Successful Transition to High School:
A Randomized Controlled Trial of the BARR Model with 9th Grade Students

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Abstract

Ninth grade is a pivotal year for students. Numerous studies find that academic performance in 9th grade often sets the student's trajectory throughout the high school years, as well as the probability of graduation. The Building Assets Reducing Risks (BARR) model is a comprehensive approach that addresses developmental, academic, and school environment challenges in the 9th grade year. This paper presents the results of a one-year randomized controlled trial that tested the effectiveness of the BARR model in a large suburban high school. The results demonstrated that students in the BARR experimental group earned significantly more credits in core classes ($F(4,516)=24.21$, $p<0.001$) and demonstrated significantly more growth from fall to spring in NWEA mathematics ($F(4,470)=388.12$, $p<0.001$) and reading scores ($F(4,490)=251.84$, $p<0.001$) when compared to students in the control group. BARR is unique in that is it a socio-emotional model that produces significant academic results and increases student success in the critical 9th grade year.

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Abstract Body

Background / Context:

Ninth grade is a pivotal year for students. Numerous studies document that academic performance in 9th grade often sets the student's trajectory throughout the high school years, as well as the probability of graduation (e.g., Benner, 2011; Nelid, 2009; Weiss & Baker-Smith, 2010). Increased absences, decreased academic performance, and increased problematic behavior all become risk factors for academic success.

The transition to 9th grade includes developmental, academic, and structural challenges. Parents give youth greater autonomy and provide less supervision and support. There is increased peer influence and risk-taking, and new relationships need to be formed with teachers and peers. Students may have inadequate academic preparation and lack skills to be successful. Finally, the structure of high school is typically very different from what students have previously experienced. In high school, the teachers' primary focus is the subject matter and not the student, students have different teachers for each subject, and teachers have little or no opportunity to learn how students are doing in other classes (Benner, 2011; Nelid, 2009).

Given these challenges and the critical nature of the 9th grade year, several programs have emerged to help students make a successful transition to high school. These programs include Project Transition (Neild, 2009), Talent Development (Kemple, Herlihy, & Smith, 2005), Diplomas Now (Balfanz, Bridgeland, Fox, DePaoli, Ingram, & Maushard, 2014; Corrin & Sepanik, 2014), On-track Indicator developed by UChicago CCSR (Allensworth & Easton, 2005; Roderick, Kelley-Kemple, Johnson, & Beechum, 2014), early warning systems (Heppen & Therriault, 2008) and ninth grade academies (Cook, Fowler, & Harris, 2008). These programs focus on the challenges to 9th grade success and vary in the comprehensiveness of their approaches. Empirical evidence for the effectiveness of these approaches has been modest due to a lack of rigorous evaluation methods that vary from pre and post test designs, quasi-experiments, interrupted time-series, and most recently, a school-level randomized controlled trial (RCT).

The Building Assets Reducing Risks (BARR) model is a comprehensive approach that addresses developmental, academic, and structural reasons for challenges in the 9th grade year and has been tested with a randomized controlled design within a high school. It combines teachers' real-time analysis of student data, student asset building, and intensive teacher collaboration to prevent course failure. It reaches all students and concentrates specifically on integrating student supports into a school's existing model for addressing nonacademic barriers to learning. BARR was developed at Saint Louis Park High School in Minnesota in 1998. Prior to BARR implementation, the 9th grade course failure rate at St. Louis Park High School ranged from 44 to 47 percent. After one year of implementing the BARR model, the failure rate decreased to 28 percent and held steadily at 20 percent or lower for the past 15 years. Last year, it was at a record low at about 14 percent (Evans, Sharma, & Jerabek, 2013).

BARR is built on educational, resilience, and developmental research confirming that positive school climate, school connectedness, learning engagement, and positive relationships between students and staff—and among staff— are essential ingredients for school reform. (Cohen 2006; De La Ossa 2005; Gordon 2006; Jerald 2006; National Research Council 2004). The degree to which students feel personally connected to their schools has been linked to attendance, performance, and graduation (Blum & Libbey 2004; Loukas et al., 2006; Wentzel1999). However, positive relationships and a sense of community are not enough to produce achievement gains among students without a clear emphasis on academic excellence by

school staff (Lee & Smith, 1999). Quality pedagogy, caring relationships, high expectations, and real-time access to student data are all critical in fostering a positive school climate that promotes achievement.

The BARR model is a recipient of US Department of Education "Investing in Innovation (i3)" Development and Validation grants. In the Development grant, BARR was implemented in a large, suburban high school in California with a randomized controlled trial and in two small, rural high schools in Maine, where the design was longitudinal. In the next four years, BARR will be implemented in 12 high schools throughout the country using a RCT and disseminated to 45 additional schools.

Purpose / Objective / Research Question / Focus of Study:

This paper will present the results of a one-year randomized controlled trial that tested the effectiveness of the BARR model in a large suburban high school. The major research question was: *Did students who experienced the BARR model earn more credits in core courses than students who did not receive the BARR model?* A secondary evaluation question was: *Did students who experienced the BARR model earn higher scores in mathematics and reading on the Northwest Education Association (NWEA) standardized achievement tests than students who did not experience the BARR model?*

Setting:

The study was conducted in a large suburban high school in southern California with a total enrollment of 2,514 students in grades 9-12. Sixty-eight percent of students were eligible for the free or reduced price lunch program.

Population / Participants / Subjects:

A total of 555 9th grade students, 54% female and 46% male, participated in the study. Students educated in sheltered instruction were excluded from participating. Racial composition was 52% Caucasian, 37% Hispanic, and 11% African American, Asian, American Indian, or mixed races.

Intervention / Program / Practice:

Eight strategies of the BARR model were implemented with the experimental group during school year 2011-2012. The control group was business as usual. **Strategy 1: Relationship-Building Professional Development for Teachers, Counselors and Administrators.** This consisted of a two-day training institute prior to the school year and continued with daily, weekly and monthly team meetings and in-situation coaching. **Strategy 2: Restructuring the High School Course Schedule.** Teachers were formed into "blocks or teams" and given a common preparation period in which they met to monitor student progress. All 9th grade students were assigned to teacher blocks/teams. Students in each block shared a common group of teachers in three core classes (English, Math, Science and/or Social Studies). **Strategy 3: Contextual Support (Focus on Leadership).** Through professional learning community meetings, administrators gained perspective on their leadership style and affirmed and expanded their actions in support of change. **Strategy 4: Parent Involvement to Support High School Reform.** Parental involvement was fostered through a 9th grade parent orientation conducted in the summer, followed by an invitation to join a parent advisory committee. Parents were included in quarterly asset reviews of their student's progress. **Strategy 5: Whole Student**

Emphasis in Instructional Reform. As teachers worked collaboratively through the block/team meeting process and delivery of I-Time, they developed an understanding of how to work with the whole student. **Strategy 6: Developmental Assets Curriculum (I-Time).** 9th grade students received, from their block/team teachers, a 30-minute lesson each week from the strength-based, relationship-focused I-Time Curriculum. I-Time focuses on social competencies to develop student-to-student and teacher-to-student relationships and is aligned with the National Common Core Standards. **Strategy 7: Block Meetings, Collaborative Problem Solving.** Teacher and support staff meet weekly to discuss the progress of all students. Remediation and acceleration needs are identified. Student strengths are always taken into consideration. **Strategy 8: Risk Review for Persistently Failing Students.** Risk Review is a weekly team meeting in which school staff discusses ways to help persistently failing students to overcome the barriers to their academic success and leverage school and community resources.

Research Design:

The research design was a RCT testing the effectiveness of the BARR intervention on core credits earned and NWEA mathematics and reading scores. After removing students in sheltered instruction, Abt Associates, the oversight evaluators for the Investing in Innovation (i3) initiative, randomly assigned half the 9th grade student body to the BARR (experimental) group (n=278) and the other half to the non-BARR (control) group (n=277). The analytic sample included only students with fall NWEA reading scores, resulting in 270 students in BARR (experimental) group and 251 students in non-BARR (control) group.

Data Collection and Analysis:

Major data sources were credits earned and failure rate in the core subjects of English, Mathematics, and Science at the end of 9th grade in 2011-12 obtained through school records. Growth in reading and mathematics was measured by NWEA tests conducted in fall and spring. Demographic data were collected on student gender and race. Data on implementation fidelity, collected in fall and spring, is reported elsewhere (Sharma, Corsello, & Jerabek, 2014).

Separate regression analyses were conducted to predict total core credits earned and spring NWEA reading scores, using Study Group, Gender, Hispanic origin, and fall NWEA reading scores as predictor variables. An additional regression analysis was conducted to predict spring NWEA mathematics scores, with Study Group, fall NWEA mathematics scores, Gender, and Hispanic origin as predictor variables.

Findings / Results:

Table 1 presents the mean number of core credits earned and mean NWEA reading and mathematics scores for fall and spring by Study Group, Gender, and Hispanic origin (please insert Table 1 here).

Table 2 displays the results of the regression analysis that predicts mean number of core credits earned. The model significantly predicted 15.8% of the variability in core course credits earned ($F(4,516)=24.205$, $p<0.001$). (please insert Table 2 here). Study Group was a significant predictor, as was Fall NWEA reading scores. Students in the BARR experimental group earned significantly more core course credits (M=5.65) toward graduation than students in the control group (M=5.39). Neither gender nor Hispanic origin were significant predictors of core credits.

Table 3 displays the results of the regression analysis to predict spring NWEA mathematics scores. The model significantly predicted 77% of the variability in spring NWEA

mathematics scores ($F(4,470)=388.118$, $p<0.001$). (please insert Table 3 here). Study Group was a significant predictor, as was fall NWEA mathematics scores. On average, students in the BARR experimental group improved 6.45 points while students in the control group improved 1.14 points (please insert Figure 1 here). This translates into an improvement of two grade levels for the BARR experimental group (8th grade to 10th grade equivalent) compared to the loss of one grade level (8th grade to 7th grade equivalent) for the control group. Gender was not a significant predictor of spring NWEA mathematics scores, but Hispanic origin was significant with non-Hispanic students earning higher spring NWEA mathematic scores than Hispanic students (see Table 1).

Table 4 displays the results of the regression analysis to predict spring NWEA reading scores. The model significantly predicted 67% of the variability in spring NWEA reading scores ($F(4,490)=251.841$, $p<0.001$). (please insert Table 4 here). Study Group was a significant predictor, as was fall NWEA reading scores. On average, students in the BARR experimental group improved 4.51 points while students in the control group improved 2.70 points (please insert Figure 2 here). Both groups scored above grade level in the fall and continued to score above grade level in the spring. Gender was not a significant predictor of spring NWEA reading scores, but Hispanic origin was significant with non-Hispanic students earning higher spring NWEA reading scores than Hispanic students (see Table 1).

Conclusions:

The results of this RCT demonstrated that students in the BARR experimental group earned a greater number of credits in core classes, and demonstrated more growth from fall to spring in NWEA mathematics and reading scores when compared to students in the control group. As part of a grant review process, these results were reviewed by What Works Clearinghouse and met their criteria for an evidence-based program without reservations.

Our findings are consistent with other successful 9th grade transition programs in increasing the number of credits earned, and extend the literature by demonstrating a two-year growth in standardized mathematics test scores, and by employing a within-school randomized controlled design. The BARR model demonstrated that relationship building focused on non-cognitive social/emotional supports, combined with rigorous academic standards and close attention to student performance produced higher academic achievement for students transitioning into high school. Core credit earning continued to improve when BARR was implemented in the entire 9th grade in year two. In the same year, Hispanic students demonstrated a 41% reduction in core course failure rate (Corsello, Sharma, & Jerabek, 2014).

From a scientific perspective, these results are notable, given the use of a within-school student-level randomized controlled design, which is relatively rare in educational research. This design requires support from school administration, cooperation from teachers, and a high level of commitment by all involved. This commitment by the school enabled us to test causal outcomes of the BARR model.

BARR is a comprehensive model that addresses the challenges that are part of the 9th grade transition year. It is unique in that it is a socio-emotional model that produces significant academic results. The model provides the support that students need to be successful in their transition to high school and sets them on a positive trajectory toward graduation and beyond. *"I know that if students are on track in the 9th grade, their chances for graduating on time are significantly enhanced."* (Rob Metz, Superintendent, St. Louis Park School District, MN).

Appendices

Appendix A. References

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Appendix B. Tables and Figures

Table 1

Mean number of core credits and NWEA scores by Study group, Gender, and Hispanic origin

			Mean score			
Study group	N	Core Credits	Fall NWEA Math	Spring NWEA Math	Fall NWEA Reading	Spring NWEA Reading
BARR	270	5.65	230.063	236.509	222.915	227.429
Control	251	5.39	230.886	232.021	222.795	225.491

Mean number of core credits and NWEA scores by Study group and Gender

			Mean score				
Study group	Gender	N	Core Credits	Fall NWEA Math	Spring NWEA Math	Fall NWEA Reading	Spring NWEA Reading
BARR	Females	146	5.68	228.304	233.971	222.539	226.681
	Males	124	5.62	232.750	240.304	223.825	228.842
Control	Females	135	5.53	228.220	229.902	223.449	226.819
	Males	116	5.24	233.529	233.843	221.495	223.318

Table 1

Mean number of core credits and NWEA scores by Study group and Hispanic origin

Study group	Ethnicity	N	Core Credits	Fall NWEA Math	Spring NWEA Math	Fall NWEA Reading	Spring NWEA Reading
BARR	Non-Hispanic	182	5.78	231.512	238.738	224.534	229.421
	Hispanic	88	5.39	227.615	232.551	220.120	223.928
Control	Non-Hispanic	148	5.49	233.478	234.836	224.964	227.791
	Hispanic	103	5.26	226.429	227.055	219.032	221.453

Table 2

Regression predicting core credits earned

Parameter Estimates				
Parameter	Beta	Std. Error	*t*	*p*-Value
Study group	0.230	0.082	2.793	0.005
Gender	-0.143	0.082	-1.742	0.082
Hispanic Origin	-0.161	0.087	-1.853	0.064
Fall NWE Reading score	0.028	0.003	8.369	0.000

Table 3

Regression predicting Spring NWEA Mathematics scores

Parameter Estimates				
Parameter	Beta	Std. Err.	*t*	*p*-Value
Study group	5.260	0.710	7.410	0.000
Fall NWEA Math score	0.937	0.025	36.789	0.000
Gender	0.693	0.720	0.963	0.336
Hispanic origin	-1.871	0.754	-2.842	0.013

Table 4

Regression predicting Spring NWEA Reading scores

Parameter Estimates				
Parameter	Beta	Std. Err.	*t*	*p*-Value
Study group	1.841	0.638	2.886	0.004
Fall NWEA Reading score	0.802	0.027	30.209	0.000
Gender	-0.284	0.637	-0.446	0.656
Hispanic origin	-1.763	0.678	-2.601	0.010

Figure 1 Growth in Mathematics - NWEA Scores

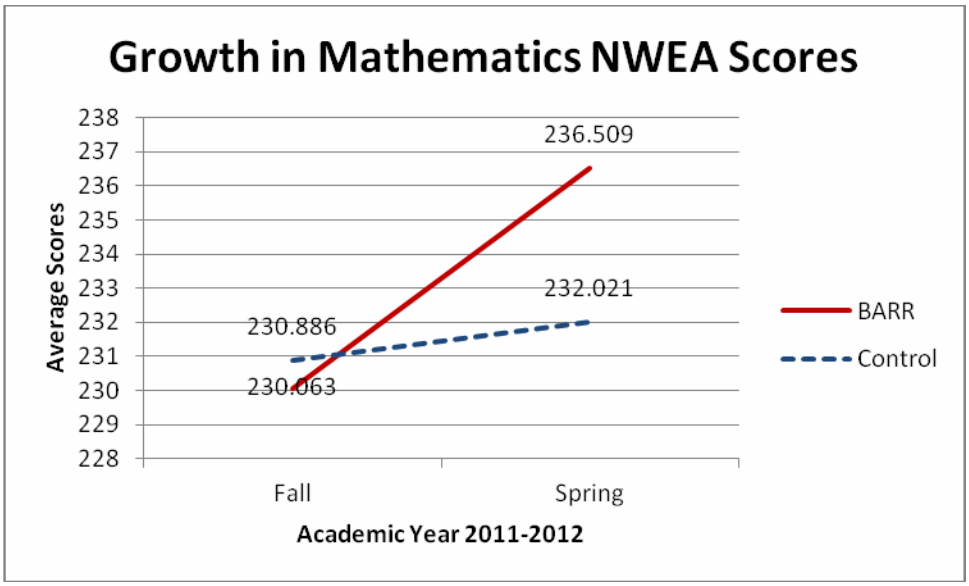

Figure 2 Growth in Reading - NWEA Scores