

# Experimental Study of a Self-Determination Intervention for Youth in Foster Care

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## Abstract

The aim of the study was to conduct a longitudinal, randomized clinical trial of the efficacy of *TAKE CHARGE*, a self-determination enhancement intervention, for promoting the school performance of youth in special education and foster care. A total of 133 youth were randomized to either a control group that received typical services, or to the intervention group that received coaching in the application of self-determination skills to achieve their goals, as well as participating in group mentoring workshops with successful young adult alumni of foster care. Findings on the outcomes of 123 youth who completed the study suggest gains for the intervention group in elements of self-determination, engagement in educational planning, school performance, and reduced anxiety and depression.

## Keywords

foster care, disabilities, self-determination, education, randomized clinical trial

Adolescents represent a large percentage of the foster care population in the United States, with youth aged 13 and above accounting for 38% of the children served by child welfare in September 2009 (U.S. Department of Health and Human Services, 2010). Older foster youth have increasingly come under the attention of policy makers, with particular attention paid to the more than 20,000 youth who reach the age of majority and emancipate from foster care in the United States each year. Research indicates that transition to adulthood for youth leaving foster care is difficult, with foster youth exhibiting increased risk of unemployment, housing instability, homelessness, involvement with the criminal justice system, and early parenting (Courtney et al., 2007; Festinger, 1983; Pecora, Kessler, et al., 2006). Research has also demonstrated that foster youth have markedly lower levels of educational attainment, which has a clear connection to many of the difficulties faced by these youth during their transition to adulthood.

Although research conducted with a specific focus on foster youth with disabilities is limited, estimates of the rate of disabilities among foster youth are high. The National Evaluation of Title IV-E Foster Care Independent Living Programs for Youth revealed that almost half of youth emancipating from foster care had an identified disability (Westat, Inc., 1991). Eligibility for special education services has

been shown to be 30% to 40% (Geenen & Powers, 2006; Goerge et al., 1992; Lambros, Hurley, Hurlburt, Zhang, & Leslie, 2010). Actual rates of disability among foster youth, however, may be higher than the proportions reflected in special education populations. For example, the Northwest Foster Care Alumni study found that among young adults who had recently exited the foster care system, more than half had a mental health problem, with 25% experiencing posttraumatic stress disorder (PTSD) and 20% experiencing major depression (Pecora et al., 2005).

## Educational Outcomes of Foster Youth

Because foster youth are called on to establish independence so quickly and often with fewer resources than their

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peers who live with family, educational attainment can be an especially powerful asset. Unfortunately, foster youth drop out of high school at higher rates and they have fewer years of education overall than youth in the general population (Courtney & Hughes-Heuring, 2005; Wolanin, 2005). Young people in foster care also experience higher rates of school suspensions, expulsions (Castrechini, 2009; Zima et al., 2000), and grade retention (Smithgall, Gladden, Howard, Goerge, & Courtney, 2004). Research has documented the link between the emotional and behavioral issues youth in foster care often experience, the failure of schools to adequately address these needs, and the youth's academic challenges described above (e.g., Smithgall, Jarpe-Ratner, & Walker, 2010). Lower rates of high school completion are associated with decreased rates of postsecondary enrollment, retention, and completion among young adults exiting foster care (Courtney & Dworsky, 2006). This study found that only 39% of foster care alumni were enrolled in higher education at age 19, a percentage much smaller than the 59% of youth in the general population. By age 21, this number dropped to one-quarter, compared with 44% of young adults overall (Courtney et al., 2007).

### **Educational Outcomes of Youth With Disabilities**

Similar patterns of lower educational attainment emerge for youth with disabilities. Youth with disabilities leave high school without a diploma at higher rates than youth without disabilities (Levine & Wagner, 2005). Using data from the 1997 National Longitudinal Survey of Youth, Berzin and Kelly (2009) found that young adults with disabilities were more likely than young adults without disabilities to drop out of high school, more likely to complete a General Educational Development Test (GED), and less likely to hold a diploma. More recently, National Longitudinal Transition Study-2 (NLTS2) findings indicate that youth with disabilities had fewer credits earned, fewer academic courses completed, more vocational courses completed, and a higher course failure rate, compared with youth in general education (Newman, Wagner, Huang, et al., 2011).

Lower levels of high school achievement translate into lower paying jobs, which often lack financial security and potential for career advancement, and have negative implications for postsecondary education. For example, NLTS2 findings showed that, compared with youth in special education who did not complete high school, high school completers were about 3 times more likely to attend postsecondary education, they worked fewer hours for the same pay, were less likely to be involved in the criminal justice system and to become a young parent, and were more likely to have a checking or savings account (Newman, Wagner, Knokey, et al., 2011).

### **Educational Challenges for Youth in Special Education and Foster Care**

Although it is known that high rates of disability exist among foster youth, and both youth in foster care and youth in special education experience poorer educational outcomes, less is known about the educational outcomes of youth who experience both foster care and disability. The few studies that do exist suggest that the challenges these youth face are compounded. Using data drawn from the Casey National Alumni Study, Anctil, McCubbin, O'Brien, Pecora, & Anderson-Harumi (2007) found that foster care alumni with disabilities had lower levels of educational attainment than foster care alumni without disabilities. Likewise, Geenen and Powers (2006) found that youth in both foster care and special education had lower achievement in a number of important academic areas (grade point average [GPA], number of credits, state testing, school stability), compared with youth in foster care only or youth in special education only. These findings document the need for validated approaches to promote the educational success of youth in foster care with disabilities.

### **Potential Benefits of Self-Determination Enhancement**

Within the field of special education, self-determination is widely viewed as an important factor that contributes positively to educational outcomes; however, the majority of this research is correlational and has only examined the impact of specific components of self-determined behavior. For example, goal setting and self-regulation have been linked to improved educational performance across students with a range of disabilities (Kapadia & Fantuzzo, 1988; Malone & Mastropieri, 1992). Several meta-analysis studies have been conducted examining the connection between self-determination and academic achievement, and the findings have been mixed; for example, Bae (2007) reviewed 18 studies focused on students with disabilities in postsecondary education and did not find significant associations between self-determination and GPA.

A number of models have been developed to promote student self-determination, and a few studies have systematically evaluated the efficacy of these approaches (e.g., *Whose Future Is It Anyway?* Wehmeyer, Palmer, Lee, Williams-Diehm, & Shogren, 2011; *Choice Maker*, Martin & Marshall, 1996; Sweeney, 1997; and *TAKE CHARGE*, Powers, Turner, Ellison, et al., 2001; Powers, Turner, Westwood, et al., 2001). A meta-analysis conducted by Fowler, Konrad, Walker, Test, and Wood (2007) specifically examined the relationship between components of self-determination interventions and academic performance for students with disabilities and found that in comparison with single component interventions, multiple component interventions produced larger effect sizes.

Powers and colleagues developed the *TAKE CHARGE* intervention, which combines coaching on the application of self-determination skills to achieve goals, mentoring from adults with disabilities, and parent support. They conducted two randomized field test studies of *TAKE CHARGE*, involving 63 students with learning, emotional, and other health impairments (Powers, Turner, Ellison, et al., 2001; Powers, Turner, Westwood, et al., 2001). Students who participated in the intervention demonstrated significantly higher transition planning knowledge and engagement, and enhanced academic goal achievement and empowerment, compared with the control group. Subsequently, a randomized, longitudinal study, referred to as *My Life*, was conducted to examine the transition outcomes of *TAKE CHARGE* for 69 youth in special education and foster care (Powers et al., 2012). The 1-year intervention included an average of 50 hr of coaching to assist youth to learn and apply self-determination skills to achieve their self-identified goals, and participation in an average of three mentoring group meetings with other intervention group youth and successful young adult foster care alumni. Outcomes included significant increases in self-determination and quality of life at post-intervention and 1-year follow-up, compared with youth who received foster care independent living services. Self-determination was found to partially mediate the effects of the intervention on quality of life.

In sum, self-determination interventions have been empirically validated; however, none have been subjected to experimental study of their efficacy for improving the educational achievement of youth who are at exceptionally high risk for academic failure, such as those in special education and foster care. To address this gap, Project Success featured a longitudinal, randomized study of the impact of *TAKE CHARGE* on the educational outcomes of youth with disabilities in foster care, both in absolute terms and in comparison with youth receiving typical educational supports. Study hypotheses were that youth randomized to the *TAKE CHARGE* intervention group would demonstrate significantly higher self-determination, educational planning knowledge and engagement, school performance; and significantly lower anxiety and depression, compared with youth who received typical educational services. Anxiety and depression were the mental health variables of focus because youth in foster care have been shown to disproportionately experience these problems (Courtney & Dworsky, 2006; Pecora et al., 2005), which have been associated with impaired academic performance (Chan, Zadeh, Jhang, & Mak, 2008; Fortin, Marcotte, Potvin, Royer, & Joly, 2006).

## Method

### Participants

A total of 133 youth in foster care and receiving public special education services were enrolled in the study and

assessed at baseline. At Time 2 (end of the intervention period), 123 of the youth were assessed (60 intervention, 63 control), 6 youth could not be located, and 4 youth had withdrawn. At Time 3 (end of 9-month follow-along), an additional 4 youth could not be located for assessment, for an overall attrition rate of 10.5%.

The sampling frame from which the participants were selected included youth (a) receiving special education services within an urban school district, (b) in the guardianship of the state foster care system, (c) residing within the study's targeted geography, and (d) in the freshman, sophomore, or junior year of high school. Grade level was selected rather than age because many youth in foster care are behind in school and older than their same grade-level peers (e.g., Smithgall et al., 2004), and we wanted to maximize the likelihood that the participants would remain in high school throughout the study period, which crossed more than two school years. To identify participants for this panel study, the state foster care system generated a list of all youth who were in foster care who met the study's eligibility requirements. This list was then cross referenced with the corresponding school district to confirm the student receives special education services. Thus, a comprehensive list of all eligible youth was created. All youth on the list were approached for participation except in rare instances when a caseworker expressed a concern (e.g., student non-English speaking, scheduled to move out of state). More than 90% of youth chose to enroll after participating in an orientation meeting to learn about the study; the state foster care agency provided consent for all students choosing to enroll.

**Sample characteristics.** The demographic characteristics of the sample are shown in Table 1 ( $n = 123$ ). Participants ranged in age from 14.08 to 17.83 ( $M = 15.49$ ,  $SD = 2.21$ ); 41.7% of intervention and 52.4% of control were in the 9th grade, 41.7% of intervention and 39.6% of control were in the 10th grade, and 16.6% of intervention and 8% of control were in the 11th grade. The two groups were also similar in terms of school setting: Almost one third of all youth attended an alternative school because of emotional, behavioral, or attendance issues; this was true for 32.8% of control and 30.5% of intervention youth. In regard to diploma type, intervention youth were more likely to be slotted for a modified diploma (21.7%) when compared with control youth (14.3%). Overall percentages for special education and maltreatment are greater than 100% because youth could experience more than one type of maltreatment or disability. Information about participants' foster care experiences were gathered from a review of foster care case files and the state's child welfare electronic database, and school data (e.g., diploma type, grade level, disability) was obtained from the school districts electronic database and copies of students' transcripts and individual education plans (IEPs).

**Table 1.** Demographic Characteristics of Project Success Study Participants.

Variable	Control (n = 63)	Intervention (n = 60)	Total (n = 123)
Age (M)	15.24	15.79	15.49
Gender (% female)	52.4	40.0	46.3
Race/ethnicity (%)			
Hispanic	7.9	5.0	6.5
Native American	6.3	8.3	7.3
Asian	1.6	0	0.8
African American	25.4	33.3	29.3
Caucasian	52.4	46.7	49.6
Multiethnic	6.3	5.0	5.7
Other	0	1.7	0.8
Placement type			
Foster care (nonrelative, %)	79.4	85.0	82.1
Kinship care (including birth parent, %)	14.3	11.7	13.0
Group home/RTC (%)	6.3	3.3	4.9
Length of time in foster care (mean months)	74.2	97.6	84.6
Total number of placement moves	6.35	7.9	7.1
Maltreatment (% nonexclusive)			
Physical	31.7	45.0	38.2
Sexual	39.7	26.7	33.3
Neglect	28.6	26.7	27.6
Emotional maltreatment	3.2	1.6	2.4
Threat of harm	11.1	13.3	12.2
Other	1.6	1.7	1.6
Special education eligibility (% nonexclusive)			
Emotional/behavioral	47.6	36.7	42.3
Intellectual disability	7.9	8.3	8.1
Speech/language	6.3	23.3	14.6
Physical (including deafness and blindness)	0	3.3	1.6
Autism spectrum disorder	4.8	1.7	3.25
Learning	27	26.7	26.8
Other health impairment	39.7	35.0	37.4

Note: RTC = residential treatment center.

## Procedure

Youth were enrolled in successive waves over a 4-year period resulting in four cohorts. For each cohort of youth, after assent and consent was obtained, participants completed a baseline assessment and were randomly assigned into either the intervention or control group. Youth participating in the control group received typical educational services (business as usual), including general and special education classes, related services, interaction with special education case managers, individualized educational planning, and extracurricular activities.

**Intervention group.** Youth participated in two components of *TAKE CHARGE*: (a) Individualized coaching in applying self-determination skills (see Table 2) to achieve their educational and related goals and to participate in educational

**Table 2.** Major Self-Determination Skills in *TAKE CHARGE*.

Achievement	Partnership	Self-regulation
Dream	Schmooze	Think positive
Set goals	Assertiveness	Manage other people's discouragement
Make decisions	Negotiation	Focus on your accomplishments
Problem-solve	Manage help	ARM yourself against stress
Plan	Make support agreements	Hang tough
Prepare	Make allies in agencies	Monitor and reward your progress

planning meetings and (b) group mentoring, where the youth and near-peer foster care alumni who had completed high school and were working or in college gathered for information sharing and peer support. Mentors were recruited from college campuses, nominations from caseworkers, and study participants from earlier waves.

## Fidelity to Treatment

To ensure fidelity, all coaches completed formal training and observation, and they attended weekly meetings where they discussed their work with youth and received ongoing support. Coaches also completed weekly log sheets where they documented the activities they engaged in and the time spent with each participant. The mean number of coaching sessions over an approximate 9-month period was 30.5 ( $SD = 7.8$ ) with youth participating in an average of 32.97 ( $SD = 8.71$ ) coaching hours over the duration of the intervention. Coaches and youth typically met weekly for 60 to 90 min; 13 was the minimum number of coaching hours and 55 was the maximum; youth availability accounted for much of the variation in coaching hours. Typically, one third of coaching time was didactic ( $M = 9.05$ ,  $SD = 3.4$ ) and two thirds experiential ( $M = 23.9$ ,  $SD = 7.1$ ). Overall fidelity for 79 coaching elements across all waves was 90.68%. Youth were invited to participate in three mentoring workshops, and they attended an average of 1.79 workshops. Workshop topics selected by youth included leading your education planning meeting, postsecondary education, careers, transportation, and relationships.

## Measures

All dependent measures were administered to participants pre-intervention (T1), at the conclusion of intervention (T2: 9 months), and after a follow-along period (T3: 18 months). Youth were typically enrolled during the first month of the



school year (fall), they had their T2 at the end of the school year and completed their T3 during spring term of the following year.

**School dropout, foster care placement stability, and employment status.** These were assessed with an outcome survey administered to youth and corroborated with data gathered from school records and the state child welfare database. The survey has been used in previous studies evaluating transition outcomes (Wehmeyer & Palmer, 2003; Wehmeyer & Schwartz, 1997) and is based on a selection of key questions from other instruments used to assess outcomes (e.g., the National Consumer Survey and the National Longitudinal Survey). The original survey was adapted to include outcomes specific to youth in foster care, such as type of foster care placement and number of placement moves.

**Self-determination.** This was measured using the *AIR Self-Determination Scale* (Wolman, Campeau, Dubois, Mithaug, & Stolarski, 1994), which assesses individual aptitude for and opportunity to exercise self-determination. There are student, teacher, and parent forms of the scale. The scale was field tested in more than 70 schools in several states. Wolman et al. (1994) conducted an alternate-item correlation for item consistency, which was found to range from .91 to .98. Split-half reliability was .95. Test-retest correlations (3 months) were .74. Self-determination also was assessed by asking youth to describe their goals and accomplishments as respective indices of youth direction and positive self-attribution highlighted in the *TAKE CHARGE* intervention.

**Youth educational planning knowledge and engagement.** This was assessed with the Educational Planning Assessment, a measure adapted from the Transition Planning Assessment tool that has been used to evaluate the impact of *TAKE CHARGE* (Powers, Turner, Westwood, et al., 2001). Both planning assessment measures rate student participation in group planning meetings; the original version focused on student involvement in transition planning while wording of items on the adapted version were changed slightly to center on educational planning. The Educational Planning Assessment has versions for completion by youth (Educational Planning Assessment: Student Version [SEPA]), foster parent (Educational Planning Assessment: Parent Version [PEPA]), and teacher (Educational Planning Assessment: Teacher Version [TEPA]). The measure consists of 14 Likert-type questions such as "My child knows how to get the help she or he needs when making education plans" and "This student helps run his or her IEP meetings." The youth and adult forms are identical except the youth version is worded with "I" statements, whereas questions in the adult version refer to the "youth." The standardized item alpha coefficients for the youth version were .86 on pre-test, .81 on post-test, and .88 at follow-up. Alpha coefficients for the educator version were .88 at pre-test and post-test and

.91 at follow-up; alpha coefficients for the parent version were .88 at each time point.

**School attitude.** This was measured using the School Attitude Measure (SAM; Dolan & Enos, 1980; Wick, 1990). The SAM, a Youth Self-Report (YSR) measure, has five subscales; however, in the present study, only the Motivation for Schooling and the Student's Sense of Control Over Performance Scale were administered to specifically target student feelings and attitudes toward school. Internal consistency coefficients for these two subscales range from .71 to .89 (Dolan, 1983; Wick, 1990).

**School performance.** This was assessed by examining GPA, credits earned toward graduation, time spent on homework, postsecondary preparation, and career development. Data on GPA and credits earned came from school transcripts. Postsecondary preparation and career development were assessed with items created for this study, which were derived from previous findings (Powers, Deshler, Jones, & Simon, 2006). In all, 10 postsecondary items included "talked with guidance counselor or teacher about going to college" and "visited colleges"; 7 career items included "talked with family members about my career interests" and "job shadowed someone in my career area." Item sums were calculated for each category.

**Youth emotional and behavior problems.** These were measured with the Teacher Report Form (TRF) and the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001), and YSR (Achenbach, 1991). These parallel measures include scales for withdrawn-depressed, anxious-depressed, delinquent, and aggressive behavior, as well as attention problems. The psychometric properties of these measures are well established. Given youth in foster care disproportionately experience depression and anxiety (Pecora et al., 2005), our analyses focused on the Withdrawn-Depressed, Anxious-Depressed, and Somatic Complaints subscales.

## Results

Descriptive statistics were calculated for school dropout, foster care, school placement, and employment status.

**School dropout.** As mentioned earlier, all youth were enrolled in high school at baseline (T1). According to YSR and confirmation through school records, at T2 (post-intervention), 4 intervention and 3 control youth had dropped out of school. At T3 (follow-up), these youth had not returned to school; furthermore, an additional 7 control and 2 treatment youth had stopped attending school without graduating. Thus, a total of 10 control and 6 intervention youth dropped out of high school during the study period, reflecting modest advantage for the intervention group. The majority of youth (10 or 62.5%) left school after the 10th grade, whereas 31% (5) dropped after the 9th grade and 1 youth discontinued school after the 11th grade. The reasons youth cited for dropping out of school included

transportation issues, moving and not reenrolling in school, drugs/alcohol, feeling unaccepted at school, or that school did not matter. The most frequent reasons for not finishing school, however, were falling behind (e.g., failing a class or lacking credits) and not having the support they needed to catch up. The remaining youth in the study continued their engagement in high school for the duration of the study. Two youth successfully completed their secondary education at T3: a control youth obtained his GED and an intervention youth graduated with a general diploma.

**Living status.** All youth were in foster care when enrolled in the study. At T2, 2 youth were living on their own (1 control, 1 intervention), 12 youth had returned to their birth family (7 control and 5 intervention), and 4 youth were incarcerated (3 control and 1 intervention); the remaining youth were still in certified foster care placements (group home, stranger or relative foster care). At T3, 6 youth were living on their own (3 control and 3 intervention), 20 youth had returned to their birth family or had been adopted (12 control and 8 intervention), and the 2 control youth who were in prison at T2 continued to be incarcerated at T3; the remainder of the youth (91) remained in foster care placements.

**School placement.** The majority of youth (65%) did not experience any change in schools during their participation in the study (approximately 2 years), that is, they attended one high school. Just over a quarter of the youth (28.5%) changed schools once, whereas a small number of youth (8 or 6.5%) attended three or more schools during the study period. Youth in the intervention and control groups did not differ in terms of number of school attended.

**Employment status.** With regard to paid employment, 48.5% of control and 46.2% of intervention youth were in a paid job at pre-intervention. Their rates of paid employment increased to 60% for control youth and 55% for intervention youth at T2. At T3, however, the groups diverged, and 37% of control and 60% of intervention youth had paid employment.

### Mixed Models Analysis of Other Key Variables

Study variables were measured at three time points (baseline, post-test, follow-up) for two groups (intervention vs. control). Because the data is measured at three time points, we have used mixed models analyses. Such analyses allow greater flexibility in estimating the variance-covariance matrix among the assessments and do not use listwise deletion of missing data as do traditional ANOVA methods. However, as some of the outcome measures had skewed distributions, we needed to use nonlinear mixed models for these outcomes. Such analyses allow use of distributions other than the normal, especially for positively skewed data, where a Poisson and negative binomial distributions are well suited. In the few cases where the distribution was

negatively skewed, we reverse scored the items to make the distributions positively skewed so that the above models could be used.

Because we expected that the effects of the intervention would be continuing, we elected to use two orthogonal contrasts on the time variable to dispense with posttest comparisons. The first contrast compared the average of the post-test and follow-up with the pretest value to provide a test of the intervention effect. The second contrast compared the post-test with the follow-up to see whether the outcomes continued to rise over time or whether they would decrease once the intervention was over. Only if this latter contrast was significant would we compare the post-test and follow-up individually with the pre-test. Given the study was hypothesis driven and sample size is not large, we opted to use one-tailed tests to be more liberal in our evaluation of the effects. We also report effect sizes, computed as the mean differences between groups divided by the estimated standard deviation. Standard deviations were either based on the variability from the model or from the pooled standard deviation of the groups at baseline, depending on the analysis. When nonlinear mixed models were used, we used raw score-based values, whereas for mixed models, we used the model-based values. Means and standard deviations are presented in Table 3 for variables with a significant group difference.

### Self-Determination Outcomes

Self-determination was assessed with the parent, student, and teacher versions of the AIR as well as by asking youth to describe their goals and accomplishments as respective indices of youths' future directedness and positive self-attribution, which are key foci of the *TAKE CHARGE* model. Specifically, youth were asked to list all their goals and accomplishments over the past 9 months, and a total count of each was tallied. There were no significant results for the Teacher or Student AIR; results for the Parent AIR and youth accomplishments and goals are described below.

**Parent AIR.** The compound symmetry assumption was not violated, so we report the results of that model. There was a nearly significant change from pre-intervention to post-intervention that favored the treatment group over controls,  $t(193) = 1.62, p = .053$ , one-tailed, effect size (ES) = .40, but no difference between groups for the post-test to follow-up comparison,  $ES = -.005$ . The treatment groups had higher scores on the Parent AIR at both post-test,  $t(193) = 1.74, p = .0413$ , one-tailed,  $ES = .44$ , and at follow-up,  $t(193) = 1.73, p = .0430$ , one-tailed,  $ES = .45$ , but not at pre-test,  $p = .8088$ .

**Student identification of educational goals.** At each time point, youth were asked to list all of their educational goals for the upcoming year and a total count was taken, gauged to reflect students' self-directedness. This variable was positively skewed and so was analyzed with a nonlinear mixed

**Table 3.** Means and Standard Deviations by Study Group.

Measurement time/ instrument	Control group		Intervention	
	M	SD	M	SD
Time 1				
EPA: Student	21.17	7.95	20.78	8.21
EPA: Parent	16.21	9.07	15.83	7.36
EPA: Teacher	15.13	7.33	15.83	8.23
AIR: Parent	61.72	9.37	61.96	8.46
YSR Anxiety	56.90	7.32	55.58	6.80
CBCL Anxiety	60.67	9.85	57.90	9.51
CBCL Withdrawn	61.94	9.14	61.28	9.06
CBCL Somatic	59.27	9.85	58.18	8.93
Postsecondary preparation	1.17	0.16	1.37	0.31
Career development	1.84	0.60	1.80	0.58
Accomplishments	2.16	1.26	2.03	1.15
Goals	1.95	1.13	1.63	1.09
Homework hours	1.16	1.23	1.07	1.00
Time 2				
EPA: Student	23.65	7.85	26.10	5.71
EPA: Parent	19.32	12.89	22.13	7.31
EPA: Teacher	17.89	8.05	20.40	7.95
AIR: Parent	63.52	8.94	66.43	8.90
YSR Anxiety	56.19	6.61	53.60	5.11
CBCL Anxiety	60.43	8.60	55.33	6.84
CBCL Withdrawn	62.36	9.60	58.89	7.04
CBCL Somatic	60.70	9.39	57.84	9.88
Postsecondary preparation	1.52	0.40	2.53	0.92
Career development	2.04	0.71	2.64	0.97
Accomplishments	1.95	1.20	2.75	1.44
Goals	2.05	1.14	2.30	1.23
Homework hours	0.81	1.11	1.32	1.27
Time 3				
EPA: Student	23.93	9.15	26.61	6.99
EPA: Parent	19.40	8.14	22.62	8.05
EPA: Teacher	18.11	8.90	20.88	7.84
AIR: Parent	62.96	8.81	65.76	8.56
YSR Anxiety	54.61	5.79	54.09	6.05
CBCL Anxiety	59.00	8.58	56.20	6.94
CBCL Withdrawn	61.19	9.08	58.23	6.73
CBCL Somatic	60.00	9.53	55.56	6.52
Postsecondary preparation	2.56	0.89	2.58	0.94
Career development	2.01	0.69	2.18	0.78
Accomplishments	2.07	1.23	2.31	1.34
Goals	1.92	1.05	1.90	1.03
Homework hours	0.94	0.96	1.08	1.13

Note: EPA = Educational Planning Assessment; YSR = Youth Self-Report; CBCL = Child Behavior Checklist.

change between pre-test and the average of post-test and follow-up,  $t(121) = 1.78$ ,  $p = .0386$ , one-tailed,  $ES = .44$ . However, the biggest difference was between the pre-test and post-test,  $t(121) = 2.15$ ,  $p = .0168$ ,  $ES = .57$ . Both groups increased from pre-test to post-test in the number of goals reported but the treatment group increased more. Both groups then went back down by the follow-up, although the treatment group was still higher than they had been at pre-test.

**Student self-attribution of accomplishments.** To assess self-attribution of educational success, conceptualized as an essential element of self-determination, youth were asked to list all their educational accomplishments for the past 6 months and a total count was gathered at each time point. This variable was modeled in the same way as goals. There was a significant difference between the groups comparing the pre-test with the average of the post-test and follow-up,  $t(121) = 2.36$ ,  $p = .0098$ ,  $ES = .53$ . However, there was also a significant group difference on the change from post-test to follow-up,  $t(121) = 1.89$ ,  $p = .0307$ ,  $ES = .56$ . The greatest difference was between pre-test and post-test,  $t(121) = 3.12$ ,  $p = .0022$ ,  $ES = .75$ , where the control group declined as the treatment group increased. Both groups decreased from post-test to follow-up, but the treatment group remained higher than their pretest values, whereas the control group was below their pretest value at follow-up.

### Youth Educational Planning Knowledge and Engagement

The student, parent, and teacher versions of the Educational Planning Assessment were used to evaluate youth knowledge and engagement in educational planning.

**SEPA.** The model assuming a compound symmetric variance-covariance matrix fit the data about as well as the model with an unstructured matrix. Results of the model indicated that the intervention group did significantly better post-treatment than the control group did,  $t(238) = 2.02$ ,  $p = .0221$ , one-tailed,  $ES = .45$ . Although the groups did not differ at the pre-test ( $p = .7806$ ), the target group was higher on the SEPA at both post-test,  $F(1, 238) = 3.09$ ,  $p = .0400$ , one-tailed,  $ES = .38$ , and follow-up,  $F(1, 238) = 3.41$ ,  $p = .0330$ , one-tailed,  $ES = .40$ .

**PEPA.** The model using an unstructured variance-covariance matrix fit the data significantly better than one with compound symmetry,  $\chi^2(4) = 11.5$ ,  $p = .0215$ . Results of this model also indicated that, based on parent report, the intervention group youth were significantly more engaged in educational planning post-treatment compared with the pre-test than were control group youth,  $t(119) = 1.81$ ,  $p = .0362$ , one-tailed,  $ES = .44$ . The treatment/control difference at post-test was not quite significant,  $p = .098$ ,  $ES = .35$ , but it was significant at follow-up,  $t(119) = 1.95$ ,  $p = .0270$ ,  $ES = .40$ .

**TEPA.** The distribution of the TEPA was relatively symmetric and unimodal, allowing us to use a mixed models

model. We assumed an unstructured variance-covariance data as this fit the data better. Results indicated a significant

analysis. The model assuming compound symmetry fit the data almost as well as the model assuming an unstructured matrix and so was the model analyzed. The overall group effect was significant,  $t(120) = 1.68$ ,  $p = .04745$ , one-tailed,  $ES = .31$ , but the group by preintervention–postintervention time contrast was not,  $p = .09955$ , one-tailed,  $ES = .31$ . There was a significant difference between groups at the post-test,  $t(191) = 1.74$ ,  $p = .0418$ ,  $ES = .41$ . The difference at the follow-up just failed to reach significance,  $p = .06$ ,  $ES = .41$ , whereas the difference at pre-test was very small,  $p = .6707$ ,  $ES = .10$ .

### School Attitude and Academic Performance Outcomes

There were no significant results for the SAM or GPA; analysis of GPA was problematic because many youth were in alternative education placements where standard methods for assessment were not used, and/or they were designated to receive modified diplomas.

**Credits toward graduation.** At each time point, transcripts were coded as to whether a student was on target or behind in the number of credits earned given his or her grade level in school. This variable was a binary variable (1 = *behind*/0 = *not behind*) and so was modeled with a nonlinear mixed analysis using a binomial distribution and a logit link function. The model with an unstructured variance–covariance matrix seemed to fit better and so is reported. There was a significant change by group between the pre-test and the average of the post-test and follow-up,  $t(108) = 1.76$ ,  $p = .0407$ , one-tailed,  $ES = .39$ . The difference was greatest for the pre-test versus follow-up comparison by group,  $t(108) = 1.84$ ,  $p = .0340$ ,  $ES = .45$ . This was primarily because of a significant difference between the groups at follow-up,  $t(108) = 1.88$ ,  $p = .0313$ ,  $ES = .42$ . However, the difference at post-test did not quite reach significance,  $p = .0784$ ,  $ES = .30$ . The difference at baseline was only .03 standard deviations. The control group was higher at both post-test and follow-up, and thus was more likely to be behind on credits needed for graduation.

**Hours spent doing homework.** This variable was also analyzed with a nonlinear mixed model using a Poisson distribution and a log link function. The variances and covariances appeared relatively homogeneous, and the fit using a compound symmetric variance–covariance matrix was good. There was a significant group difference on the comparison of the pre-test to the average of the post-test and follow-up,  $t(204) = 1.79$ ,  $p = .0372$ ,  $ES = .37$ . The largest difference was between pre-test and post-test,  $t(204) = 2.22$ ,  $p = .0276$ , two-tailed,  $ES = .53$ . This was confirmed by a significant difference between the groups at post-test,  $t(204) = 2.39$ ,  $p = .0178$ , two-tailed,  $ES = .45$ . The treatment group reported spending more time doing homework from pre-test to post-test with this tapering off at follow-up, whereas the

control group declined from pre-test to post-test and then went up slightly at follow-up, although not as high as they had been at pre-test.

**Postsecondary preparation.** On the outcome survey, youth completed a checklist indicating activities they had performed in planning for college. The data were positively skewed and so a nonlinear mixed model was used. The model assuming an unstructured variance–covariance matrix seemed to fit the data better. There was a significant group by posttest interaction versus follow-up interaction,  $t(121) = 2.47$ ,  $p = .0076$ , one-tailed,  $ES = .53$ . In addition, the group by pretest interaction versus posttest interaction approached significance,  $t(121) = 1.82$ ,  $p = .0711$ , two-tailed,  $ES = .55$  (a two-tailed test is used here because this is not an orthogonal comparison with the other). There was also a significant difference between the groups at post-test,  $t(121) = 2.88$ ,  $p = .0024$ , one-tailed,  $ES = .61$ , but not at follow-up,  $p = .7405$ ,  $ES = .08$ , or baseline,  $p = .6685$ ,  $ES = .06$ . In sum, from pre-test to post-test, the treatment group became increasingly more involved in planning for higher education when compared with the control group. However, the control group caught up from post-test to follow-up.

**Career development.** Information regarding key activities youth had engaged in around career exploration and preparation for employment was also gathered on the outcome survey. The model was a nonlinear mixed model, and the variances and covariances were relatively homogeneous so that a model assuming compound symmetry seemed appropriate. Although there were no significant changes across the three time points by group, there was a significant difference in the groups at post-test,  $t(189) = 1.81$ ,  $p = .0361$ , one-tailed,  $ES = .60$ . Thus, although the groups were virtually identical at pre-test in their engagement in career preparation activities, the treatment group showed notable gains in engagement at post-test, compared with the control group. The intervention group's level of involvement in career development activities was not maintained at follow-up (however, as previously noted, their employment rate increased).

### Youth Emotional and Behavioral Outcomes

There were no significant differences between groups on the subscales of interest in the TRF. The following findings were obtained for the CBCL and YSR.

**CBCL Anxiety-Depressed.** The subscale scores were all positively skewed and so a nonlinear mixed model was used specifying a Poisson distribution with a log link function. With anxiety, the fit of the compound symmetric variance–covariance model was suspect, so we report the results of the model assuming an unstructured matrix. There was an overall group effect,  $F(1, 121) = 9.07$ ,  $p = .0016$ , one-tailed. Although the groups did not differ significantly at baseline ( $p = .1161$ , two-tailed, as we did not expect a difference,



ES = .32), they did differ at post-test,  $t(121) = 3.45$ ,  $p = .0004$ , one-tailed, ES = .60, and at follow-up,  $t(121) = 1.68$ ,  $p = .0481$ , one-tailed, ES = .33.

**CBCL Withdrawn-Depressed.** The model assuming an unstructured variance-covariance matrix was deemed tenable and interpreted. There was a significant group effect,  $F(1, 121) = 3.83$ ,  $p = .0264$ , one-tailed, but no significance in time or group by time effects. As with the *Anxiety-Depressed* scale, there were significant differences between groups at post-test,  $t(121) = 2.08$ ,  $p = .0197$ , one-tailed, ES = .42, and follow-up,  $t(121) = 1.78$ ,  $p = .0384$ , one-tailed, ES = .33, but not at baseline,  $p = .6915$ , ES = .08. Although the differences over time failed to reach statistical significance, important trends were observed. For example, the group by pretest versus posttest/follow-up contrast had a  $t(121) = 1.46$ ,  $p = .0732$ , one-tailed, ES = .30.

**CBCL Somatic Complaints.** There was some evidence that the compound symmetric variance-covariance matrix did not fit the data as well as the unstructured variance-covariance matrix so the latter result is interpreted. There was a significant group effect,  $F(1, 121) = 4.58$ ,  $p = .0172$ , one-tailed, but no significant time or group by time effects. However, there was a significant contrast of group by pre-test versus follow-up,  $t(121) = 1.80$ ,  $p = 0.375$ , one-tailed, ES = .39, and a significant difference between groups at follow-up,  $t(121) = 2.81$ ,  $p = .0029$ , one-tailed, ES = .51. Although group difference at post-test was not quite significant,  $t(121) = 1.45$ ,  $p = .0749$ , one-tailed, ES = .31, it was quite small at baseline,  $t(121) = 0.64$ ,  $p = .5233$ , two-tailed, ES = .08. Thus, intervention group somatic complaints decreased over time, becoming most different from the control group at follow-up.

**YSR Anxiety-Depression.** *YSR Anxiety-Depression* scale scores were positively skewed and so a nonlinear mixed model was used for the analysis. The fit indices indicate that the model assuming an unstructured variance-covariance matrix was better and so that model is reported. The group by posttest versus follow-up contrast was significant,  $t(121) = 1.99$ ,  $p = .0486$ , two-tailed, ES = .33, indicating that the control group went down more between post-test and follow-up than the treatment group. This was because the treatment group had a significantly lower value for anxiety-depression than the control group,  $t(121) = 2.39$ ,  $p = .0091$ , one-tailed, ES = .41.

**YSR Withdrawn-Depressed and Somatic Complaints.** Significant results were not observed for these variables.

## Discussion

On the whole, the study findings confirm the benefits of the intervention for promoting educational planning knowledge and engagement, academic performance (homework, catching up on classes, post-secondary and career planning), and reduction in anxiety and depression. It is not

clear whether the intervention had a significant impact on self-determination as measured by the AIR. Although scores on the Parent AIR indicate near significant change from pre-intervention to post-intervention that favored the treatment group over control (ES = .40), the Teacher AIR did not reflect significant change by group over time, nor did the Student AIR. Scaling is uniform throughout the AIR and individual items are repeated in each domain; data collectors expressed concern that when items were repeated, youth were not discriminating between domains and consistently chose the same response option. Other indicators of self-determination, however, showed favorable change for the intervention group. The average of post-test and follow-up group differences on student identification of academic goals and self-attribution of accomplishments was significantly greater for the intervention group, yielding moderate effect sizes. Most of this difference was associated with notable baseline to postintervention gains by the intervention group. In addition, the intervention group demonstrated increased engagement in educational planning, which is generally considered an important marker of self-determination expression in school.

Youth in the intervention group, along with their parents, reported significantly greater youth involvement in educational planning post-treatment compared with baseline than did control group youth and parents. A significant group by time difference was not obtained for youth's attitudes toward school (as measured by the SAM). However, the intervention appeared to have a positive impact on key school achievement and performance variables, including credits toward graduation and time spent on homework. As reflected in the descriptive data, the intervention may have also had a positive impact on overall high school retention. Although the groups were similar in terms of grade level at pre-test, by follow-up almost twice as many control group youth had dropped out of school. In addition, the intervention appears to have had a positive impact on intervention group youths' preparation for postsecondary education, and the intervention group youth were more engaged in career development activities at post-test, and they were more likely to have paid jobs at follow-up, compared with the control group.

Most likely related to insufficient power to detect differences in this limited sample of youth, some findings offer moderate effect sizes but do not reach statistical significance. In addition, some of the findings are more compelling for baseline to posttest comparisons, with group differences decreasing between post-intervention and follow-up for some variables. Important exceptions where post-intervention to follow-up differences maintained include parent ratings of the youths' self-determination, youth being behind on credits, youths' knowledge and engagement in educational planning, and parent ratings of youths' anxiety-depression, withdrawal-depression, and

somatic complaints. Reductions in group differences from post-intervention to follow-up are straightforward in some cases (i.e., time spent doing homework), whereas they are more difficult to interpret in other cases. For example, significant postintervention differences in youth postsecondary preparation and career development activities do not maintain at follow-up. However, some of the items that assessed postsecondary preparation are one time, such as “Take the PSAT” (preliminary SAT) and thus, it is possible that a ceiling effect was present at follow-up for the intervention group, which demonstrated significantly higher engagement than the control group from baseline to post-intervention with an effect size of .6. Likewise, it is possible that differences between the groups from post-test to follow-up in performance of career preparation activities were dampened by the intervention group’s higher level of paid employment at follow-up (60% vs. 37%).

Although overall encouraging, the longitudinal effects of the intervention are not quite as consistent as those observed in the Powers et al.’s (2012) *My Life* study. One possible explanation is that this type of self-determination enhancement intervention is less powerful over extended time in influencing educational outcomes, compared with transition outcomes. Indeed, our coaches reported that several youth were resistant to identifying educational goals and preferred to focus on post-high school life, including getting a job and going to college. It is also possible that the intervention dosage was not adequate to activate self-determination as a longitudinal partial mediator of the effects of the intervention on the outcomes, as was found in the *My Life* study. For example, the average number of coaching hours provided in the school year within the Project Success intervention was almost 33 hr, compared to 50 hr in the year-long *My Life* intervention. Additional research is needed to further investigate the effects of intervention dosage on self-determination and academic and transition outcomes over time, as well as their associations.

### ***Implications for Policy, Practice, and Research***

Findings from this study suggest that in vivo coaching in the application of self-determination skills to achieve youth-identified goals, and mentoring experiences that bring together peers and near-peer more experienced young adults, could be effective approaches to promote education and transition success for youth in foster care and special education. However, resource constraints and lack of cross-cutting knowledge in and collaboration between special education and foster care programs could make implementation difficult. Effective implementation would require coordinated efforts of foster care agencies and school districts to identify youth in foster care and special education and to share resources in supporting

youth liaisons that are youth-directed in their focus, knowledgeable about both systems, and have as their charge bridging systems to optimally support youth in advancing their school success. An example of this type of approach is evident in services currently provided through the McKinney-Vento Homeless Assistance Act of 1987, which requires that all school districts make special accommodations to ensure access to school and reduce segregation, stigma, and bias for youth who are homeless, including those in special education. At the most basic level, school and child welfare systems need a mechanism for exchanging information so that educators and caseworkers can identify youth who interface with both foster care and special education. Although an interagency agreement allowing for such an exchange of information was established for this study, restrictions around Individuals With Disabilities Education Act (IDEA) and Family Educational Rights and Privacy Act (FERPA) create formidable barriers to agencies sharing information and working collaboratively across systems. Indeed, educators are often unaware of which students are in foster care and caseworkers lack information regarding which of their youth receive special education services. Policy and service reform is essential to improve the distressingly poor outcomes of young people in foster care and special education. As shown in the findings from this study, self-determination enhancement should be incorporated as a foundation of policy and service improvement.

In addition to working toward fundamental systems improvement, key elements of the intervention could currently be implemented with youth by school and/or child welfare professionals. For example, supporting the meaningful involvement of youth in their educational planning is particularly important for students in foster care who may not always have a parent figure or caregiver who can advocate for their educational needs. Similarly, educators need to have a greater understanding of the transition barriers facing students in foster care, as youth aging out of the child welfare system may suddenly face homelessness, a lack of adult support, and few or no financial resources, all of which have a direct impact on a youth’s education and ability to stay in school.

In summary, the findings from this study provide encouraging information about the outcomes of a self-determination-focused intervention over time. Also important to note, this study marks the first time that emotional and behavioral effects of a self-determination intervention have been studied with youth in special education. The findings highlight the need for further research on the associations of anxiety and depression with self-determination and academic performance and engagement, especially among youth in foster care for whom posttraumatic stress and depression are significant problems. Hopefully, the findings from this study will assist the field to move beyond simple investigation of intervention efficacy to more

specific examination of the conditions under which, and for whom and when, self-determination enhancement is most effective.

### Authors' Note

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