Title: Implementation and Impact of the Check & Connect Mentoring Program

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Background / Context:

High school graduation rates remain unacceptably low in the U.S., especially among disadvantaged youth (Chapman, Laird, Ifill, & KelalRamani, 2011; Stillwell, 2010), with troubling implications for future earnings and employment status (Bureau of Labor Statistics, 2012). Check & Connect (C&C) is an individualized program that pairs students with a trained mentor who closely monitors their progress in school and matches them with targeted academic and social supports, with the goal of increasing student engagement and performance in school and improving on-time graduation rates. C&C was originally developed to address concerns about low high school completion rates among students with disabilities. A strong body of prior research has demonstrated the effectiveness of C&C on school persistence and progression among students receiving special education (Sinclair, Christenson, Evelo & Hurley, 1998; Sinclair, Christenson & Thurlow, 2005; What Works Clearinghouse, 2006). Although C&C was developed for use with students in special education, the program continues to be used by some school districts with low completion rates to prevent dropout among general education students as well.

The use of C&C with a broader population of students is supported by research suggesting that the strategies employed in this intervention can be effective at preventing high school dropout in the general education population. Student graduation outcomes may be improved by strengthening adult and student relationships (Balfanz & Legters, 2006), embedding academic support for all students into the regular school schedule (Dynarski & Wood, 1997), and increasing the rigor and pace of coursework (Kemple, 2004; Kemple et al., 2005; Kemple & Snipes, 2000). However, no rigorous studies have tested the efficacy of C&C for general education students at heightened risk of dropping out of high school.

Purpose / Objective / Research Question / Focus of Study:

The study, funded by a grant from the Institute of Education Sciences, is testing the impact of C&C on school engagement, attendance, and completion outcomes among general education students at high risk of dropping out. We used student risk indicators from Grade 8 and the first half of Grade 9 to select students at risk for dropping out of high school. Students within the selected high-risk sample were then randomly assigned within schools to participate in C&C or to a business-as-usual control group. The study was designed to generate rigorous evidence about the effects of C&C on engagement, school completion, and academic outcomes of at-risk general education students, and to document implementation.

Setting:

The study took place in the San Diego Unified School District (SDUSD), an urban district in Southern California. Ten comprehensive high schools in SDUSD volunteered to participate in the study and are described in Table 1.

Population / Participants / Subjects:

The study sample included 9th graders in the ten study schools with lowest probabilities of on-time graduation, based on their risk factors from Grades 8 and 9 (prior to study implementation). To identify these students, we first identified the 8th/9th grade risk factors that were most predictive of on-time graduation using the district's administrative data from previous cohorts of students, for whom high school completion outcomes were known. Next, we used data for students who were in their first year of high school in 2010-11 to generate a predicted probability of on-time graduation (in spring of

2014) for each student in the ten study schools. Students with the lowest probabilities of on-time graduation in their schools were recruited for study participation. Random assignment to treatment condition occurred after recruitment and parental consent were completed. The final study sample included 553 students. Table 2 presents descriptive data on the sample at baseline, including demographics and 8^{th}/9^{th} grade risk factors.

Intervention / Program / Practice:

Check & Connect's theory of action centers on student engagement, and recognition that dropout is the culminating event of a cumulative process of increased disengagement from school that typically occurs over many years (Anderson, Christenson, & Lehr, 2004; Fine, 1991; Orfield, 2004). C&C intends to interrupt this process through early identification of observable signs of disengagement, followed by the provision of personalized mentoring designed to reengage students in school. Once reengagement begins, mentors can help students navigate the academic supports and other available resources that may help improve academic and behavioral outcomes. C&C has two main components: the ***check*** component involves monitoring indicators of student engagement (e.g., attendance, behavior, educational progress); the ***connect*** component has two levels of intervention: basic and intensive. All participating students receive basic intervention, including regular conversations about their progress in school and problem-solving strategies. Students who show continued signs of disengagement receive intensive services (e.g. facilitated tutoring, meetings between home and school, community resources) to encourage them to reengage in school. C&C is designed to provide support to students over multiple years of school.

C&C was provided to students in the study's treatment group for three years, occurring continuously from the summer after Grade 9 (August 2011) through spring 2014. Five mentors hired by SDUSD from the local community delivered the program. Mentors received training and support from the model developers and were supervised by a district-based lead mentor.

Research Design:

The study has a block-randomized trial design, with within-school random assignment of students to condition. In July 2011, after identifying the study's sample of students at heightened risk of dropping out, students were randomly assigned within each school to either receive C&C mentoring (*n*=276) or to the business-as-usual control group (*n*=277). Students assigned to the treatment group were invited to participate in C&C for the next 3 years (through the spring of their scheduled 12th grade school year). Students assigned to the control group had access to support services that would be typically available to them, but they did not have access to C&C. This study design created two groups that were statistically equivalent at baseline (as shown in Table 2), permitting estimation of the impact of C&C with high internal validity.

Data Collection and Analysis:

Student Baseline and Outcome Measures

Administrative Records. Prior to study recruitment and also at the end of each semester of the 2011-12, 2012-13, and 2013-14 school years, SDUSD provided the following student-level data for all study students who remained within the district school system: attendance;

course academic and citizenship grades[1]; credits; enrollment, transfer, or exit status with dates for each status change; days enrolled and days present; and graduation status (as of June 2014 and August 2014). Data prior to July 2011 were used as baseline information; data after this date are used as outcome data.[2] In addition, SDUSD provided student demographic and socio-economic data at baseline. At the time of this proposal, all of these data are in hand except final validated graduation data, which will be provided in October 2014.

Student Survey. We measured attitudinal outcomes, including different aspects of student engagement, using an annual spring survey for all study students. The survey includes the Student Engagement Index (Appleton, Christenson, Kim, & Reschly, 2006), composed of five subscales that were validated by the developers: teacher-student relationships, control and relevance of school work, peer support for learning, future aspirations and goals, and family support for learning.

Implementation Measures

Implementation data included monitoring logs completed by the mentors for each student on a monthly basis. The mentors used the logs to record their contacts with students, school personnel, parents, and others; student indicators of risk (e.g., attendance, grades, and behavior referrals); designated students as "high risk" or not, and recorded specific referrals/interventions used, frequency, and duration. Additionally, both mentors and treatment group students were surveyed each fall regarding the amount and type of C&C services delivered. The spring student survey also gathered data about the range of support services available to treatment and control group students, allowing us to describe the service contrast.

Analysis Methods

This paper will report results from two sets of analyses: (1) impact analyses for all study outcomes; and (2) descriptive analyses of implementation data. To carry out the main impact analysis, we estimate multiple regression models as follows:

$$Y_i = \alpha + \beta_0 T_i + \sum_{1}^{x} \beta_x X_{xi} + \varepsilon_i \quad (1)$$

where Y_i represents an outcome Y for student i, T_i is the treatment indicator (0 for control and 1 for treatment), β_0 is the program effect, and X_{xi} is a vector of pre-random-assignment background characteristics whose accompanying regression coefficients are β_x. These variables X_{xi} include student race and ethnicity; gender; predicted probability of on-time graduation (described in Population above); and a vector of school dummies (fixed effects) identifying each individual school from which the participating students are sampled. These dummy variables remain unchanged even if students moved to a different school. Lastly, ε_i is a random error term. For some outcomes, Y_i will be binary variables (coded 0/1, representing e.g. whether or not a student remains enrolled in school). In these cases, we estimate Equation 1 with a logit link function.

Findings / Results:

Impact Analyses

[1] Citizenship grades reflect the teacher's impression of the general behavior, attitudes, values, and habits of an individual student in the school community, and are provided for most classes in addition to traditional academic grades.

[2] At the end of each term, data on enrollment status are collected for all students in the initial study sample. For students enrolled in any SDUSD school, other administrative records data were collected directly from SDUSD. For students enrolled in charter schools in the San Diego area, we attempted to collect the other administrative records data from the charter schools. For students not enrolled in SDUSD or local charter schools, other administrative records were not collected from the exit date onward.

This paper will report impacts of C&C on a full set of student outcomes, including annual measures of attendance, student enrollment status, course-taking (course failures, on-track course taking, and credit accumulation), citizenship grades, pass/fail status on state exit exams, self-reported measures of student engagement, and graduation. Thus far, analyses conducted on interim outcomes measuring student engagement and progress toward on-time graduation in 2011-12 and 2012-13 have yielded no evidence of statistically significant program impacts. Results from 2012-13 are shown in Table 3. However, while no indication of treatment effects emerged in the first two years of implementation, it is possible that with an increased emphasis on credit recovery, outcomes in the final year of implementation may be different for C&C students than their control group counterparts; this will be a main focus of the proposed paper.

Implementation Analyses

C&C was designed to be delivered primarily through bi-weekly meetings between mentors and students. Based on the monitoring forms submitted, the mentors met with students approximately 2.3 times per month in Year 1 and 2.4 times per month in Year 2 on average during the academic year, although there was variation in the average number of meetings by mentor as illustrated in Table 4. However, in annual student surveys, approximately two thirds of students in the treatment group reported meeting with mentors at least once every two weeks.

As noted in the intervention description above, the C&C model is designed to offer "basic" services to all treatment students and additional "intensive" services to students deemed to be at risk based upon the mentor's review of the "check" data for that month. Table 5 summarizes the percentage of treatment students receiving intensive services (according to the mentors), the percentage designated high risk (by the mentors), and the percentage who were both designated high risk and receiving intensive services, based on the monitoring forms from May 2013 (for the sake of illustration). During this month, 92 percent of treatment students were designated high risk; of those, 75 percent were provided intensive services. However, of the other 8 percent of treatment students who were not designated high risk (not shown in Table 5), nearly two-thirds also received intensive services from mentors during that month.

The data suggest that mentors met with students on their caseload about as much as expected. Mentors also seemed to have "checked" students' data as intended by the intervention model, but they also added their own judgment to decisions about the level of intensity for the intervention provided. Most students with whom mentors met received what mentors described as "intensive" intervention. That is, mentors did not differentiate services as might be expected based on "check" data exclusively. Analyses in this paper will further explore mentoring strategies used by C&C mentors in this study, by mentor and by students' incoming level of risk and setting (i.e., attending original school, other school within the district, or charter schools within the local geographic area).

Conclusions:

Given the grim prospects for students who drop out of high school, or graduate high school underprepared for the demands of college or work, the need to identify effective intervention models is high. This study is expanding the evidence base to address the effects of a highly touted mentoring model used with general education students with increased risk of academic failure. While interim study results did not detect impacts on student engagement and academic outcomes, analyses presented in

this paper will focus on impacts after the full three years of treatment, including graduation outcomes. Implementation analyses indicate that C&C was implemented as intended for some, but not all students, with less variation (i.e., individualization) than expected in the intensity and types of interventions provided to treatment students via their mentors. This paper will complement the other papers in the proposed symposium by providing a detailed picture of one prominent mentoring model and how it was implemented with the student population on which this study focused. The discussion will compare and contrast mentoring strategies used with different types of students with varying academic and non-academic needs.

Appendix A. References

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Appendix B. Tables and Figures

Table 1. School Characteristics of Study Schools and All SDUSD High Schools

	Study Schools	All SDUSD high schools
Characteristics	**Average Percent**	**Average Percent**
Race/Ethnicity		
White	12%	23%
African American	16%	13%
Hispanic	56%	48%
Asian	14%	12%
Native American	1%	<1%
Eligible for free or reduced-price lunch	83%	66%
ELL	29%	33%
Proficient on English Language Arts State Assessment (2010)	37%	53%
Proficient on Mathematics State Assessment (2010)	13%	50%
	Mean (SD)	**Mean (SD)**
Average predicted probability of on-time graduation for 2010-2011 ninth graders (class of 2014)	0.82 (0.05)	0.85 (0.08)

Table 2. Characteristics of *Check & Connect* Study Sample Overall and by Condition

Student Characteristic	Overall	Treatment	Control	*p*-value
Percent limited English proficient (*n* = 437)	72%	71%	73%	0.702
Percent female (*n* = 545)	48%	46%	50%	0.281
Percent racial/ethnicity group (*n* =545)				
Percent African American	12%	12%	13%	0.901
Percent White	8%	9%	7%	0.497
Percent Asian	6%	6%	7%	0.475
Percent Hispanic	72%	72%	72%	0.934
Percent students who were absent 10% or of enrolled days in Grade 9 (*n* =545)	23%	24%	22%	0.524
Percent students whose behavior grades at Grade 9 had at least one "Need to improve or unsatisfactory" (*n* =545)	90%	91%	89%	0.472
Percent students who failed any course in Grade 9 (*n* =545)	99%	99%	99%	0.203
Percent students who failed Algebra (*n* =545)	79%	80%	79%	0.965
Average predicted probability of graduation (*n* = 545)	0.55 (0.15)	0.56 (0.15)	0.55 (0.16)	0.892

Note. Differences in student characteristics by condition were tested using a model that accounts for the clustered data structure. Numbers in parentheses are standard deviations.

Table 3. Comparison of Treatment and Student Engagement and Progress Toward On-Time Graduation in 2011-12 And 2012-13

Interim Outcomes, 2012-13	Treatment Predicted Mean (SD)	Control Predicted Mean (SD)	*n*	*p*
In 11th Grade in Fall 2012-13	0.445 (.235)	0.461 (.230)	459	
Total Credits Earned as of July 2013	24.7 (5.9)	25.2 (5.8)	383	
Credits Earned in On-Track ELA Courses	0.318 (.152)	0.274 (.127)	382	
Credits Earned in On-Track Math Courses	0.099 (.093)	0.126 (.101)	382	
Two or More Course Failures	0.548 (.146)	0.585 (.140)	374	
Ever Passed High School Exit Exam	0.622 (.129)	0.628 (.121)	552	
Attended School 90% of Days or More	0.801 (.107)	0.838 (.091)	422	
Two or More Unsatisfactory Citizenship	0.365 (.133)	0.351 (.126)	383	
* = $p < .05$; ** = $p < .01$; *** = $p < .0001$;				

Table 4. Average Number of Meetings per Month for Mentors and Their Students Between December 2012 and July 2013 and September 2013, by Mentor

	Number of Meetings per Month (out of Spring 2013 Caseload)								
Mentor	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Sep**
A	1.6	1.7	1.8	2.1	1.5	1.4	1.5	1.3	1.6
B	1.3	2.0	1.8	2.0	1.9	2.2	1.8	1.4	1.7
C	2.3	2.8	2.4	2.5	2.3	2.9	2.1	2.1	2.6
D	2.4	2.8	3.4	3.6	3.2	3.5	3.5	3.6	3.8
E	1.9	3.0	3.0	3.6	1.0	3.7	5.0	3.3	0.0
Total	*1.9*	*2.5*	*2.5*	*2.8*	*2.0*	*2.8*	*2.8*	*2.4*	*1.9*

Table 5. Percentage of Students Receiving Intensive Services, Designated High Risk, and Both Designated High Risk and Receiving Intensive Services in May 2013‡

Mentor	Percent of Students Receiving Intensive Services	Percent of Students Designated High Risk	Of Students Designated High Risk, Percent Receiving Intensive Services
A	57%	89%	59%
B	80%	93%	69%
C	88%	98%	85%
D	91%	75%	92%
E	88%	94%	90%
Total	*86%*	*92%*	*75%*

‡ The denominator is the total number of students in a mentor's caseload as of spring 2013