Low High School GPA:

Another Reason to Try SI

Melissa Birkett, *Northern Arizona University*
Linda Neff, *Northern Arizona University*
Evin Deschamps, *Northern Arizona University*

Corresponding Author: Melissa Birkett, Department of Psychological Sciences, Northern Arizona University, PO Box 15106, Flagstaff, AZ 86011

Email: Melissa.Birkett@nau.edu

Abstract

The purpose of this project was to investigate the effect of participation in Supplemental Instruction (SI) on first-year students' academic performance after controlling for relevant non-programmatic factors. Student academic performance was compared in quartiles determined by high school core grade point average (HS Core GPA). A total of 2,436 student SI participants and non-participants were matched based on six academic readiness and demographic covariates. The results revealed that SI participants had significantly higher course grade averages and passing rates compared to non-participants. Participants in the lowest HS Core GPA quartile had the largest gains in course grade with the largest effect size when compared to matched non-participants. The results of this study suggest that first-year students with low HS Core GPA may experience the greatest benefit of SI participation.

Keywords: High school GPA, first-year students, Supplemental Instruction

Low high school GPA: Another reason to try SI

High school grade point average (GPA) is a strong predictor of college academic performance (Geiser & Santelices, 2007). Students with a high school grade point average below 2.0 (on a scale of 0.0-4.0) had the lowest probabilities of retention at a large public university, and only approximately one third of students with high school GPAs of 2.0-2.7 were retained after four years (Murtaugh, Burns, & Schuster, 1999). While high

school grade point average is an important predictor of first-year college academic performance (Geiser & Santelices, 2007; Zwink & Sklar, 2005), it is an even stronger predictor of academic performance after four years (Geiser & Santelices, 2007). Students entering college with a low high school grade point average may be at risk for failing courses, being placed on academic probation, and/or leaving higher education without a degree. Consequently, academic interventions to benefit first-year students with low high school grade point averages could be a valuable tool in increasing student retention in higher education.

Supplemental Instruction (SI) is a non-remedial, academic intervention program that supports all students enrolled in historically challenging courses. Historically challenging courses are defined as having high rates of D, F, and Withdrawal grades. In 1997, SI was implemented at Northern Arizona University (NAU) as part of a National Institutes of Health grant. The grant initially supported seven introductory courses in biology and chemistry. In 2006, the NAU SI program expanded to include additional biology and chemistry courses as well as accounting, engineering, and physics courses. Since 2006, additional courses in business and social and behavioral sciences have been supported. Many of the SI-supported courses at NAU have high enrollments (>100 students/class) and are required for progression in a major. At NAU, the SI approach is to hire and train a student who has been previously successful in the course as an SI Leader. The SI Leader is responsible for serving as a peer role model, attending the course again, taking notes, and advertising SI sessions. The SI Leader holds four, one-hour long study sessions each week focusing on reviewing the course content and introducing students to effective study and review strategies. SI Leaders are supervised by professional staff, observed regularly for formative assessment, and paid a stipend for their work during a semester. Student participation in SI is voluntary.

The earliest data on the effectiveness of SI program participation date back to the 1970s and 1980s and demonstrate academic improvement through a variety of dependent measures, primarily final course grades and course completion rates (Arendale, 2002; Dawson, van der Meer, Skalicky, & Cowley, 2014; Summers, Acee, & Ryser, 2015). For example, a growing body of research supports claims that SI participants earn higher final course grades, pass courses at higher rates and are retained at their institutions at higher rates when controlling for ethnicity and previous academic performance (Dawson et al., 2014). Beyond examining general

improved grades or retention among participants, recent research on the effectiveness of SI has expanded to focus on the benefits of online SI programs (Hizer & Schultz, 2017), the challenges serving transfer students (Musah & Ford, 2016), and the factors important in voluntary SI participation (Goldstein, Sauer & O'Donnell, 2014). Some research also suggests that SI can help close the academic achievement gap between Hispanic and Caucasian students (Summers et al., 2015). The overall results of annual assessment of the NAU SI program are consistent with the literature and demonstrate increased rates of passing courses among participants (Chen & Neff, 2015; Hedegard, 2013; Merica, 2012). A pilot investigation suggested positive benefits of SI participation among first-year students with lower by high school core grade point average (HS Core GPA) (Cruickshank & Merica, 2013). As students with low HS Core GPAs are often considered at-risk for course failure, the potential impact of SI participation on increased grade and pass rate is of particular interest to those involved in retention efforts with first-year students in higher education.

Based on previous pilot data (Cruickshank & Merica, 2013), we anticipated that voluntary SI participation among NAU students with the lowest HS Core GPAs would result in increased course GPA and pass rates. In order to test the hypothesis that first-year SI participants will have higher course grades and higher rates of passing SI-supported courses, we used a quasi-experimental, matched, two-group design to investigate the academic performance of SI participants compared to non-participants.

Method

Participants and Courses

In Academic Year 2014-2015 (AY14-15), Northern Arizona University, a public, regional institution, had approximately 20,000 undergraduate students on its main residential campus. The SI program at NAU adheres closely to the model developed at the University of Missouri Kansas City and described by Stone and Jacobs (2008). Table 1 lists the courses with SI support at NAU in AY14-15. This study focused on the 3,643 first-time, full-time, first-year NAU students who enrolled in SI-supported courses during AY14-15. The SI program served 42.8% (*Nn*=1,560) of the individual students who participated in at least one SI-supported course. Consequently, this study examined 6,402 cases of students who enrolled in SI-supported courses.

Table 1

Courses with Supplemental Instruction (SI) support in academic year 2014-2015.

Course Prefix	Course Title
ACC205	Legal, Ethical, Global, And Regulatory Environment Of Business
ACC255	Principles Of Accounting: Financial
ACC256	Principles Of Accounting: Managerial
BIO100	Principles Of Biology
BIO181	Unity Of Life I: Life Of The Cell
BIO182	Unity Of Life II: Lives Of Multicellular Organisms
BIO192	Introduction To Exercise Science
BIO201	Human Anatomy/Physiology I
BIO202	Human Anatomy/Physiology II
BIO205	Microbiology
BIO320	General Pathology
CENE251	Applied Mechanics Statics
CENE253	Mechanics Of Materials
CHM130	Fundamental Chemistry
CHM151	General Chemistry I
CHM152	General Chemistry II
CHM235	General Organic Chemistry I
CHM360	Fundamental Biochemistry
CS122	Programming For Engineering And Science
ECO201	Introduction To Business Statistics
ECO280	Introduction To Economics
ECO284	Principles Of Economics: Micro
ECO285	Principles Of Economics: Macro
EE110	Introduction To Digital Logic
EE188	Electrical Engineering I
FIN311	Principles Of Finance
FIN340	Financial Analysis And Working Capital Management
ME252	Applied Mechanics Dynamics
PHY111	General Physics I
PHY112	General Physics II
PHY161	University Physics I
PHY262	University Physics II

Procedure

Using a non-experimental design, a HS Core GPA quartile distribution representing student cases in multiple courses that were supported by SI during AY14-15 (*Nn*=6,402 cases) was created to define the first-year student quartile groups. Students who did not have a HS Core GPA were excluded from the study. The median HS Core GPA was used to divide the ordered set into two halves and was not included in either half. The lower quartile value was the median of the lower half of the data and the upper quartile value was the median of the upper half. The lower quartile and upper quartile values were not included in either quartile. The lowest quartile (Q1) included students with HS Core GPA ranging from the minimum value of 2.03-2.98; Q2 from 2.99-3.33; Q3 from 3.34-3.67; and Q4 from 3.68-4.00. All measures of GPA are based on the following scale: 0.0=F, 1.0=D, 2.0=C, 3.0=B, 4.0=A.

Within each quartile group, students were matched on the following demographic and academic preparedness covariates: HS Core GPA, gender, ethnicity, in-state residency, Pell grant eligibility, and first generation student status. All participants/non-participant pairs that were not included in the match up were discarded. By matching the groups, the design excluded several possible alternative explanations (gender, ethnicity, in-state residency, Pell grant eligibility, and first generation student status based on the covariates) for differences in academic performance between participants and non-participants.

Combined course grade average representing 32 SI-supported courses included in the study (see Table 1) and passing rate (defined as earning an A, B or C final grade in the course) were used as dependent variables measuring the effect of SI participation in each quartile. Several additional courses received SI support during AY14-15; however, they did not include first-year students, so they were not included in this analysis.

Data Analysis

As with many types of educational research, in this study it was not possible to randomly assign students to an intervention and control group in an educational context. To address limitations of non-experimental designs, many education researchers use a variety of methods to match an intervention group with a control group on variables where previous research has demonstrated that these variables affect

outcomes such as retention and GPA. Here a quasi-experimental, matched, two-group design was used to investigate the course grade average and passing rate of SI participants compared to non-participants by HS Core GPA quartile. Course grade was converted to a four-point scale with the following values: A=4.0, B=3.0, C=2.0, D=1.0, F=0.0.

Propensity score matching is used to control for differences in academic readiness and demographic measures. In this study, the covariates included HS Core GPA, first generation status, Pell grant eligibility, state residency, ethnicity, and gender. All of these variables have been shown to affect student success outcomes at Northern Arizona University (Saltonstall, Dickson, Hopkins, & Chen, 2013; Saltonstall, Dickson, Hopkins, Chen, & Neff, 2014; Saltonstall, Dickson, Hopkins, Chen, & Neff, 2015). Using logistic regression, these variables serve as the predictors of intervention participation. The propensity score measures the probability of treatment and helps to balance the intervention and control groups. As a result, impacts of the program on the dependent variables are better isolated.

Statistical analyses were conducted using SPSS Statistics 22.0. Groups were matched with the R-Essentials SPSS extension bundle PSMatching 3.0 (Thoemmes, F., 2012). A logistic regression method was used to create the propensity scores (*i.e.,* the probability of treatment given the set of covariates). To create a balance between the two groups, the nearest neighbor with caliper adjustment, 1:1 matching algorithm was employed with none of the units discarded after the matching. The caliper adjustment was .05 for the 3rd and 4th quartiles and 0.00 for the 1st and 2nd quartile matched groups. Match quality was evaluated using *t*-tests and Chi-Square goodness of fit tests. Notable differences in all of the covariates were reduced to a small degree or completely eliminated.

One-way analyses of variance (ANOVAs) were used to assess mean difference in course grade average between matched participants and non-participants within each quartile. The frequency distribution for categorical data in individual course grades (counting the number of students earning an A, B or C in the course) between participants and matched non-participants was determined with the frequency analysis $\chi 2$ option. The alpha for this study was constrained at .05.

The data were collected during AY14-15 from NAU's internal student databases as part of an ongoing annual program evaluation. This research was submitted for review by the Institutional Review Board of Northern Arizona University. Upon review, this research was determined to not meet criteria for research with human subjects and therefore not subject to oversight by the Board.

Results

Table 2 summarizes the demographic characteristics of the matched participants and non-participants in this study.

Table 2

Matched participant and non-participant characteristics

	Non-Participants				Partici-pants			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Number of Students (*n*)	471	557	676	732	471	557	676	732
Gender								
Female (%)	48.4	53.9	65.8	75.8	48.0	55.5	66.6	75.7
Male (%)	51.6	46.1	34.2	24.2	52.0	44.5	33.4	24.3
Ethnicity								
American Indian/Alaska Native (%)	1.2	1.3	1.8	1.8	2.1	1.6	2.2	2.9
Asian (%)	0.8	2.9	2.2	2.0	0.8	2.7	2.2	3.3
Black/African American (%)	6.2	3.2	3.0	2.9	7.0	3.1	2.5	2.9
Hispanic/Latino (%)	34.0	29.3	26.2	24.7	32.7	27.8	24.7	24.7
International (%)	0.2	-	-	-	0.2	-	-	-
Native Hawaiian/Other Pacific Island (%)	-	-	-	-	-	-	-	-
Not Specified (%)	0.4	0.4	0.7	0.1	0.4	0.7	0.7	0.1
Two or More (%)	7.6	7.9	3.7	6.0	6.8	7.7	5.0	6.0
White (%)	48.4	54.9	61.7	62.4	49.5	56.2	62.1	61.1
In-state Resident (%)	48.2	52.2	70.9	86.1	47.1	51.0	67.9	84.0
First Generation Student (%)	43.7	49.2	47.0	43.7	44.4	46.0	44.7	44.5

Table 3 displays differences in outcomes between the four matched quartile groups. Participants in all four quartiles earned significantly higher course grades compared to non-participants. The effect size of group differences ranged from 0.36 (Q4) to 0.65 (Q1), suggesting a moderate to large effect of SI participation on

course grade. Participants in Q1 had the largest significant increase in course grade (+0.74, Effect Size=0.65) compared to non-participants.

Table 3

Course grade average of participants and non-participants by quartile groups

	Non-Participants		Participants		Mean Difference in Course GPA	*p* [Effect Size]*	
HS Core GPA	n	Mean ±	95% CI	n	Mean ± SD	95% CI	
Q1	471	1.30 ± 1.15	[1.19, 1.40]	471	2.04 ± 1.14	[1.93, 2.14]	0.74	<0.001 [0.65]
Q2	557	1.77 ± 1.25	[1.66, 1.87]	557	2.36 ± 1.04	[2.27, 2.44]	0.59	<0.001 [0.57]
Q3	676	2.49 ± 1.17	[2.41, 2.58]	676	2.91 ± 0.92	[2.84, 2.98]	0.42	<0.001 [0.40]
Q4	732	3.10 ± 1.02	[3.02, 3.17]	732	3.43 ± 0.79	[3.37, 3.49]	0.33	<0.001 [0.36]

*Effect size based on Cohen's distance (*Cohen's d*).

Participants had significantly higher rates of passing the SI-supported course compared to non-participants. The differences in pass rates were significant in all quartiles. Odds ratios were calculated to demonstrate the odds of passing the course for students in each quartile. The results of comparisons of passing rates within each quartile are summarized in Table 4. The odds of passing are 2.94 times greater for Q1 participants, 2.65 times greater for Q2 participants, 3.00 times greater for Q3 participants, and 2.69 times greater for Q4 participants – all compared to non-participants in each quartile.

Table 4

Passing rates of participants and non-participants by quartile groups

	Non-Participants		Participants		Mean Difference in Passing Rate	*p* [Effect Size]	Odds Ratio
HS Core GPA Quartiles	n	Passing Rate	n	Passing Rate			
Q1	220	46.7%	339	72.0%	+25.3%	<.001 [.26]	2.94
Q2	565	64.1%	460	82.6%	+18.5%	<.001 [.19]	2.65
Q3	559	82.7%	632	93.5%	+10.8%	<.001 [.17]	3.00
Q4	691	94.4%	716	97.9%	+3.5%	0.001 [.09]	2.69

Note: Passing rate was determined by the percent of students in the quartile earning an A, B or C final grade in the SI-supported course. The odds-ratio characterizes the intervention effect as the odds of passing for the participant group, or the ratio of the number who pass to the number who fail.

Discussion

The results of this research demonstrate that first time, full-time, first-year students who participate in SI earn significantly higher course grades compared to non-participants when controlling for HS Core GPA, gender, ethnicity, in-state residency, Pell grant eligibility and first generation student status. While participants in all four quartiles earned significantly higher grades, participants with the lowest HS Core GPA (Q1) demonstrated the largest increases in grades (with the largest effect size) when compared to non-participants. It is important to note that the effect sizes of SI participation on course grade average were 0.65 in Q1, 0.57 in Q2 and 0.40 in Q3, meeting or surpassing the 0.4 benchmark often used to determine practical usefulness of an education intervention (Hattie, 2009). This suggests that SI participation was most effective for students with a HS Core GPA <3.68.

Looking more closely at Q1, on average, participants (M±SD=2.04±1.14; C final grade average) earned one letter grade higher than non-participants (M±SD=1.30±1.15; D final grade average), which resulted in a mean passing grade when students attended at least two SI sessions in a semester. Participating in SI may be particularly beneficial to students in this group, whose retention in AY15-16 was 14.6% lower than the overall (full and part-time) first-year student retention rate for on-campus students at NAU (J. Hopkins, personal communication, October 18, 2016).

In a separate analysis, we further demonstrated that participants had significantly increased rates of passing SI-supported courses compared to non-participants. Passing rates were lowest among students with the lowest HS Core GPAs; however, participating in SI increased rates of passing by over 25% in this group (Q1), with an odds ratio for passing the course of 2.94. The impact of SI participation on passing rates was largest among students with the lowest HS Core GPAs (Q1).

While the largest gains in grades and pass rates by participants were made in Q1, it should also be noted that this quartile contained the smallest number of participants (n=471). A small number of students in Q1 may be due to several factors such as lower admission rates for students with low high school Core GPAs

or inability to attend SI sessions held outside of regular class meeting times. The students in Q1 included a larger number of individuals identifying as male, Hispanic or Black/African American compared to the other quartiles. This result complements the finding that SI participation benefitted Hispanic students and helped reduce an academic achievement gap between Hispanic and Caucasian students in a History course with a low passing rate overall (Summers, Acee, & Ryser, 2015). Harper (2013) identified reduced help-seeking behavior by men and students of color (p. 6). This may be one factor related to reduced use of SI among Q1 students in the present research (see also Summer et al., 2015). Additional research is needed to more clearly identify the factors related to lower numbers of participants in this quartile; however, additional outreach or coordination to meet the needs of potential participants in this quartile may be of interest to SI programs seeking to increase the effects of their intervention among students with low HS Core GPAs. Murtaugh, Burns and Schuster (1999) found that students with a HS Core GPA below 2.0 had the lowest rates of retention at a large public university, suggesting that students entering college with low GPAs are an important demographic group for academic intervention. In their review of a decade of recent research on SI effectiveness, Dawson and colleagues (2014) note prior research did not find a difference in HS Core GPA between SI participants and non-participants. While the present study took a different approach by controlling for HS GPA in quartiles for the analysis, our data suggest that students with the lowest HS GPAs receive the greatest benefit from SI participation.

There are several limitations of this research, including some of those identified by Dawson, van der Meer, Skalick, & Cowley (2014). Like many observational studies that attempt to understand cause-and-effect relationships, the present research is not experimental as students were not randomly assigned to groups, and the results may not generalize to groups other than first-year students at Northern Arizona University. Moreover, propensity score matching can only attempt to control some of the confounding bias inherent in this type of educational intervention. Other factors like instructional delivery, course design, content difficulty, course and section variability, and teaching quality all play a role in contributing to the outcomes described in this study. To further improve understanding of the effects of SI participation, future research should seek to

include measures of historical data by course, instructor and/or SI section leader to better understand class-level effects.

With regard to measures of student success, the use of course grade and pass rate as a dependent variable may not accurately reflect learning. That said, it is important to note that the present research meets the four recommendations for SI research set forth by Dawson and colleagues (2014). First, the number of students involved in the study was identified. Second, SI attendance requirements were described. Third, mean course grades included a range (95% confidence interval), standard deviation, and significance levels (*p* values) for the data. In addition, we have calculated effect sizes to aid in interpretation of the results of the study. By meeting these criteria set forth by Dawson and colleagues (2014), this study raises the standard of research for this type of investigation.

One additional caveat of interpreting the results of this research is the limitation of calculating course grade. These calculations were based on a restricted range scale of 0.0-4.0. This may contribute to a ceiling effect in course GPA whereby additional academic gains or learning due to SI participation cannot be captured by the dependent variable. Using a course grade based on a percentage of total points earned (numerical: 1-100%) may be one way to address this limitation in future research.

The present research replicates the statistical effect of SI participation on course grade and passing rate. It extends this general finding to show that SI is beneficial for participants with low HS Core GPA who may be at risk for adverse academic outcomes. Future research should seek to examine the effects of SI participation in a more diverse (*e.g.*, second, third or fourth year students) sample or with respect to specific disciplines or courses. Alternative variables and assessments to represent learning (*e.g.*, pre/post testing, standardized exams etc.) may also help evaluate the effects of SI participation. In addition, the effects of factors such as the number of SI sessions attended, students' perceptions of the sessions, session participant size, and long-term impacts such as second-year retention remain to be investigated in this sample. It would also be beneficial to determine the effects of other covariates such as concurrent or sequential participation in other student success programs. Finally, future research examining the effects of SI participation amongst part-time and transfer students would address an existing gap in the literature. Altogether, an accumulating body of

research indicates that participation in SI yields important benefits for college students. It serves as an important tool for retention and student success by providing strategies for students to improve their understanding of the course content, strengthen critical thinking, engage in collaborative learning, and promote positive study habits in historically difficult gateway courses.

References

Arendale, D. (2002). History of supplemental instruction (SI): Mainstreaming of developmental education. In D. B. Lundell & J. Higbee (Eds.), *Histories of developmental education* (pp. 15-27). Minneapolis: Center for Research on Developmental Education and Urban Literacy, General College, University of Minnesota.

Chen, Z. & Neff, L. (2015). *Assessment report: SI academic year 2014/15.* Flagstaff, AZ: Northern Arizona University Office of Curriculum, Learning Design, and Academic Assessment.

Cruickshank, B. & Merica, M. (2013, April). *The impact of SI attendance on course grade average for first-year college students based on incoming high school GPA*. Poster presented at the Northern Arizona University Assessment Fair, Flagstaff, AZ.

Dawson, P., van der Meer, J., Skalicky, J., & Cowley, K. (2014). On the effectiveness of supplemental instruction: A systematic review of supplemental instruction and peer-assisted study sessions literature between 2001 and 2010. *Review of Educational Research, 84*(4), 609-639.

Geiser, S., & Santelices, M. V. (2007). *Validity of high-school grades in predicting student success beyond the freshman year: High-school record vs. standardized tests as indicators of four-year college outcomes.* Berkeley, CA: Center for Studies in Higher Education Research & Occasional Paper Series: CSHE. 6.07.

Goldstein, J., Sauer, P., & O'Donnell, J. (2014). Understanding factors leading to participation in Supplemental Instruction programs in introductory accounting courses *Accounting Education: an international journal, 23*(6), 507-526.

Harper, S. R. (2013). *Five things student affairs administrators can do to improve success among college men of color*. Washington, D.C.: Student Affairs Administrators in Higher Education NASPA Research and Policy Institute Issue Brief.

Hattie, J. (2009). *Visible learning: A synthesis of 800+ meta-analyses on achievement*. Oxford, England: Routledge.

Hedegard, D. (2014). *Assessment Report: SI Academic Year 2012/13.* Flagstaff, AZ: Northern Arizona University Office of Curriculum, Learning Design, and Academic Assessment.

Hizer, S.E., Schultz, P.W. & Bray, R. (2017). Supplemental Instruction Online: As Effective as the Traditional Face-to-Face Model? *J Sci Educ Technol 26*, 100-115. doi:10.1007/s10956-016-9655-z

Merica, M. (2013). *Supplemental Instruction Program AY 2011-2012 – Course Grade Analysis*. Flagstaff, AZ: Northern Arizona University Office of Curriculum, Learning Design, and Academic Assessment.

Murtaugh, P. A., Burns, L. D., & Schuster, J. (1999). Predicting the retention of university students. *Research in Higher Education*, *40*(3), 355-371.

Musah, R., & Ford, M. (2016). Peer-based Supplemental Instruction in STEM: Differences in effectiveness across transfer and nontransfer undergraduates. *Intervention, Evaluation, and Policy Studies.* 1-23.

Saltonstall, M., Dickson, L., Hopkins, J., & Chen, Z. (2013) *Student Success Initiative: Fall 2011 -2012.* Flagstaff, AZ: Northern Arizona University Office of Curriculum, Learning Design, and Academic Assessment.

Saltonstall, M., Dickson, L., Hopkins, J., Chen, Z. & Neff, L. (2014) *Student Success Initiative: Fall 2012 - 2013.* Flagstaff, AZ: Northern Arizona University Office of Curriculum, Learning Design, and Academic Assessment.

Saltonstall, M., Dickson, L., Hopkins, J., Chen, Z. & Neff, L. (2015). *Student Success Initiative: Fall 2013 - 2014.* Flagstaff, AZ: Northern Arizona University Office of Curriculum, Learning Design, and Academic Assessment.

Stone, M. E., & Jacobs, G. (Eds.). (2008). *Supplemental instruction: Improving first-year student success in high-risk courses* (Monograph No. 7, 3rd ed.). Columbia, SC: University of South Carolina, National Resource Center for The First-Year Experience and Students in Transition.

Summers, E. J., Acee, T. W., & Ryser, G. R. (2015). Differential benefits of attending supplemental instruction for introductory, large-section, university U.S. history courses. *Journal of College Reading and Learning, 45*, 147-163.

Thoemmes, F. (2012). *Propensity score matching in SPSS.* arXiv:1201.6385 [stat.AP].

Zwick, R., & Sklar, J. C. (2005). Predicting college grades and degree completion using high school grades and SAT scores: The role of student ethnicity and first language. *American Educational Research Journal*, *42*(3), 439-464.

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