



# Auditing for Score Inflation Using Self-Monitoring Assessments: Findings from Three Pilot Studies

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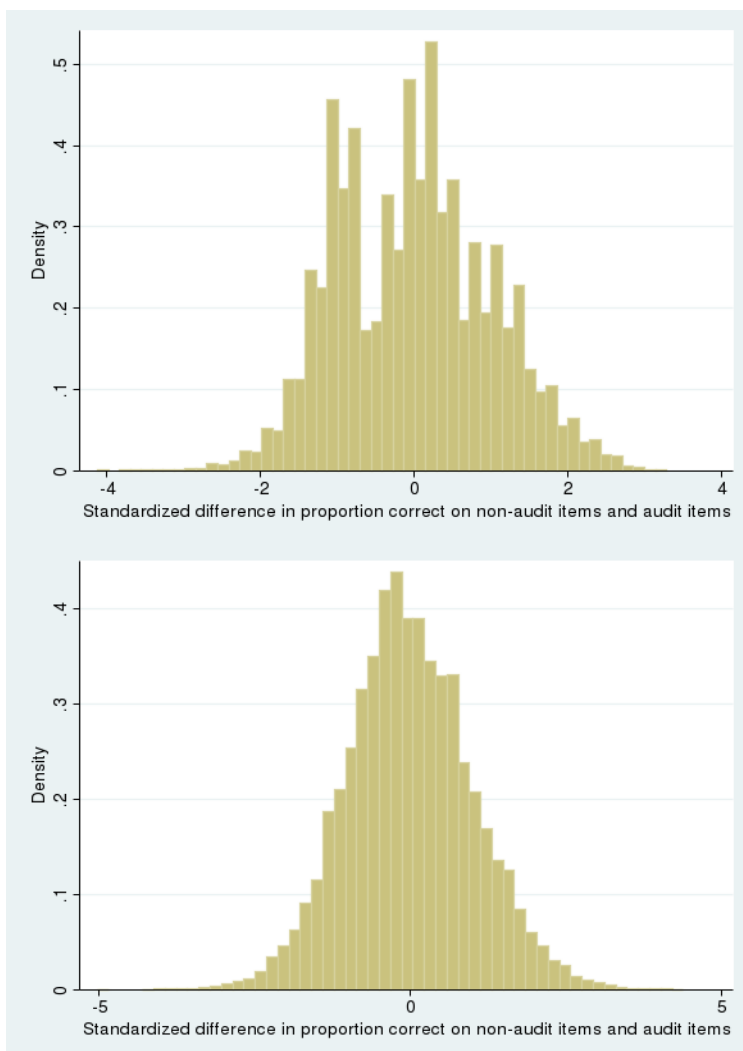
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## Auditing for Score Inflation Using Self-Monitoring Assessments: Findings from Three Pilot Studies

### Supplementary Materials

Daniel Koretz<sup>1</sup>  
Jennifer L. Jennings<sup>2</sup>  
Hui Leng Ng<sup>1</sup>  
Carol Yu<sup>1</sup>  
David Braslow<sup>1</sup>  
Meredith Langi<sup>1</sup>



*Figure S.1.* Histograms of outcome variable, difference in proportion correct on non-audit and audit items, for grades 4 (top) and 8 (bottom) in study C

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Table S.1

*Descriptive statistics for analytic samples, by grade*

|                           | Grade 4      |              |              | Grade 7      |              |              | Grade 8      |              |          |
|---------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----------|
|                           | <u>Study</u> | <u>Study</u> | <u>Study</u> | <u>Study</u> | <u>Study</u> | <u>Study</u> | <u>Study</u> | <u>Study</u> |          |
|                           | <u>A</u>     | <u>B</u>     | <u>C</u>     | <u>A</u>     | <u>B</u>     | <u>C</u>     | <u>A</u>     | <u>B</u>     | <u>C</u> |
| # of Students             | 6,301        | 193,538      | 185,164      | 7,662        | 195,273      | 185,615      | 8,420        | 195,941      | 186,645  |
| # of Schools              | 852          | 2,433        | 2,342        | 573          | 1,426        | 1,356        | 517          | 1,504        | 1,332    |
| <u>Student-Level</u>      |              |              |              |              |              |              |              |              |          |
| % White                   | 0.52         | 0.48         | 0.51         | 0.55         | 0.50         | 0.52         | 0.56         | 0.51         | 0.53     |
| % Asian                   | 0.09         | 0.18         | 0.08         | 0.08         | 0.18         | 0.08         | 0.09         | 0.08         | 0.08     |
| % Black                   | 0.17         | 0.23         | 0.18         | 0.17         | 0.22         | 0.18         | 0.16         | 0.18         | 0.18     |
| % Hispanic                | 0.21         | 0.08         | 0.22         | 0.19         | 0.08         | 0.21         | 0.19         | 0.22         | 0.20     |
| % Other                   | 0.01         | 0.02         | 0.01         | 0.01         | 0.01         | 0.01         | 0.01         | 0.01         | 0.01     |
| % Low Income              | 0.51         | 0.56         | 0.55         | 0.48         | 0.53         | 0.51         | 0.46         | 0.52         | 0.50     |
| % Bubble Student          | 0.14         | 0.14         | 0.15         | 0.08         | 0.08         | 0.09         | 0.08         | 0.07         | 0.09     |
| <u>School-Level</u>       |              |              |              |              |              |              |              |              |          |
| Prop. White               | 0.52         | 0.51         | 0.53         | 0.52         | 0.48         | 0.50         | 0.51         | 0.49         | 0.50     |
| Proportion Asian          | 0.08         | 0.07         | 0.06         | 0.06         | 0.05         | 0.05         | 0.07         | 0.05         | 0.05     |
| Proportion Black          | 0.18         | 0.20         | 0.19         | 0.20         | 0.23         | 0.22         | 0.21         | 0.23         | 0.22     |
| Proportion Hispanic       | 0.21         | 0.21         | 0.20         | 0.21         | 0.22         | 0.22         | 0.21         | 0.22         | 0.21     |
| Proportion Other          | 0.01         | 0.02         | 0.01         | 0.01         | 0.01         | 0.01         | 0.01         | 0.01         | 0.01     |
| Proportion Low Income     | 0.51         | 0.55         | 0.55         | 0.56         | 0.58         | 0.57         | 0.54         | 0.56         | 0.56     |
| Proportion Bubble Student | 0.14         | 0.14         | 0.15         | 0.09         | 0.07         | 0.10         | 0.08         | 0.07         | 0.10     |

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Table S.2

*Reliability coefficients (alpha) for Studies A, B, and C by grade including Spearman-Brown predicted reliabilities for audit portions*

|                              | Grade 4 |         |         | Grade 7 |         |         | Grade 8 |         |         |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|                              | Study A | Study B | Study C | Study A | Study B | Study C | Study A | Study B | Study C |
| Audit Portion                | 0.57    | 0.44    | 0.47    | 0.54    | 0.42    | 0.66    | 0.58    | 0.43    | 0.70    |
| Non Audit                    |         |         |         |         |         |         |         |         |         |
| Portion                      | 0.65    | 0.91    | 0.93    | 0.64    | 0.91    | 0.90    | 0.61    | 0.92    | 0.92    |
| Difference Scores            | 0.11    | 0.07    | -0.04   | 0.03    | -0.03   | 0.08    | 0.02    | 0.02    | -0.04   |
| <u>Predicted Reliability</u> |         |         |         |         |         |         |         |         |         |
| Audit Portion                |         | 0.66    | 0.75    |         | 0.65    | 0.73    |         | 0.65    | 0.70    |
| Difference Scores            |         | 0.41    | 0.48    |         | 0.34    | 0.25    |         | 0.38    | -0.04   |

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Table S.3

*Regression results for forms excluded from Tables 4 and 5 because of very low or zero reliability of the difference score, for grades 4 & 8*

|                                | Grade 4             |                   | Grade 8           |                          |                     |                          |
|--------------------------------|---------------------|-------------------|-------------------|--------------------------|---------------------|--------------------------|
|                                | <u>Study B</u>      | <u>Study A</u>    |                   | <u>Study B</u>           |                     | <u>Study C</u>           |
|                                | <u>Form D</u>       | <u>Form 3</u>     | <u>Form 4</u>     | <u>Form B</u>            | <u>Form C</u>       |                          |
| <u>Student-Level Variables</u> |                     |                   |                   |                          |                     |                          |
| Black                          | -0.033<br>(0.018)   | 0.112<br>(0.091)  | 0.128<br>(0.084)  | 0.068***<br>(0.018)      | -0.033<br>(0.019)   | 0.003<br>(0.009)         |
| Hispanic                       | 0.016<br>(0.016)    | 0.099<br>(0.082)  | 0.052<br>(0.078)  | 0.085***<br>(0.016)      | 0.007<br>(0.018)    | 0.011<br>(0.008)         |
| Low Income                     | -0.025*<br>(0.012)  | -0.062<br>(0.061) | 0.047<br>(0.057)  | -0.008<br>(0.012)        | -0.032*<br>(0.013)  | -0.001<br>(0.006)        |
| Bubble Student                 | 0.160***<br>(0.013) | 0.096<br>(0.082)  | 0.036<br>(0.076)  | 0.005<br>(0.018)         | 0.072***<br>(0.019) | 0.089***<br>(0.008)      |
| <u>School-Level Variables</u>  |                     |                   |                   |                          |                     |                          |
| Proportion Black               | -0.038<br>(0.045)   | -0.034<br>(0.150) | 0.035<br>(0.140)  | 0.109<br>(0.066)         | 0.114<br>(0.059)    | -<br>0.225***<br>(0.038) |
| Proportion Hispanic            | -0.107*<br>(0.050)  | 0.002<br>(0.151)  | 0.035<br>(0.145)  | 0.278***<br>(0.075)      | 0.081<br>(0.072)    | -<br>0.203***<br>(0.046) |
| Proportion Low Income          | 0.038<br>(0.044)    | 0.07<br>(0.124)   | -0.135<br>(0.115) | -<br>0.265***<br>(0.071) | -0.190**<br>(0.064) | 0.147***<br>(0.041)      |
| Proportion Bubble Students     | 0.552***<br>(0.153) | 0.504<br>(0.323)  | -0.118<br>(0.292) | -0.606*<br>(0.303)       | 0.292<br>(0.311)    | 0.571***<br>(0.168)      |
| <i>N</i>                       | 44538               | 2137              | 2055              | 47078                    | 44830               | 186645                   |

Note. \*p<0.05 \*\*p<0.01 \*\*\*p<0.001

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Table S.4

*Regression results for forms excluded from Table 5 because of very low or zero reliability of the difference score, for grade 7*

|                                | Grade 7           |                   |                      |                      |                     |                      |
|--------------------------------|-------------------|-------------------|----------------------|----------------------|---------------------|----------------------|
|                                | Study A           |                   | Study B              |                      |                     |                      |
|                                | Form 1            | Form 2            | Form A               | Form B               | Form C              | Form D               |
| <u>Student-Level Variables</u> |                   |                   |                      |                      |                     |                      |
| Black                          | 0.028<br>(0.077)  | -0.019<br>(0.078) | -0.064***<br>(0.019) | 0.076***<br>(0.018)  | -0.011<br>(0.016)   | -0.060**<br>(0.019)  |
| Hispanic                       | 0.150*<br>(0.070) | -0.064<br>(0.070) | -0.015<br>(0.017)    | 0.034*<br>(0.017)    | -0.013<br>(0.015)   | -0.031<br>(0.017)    |
| Low Income                     | 0.088<br>(0.053)  | 0.017<br>(0.052)  | -0.013<br>(0.013)    | -0.064***<br>(0.012) | 0.010<br>(0.011)    | -0.060***<br>(0.013) |
| Bubble Student                 | 0.034<br>(0.071)  | 0.055<br>(0.073)  | 0.127***<br>(0.019)  | 0.127***<br>(0.019)  | 0.086***<br>(0.017) | -0.008<br>(0.020)    |
| <u>School-Level Variables</u>  |                   |                   |                      |                      |                     |                      |
| Proportion Black               | -0.063<br>(0.135) | -0.147<br>(0.140) | -0.145*<br>(0.061)   | -0.127**<br>(0.049)  | -0.149**<br>(0.048) | -0.054<br>(0.054)    |
| Proportion Hispanic            | -0.147<br>(0.142) | 0.22<br>(0.145)   | -0.094<br>(0.070)    | -0.040<br>(0.054)    | 0.001<br>(0.056)    | 0.004<br>(0.064)     |
| Proportion Low Income          | 0.207<br>(0.119)  | -0.013<br>(0.122) | 0.029<br>(0.066)     | -0.125*<br>(0.053)   | 0.009<br>(0.050)    | -0.063<br>(0.059)    |
| Proportion Bubble Students     | 0.306<br>(0.250)  | 0.063<br>(0.247)  | 0.991**<br>(0.315)   | 0.014<br>(0.254)     | 0.434<br>(0.257)    | -0.384<br>(0.278)    |
| <i>N</i>                       | 2579              | 2531              | 46652                | 47329                | 45080               | 43519                |

Note. \*p<0.05 \*\*p<0.01 \*\*\*p<0.001

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Table S.5

*Regression results for sensitivity analysis: changing definition of bubble student for Studies A, B, and C in grade 7*

|                      | Grade 7                  |                         |                                 |                          |                         |                                 |                          |                         |                                 |
|----------------------|--------------------------|-------------------------|---------------------------------|--------------------------|-------------------------|---------------------------------|--------------------------|-------------------------|---------------------------------|
|                      | Study A                  |                         |                                 | Study B                  |                         |                                 | Study C                  |                         |                                 |
|                      | Main:<br>Plus<br>Minus 3 | Sensitivity:<br>Minus 2 | Sensitivity:<br>Plus Minus<br>2 | Main:<br>Plus<br>Minus 3 | Sensitivity:<br>Minus 2 | Sensitivity:<br>Plus Minus<br>2 | Main:<br>Plus<br>Minus 3 | Sensitivity:<br>Minus 2 | Sensitivity:<br>Plus Minus<br>2 |
| <u>Student-Level</u> |                          |                         |                                 |                          |                         |                                 |                          |                         |                                 |
| Asian                | -0.048<br>(0.053)        | -0.049<br>(0.053)       | -0.046<br>(0.053)               | -<br>0.052***<br>(0.010) | -0.052***<br>(0.010)    | -0.050***<br>(0.010)            | -<br>0.115***<br>(0.010) | -0.117***<br>(0.010)    | -0.113***<br>(0.010)            |
| Black                | 0.002<br>(0.047)         | 0.003<br>(0.047)        | 0.000<br>(0.047)                | -0.013<br>(0.009)        | -0.013<br>(0.009)       | -0.014<br>(0.009)               | 0.050***<br>(0.009)      | 0.052***<br>(0.009)     | 0.049***<br>(0.009)             |
| Hispanic             | 0.029<br>(0.042)         | 0.031<br>(0.042)        | 0.028<br>(0.042)                | -0.004<br>(0.008)        | -0.004<br>(0.008)       | -0.004<br>(0.008)               | 0.114***<br>(0.008)      | 0.114***<br>(0.008)     | 0.111***<br>(0.008)             |
| Low Income           | 0.022<br>(0.031)         | 0.022<br>(0.031)        | 0.023<br>(0.031)                | -<br>0.032***<br>(0.006) | -0.032***<br>(0.006)    | -0.033***<br>(0.006)            | 0.075***<br>(0.006)      | 0.078***<br>(0.006)     | 0.077***<br>(0.006)             |
| Bubble Student       | 0.117**<br>(0.043)       | -0.098*<br>(0.040)      | -0.096*<br>(0.040)              | 0.085***<br>(0.009)      | 0.005<br>(0.023)        | 0.008<br>(0.023)                | 0.246***<br>(0.008)      | -0.161***<br>(0.021)    | -0.156***<br>(0.020)            |
| NYC                  | -0.098*<br>(0.040)       | 0.091<br>(0.051)        | 0.109**<br>(0.037)              | 0.007<br>(0.023)         | 0.092***<br>(0.011)     | 0.111***<br>(0.008)             | 0.156***<br>(0.020)      | 0.241***<br>(0.009)     | 0.256***<br>(0.007)             |
| <u>School-Level</u>  |                          |                         |                                 |                          |                         |                                 |                          |                         |                                 |
| Proportion Asian     | -0.149<br>(0.115)        | -0.171<br>(0.114)       | (0.165)<br>(0.115)              | -0.030<br>(0.077)        | -0.036<br>(0.076)       | (0.031)<br>(0.077)              | -<br>0.466***<br>(0.070) | -0.496***<br>(0.069)    | -0.441***<br>(0.069)            |
| Proportion Black     | -0.042<br>(0.083)        | -0.043<br>(0.083)       | (0.034)<br>(0.083)              | -0.113**<br>(0.038)      | -0.115**<br>(0.038)     | -0.111**<br>(0.038)             | -<br>0.267***<br>(0.034) | -0.265***<br>(0.034)    | -0.254***<br>(0.033)            |
| Proportion Hispanic  | 0.081                    | 0.079                   | 0.081                           | -0.022                   | -0.025                  | (0.022)                         | -                        | -0.245***               | -0.233***                       |

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|                   |         |         |         |         |         |         |          |          |          |
|-------------------|---------|---------|---------|---------|---------|---------|----------|----------|----------|
|                   |         |         |         |         |         |         | 0.246*** |          |          |
|                   | (0.087) | (0.087) | (0.087) | (0.046) | (0.046) | (0.046) | (0.040)  | (0.040)  | (0.039)  |
| Proportion Low    |         |         |         |         |         |         |          |          |          |
| Income            | 0.124   | 0.134   | 0.125   | -0.021  | -0.015  | (0.019) | 0.217*** | 0.230*** | 0.207*** |
|                   | (0.073) | (0.073) | (0.073) | (0.043) | (0.042) | (0.042) | (0.036)  | (0.036)  | (0.036)  |
| Proportion Bubble | 0.163   | 0.007   | 0.023   | 0.296   | 0.358   | 0.208   | 0.790*** | 0.871*** | 0.756*** |
|                   | (0.152) | (0.186) | (0.138) | (0.195) | (0.251) | (0.165) | (0.161)  | (0.201)  | (0.129)  |
| Intercept         | 0.040*  | 0.040*  | 0.039*  | -0.005  | -0.004  | (0.005) | 0.059*** | 0.062*** | 0.059*** |
|                   | (0.019) | (0.019) | (0.019) | (0.010) | (0.010) | (0.010) | (0.010)  | (0.010)  | (0.010)  |
| <i>N</i>          | 7,662   | 7,662   | 7,662   | 182,580 | 182,580 | 182,580 | 185,615  | 185,615  | 185,615  |

Note. \* $p < 0.05$  \*\* $p < 0.01$  \*\*\* $p < 0.001$