



**Research Brief**

Relationship of Supplemental Instruction (SI) to Course Success for Students in the HSI/Title V Transfer Prep SI Program

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**About this Brief**

This brief is a revision to previous Supplemental Instruction (SI) research (RRN 605). It summarizes the relationship between SI and classroom achievement for those students in the HSI/Title V Transfer Prep SI program at Crafton Hills College. The results include demographic information which has been disaggregated by ethnicity, gender and age.

**Summary of Findings**

- 129 students attended one or more SI sessions and earned a Grade on Record (GOR) in Fall 2012
- 57% of students who attended a SI session attended two or more sessions
- 28% of the students who were enrolled in a section where SI was offered attended a SI session at least once
- Students who attended one or more SI sessions had a statistically significant and substantially higher success rate (80%) than students in the same section who did not attend at least one SI session (64%)
- Students who attended two or more SI sessions had a statistically significant and substantially higher success rate (81%) than students in the same section who did not attend at least one SI session (64%)
- Hispanic students who attended two or more SI sessions had a substantially higher success rate (79%) than Hispanic students who did not attend SI (62%)
- Female students who attended two or more SI sessions also had a statistically significantly and a substantially higher success rate (83%) than female students in the same section who did not attend SI (57%)

**Findings**

An examination of the students who did not attend SI and those who attended a session one or more times or two or more times was performed. Students who attended one or more SI sessions had a statistically significant ( $p < .01$ ) and substantially higher ( $ES = 0.33$ ) success rate (80%) than students in the same section who did not attend at least one SI session (64%). Similarly, students who attended two or more SI sessions had a statistically significant ( $p = .001$ ) and substantially higher ( $ES = 0.36$ ) success rate (81%) than students who did not attend at least one SI session (see *Figure 1, Tables 1 - 2, and 4*).

**Hispanic Students**

Student success rates were disaggregated by ethnicity, gender and age. Hispanic students who attended two or more SI sessions had a substantially ( $ES = 0.34$ ) higher (79%), and a statistically significant ( $p = .050$ ) success rate than Hispanic students in the same section who did not attend SI (62%) (see *Figure 2 and Table 3*).

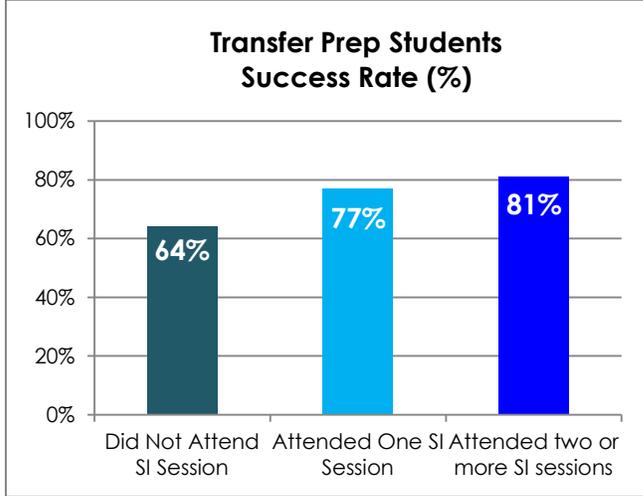
**Gender**

Female students who attended two or more SI sessions also had a statistically significantly ( $p < .001$ ) and a substantially ( $ES = 0.53$ ) higher success rate (83%) than female students in the same section who did not attend SI (57%). The results illustrate that male students who participated in two or more SI sessions were not statistically significantly ( $p = .832$ ) nor substantially ( $ES = 0.05$ ) more likely to succeed (74%) in their courses than male students in the same course sections (72%). However, a limitation is that the sample size for female students is greater than for male students.

**Age**

The data also illustrates that students who were in the 19 years-old or younger and 25-29 years-old age category and whom attended two or more SI sessions were statistically significantly ( $p = .006$  for 19 yrs. or younger;  $p = .011$  for 25-29 year-olds) and substantially ( $ES = 0.56$  for 19 yrs. or younger;  $ES = 0.54$  for 25-29 year-olds) more likely to succeed in their course. Students who were in the 20-24 years-old and 30-34 years-old were also substantially more likely to succeed in their course, but the results were not statistically significant.

**Figure 1: Fall 2012 Transfer Prep Students Success Rate by Number of SI Sessions Attended.**



**Table 1: Fall 2012 Success Rate of Students Who Did Not Attend and Attended One or More SI Sessions by Course.**

SI Course	Success Rate						ES	P-Value
	Did Not Attend SI Session			Attended One or More SI Sessions				
	#	N	%	#	N	%		
ANAT-101	33	51	65	10	13	77	0.26	.410
CD-105	31	63	49	18	25	72	0.46	.053
ENGL-101	11	15	73	8	10	80	0.15	.716
HIST-100	68	100	68	30	36	83	0.34	.080
HIST-101	28	41	68	25	30	83	0.34	.154
PSYCH-100	77	116	66	19	24	83	0.27	.222
<b>Total</b>	<b>248</b>	<b>386</b>	<b>64</b>	<b>110</b>	<b>138</b>	<b>80</b>	<b>0.33</b>	<b>&lt;.01</b>

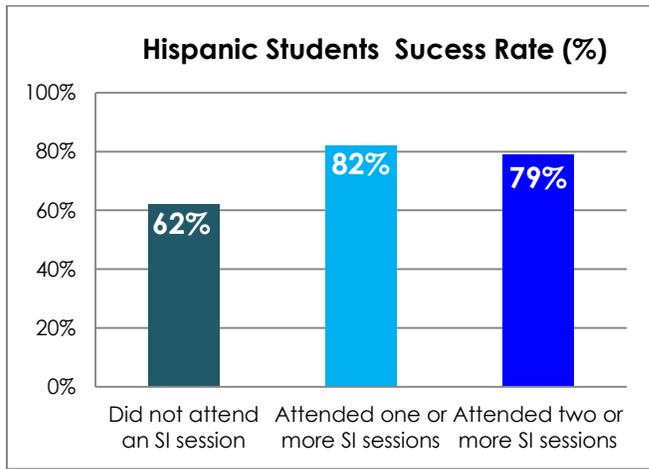
Note: Students were included even if they were not enrolled in a course where SI was offered.

**Table 2: Fall 2012 Success Rate of Students Who Did Not Attend and Attended Two or More SI Sessions by Course.**

SI Course	Success Rate						ES	P-Value
	Did Not Attend SI Session			Attended Two or More SI Sessions				
	#	N	%	#	N	%		
ANAT-101	33	51	65	6	7	86	0.44	.275
CD-105	31	63	49	11	14	79	0.59	.047
ENGL-101	11	15	73	6	7	86	0.29	.541
HIST-100	68	100	68	20	25	80	0.26	.243
HIST-101	28	41	68	18	21	86	0.39	.142
PSYCH-100	77	116	66	12	16	75	0.18	.494
<b>Total</b>	<b>248</b>	<b>386</b>	<b>64</b>	<b>73</b>	<b>90</b>	<b>81</b>	<b>0.36</b>	<b>.001</b>

Note: Students were included even if they were not enrolled in a course where SI was offered.

**Figure 2. Fall 2012 Hispanic Students Success Rate** by Number of SI Sessions Attended.



**Table 3: Fall 2012 Student Success Rates** Disaggregated by **Ethnicity, Gender and Age**.

Ethnicity	Did not attend an SI session			Attended one or more SI sessions			Attended two or more SI sessions			Effect Size (ES)	P-Value
	#	N	%	#	N	%	#	N	%		
Hispanic	88	141	62	41	50	82	26	33	79	0.34	.050
African American	8	15	53	10	13	77	7	9	78	0.49	.231
Asian	8	13	62	7	10	70	5	7	71	0.2	.675
Native American/Alaskan Native	8	9	89	3	3	100	3	3	100	0.38	.341
Caucasian	96	152	63	40	51	78	24	28	86	0.48	.004
<b>Total</b>	<b>208</b>	<b>330</b>	<b>63</b>	<b>101</b>	<b>127</b>	<b>80</b>	<b>65</b>	<b>80</b>	<b>81</b>	<b>0.39</b>	<b>p&lt;.001</b>
Gender	#	N	%	#	N	%	#	N	%	Effect Size (ES)	P-Value
Female	115	201	57	66	85	78	49	59	83	0.53	p<.001
Male	94	131	72	36	44	82	17	23	74	0.05	.832
Age	#	N	%	#	N	%	#	N	%	Effect Size (ES)	P-Value
19 or younger	59	96	61	26	31	84	15	17	88	0.56	0.006
20-24	110	186	59	45	59	76	27	37	73	0.28	0.094
25-29	23	29	79	10	12	83	6	6	100	0.54	0.011
30-34	6	7	86	4	5	80	3	3	100	0.45	0.347
35-39	6	7	86	6	8	75	5	6	83	0.06	0.916
40-49	3	4	75	9	11	82	8	10	80	0.12	0.863
50 and above	2	3	67	2	3	67	2	3	67		1

**Methodology**

The success rate<sup>1</sup> of students who utilized SI was compared to students in the same section who did not utilize SI. Students who attended a SI session one or more times or two or more times were compared to students who did not attend a SI session and were enrolled in the same section. Because SI benefits are more likely to occur with students who participate in SI two or more times, students who attended two or more times were also compared with students who did not attend at least one SI session.

The effect size statistic was used to indicate the size of the difference on success between those who did and did not

1. Success rate is defined as earning a grade of A, B, C, or P divided by the number of grades earned on record (GOR; A, B, C, D, F, P, NP, I and W).

attend SI. A method of interpreting effect size was developed by Jacob Cohen, a renowned statistician and psychologist. Jacob Cohen defined “small”, “medium”, and “large” effect sizes. He explained that an effect size of .20, .50, and .80 can be small, medium, and large, respectively. An effect size of .20 or higher is considered meaningful. It is important to mention that the number of students in each group does not influence effect size; whereas, when statistical significance is calculated, the number of students in each group does influence the significance level (i.e. “p” value being lower than .05).

**Participation**

In Fall 2012, 129 students attended at least one SI session. Of those, 129 (100%) students earned a GOR in one of the sections in which SI was offered. Moreover, 73 of the 129 (57%) students attended two or more SI sessions. Table 3 illustrates the number of students who attended at least one SI session and earned a GOR in one of the sections where SI was offered. Students were excluded if they attended an SI session for a section where SI was not offered. Accordingly, 28% of the students who were enrolled in a section where SI was offered attended a SI session at least once.

**Table 4:** Fall 2012 Number and Percent of **Students Attending One or More SI Sessions** by Course Section.

<b>Transfer Prep Program</b>			
<b>SI Course Section</b>	<b>Percent of Students who Used SI</b>		
	<b>#</b>	<b>N</b>	<b>%</b>
ANAT-101-01	8	33	24
ANAT-101-02	5	31	16
CD-105-10	17	47	36
CD-105-20	8	41	20
ENGL-101-30	10	25	40
HIST-100-30	27	69	39
HIST-101-15	30	71	42
PSYCH-100-15	11	87	13
PSYCH-100-45	13	53	25
<b>Total</b>	<b>129</b>	<b>457</b>	<b>28</b>

Note: The data accounts for those same students who attended more than one section and some students who attended SI even though they were not in a section that offered SI. Note “#” represents the number of students who attended at least one SI session and earned a GOR, “N” represents the total number of GOR earned in the SI section, and “%” represents the percent of students who attended at least one SI session.