

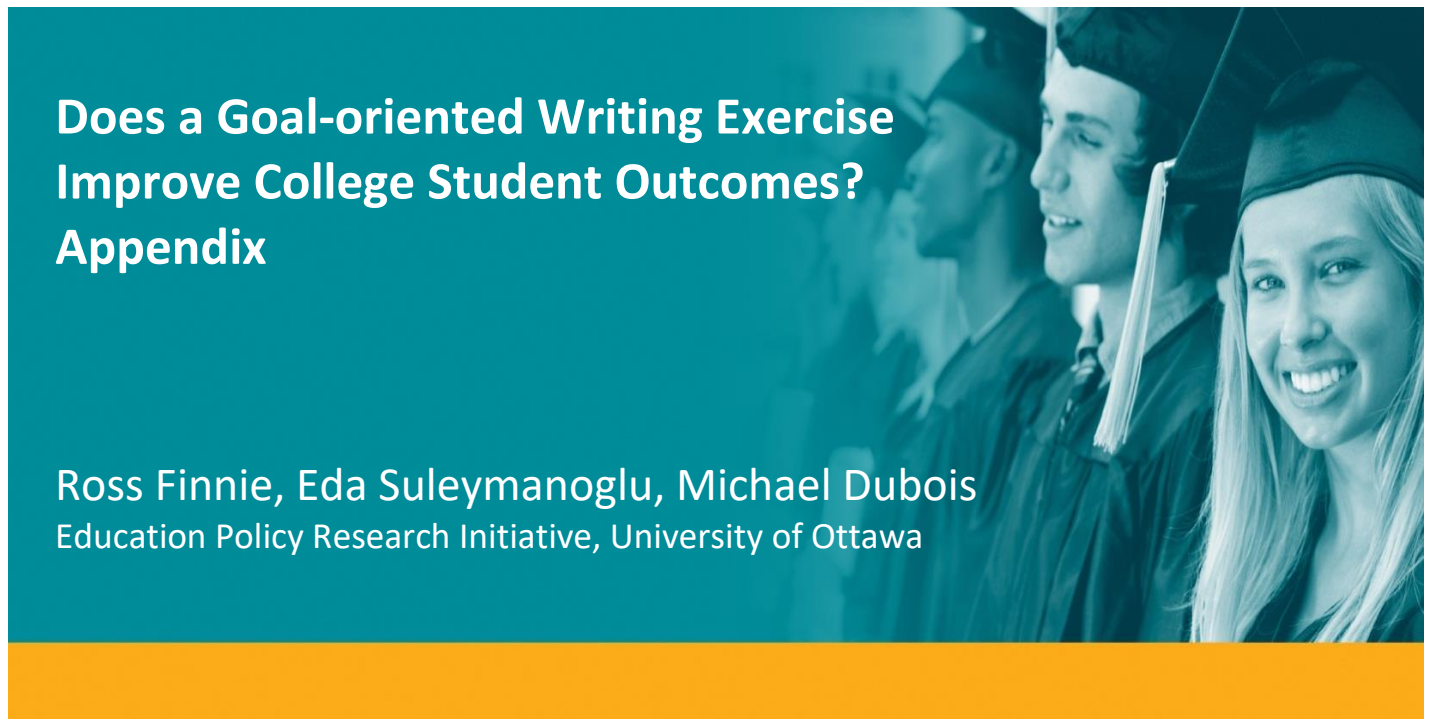


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Does a Goal-oriented Writing Exercise Improve College Student Outcomes? Appendix

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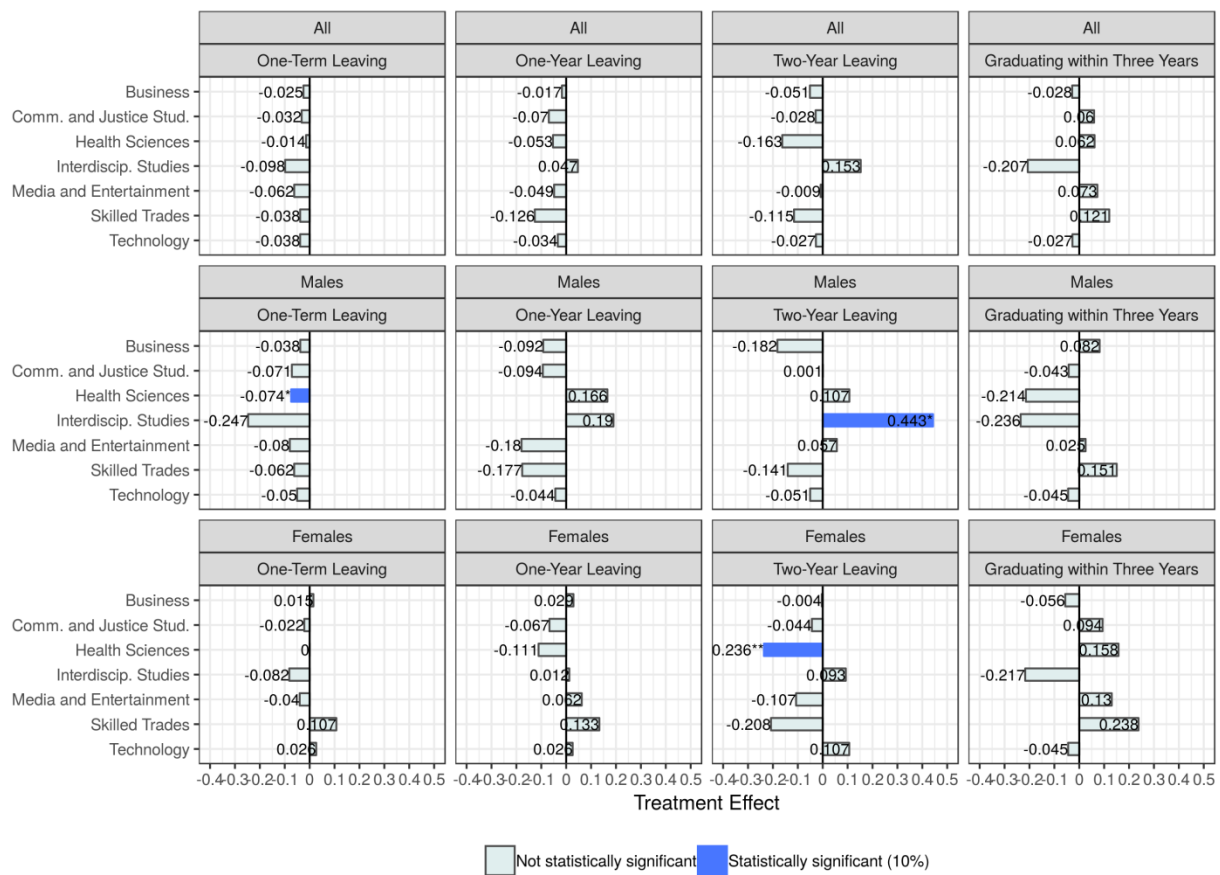
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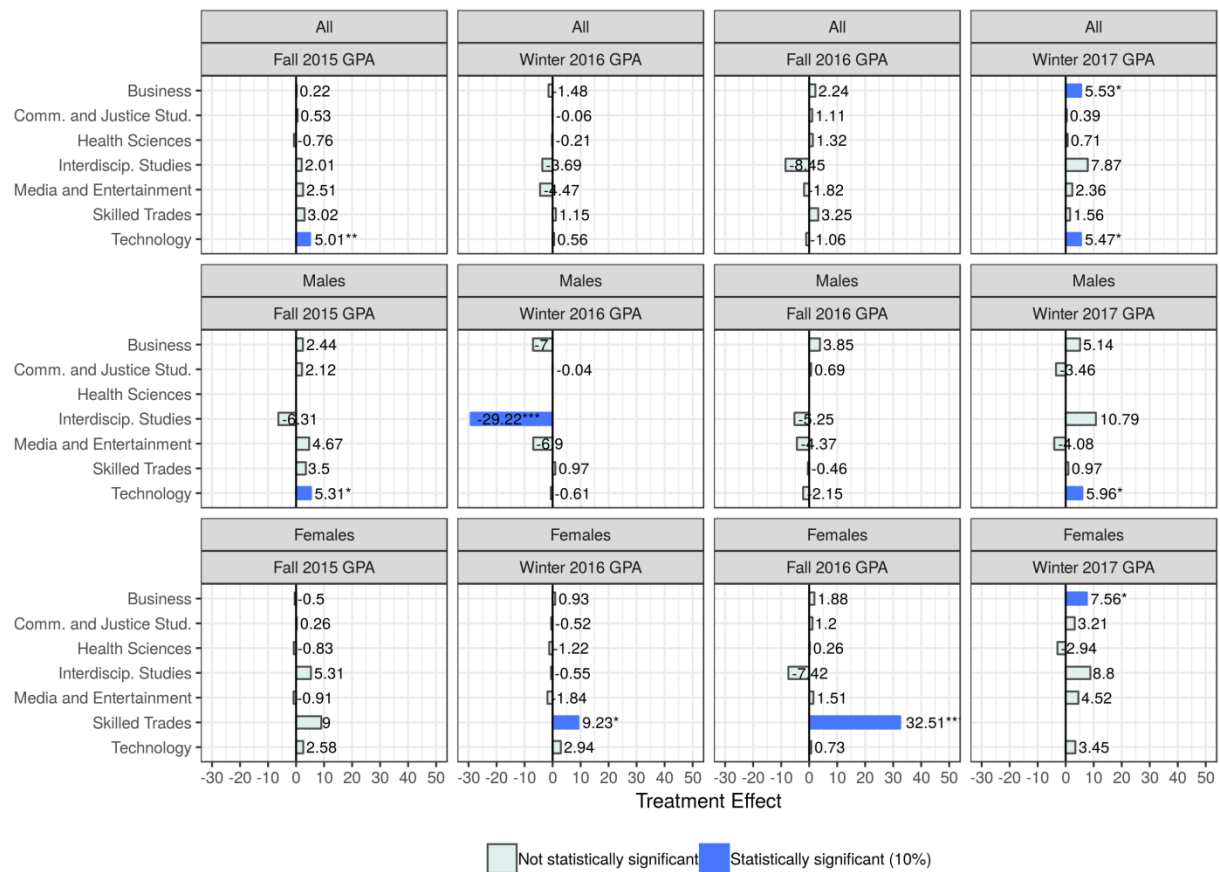
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Appendix A: Additional Figures and Tables for the Main Outcomes

Figure A.1: Treatment Effects on Leaving and Graduation by School



The estimates are the intention-to-treat effect estimates reported under column "All controls" in Table A.1. The asterisks ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Figure A.2: Treatment Effects on Grades by School

The estimates are the intention-to-treat effect estimates reported under column "All controls" in Table A.1. The asterisks ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table A.1: Treatment Effects on Leaving, Graduation and Grades by School

| | One-Term Leaving | One-Year Leaving | Two-Year Leaving | Grad. w/in Three Years | Fall 2015 GPA | Winter 2016 GPA | Fall 2016 GPA | Winter 2017 GPA |
|-------------------------------|---------------------|---------------------|---------------------|------------------------|--------------------|-----------------------|--------------------|--------------------|
| ALL | | | | | | | | |
| Business | -0.025 (0.056) | -0.017 (0.080) | -0.051 (0.086) | -0.028 (0.089) | 0.215 (2.695) | -1.483 (2.954) | 2.237 (2.828) | 5.530* (3.187) |
| Community and Justice Studies | -0.032 (0.036) | -0.070 (0.060) | -0.028 (0.067) | 0.060 (0.068) | 0.527 (1.813) | -0.056 (2.558) | 1.105 (2.270) | 0.388 (2.381) |
| Health Sciences | -0.014 (0.064) | -0.053 (0.107) | -0.163 (0.125) | 0.062 (0.113) | -0.760 (3.281) | -0.209 (2.755) | 1.316 (3.398) | 0.711 (3.786) |
| Interdisciplinary Studies | -0.098 (0.089) | 0.047 (0.131) | 0.153 (0.133) | -0.207 (0.128) | 2.012 (4.243) | -3.688 (5.710) | -8.452 (7.845) | 7.873 (6.402) |
| Media and Entertainment | -0.062 (0.059) | -0.049 (0.096) | -0.009 (0.100) | 0.073 (0.104) | 2.507 (3.091) | -4.473 (4.833) | -1.819 (3.815) | 2.357 (4.339) |
| Skilled Trades | -0.038 (0.091) | -0.126 (0.109) | -0.115 (0.112) | 0.121 (0.110) | 3.018 (3.704) | 1.154 (4.089) | 3.249 (3.185) | 1.564 (3.016) |
| Technology | -0.038 (0.042) | -0.034 (0.057) | -0.027 (0.061) | -0.027 (0.060) | 5.012** (2.358) | 0.560 (2.557) | -1.063 (2.462) | 5.467* (2.793) |
| Missing | 0.095* (0.049) | 0.113 (0.072) | 0.134 (0.088) | -0.142 (0.103) | | | | |
| Observations | 759 | 759 | 759 | 759 | 724 | 647 | 509 | 424 |
| MALES | | | | | | | | |
| Business | -0.038 (0.124) | -0.092 (0.167) | -0.182 (0.174) | 0.082 (0.160) | 2.440 (5.813) | -7.002 (6.686) | 3.853 (4.519) | 5.137 (4.249) |
| Community and Justice Studies | -0.071 (0.060) | -0.094 (0.101) | 0.001 (0.112) | -0.043 (0.124) | 2.118 (3.595) | -0.042 (4.786) | 0.693 (4.182) | -3.463 (4.065) |
| Health Sciences | -0.074* (0.040) | 0.166 (0.136) | 0.107 (0.138) | -0.214 (0.148) | | | | |
| Interdisciplinary Studies | -0.247 (0.282) | 0.190 (0.289) | 0.443* (0.236) | -0.236 (0.230) | -6.309 (12.897) | -29.219*** (7.371) | -5.245 (24.498) | 10.788 (11.986) |
| Media and Entertainment | -0.080 (0.093) | -0.180 (0.136) | 0.057 (0.139) | 0.025 (0.134) | 4.671 (4.782) | -6.900 (6.771) | -4.368 (5.770) | -4.080 (5.655) |
| Skilled Trades | -0.062 (0.101) | -0.177 (0.118) | -0.141 (0.122) | 0.151 (0.122) | 3.501 (4.207) | 0.974 (4.427) | -0.462 (3.064) | 0.967 (3.792) |
| Technology | -0.050 (0.047) | -0.044 (0.064) | -0.051 (0.070) | -0.045 (0.068) | 5.315* (2.789) | -0.609 (3.088) | -2.154 (2.872) | 5.965* (3.266) |
| Missing | 0.270*** (0.076) | 0.439*** (0.110) | 0.440*** (0.115) | -0.453*** (0.116) | | | | |
| Observations | 374 | 374 | 374 | 374 | 358 | 312 | 246 | 196 |
| FEMALES | | | | | | | | |
| Business | 0.015 (0.065) | 0.029 (0.092) | -0.004 (0.103) | -0.056 (0.112) | -0.497 (3.262) | 0.932 (3.193) | 1.877 (3.727) | 7.565* (3.878) |
| Community and Justice Studies | -0.022 | -0.067 | -0.044 | 0.094 | 0.262 | -0.517 | 1.203 | 3.213 |

| | | | | | | | | |
|---------------------------|---------|---------|----------|---------|---------|---------|-----------|---------|
| | (0.046) | (0.078) | (0.085) | (0.083) | (2.163) | (3.228) | (2.610) | (3.092) |
| Health Sciences | -0.000 | -0.111 | -0.236** | 0.158 | -0.829 | -1.224 | 0.263 | -2.941 |
| | (0.071) | (0.099) | (0.116) | (0.106) | (3.100) | (2.748) | (3.354) | (3.675) |
| Interdisciplinary Studies | -0.082 | 0.012 | 0.093 | -0.217 | 5.307 | -0.550 | -7.421 | 8.804 |
| | (0.087) | (0.149) | (0.151) | (0.146) | (3.968) | (6.173) | (8.520) | (6.608) |
| Media and Entertainment | -0.040 | 0.062 | -0.107 | 0.130 | -0.910 | -1.840 | 1.506 | 4.522 |
| | (0.062) | (0.133) | (0.149) | (0.163) | (4.057) | (7.312) | (5.099) | (7.080) |
| Skilled Trades | 0.107 | 0.133 | -0.208 | 0.238 | 8.997 | 9.232* | 32.514*** | |
| | (0.103) | (0.127) | (0.286) | (0.291) | (9.647) | (5.187) | (3.981) | |
| Technology | 0.026 | 0.026 | 0.107 | -0.045 | 2.576 | 2.940 | 0.731 | 3.446 |
| | (0.100) | (0.134) | (0.145) | (0.155) | (3.722) | (3.623) | (4.704) | (3.780) |
| Missing | 0.005 | 0.068 | 0.030 | -0.070 | | | | |
| | (0.055) | (0.066) | (0.075) | (0.087) | | | | |
| Observations | 385 | 385 | 385 | 385 | 366 | 335 | 263 | 228 |

Standard errors are given in parentheses. The symbols ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively. The estimated effects represent the intention-to-treat (ITT) effects (see Section 4.4), which come from a linear regression model that includes treatment indicator, interaction terms between the treatment indicator and school categories, and other control variables included in linear form (i.e., gender, age, credential, school, high school average, reading and writing and reading assessment scores).

Appendix B: Tables for the Additional Outcomes and Explanatory Variables

Table B.1: Treatment Effects on the Additional Grade Outcomes

| | All | | Males | | Females | |
|------------------------|-----------------|----------------|-----------------|----------------|-----------------|-----------------|
| | No controls | All controls | No controls | All controls | No controls | All controls |
| FALL 2017 GPA | | | | | | |
| Control Group Mean | 72.08 | | 71.91 | | 72.23 | |
| Treatment Effect | 1.36 (2.34) | 3.44 (2.29) | -0.10 (3.17) | 0.97 (3.17) | 3.80 (3.43) | 6.99* (3.93) |
| Observations | 191 | | 105 | | 86 | |
| WINTER 2018 GPA | | | | | | |
| Control Group Mean | 73.55 | | 68.71 | | 78.39 | |
| Treatment Effect | 0.98 (2.18) | 2.95 (2.22) | 3.22 (3.49) | 4.18 (4.46) | -0.64 (2.37) | 2.81 (2.01) |
| Observations | 217 | | 115 | | 102 | |
| FALL 2018 GPA | | | | | | |
| Control Group Mean | 71.53 | | 69.10 | | 74.05 | |
| Treatment Effect | -1.54 (3.05) | 1.03 (3.44) | 0.02 (4.11) | 1.13 (4.59) | -2.21 (5.04) | -3.34 (6.42) |
| Observations | 115 | | 70 | | 45 | |

Standard errors are given in parentheses. The symbols ** and * denote statistical significance at the 5% and 10% levels, respectively. The estimated effects represent the intention-to-treat (ITT) effects (see Section 4.4), which come from linear probability models for the respective outcome variable. The column “Controls” present the results from a linear regression model of the relevant outcome variable on the treatment indicator. The column “All controls” present the coefficient estimate for the treatment indicator from the models including also gender, age, credential, school, high school average, reading and writing assessment scores.

Table B.2: Treatment Effects on the Additional Grade Outcomes by Age

| | Fall 2017 GPA | Winter 2018 GPA | Fall 2018 GPA |
|----------------|-------------------|--------------------|---------------------|
| ALL | | | |
| Below 18 | 5.778* (2.951) | 5.553** (2.761) | 2.827 (3.651) |
| 19–22 | -0.170 (4.000) | -2.115 (4.987) | 8.031 (8.786) |
| 23 and above | -3.840 (5.288) | 2.999 (3.571) | -7.680 (7.654) |
| Observations | 191 | 217 | 115 |
| MALES | | | |
| Below 18 | 1.484 (3.526) | 7.583 (4.963) | 1.333 (6.076) |
| 19–22 | 0.417 (5.901) | 0.705 (9.456) | 3.876 (11.367) |
| 23 and above | -8.861 (6.045) | 2.095 (7.453) | -0.651 (12.421) |
| Observations | 105 | 115 | 70 |
| FEMALES | | | |
| Below 18 | 7.495* (4.215) | 3.037 (2.670) | -2.225 (7.473) |
| 19–22 | 1.785 (8.254) | -2.612 (5.162) | 19.018 (13.657) |
| 23 and above | 4.874 (9.701) | 3.517 (4.156) | -16.216 (10.987) |
| Observations | 86 | 102 | 45 |

Standard errors are given in parentheses. The symbols ** and * denote statistical significance at the 5% and 10% levels, respectively. The estimated effects represent the intention-to-treat (ITT) effects (see Section 4.4), which come from a linear regression model that includes treatment indicator, interaction terms between the treatment indicator and age categories, and other control variables included in linear form (i.e., gender, age, credential, school, high school average, reading and writing and reading assessment scores).

Table B.3: Treatment Effects on the Additional Grade Outcomes by High School Average

| | Fall 2017 GPA | Winter 2018 GPA | Fall 2018 GPA |
|----------------|--------------------|----------------------|--------------------|
| ALL | | | |
| Below 70 | 10.795* (6.028) | 9.186* (5.282) | 10.720 (6.933) |
| 70 and above | 1.977 (2.615) | 2.609 (2.592) | -3.554 (4.223) |
| Missing | -4.279 (6.084) | -5.536 (6.077) | -3.898 (9.368) |
| Observations | 191 | 217 | 115 |
| MALES | | | |
| Below 70 | 8.898 (6.683) | 16.895** (7.068) | 6.911 (8.003) |
| 70 and above | -0.334 (3.855) | 6.287 (4.757) | -1.511 (7.297) |
| Missing | -2.174 (12.178) | -19.585* (11.629) | -9.869 (8.568) |
| Observations | 105 | 115 | 70 |
| FEMALES | | | |
| Below 70 | 13.364 (12.622) | -2.596 (7.971) | 6.636 (12.554) |
| 70 and above | 5.495 (3.591) | 0.166 (2.328) | -5.881 (7.849) |
| Missing | -2.062 (8.354) | 4.452 (4.022) | -2.440 (11.409) |
| Observations | 86 | 102 | 45 |

Standard errors are given in parentheses. The symbols ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively. The estimated effects represent the intention-to-treat (ITT) effects (see Section 4.4), which come from a linear regression model that includes treatment indicator, interaction terms between the treatment indicator and high school average categories, and other control variables included in linear form (i.e., gender, age, credential, school, high school average, reading and writing and reading assessment scores).

Table B.4: Treatment Effects on the Additional Grade Outcomes by Credential

| | Fall 2017 GPA | Winter 2018 GPA | | Fall 2018 GPA |
|-------------------------------|----------------------|---------------------|----------|--------------------|
| ALL | | | | |
| Advanced Diploma | 3.210 (2.578) | 3.448 (2.689) | | -0.554 (4.158) |
| Certificate | 3.653 (8.184) | -5.197 (6.477) | | 6.865 (10.981) |
| Diploma | 3.793 (4.393) | 3.882 (4.385) | | 2.995 (6.226) |
| Other/Missing Observations | 191 | 217 | | 115 |
| MALES | | | | |
| Advanced Diploma | 1.358 (3.234) | 4.604 (4.474) | | -2.866 (4.952) |
| Certificate | 59.422*** (8.713) | | (22.154) | 62.527*** |
| Diploma | -4.869 (6.818) | 3.426 (9.323) | | 9.086 (8.250) |
| Other/Missing Observations | 105 | 115 | | 70 |
| FEMALES | | | | |
| Advanced Diploma | 7.459 (5.248) | 4.514 (2.880) | | -4.617 (8.563) |
| Certificate | -8.500 (5.496) | -10.627* (5.999) | | -3.436 (14.880) |
| Diploma | 12.645* (6.499) | 5.596* (3.319) | | -1.004 (9.734) |
| Other/Missing Observations | 86 | 102 | | 45 |

Standard errors are given in parentheses. The symbols ** and * denote statistical significance at the 5% and 10% levels, respectively. The estimated effects represent the intention-to-treat (ITT) effects (see Section 4.4), which come from a linear regression model that includes treatment indicator, interaction terms between the treatment indicator and credential categories, and other control variables included in linear form (i.e., gender, age, credential, school, high school average, reading and writing and reading assessment scores). The degree, graduate certificate students and those with missing credential information are categorized as “Other/Missing” due to very small sample sizes.

Table B.5: Treatment Effects on the Additional Grade Outcomes by Reading Assessment Score

| | Fall 2017 GPA | Winter 2018 GPA | Fall 2018 GPA |
|--------------------------|--------------------|---------------------|---------------------|
| ALL | | | |
| 1 st quartile | 2.847 (5.174) | 2.242 (4.880) | 3.677 (7.030) |
| 2 nd quartile | 8.802** (3.979) | 6.938 (4.333) | -1.406 (5.460) |
| 3 rd quartile | 6.240 (5.181) | 0.787 (4.067) | -0.652 (9.787) |
| 4 th quartile | -2.810 (3.778) | 5.718 (4.568) | -0.429 (8.189) |
| Missing | -2.230 (8.376) | -5.920 (7.979) | 11.340 (13.352) |
| Observations | 191 | 217 | 115 |
| MALES | | | |
| 1 st quartile | -6.428 (7.457) | 4.914 (14.187) | -3.334 (20.022) |
| 2 nd quartile | 11.387* (6.428) | 13.186* (7.209) | 14.977 (10.615) |
| 3 rd quartile | 2.274 (8.340) | 3.635 (7.335) | 1.974 (15.077) |
| 4 th quartile | -4.045 (4.865) | 6.243 (7.273) | -6.588 (8.185) |
| Missing | -4.296 (12.663) | -16.564 (14.967) | -24.762 (14.889) |
| Observations | 105 | 115 | 70 |
| FEMALES | | | |
| 1 st quartile | 8.902 (6.485) | -1.466 (4.198) | -1.147 (12.386) |
| 2 nd quartile | 5.923 (8.029) | 1.636 (4.461) | -24.833 (14.266) |
| 3 rd quartile | 7.087 (7.618) | 4.893 (5.382) | -8.949 (15.019) |
| 4 th quartile | 5.429 (6.806) | 7.097* (3.901) | 7.934 (22.091) |
| Missing | 3.720 (16.060) | 5.935 (4.844) | 17.308 (15.698) |
| Observations | 86 | 102 | 45 |

Standard errors are given in parentheses. The symbols ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively. The estimated effects represent the intention-to-treat (ITT) effects (see Section 4.4), which come from a linear regression model that includes treatment indicator, interaction terms between the treatment indicator and reading assessment score categories, and other control variables included in linear form (i.e., gender, age, credential, school, high school average, reading and writing and reading assessment scores).

Table B.6: Treatment Effects on the Additional Grade Outcomes by Writing Assessment Score

| | Fall 2017 GPA | Winter 2018 GPA | Fall 2018 GPA |
|--------------|--------------------|---------------------|----------------------|
| | | ALL | |
| 0–4 | 6.376 (4.604) | 9.814* (5.176) | 11.705 (7.097) |
| 5 | 3.808 (3.230) | 0.415 (3.265) | -10.774* (5.714) |
| 6–8 | 1.372 (4.639) | 5.493 (3.593) | 2.138 (6.485) |
| Missing | -1.087 (8.360) | -5.819 (8.028) | 9.045 (13.496) |
| Observations | 191 | 217 | 115 |
| | | MALES | |
| 0–4 | 14.003* (7.173) | 14.820 (9.296) | 19.783** (9.423) |
| 5 | -2.699 (4.921) | 1.462 (5.432) | -14.854* (7.571) |
| 6–8 | -4.313 (5.897) | 11.690 (7.968) | 15.841 (14.069) |
| Missing | -3.358 (12.395) | -15.703 (14.755) | -28.642* (14.552) |
| Observations | 105 | 115 | 70 |
| | | FEMALES | |
| 0–4 | 3.321 (6.501) | 0.136 (3.774) | 7.694 (14.030) |
| 5 | 8.454 (5.523) | 0.558 (4.009) | -10.167 (14.522) |
| 6–8 | 9.055 (9.060) | 6.946 (4.311) | -11.451 (10.526) |
| Missing | 4.311 (16.136) | 5.751 (4.873) | 18.207 (16.745) |
| Observations | 86 | 102 | 45 |

Standard errors are given in parentheses. The symbols ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively. The estimated effects represent the intention-to-treat (ITT) effects (see Section 4.4), which come from a linear regression model that includes treatment indicator, interaction terms between the treatment indicator and writing assessment score categories, and other control variables included in linear form (i.e., gender, age, credential, school, high school average, and reading and writing and reading assessment scores).

Table B.7: Treatment Effects on the Additional Grade Outcomes by School

| | Fall 2017 GPA | Winter 2018 GPA | Fall 2018 GPA |
|-------------------------------|----------------------|-----------------------|---------------------|
| ALL | | | |
| Business | 2.835 (4.615) | 3.715 (3.401) | -1.462 (7.616) |
| Community and Justice Studies | 7.036 (6.109) | -1.246 (4.701) | -9.564 (11.025) |
| Health Sciences | 33.726*** (9.450) | 14.832 (9.750) | |
| Interdisciplinary Studies | -2.356 (6.407) | -6.363 (6.739) | 2.362 (12.006) |
| Media and Entertainment | 1.615 (5.742) | -1.493 (3.831) | 8.044 (9.246) |
| Skilled Trades | 4.490 (6.656) | 30.220* (17.313) | |
| Technology | 1.933 (2.927) | 4.446 (3.819) | 2.350 (4.296) |
| Missing Observations | 191 | 217 | 115 |
| MALES | | | |
| Business | -0.313 (8.857) | -0.809 (7.987) | -0.953 (15.921) |
| Community and Justice Studies | -4.180 (14.850) | 1.806 (11.950) | -11.676 (10.854) |
| Health Sciences | | | |
| Interdisciplinary Studies | 45.662** (17.668) | 43.782*** (13.829) | |
| Media and Entertainment | 9.337 (7.087) | 0.356 (7.985) | 11.565 (16.894) |
| Skilled Trades | -4.674 (11.985) | 33.699* (18.192) | |
| Technology | 0.073 (3.632) | 2.342 (5.577) | 0.503 (5.486) |
| Missing Observations | 105 | 115 | 70 |
| FEMALES | | | |
| Business | 0.663 (7.207) | 6.487 (4.511) | -12.745 (21.095) |
| Community and Justice Studies | 12.320* (7.050) | -0.370 (5.045) | -12.469 (13.187) |
| Health Sciences | 26.184* (13.595) | 9.584 (13.675) | |
| Interdisciplinary Studies | -8.479 (6.537) | -15.686*** (4.116) | -3.275 (15.546) |
| Media and Entertainment | 3.225 | 3.326 | 6.832 |

| | | | |
|----------------|---------------------|--------------------|------------------|
| | (8.314) | (5.381) | (18.660) |
| Skilled Trades | | | |
| Technology | 16.593** (7.081) | 9.439** (3.971) | 1.051 (9.056) |
| Missing | | | |
| Observations | 86 | 102 | 45 |

Standard errors are given in parentheses. The symbols ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively. The estimated effects represent the intention-to-treat (ITT) effects (see Section 4.4), which come from a linear regression model that includes treatment indicator, interaction terms between the treatment indicator and school categories, and other control variables included in linear form (i.e., gender, age, credential, school, high school average, reading and writing and reading assessment scores).

Table B.8: Difference in Mean Outcomes for Control and Treatment Group by Word Count

| | One-Term Leaving | One-Year Leaving | Two-Year Leaving | Grad. w/in Three Years | Fall 2015 GPA | Winter 2016 GPA | Fall 2016 GPA | Winter 2017 GPA | Fall 2017 GPA | Winter 2018 GPA | Fall 2018 GPA |
|------------------------|----------------------|---------------------|---------------------|---------------------------------|-------------------|-----------------------|-------------------|-----------------------|---------------------|-----------------------|---------------------|
| ALL | | | | | | | | | | | |
| Control Group Mean | 0.136 | 0.282 | 0.341 | 0.515 | 71.10 | 71.30 | 74.29 | 72.59 | 72.08 | 73.55 | 71.53 |
| 1st Tercile Difference | -0.068*** (0.026) | -0.043 (0.042) | -0.030 (0.046) | 0.002 (0.048) | 0.49 (1.52) | -1.41 (1.78) | -0.92 (1.53) | 0.70 (1.71) | 2.88 (2.94) | 3.49 (2.45) | 2.26 (4.19) |
| 2nd Tercile Difference | -0.023 (0.029) | -0.041 (0.043) | 0.018 (0.048) | -0.003 (0.047) | 2.27* (1.33) | -2.03 (2.02) | -1.45 (1.98) | 4.77*** (1.84) | 3.75 (3.42) | 1.56 (3.10) | -2.29 (6.04) |
| 3rd Tercile Difference | -0.027 (0.028) | -0.048 (0.041) | -0.075* (0.044) | 0.032 (0.044) | 3.52** (1.37) | 1.28 (1.76) | 2.56 (1.68) | 3.98** (1.66) | 3.68 (3.16) | 3.44 (3.59) | 2.22 (4.50) |
| Observations | 759 | 759 | 759 | 759 | 724 | 647 | 509 | 424 | 191 | 217 | 115 |
| MALES | | | | | | | | | | | |
| Control Group Mean | 0.164 | 0.322 | 0.355 | 0.415 | 67.82 | 69.62 | 72.82 | 71.17 | 71.91 | 68.71 | 69.10 |
| 1st Tercile Difference | -0.088** (0.039) | -0.056 (0.055) | -0.033 (0.060) | -0.032 (0.065) | 2.01 (2.17) | -3.07 (2.77) | -1.68 (2.25) | -0.11 (2.53) | 3.26 (4.29) | 3.40 (4.36) | -3.21 (5.21) |
| 2nd Tercile Difference | -0.046 (0.045) | -0.075 (0.064) | 0.006 (0.072) | 0.009 (0.072) | 4.07* (2.20) | -3.34 (3.53) | 0.17 (3.05) | 8.04*** (2.33) | 1.21 (5.26) | 4.97 (5.71) | -5.83 (8.97) |
| 3rd Tercile Difference | -0.043 (0.046) | -0.131** (0.065) | -0.078 (0.069) | 0.026 (0.067) | 5.78*** (2.18) | 1.04 (2.56) | -1.90 (2.71) | 0.43 (2.74) | -2.05 (5.18) | 4.57 (6.94) | 10.50** (5.19) |
| Observations | 374 | 374 | 374 | 374 | 358 | 312 | 246 | 196 | 105 | 115 | 70 |
| FEMALES | | | | | | | | | | | |
| Control Group Mean | 0.108 | 0.242 | 0.328 | 0.613 | 74.36 | 72.82 | 75.60 | 73.73 | 72.23 | 78.39 | 74.05 |
| 1st Tercile Difference | -0.039 (0.037) | -0.040 (0.064) | -0.047 (0.072) | 0.047 (0.074) | -1.01 (2.27) | -0.23 (2.66) | 0.33 (2.50) | 3.50 (2.51) | 3.91 (4.73) | 3.10 (3.07) | 0.08 (11.48) |
| 2nd Tercile Difference | 0.006 (0.039) | -0.015 (0.058) | 0.028 (0.067) | -0.025 (0.065) | 1.29 (1.65) | -0.78 (2.41) | -1.99 (2.58) | 3.13 (2.60) | 10.74* (6.23) | 1.48 (2.85) | 10.13 (6.65) |
| 3rd Tercile Difference | -0.019 (0.035) | -0.002 (0.056) | -0.090 (0.059) | 0.062 (0.062) | 1.62 (1.73) | 1.05 (2.44) | 5.06*** (1.81) | 5.70*** (2.04) | 6.50 (5.08) | 3.37 (2.96) | -15.34 (8.86) |
| Observations | 385 | 385 | 385 | 385 | 366 | 335 | 263 | 228 | 86 | 102 | 45 |

Standard errors are given in parentheses. The symbols ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively. The estimates represent the differences in mean outcomes between the students in the control group and those who were assigned to the treatment group and wrote a certain number of words. The

estimates come from linear regression models that include word count variable with four categories: those who were assigned to the control group, those who were assigned to the treatment groups and whose total number of words written for the exercise fall within the first tercile, second tercile and third tercile. Other control variables included in the regressions are gender, age, credential, school, high school average, reading and writing and reading assessment scores.

Table B.9: Difference in Mean Outcomes for Control and Treatment Group by Time Taken to Finish the Writing Exercise

| | One-Term Leaving | One-Year Leaving | Two- Year Leaving | Grad. w/in Three Years | Fall 2015 GPA | Winter 2016 GPA | Fall 2016 GPA | Winter 2017 GPA | Fall 2017 GPA | Winter 2018 GPA | Fall 2018 GPA |
|------------------------|----------------------|----------------------|-------------------------|---------------------------------|---------------------|--------------------|------------------|-----------------------|---------------------|-----------------------|---------------------|
| ALL | | | | | | | | | | | |
| Control Group Mean | 0.136 | 0.282 | 0.341 | 0.515 | 71.10 | 71.30 | 74.29 | 72.59 | 72.08 | 73.55 | 71.53 |
| 1st Tercile Difference | -0.059** (0.026) | -0.041 (0.043) | -0.028 (0.048) | 0.029 (0.046) | 2.61* (1.37) | -2.05 (2.06) | 1.34 (1.82) | 5.29*** (1.62) | 7.84** (3.06) | 5.01* (2.83) | 5.15 (4.00) |
| 2nd Tercile Difference | -0.046* (0.027) | -0.057 (0.042) | -0.038 (0.046) | 0.023 (0.047) | 2.17 (1.39) | -1.42 (1.81) | -0.36 (1.49) | -0.24 (1.81) | -0.77 (2.99) | 2.82 (2.58) | -0.79 (4.50) |
| 3rd Tercile Difference | -0.016 (0.031) | -0.045 (0.042) | -0.033 (0.046) | -0.003 (0.046) | 1.97 (1.49) | 1.69 (1.84) | -0.85 (2.01) | 4.42** (1.76) | 4.25 (2.86) | 0.81 (3.62) | -0.65 (5.04) |
| Observations | 748 | 748 | 748 | 748 | 715 | 639 | 503 | 419 | 187 | 214 | 112 |
| MALES | | | | | | | | | | | |
| Control Group Mean | 0.164 | 0.322 | 0.355 | 0.415 | 67.82 | 69.62 | 72.82 | 71.17 | 71.91 | 68.71 | 69.10 |
| 1st Tercile Difference | -0.045 (0.047) | 0.006 (0.068) | 0.022 (0.074) | -0.034 (0.069) | 1.94 (2.49) | -5.72 (3.51) | -0.75 (3.66) | 3.02 (2.87) | 8.13* (4.39) | 5.42 (5.10) | 8.31 (6.65) |
| 2nd Tercile Difference | -0.105*** (0.039) | -0.125* (0.064) | -0.034 (0.068) | 0.026 (0.071) | 4.41** (2.15) | -2.20 (3.05) | -1.82 (2.17) | -0.83 (3.04) | -5.58 (4.00) | 7.74 (4.96) | 1.38 (5.49) |
| 3rd Tercile Difference | -0.039 (0.045) | -0.143*** (0.054) | -0.098 (0.062) | 0.027 (0.064) | 4.51** (2.15) | 1.97 (2.54) | -0.92 (2.45) | 4.18* (2.13) | 2.20 (3.59) | 0.33 (6.14) | -3.31 (7.08) |
| Observations | 369 | 369 | 369 | 369 | 355 | 309 | 244 | 194 | 103 | 114 | 68 |
| FEMALES | | | | | | | | | | | |
| Control Group Mean | 0.108 | 0.242 | 0.328 | 0.613 | 74.36 | 72.82 | 75.60 | 73.73 | 72.23 | 78.39 | 74.05 |
| 1st Tercile Difference | -0.055* (0.030) | -0.064 (0.057) | -0.057 (0.066) | 0.053 (0.065) | 2.99* (1.59) | -0.52 (2.74) | 3.49 (2.23) | 6.82*** (2.32) | 9.16* (5.09) | 4.64 (3.32) | -10.49 (8.90) |
| 2nd Tercile Difference | 0.014 (0.041) | 0.006 (0.059) | -0.054 (0.064) | 0.023 (0.066) | -0.01 (1.91) | -0.89 (2.49) | 0.61 (2.00) | 1.60 (2.35) | 6.78 (5.65) | 1.07 (2.55) | 0.10 (8.40) |

| | | | | | | | | | | | |
|------------------------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|---------|
| 3rd Tercile Difference | -0.004 | 0.022 | 0.008 | -0.002 | -0.07 | 1.93 | -1.75 | 3.68 | 4.67 | 3.02 | 19.56 |
| | (0.041) | (0.065) | (0.070) | (0.069) | (2.18) | (2.68) | (3.41) | (2.87) | (7.41) | (3.91) | (14.49) |
| Observations | 379 | 379 | 379 | 379 | 360 | 330 | 259 | 225 | 84 | 100 | 44 |

Standard errors are given in parentheses. The symbols ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively. The estimates represent the differences in mean outcomes between the students in the control group and those who were assigned to the treatment group and took a certain number of minutes to finish the FA program. The estimates come from linear regression models that include the time taken to finish variable with four categories: those who were assigned to the control group, those who were assigned to the treatment groups and whose total number of minutes fall within the first tercile, second tercile and third tercile. Other control variables included in the regressions are gender, age, credential, school, high school average, reading and writing and reading assessment scores.



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