

The Relationship Between Taking a Writing Course and Academic Success in the Freshman Year
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Angela Buchanan of the Program for Writing and Rhetoric (PWR) asked us to examine the retention rates among freshmen who took their first year course (WRTG 1100, WRTG 1150, or WRTG 1250). We did this, and also looked at GPA in non-WRTG courses. (Overall GPA, of course, could be affected by grades earned in the WRTG courses themselves, if they are significantly higher than non-WRTG grades, which on average they are.)

The population was all new freshmen in Arts and Sciences in fall 2006. Other colleges either had too few students taking WRTG courses (business, engineering), too few not taking them (architecture), or too few, period. Seven A&S students who took a writing course other than 1100, 1150, or 1250 were also deleted from analyses.

Dependent variables were (1) cumulative GPA in non-WRTG courses, and (2) retention in UCB enrollment to the second year. In addition to straight comparisons, to estimate the relationship of WRTG to cumulative GPA we did a general linear models (regression) analysis, with cumulative GPA the criterion variable, taking a WRTG course the predictor, and controlling for predicted GPA (PGPA), college, gender, ethnicity, residency, and participation in a Residential Academic Program (RAP). Finally, to estimate the relationship of WRTG to retention, we did a logistic regression, with the same predictor and control variables, and retention to the second year the criterion.

The major finding is that taking a WRTG course in the freshman year is associated with a sizable positive difference in both (1) GPA in first-year non-WRTG courses, and (2) retention to the second year. A & S students who took a WRTG course had a slightly *lower* average PGPA (calculated from a formula involving high school GPA and standardized test scores), than students who did not take a WRTG course, but they performed much *better* in the first year, as measured by grades earned in non-writing courses and by retention. Consequently, the difference in cum GPA favoring WRTG students holds up when PGPA differences, as well as ethnicity, gender, residency, and RAP participation, are statistically controlled for.

When we controlled for PGPA, residency, ethnicity, gender, and RAP participation in a general linear models analysis, taking a WRTG course was associated with a positive difference of 0.15 in first-year GPA in non-WRTG courses; with the same controls applied in a logistic regression, taking a WRTG course was associated with an increase in probability of retention of 9 percentage points.

Table 1. Relationship between taking any WRTG course (1100, 1150, or 1250) and first-year success, A & S students only.

Group	N	PGPA	2 nd -year Retention	Non-WRTG GPA	Adjusted Retention Diff*	Adjusted GPA Diff.*
No WRTG	1,998	2.91	76%	2.57	--	--
WRTG	2,015	2.89	85%	2.72	+9 pct. points	+ .15

*Adjusted for PGPA, gender, ethnicity, residency, and RAP participation.

We also repeated the analysis using fall 2005 freshmen. The effects were similar, but slightly smaller. Using the same control variables as before, taking a WRTG course was associated with a positive difference of .08 points of GPA in non-WRTG courses, and an increase in probability of retention of 7.5 percentage points.

The relationships between taking WRTG and retention/GPA differed according to the WRTG course taken. The vast majority of students taking WRTG took WRTG 1150, a 3-credit course. WRTG 1100, a more intensive, 4-credit version of 1150, was taken by a small number of students who tended to have much lower academic preparation as measured by PGPA. WRTG 1250, also taken by a small number of students, was for more advanced writers. WRTG 1100 bore no relationship to retention and a smaller (but still considerable) relationship to GPA. WRTG 1150 and 1250 had sizable relationships to both retention and GPA.

Table 4. Relationship between taking a WRTG course and first-year success, by course, A & S students only.

Group	N	PGPA	2 nd -year Retention	Non-WRTG GPA	Adjusted Retention Diff*	Adjusted GPA Diff.*
No WRTG	1,998	2.91	76%	2.57	--	--
WRTG 1100	137	2.78	75%	2.52	0 pct. points	+ .09
WRTG 1150	1,661	2.87	86%	2.70	+10 pct. points	+ .15
WRTG 1250	217	3.14	87%	3.06	+8 pct. points	+ .18

*Adjusted for PGPA, gender, ethnicity, residency, and RAP participation.

Conclusions

Obviously, these results are striking – a .15 difference in non-WRTG GPA, and a (possibly related to the GPA difference) 9 percentage point difference in retention, just from taking a WRTG course, seem almost too good to be true.

The obvious caveat here is that this was not a truly experimental study, i.e., one with random assignment to “treatment.” Had students been randomly assigned to take or not take a WRTG course, results like these – especially in two separate fall terms, with completely independent populations -- would conclusively show that taking a WRTG course *causes* better performance in non-WRTG courses. The lack of random assignment prevents such a categorical conclusion. In reality, students are not randomly assigned to WRTG, but do not completely self-select, either. The A & S academic advising office told us that all A & S students are required to take a lower

division writing course unless they completed AP English in high school and scored a 4 or 5 on the AP exam, or had credit from another institution. Of the non-exempt students, about half are pre-registered into a WRTG course in their first term, the other half in spring, with classroom space limitations preventing all students from taking it in one term. However, students may drop the course in either term, or may not be pre-registered because they don't complete a required self-placement exercise. These students take their required writing course in a subsequent term, after the first year. So freshmen not taking WRTG the first year are a mixture of students with credit from AP or another institution, students who dropped the class, and students who did not take the required placement test. In other words, students taking WRTG are self-selected in a sense, but the self-selection is not straightforward, not a particularly active process on the students' part, and not all for the same or related reasons.

What impact does self-selection have on a potential conclusion that WRTG *causes* better performance in other courses? A lack of random assignment only really presents a problem with respect to a conclusion about WRTG if students taking WRTG differ in some systematic way from those not taking it, *and* if that difference affects grades in non-WRTG courses. We looked for evidence that this was the case – in other words, looked for alternative explanations for our findings -- but could not find any.

We considered PGPA, gender, residency, ethnicity, and RAP participation as possible alternative explanations, and either controlled for them statistically, did separate analyses, or both. Average PGPA was slightly lower for the WRTG students, yet they had higher non-WRTG GPAs. For RAP participation and for gender, both related to GPA in their own rights, we took two approaches: Statistically controlling them in the linear models/logistic analyses, and doing separate analyses on each group, RAP and non-RAP, male and female. Results were similar with both approaches and for both variables – the WRTG effect remained after statistical control and was of similar magnitude in each group separately (slightly bigger for males). We statistically controlled for all of these variables, plus ethnicity and residency as well, in the linear models analysis, yet the GPA advantage for WRTG students remained. In addition, WRTG students had lower average SAT verbal and math scores, lower average ACT English and math scores, and slightly fewer high school English credits – but higher GPAs. A few students – about 10% of the population – took other writing-intensive courses that fulfill the A & S writing requirement. These students were handled in two different ways. First, we included them in the non-WRTG group, which should have mitigated against a positive effect for WRTG. Second, we repeated the analyses with these students deleted altogether. Either way, the WRTG effect remained. Students taking AP English in high school are exempt from the writing requirement, and presumably the vast majority were in the non-WRTG group as well, although we did not check this. Again, the WRTG effect remained.

In sum, we believe we have ruled out the following alternative explanations for why WRTG students performed so much better than non-WRTG students:

- PGPA
- Standardized test scores (SAT verbal and math, ACT English and math), which contribute to PGPA.
- Gender
- Ethnicity
- Residence
- RAP participation
- Number of high school English credits
- High school AP English participation

Have we ruled out every possible competing explanation? No, that would be logically impossible. Maybe WRTG students tend to take easier non-WRTG courses, or courses with looser grading standards. Maybe they study harder. Maybe they congregate in different majors. Maybe it's a general effect from taking small courses, not limited to WRTG. Maybe something we haven't even thought of. We solicit readers of this report to suggest alternative explanations to us, by clicking on this link: ir@colorado.edu. In the absence of such alternatives, we tentatively conclude that taking a WRTG course in the freshman year has a powerful effect on non-WRTG GPA and on retention.