

# **Intensity and content of private tutoring lessons during German secondary schooling: effects on students' grades and test achievement**

Supplemental Online Material

## **Appendix A: Descriptive statistics and intercorrelations**

Table A.1: Students with private tutoring in mathematics – intercorrelations and descriptive statistics ( $N_{\max} = 1,025$ )

|      | Variable                                        | (1)         | (2)         | (3)         | (4)        | (5)         | (6)         | (7)         | (8)         | (9)        | (10)        | (11)        | (12)        | (13)        | (14)        | (15)        | (16)        | (17)        | (18)        | (19)        | (20)        |
|------|-------------------------------------------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| (1)  | PT: Up to 3 months                              | —           |             |             |            |             |             |             |             |            |             |             |             |             |             |             |             |             |             |             |             |
| (2)  | PT: 4 to 6 months                               | <b>-.50</b> | —           |             |            |             |             |             |             |            |             |             |             |             |             |             |             |             |             |             |             |
| (3)  | PT: 7 to 9 months                               | <b>-.30</b> | <b>-.23</b> | —           |            |             |             |             |             |            |             |             |             |             |             |             |             |             |             |             |             |
| (4)  | PT: 10 and more months                          | <b>-.42</b> | <b>-.31</b> | <b>-.19</b> | —          |             |             |             |             |            |             |             |             |             |             |             |             |             |             |             |             |
| (5)  | PT intensity: up to 1 hour per week             | <b>.09</b>  | -.04        | -.05        | -.04       | —           |             |             |             |            |             |             |             |             |             |             |             |             |             |             |             |
| (6)  | PT intensity: 1–2 hours per week                | <b>-.09</b> | .03         | .01         | <b>.07</b> | <b>-.59</b> | —           |             |             |            |             |             |             |             |             |             |             |             |             |             |             |
| (7)  | PT intensity: more than 2 hours per week        | <b>-.11</b> | .04         | .04         | .06        | <b>-.33</b> | <b>-.22</b> | —           |             |            |             |             |             |             |             |             |             |             |             |             |             |
| (8)  | Motivation to attend PT                         | .03         | .05         | <b>-.07</b> | -.04       | -.01        | .06         | -.06        | —           |            |             |             |             |             |             |             |             |             |             |             |             |
| (9)  | Change in learning time                         | -.05        | .00         | .04         | .03        | <b>-.18</b> | <b>.13</b>  | .09         | <b>.26</b>  | —          |             |             |             |             |             |             |             |             |             |             |             |
| (10) | Homework                                        | -.07        | .07         | .01         | -.01       | -.07        | .03         | .09         | <b>.15</b>  | <b>.17</b> | —           |             |             |             |             |             |             |             |             |             |             |
| (11) | Current lesson content                          | <b>-.18</b> | <b>.12</b>  | .01         | .08        | -.08        | .07         | .05         | <b>.33</b>  | <b>.27</b> | <b>.33</b>  | —           |             |             |             |             |             |             |             |             |             |
| (12) | Learning strategies                             | -.02        | .02         | .00         | .00        | <b>-.16</b> | .05         | .09         | <b>.17</b>  | <b>.28</b> | <b>.18</b>  | <b>.22</b>  | —           |             |             |             |             |             |             |             |             |
| (13) | Earlier lesson content                          | <b>-.12</b> | <b>.11</b>  | -.04        | .06        | <b>-.12</b> | .06         | .07         | <b>.23</b>  | <b>.20</b> | <b>.27</b>  | <b>.53</b>  | <b>.26</b>  | —           |             |             |             |             |             |             |             |
| (14) | End-of-year grade (G8)                          | -.01        | <b>-.09</b> | .03         | <b>.08</b> | .03         | -.01        | -.05        | <b>-.07</b> | -.03       | <b>-.12</b> | -.03        | -.08        | -.09        | —           |             |             |             |             |             |             |
| (15) | Midterm grade (G8)                              | -.05        | <b>-.08</b> | <b>.07</b>  | <b>.10</b> | .00         | -.02        | -.04        | -.04        | -.03       | -.08        | .01         | -.08        | <b>-.13</b> | <b>.65</b>  | —           |             |             |             |             |             |
| (16) | Test achievement (G8)                           | <b>.07</b>  | -.04        | -.02        | -.03       | <b>.17</b>  | .01         | <b>-.15</b> | .03         | -.05       | -.07        | <b>.13</b>  | <b>-.17</b> | -.03        | <b>.27</b>  | <b>.18</b>  | —           |             |             |             |             |
| (17) | Test achievement (G7)                           | <b>.11</b>  | -.05        | <b>-.06</b> | -.03       | <b>.15</b>  | -.03        | <b>-.11</b> | -.02        | -.02       | <b>-.10</b> | <b>.10</b>  | <b>-.16</b> | <b>-.10</b> | <b>.26</b>  | <b>.17</b>  | <b>.72</b>  | —           |             |             |             |
| (18) | Mean test achievement school level (G7)         | .05         | -.04        | .00         | -.02       | <b>.19</b>  | -.02        | <b>-.15</b> | .04         | -.01       | -.01        | <b>.18</b>  | <b>-.18</b> | .00         | <b>.07</b>  | -.03        | <b>.64</b>  | <b>.64</b>  | —           |             |             |
| (19) | General cognitive abilities (G7)                | .01         | .02         | -.01        | -.03       | <b>.10</b>  | -.02        | <b>-.07</b> | -.04        | -.02       | -.08        | -.01        | <b>-.10</b> | <b>-.16</b> | <b>.21</b>  | <b>.16</b>  | <b>.45</b>  | <b>.50</b>  | <b>.36</b>  | —           |             |
| (20) | Performance anxiety (G7)                        | -.01        | -.03        | .03         | .01        | -.03        | .02         | .03         | .02         | .04        | .07         | .00         | .02         | .04         | <b>-.15</b> | <b>-.11</b> | <b>-.18</b> | <b>-.17</b> | <b>-.09</b> | <b>-.10</b> | —           |
| (21) | Mathematic ability self-concept (G7)            | .01         | .03         | -.02        | -.03       | <b>-.07</b> | -.02        | .01         | <b>-.08</b> | .05        | -.04        | <b>-.12</b> | <b>.10</b>  | <b>-.14</b> | <b>.21</b>  | <b>.20</b>  | <b>.07</b>  | <b>.12</b>  | <b>-.17</b> | <b>.08</b>  | <b>-.15</b> |
| (22) | Work habits                                     | -.02        | .06         | .00         | -.04       | -.01        | .00         | .02         | -.01        | .02        | .04         | .05         | .03         | .02         | <b>.15</b>  | <b>.10</b>  | <b>.16</b>  | <b>.17</b>  | <b>.10</b>  | .02         | <b>-.09</b> |
| (23) | Interest in mathematics                         | -.01        | .05         | -.04        | -.01       | <b>-.09</b> | .01         | .02         | .03         | <b>.11</b> | -.06        | -.07        | <b>.11</b>  | <b>-.10</b> | <b>.15</b>  | <b>.14</b>  | .02         | <b>.09</b>  | <b>-.14</b> | .00         | -.03        |
| (24) | IHR lower level                                 | -.06        | <b>.07</b>  | .04         | -.04       | -.05        | .01         | -.01        | -.01        | .03        | -.02        | -.08        | .04         | -.01        | -.04        | .00         | <b>-.12</b> | <b>-.13</b> | <b>-.16</b> | -.06        | .04         |
| (25) | IHR higher level                                | .01         | .00         | -.03        | .02        | -.04        | -.01        | .02         | .03         | -.06       | -.01        | -.08        | .03         | .05         | .02         | .02         | <b>-.07</b> | <b>-.08</b> | <b>-.17</b> | <b>-.08</b> | -.01        |
| (26) | Intermediate track                              | .02         | .03         | -.02        | -.04       | <b>-.07</b> | .05         | .04         | -.04        | .00        | .05         | -.04        | <b>.14</b>  | <b>.10</b>  | -.05        | -.02        | <b>-.18</b> | <b>-.16</b> | <b>-.31</b> | <b>-.13</b> | .05         |
| (27) | Comprehensive school: lower level               | -.04        | -.01        | .03         | .04        | <b>-.12</b> | .02         | <b>.13</b>  | .04         | -.01       | -.01        | -.05        | .07         | -.05        | .04         | .04         | <b>-.38</b> | <b>-.37</b> | <b>-.39</b> | <b>-.25</b> | <b>.09</b>  |
| (28) | Comprehensive school: higher level              | .01         | <b>-.07</b> | .00         | <b>.07</b> | .00         | .03         | -.04        | -.03        | -.01       | -.04        | .00         | -.02        | -.01        | .03         | <b>.14</b>  | -.03        | -.05        | <b>-.25</b> | .04         | <b>-.09</b> |
| (29) | Academic track                                  | .03         | .01         | -.04        | -.02       | <b>.18</b>  | -.02        | <b>-.14</b> | .06         | .01        | .02         | <b>.14</b>  | <b>-.17</b> | -.01        | .03         | <b>-.08</b> | <b>.60</b>  | <b>.59</b>  | <b>.88</b>  | <b>.35</b>  | <b>-.07</b> |
| (30) | Parent(s) qualified for university <sup>a</sup> | -.01        | .01         | -.01        | .01        | <b>.06</b>  | -.03        | .00         | .03         | -.04       | .02         | <b>.13</b>  | -.02        | .02         | .03         | .02         | <b>.25</b>  | <b>.26</b>  | <b>.36</b>  | <b>.10</b>  | <b>-.06</b> |
| (31) | Parent(s) with university degree <sup>b</sup>   | .04         | -.03        | .00         | -.02       | .03         | .01         | -.03        | .05         | -.04       | .03         | <b>.12</b>  | -.06        | -.04        | .03         | .01         | <b>.23</b>  | <b>.23</b>  | <b>.35</b>  | <b>.13</b>  | -.05        |
| (32) | Migration: one parent born abroad <sup>c</sup>  | .00         | .01         | .02         | -.02       | .02         | -.03        | .02         | .02         | .05        | .03         | -.01        | -.01        | .05         | -.05        | -.02        | .00         | .01         | .05         | .03         | .02         |

|      |                                                  |             |      |      |      |             |      |             |            |      |      |            |             |      |      |      |             |             |             |             |             |
|------|--------------------------------------------------|-------------|------|------|------|-------------|------|-------------|------------|------|------|------------|-------------|------|------|------|-------------|-------------|-------------|-------------|-------------|
| (33) | Migration: both parents born abroad <sup>c</sup> | <b>-.08</b> | .06  | .01  | .02  | <b>-.07</b> | .01  | .06         | -.03       | .00  | -.05 | -.04       | .05         | .01  | -.01 | .01  | <b>-.12</b> | <b>-.14</b> | <b>-.16</b> | <b>-.14</b> | <b>.12</b>  |
| (34) | Highest ISEI in family                           | -.01        | -.01 | -.02 | .03  | <b>.10</b>  | -.01 | <b>-.11</b> | .04        | -.04 | -.03 | <b>.12</b> | <b>-.11</b> | -.03 | .05  | .06  | <b>.25</b>  | <b>.26</b>  | <b>.37</b>  | <b>.14</b>  | <b>-.09</b> |
| (35) | Gender <sup>d</sup>                              | .00         | .01  | .00  | -.01 | <b>.13</b>  | -.01 | <b>-.08</b> | <b>.10</b> | -.07 | .01  | .05        | <b>-.13</b> | .03  | -.02 | -.02 | .04         | -.02        | <b>.14</b>  | <b>.13</b>  | <b>.17</b>  |

| Variable |                                                  | (21)        | (22)        | (23)        | (24)        | (25)        | (26)        | (27)        | (28)        | (29)        | (30)        | (31)        | (32)        | (33)        | (34) | (35) |
|----------|--------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------|------|
| (21)     | Mathematic ability self-concept (G7)             | —           |             |             |             |             |             |             |             |             |             |             |             |             |      |      |
| (22)     | Work habits                                      | <b>.35</b>  | —           |             |             |             |             |             |             |             |             |             |             |             |      |      |
| (23)     | Interest in mathematics                          | <b>.58</b>  | <b>.25</b>  | —           |             |             |             |             |             |             |             |             |             |             |      |      |
| (24)     | IHR lower level                                  | .00         | <b>-.07</b> | .02         | —           |             |             |             |             |             |             |             |             |             |      |      |
| (25)     | IHR higher level                                 | .05         | -.03        | -.01        | -.02        | —           |             |             |             |             |             |             |             |             |      |      |
| (26)     | Intermediate track                               | <b>.10</b>  | .03         | .04         | -.04        | -.05        | —           |             |             |             |             |             |             |             |      |      |
| (27)     | Comprehensive school: lower level                | -.05        | <b>-.10</b> | .02         | -.05        | -.06        | <b>-.17</b> | —           |             |             |             |             |             |             |      |      |
| (28)     | Comprehensive school: higher level               | <b>.14</b>  | .02         | <b>.08</b>  | -.04        | -.05        | <b>-.15</b> | <b>-.18</b> | —           |             |             |             |             |             |      |      |
| (29)     | Academic track                                   | <b>-.14</b> | <b>.09</b>  | <b>-.11</b> | <b>-.11</b> | <b>-.13</b> | <b>-.37</b> | <b>-.43</b> | <b>-.37</b> | —           |             |             |             |             |      |      |
| (30)     | Parent(s) qualified for university <sup>a</sup>  | -.06        | .01         | -.05        | <b>-.10</b> | <b>-.07</b> | <b>-.12</b> | <b>-.14</b> | -.03        | <b>.32</b>  | —           |             |             |             |      |      |
| (31)     | Parent(s) with university degree <sup>b</sup>    | <b>-.07</b> | -.01        | -.05        | <b>-.08</b> | <b>-.06</b> | <b>-.17</b> | <b>-.10</b> | -.03        | <b>.31</b>  | <b>.66</b>  | —           |             |             |      |      |
| (32)     | Migration: one parent born abroad <sup>c</sup>   | <b>-.07</b> | -.05        | -.05        | .03         | -.03        | <b>-.09</b> | -.03        | -.01        | .04         | <b>.09</b>  | <b>.08</b>  | —           |             |      |      |
| (33)     | Migration: both parents born abroad <sup>c</sup> | <b>.16</b>  | .01         | <b>.15</b>  | .05         | <b>.08</b>  | <b>.07</b>  | .05         | -.02        | <b>-.11</b> | <b>-.14</b> | <b>-.14</b> | <b>-.20</b> | —           |      |      |
| (34)     | Highest ISEI in family                           | <b>-.10</b> | .00         | <b>-.09</b> | <b>-.06</b> | <b>-.07</b> | <b>-.15</b> | <b>-.13</b> | -.03        | <b>.32</b>  | <b>.53</b>  | <b>.55</b>  | .02         | <b>-.34</b> | —    |      |
| (35)     | Gender <sup>d</sup>                              | <b>-.34</b> | -.06        | <b>-.25</b> | <b>-.07</b> | -.01        | .00         | -.04        | <b>-.09</b> | <b>.17</b>  | .03         | .03         | .00         | -.01        | .04  | —    |

  

|  |           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|  |           | (1)  | (2)  | (3)  | (4)  | (5)  | (6)  | (7)  | (8)  | (9)  | (10) | (11) | (12) | (13) | (14) | (15) |
|  | <i>M</i>  | 0.39 | 0.29 | 0.09 | 0.23 | 0.43 | 0.28 | 0.10 | 3.23 | 2.13 | 3.05 | 3.42 | 2.14 | 3.08 | 3.28 | 3.30 |
|  | <i>SD</i> | 0.49 | 0.45 | 0.29 | 0.42 | 0.50 | 0.45 | 0.30 | 0.75 | 0.51 | 0.77 | 0.67 | 1.00 | 0.96 | 0.85 | 0.92 |

  

|  |           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|  |           | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) |
|  | <i>M</i>  | —    | —    | —    | 14.1 | 2.24 | 2.32 | 2.99 | 2.47 | 0.01 | 0.02 | 0.13 | 0.17 | 0.13 | 0.48 | 0.52 |
|  | <i>SD</i> | 0.01 | 0.40 | 0.07 | 8    | 0.85 | 0.94 | 0.55 | 0.86 | 0.11 | 0.13 | 0.34 | 0.38 | 0.34 | 0.50 | 0.50 |

  

|  |           |      |      |      |      |      |
|--|-----------|------|------|------|------|------|
|  |           | (31) | (32) | (33) | (34) | (35) |
|  | <i>M</i>  | 0.32 | 0.14 | 0.20 | 51.4 | 0.61 |
|  | <i>SD</i> | 0.47 | 0.35 | 0.40 | 15.9 | 0.49 |

Notes. Significant coefficients are shown in bold ( $p < .05$ ). PT: Private tutoring. G8: Grade 8. G7: Grade 7. IHR: integrated lower and middle secondary school (*Integrierte Haupt- und Realschule*). Grades are reverse coded (1 = fail to 6 = very good). Reference categories: <sup>a</sup>parents not qualified for university admission. <sup>b</sup>parents without university degree. <sup>c</sup>both parents born in Germany. <sup>d</sup>male.

Table A.2: Students with private tutoring in English – intercorrelations and descriptive statistics ( $N_{\max} = 603$ )

|      | Variable                                         | (1)         | (2)         | (3)         | (4)         | (5)         | (6)  | (7)         | (8)         | (9)        | (10)       | (11)        | (12)        | (13)        | (14)       | (15)       | (16)        | (17)        | (18)        | (19)        | (20)        |
|------|--------------------------------------------------|-------------|-------------|-------------|-------------|-------------|------|-------------|-------------|------------|------------|-------------|-------------|-------------|------------|------------|-------------|-------------|-------------|-------------|-------------|
| (1)  | PT: up to 3 months                               | —           |             |             |             |             |      |             |             |            |            |             |             |             |            |            |             |             |             |             |             |
| (2)  | PT: 4 to 6 months                                | <b>-.47</b> | —           |             |             |             |      |             |             |            |            |             |             |             |            |            |             |             |             |             |             |
| (3)  | PT: 7 to 9 months                                | <b>-.29</b> | <b>-.22</b> | —           |             |             |      |             |             |            |            |             |             |             |            |            |             |             |             |             |             |
| (4)  | PT: 10 and more months                           | <b>-.43</b> | <b>-.34</b> | <b>-.20</b> | —           |             |      |             |             |            |            |             |             |             |            |            |             |             |             |             |             |
| (5)  | PT intensity: up to 1 hour per week              | .06         | .01         | -.05        | -.04        | —           |      |             |             |            |            |             |             |             |            |            |             |             |             |             |             |
| (6)  | PT intensity: 1–2 hours per week                 | <b>-.09</b> | -.03        | <b>.08</b>  | .07         | <b>-.52</b> | —    |             |             |            |            |             |             |             |            |            |             |             |             |             |             |
| (7)  | PT intensity: more than 2 hours per week         | <b>-.10</b> | -.01        | .02         | <b>.11</b>  | <b>-.34</b> | -.20 | —           |             |            |            |             |             |             |            |            |             |             |             |             |             |
| (8)  | Motivation to attend PT                          | .07         | .01         | <b>-.08</b> | -.02        | .04         | .00  | -.02        | —           |            |            |             |             |             |            |            |             |             |             |             |             |
| (9)  | Change in learning time                          | .03         | .01         | .00         | -.04        | .06         | .06  | -.06        | .15         | —          |            |             |             |             |            |            |             |             |             |             |             |
| (10) | Homework                                         | -.09        | .07         | -.05        | .05         | .00         | -.04 | .04         | .11         | .03        | —          |             |             |             |            |            |             |             |             |             |             |
| (11) | Current lesson content                           | -.10        | .05         | .02         | .03         | .02         | -.03 | .11         | <b>.19</b>  | .06        | <b>.45</b> | —           |             |             |            |            |             |             |             |             |             |
| (12) | Learning strategies                              | .01         | -.03        | .08         | -.03        | -.07        | .01  | .15         | <b>.25</b>  | .11        | <b>.25</b> | <b>.37</b>  | —           |             |            |            |             |             |             |             |             |
| (13) | Earlier lesson content                           | -.09        | .12         | .04         | -.07        | .02         | .01  | .11         | <b>.20</b>  | .08        | .14        | <b>.43</b>  | <b>.24</b>  | —           |            |            |             |             |             |             |             |
| (14) | End-of-year grade (G8)                           | -.02        | -.05        | -.01        | .07         | .05         | -.05 | .05         | <b>-.09</b> | -.04       | -.03       | <b>-.17</b> | <b>-.23</b> | <b>-.16</b> | —          |            |             |             |             |             |             |
| (15) | Midterm grade (G8)                               | .00         | <b>-.08</b> | .02         | .07         | .04         | -.03 | .00         | <b>-.09</b> | -.05       | .00        | -.09        | <b>-.14</b> | -.12        | <b>.66</b> | —          |             |             |             |             |             |
| (16) | Test achievement (G8)                            | .00         | .05         | -.05        | -.02        | <b>.12</b>  | .05  | <b>-.10</b> | -.03        | -.02       | -.11       | -.06        | <b>-.26</b> | .05         | <b>.29</b> | <b>.17</b> | —           |             |             |             |             |
| (17) | Test achievement (G7)                            | -.02        | .04         | -.01        | -.02        | <b>.14</b>  | -.02 | -.06        | -.04        | -.07       | -.13       | -.10        | <b>-.27</b> | .01         | <b>.18</b> | .07        | <b>.68</b>  | —           |             |             |             |
| (18) | Mean test achievement school level (G7)          | -.05        | .06         | -.01        | -.01        | <b>.15</b>  | -.01 | -.07        | -.03        | -.08       | -.03       | -.08        | <b>-.18</b> | .03         | <b>.08</b> | -.04       | <b>.64</b>  | <b>.73</b>  | —           |             |             |
| (19) | General cognitive abilities (G7)                 | <b>-.08</b> | .05         | .04         | .01         | <b>.11</b>  | -.06 | -.05        | <b>-.08</b> | -.11       | -.07       | -.06        | <b>-.18</b> | -.04        | .06        | .02        | <b>.38</b>  | <b>.37</b>  | <b>.40</b>  | —           |             |
| (20) | Performance anxiety (G7)                         | .00         | -.03        | .05         | -.01        | -.07        | .07  | .02         | .08         | <b>.20</b> | .14        | .04         | <b>.23</b>  | -.01        | -.04       | .00        | <b>-.13</b> | <b>-.15</b> | <b>-.08</b> | <b>-.16</b> | —           |
| (21) | English ability self-concept (G7)                | .07         | -.06        | .01         | -.03        | -.03        | .02  | .00         | -.02        | .08        | .01        | -.10        | <b>-.21</b> | -.06        | <b>.19</b> | <b>.21</b> | <b>.21</b>  | <b>.22</b>  | .01         | -.07        | <b>-.13</b> |
| (22) | Work habits                                      | .05         | -.03        | -.05        | .01         | .01         | -.04 | -.03        | -.02        | -.09       | .02        | .01         | .05         | -.04        | <b>.09</b> | .03        | <b>.10</b>  | <b>.11</b>  | .04         | -.02        | <b>-.15</b> |
| (23) | IHR lower level                                  | .02         | .03         | -.01        | -.04        | -.03        | -.01 | -.05        | .01         | *          | *          | *           | *           | *           | .00        | .03        | <b>-.13</b> | <b>-.18</b> | <b>-.14</b> | -.05        | .03         |
| (24) | IHR higher level                                 | <b>.09</b>  | -.04        | -.02        | -.05        | -.03        | .00  | -.02        | .00         | -.01       | .02        | .03         | .06         | -.01        | .00        | .04        | -.02        | -.07        | <b>-.19</b> | -.05        | -.03        |
| (25) | Intermediate track                               | .01         | .02         | -.01        | -.03        | -.07        | .10  | -.01        | .00         | .15        | -.05       | .04         | .02         | .00         | -.06       | -.05       | <b>-.13</b> | <b>-.18</b> | <b>-.33</b> | <b>-.13</b> | <b>.08</b>  |
| (26) | Comprehensive school: lower level                | .05         | <b>-.10</b> | -.01        | .06         | <b>-.10</b> | -.01 | <b>.08</b>  | .01         | .07        | .07        | .06         | <b>.16</b>  | .11         | -.04       | -.02       | <b>-.42</b> | <b>-.32</b> | <b>-.28</b> | <b>-.29</b> | .07         |
| (27) | Comprehensive school: higher level               | <b>-.08</b> | .01         | .07         | .03         | .04         | .02  | .01         | .03         | -.14       | .04        | .10         | -.03        | .00         | .06        | <b>.09</b> | .06         | .02         | <b>-.14</b> | -.02        | <b>-.10</b> |
| (28) | Academic track                                   | -.02        | .06         | -.03        | -.01        | <b>.14</b>  | -.04 | <b>-.09</b> | -.02        | -.06       | -.04       | -.14        | <b>-.18</b> | -.04        | .02        | -.06       | <b>.59</b>  | <b>.62</b>  | <b>.84</b>  | <b>.45</b>  | <b>-.08</b> |
| (29) | Parent(s) qualified for university <sup>a</sup>  | -.01        | .03         | -.04        | .00         | .06         | -.11 | .04         | -.03        | -.06       | .10        | -.05        | .00         | .00         | .05        | .01        | <b>.24</b>  | <b>.28</b>  | <b>.35</b>  | <b>.14</b>  | <b>-.09</b> |
| (30) | Parent(s) with university degree <sup>b</sup>    | -.02        | .01         | .00         | .01         | .05         | -.05 | -.01        | .01         | .07        | .03        | .00         | -.04        | .05         | .03        | -.02       | <b>.22</b>  | <b>.30</b>  | <b>.34</b>  | <b>.14</b>  | <b>-.10</b> |
| (31) | Migration: one parent born abroad <sup>c</sup>   | .03         | .04         | .01         | <b>-.08</b> | -.01        | .00  | .02         | .01         | .00        | .11        | .11         | .04         | .04         | .00        | .02        | .03         | .02         | .02         | -.03        | .03         |
| (32) | Migration: both parents born abroad <sup>c</sup> | -.02        | .02         | -.04        | .04         | <b>-.14</b> | .05  | <b>.09</b>  | .00         | .06        | -.05       | .01         | .12         | .04         | .00        | .04        | <b>-.13</b> | <b>-.13</b> | <b>-.14</b> | <b>-.10</b> | <b>.10</b>  |

|      |                        |      |      |      |      |            |      |             |            |      |     |      |      |      |            |     |            |            |            |            |             |
|------|------------------------|------|------|------|------|------------|------|-------------|------------|------|-----|------|------|------|------------|-----|------------|------------|------------|------------|-------------|
| (33) | Highest ISEI in family | −.03 | −.03 | .04  | .03  | <b>.12</b> | −.05 | <b>−.09</b> | −.01       | .01  | .05 | .02  | −.09 | .10  | <b>.08</b> | .04 | <b>.25</b> | <b>.28</b> | <b>.34</b> | <b>.18</b> | <b>−.11</b> |
| (34) | Gender <sup>d</sup>    | .03  | .03  | −.04 | −.04 | .05        | .02  | −.03        | <b>.13</b> | −.07 | .05 | −.10 | .00  | −.08 | <b>.11</b> | .07 | <b>.17</b> | <b>.09</b> | .06        | .04        | <b>.21</b>  |

|      | Variable                                         | (21)        | (22)        | (23)        | (24)        | (25)        | (26)       | (27)        | (28)        | (29)       | (30)        | (31)        | (32)        | (33) | (34) |
|------|--------------------------------------------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|------------|-------------|-------------|-------------|------|------|
| (21) | English ability self-concept (G7)                | –           |             |             |             |             |            |             |             |            |             |             |             |      |      |
| (22) | Work habits                                      | <b>.21</b>  | –           |             |             |             |            |             |             |            |             |             |             |      |      |
| (23) | IHR lower level                                  | .01         | .04         | –           |             |             |            |             |             |            |             |             |             |      |      |
| (24) | IHR higher level                                 | .06         | .01         | −.02        | –           |             |            |             |             |            |             |             |             |      |      |
| (25) | Intermediate track                               | .04         | .05         | −.06        | −.06        | –           |            |             |             |            |             |             |             |      |      |
| (26) | Comprehensive school: lower level                | <b>−.13</b> | <b>−.11</b> | −.07        | −.07        | <b>−.22</b> | –          |             |             |            |             |             |             |      |      |
| (27) | Comprehensive school: higher level               | <b>.08</b>  | .01         | −.05        | −.05        | <b>−.16</b> | <b>.19</b> | –           |             |            |             |             |             |      |      |
| (28) | Academic track                                   | .00         | .06         | <b>−.10</b> | <b>−.11</b> | <b>−.35</b> | <b>.42</b> | <b>−.30</b> | –           |            |             |             |             |      |      |
| (29) | Parent(s) qualified for university <sup>a</sup>  | .00         | .04         | <b>−.10</b> | −.07        | <b>−.12</b> | <b>.16</b> | .03         | <b>.33</b>  | –          |             |             |             |      |      |
| (30) | Parent(s) with university degree <sup>b</sup>    | .00         | .06         | <b>−.08</b> | −.07        | <b>−.14</b> | <b>.14</b> | .07         | <b>.29</b>  | <b>.67</b> | –           |             |             |      |      |
| (31) | Migration: one parent born abroad <sup>c</sup>   | .05         | .02         | .06         | −.05        | <b>−.10</b> | .03        | .04         | .00         | .06        | .04         | –           |             |      |      |
| (32) | Migration: both parents born abroad <sup>c</sup> | .07         | .04         | .02         | <b>.11</b>  | <b>.08</b>  | .06        | −.07        | <b>−.10</b> | −.07       | <b>−.09</b> | <b>−.19</b> | –           |      |      |
| (33) | Highest ISEI in family                           | .00         | .00         | −.04        | <b>−.08</b> | <b>−.14</b> | <b>.12</b> | .05         | <b>.29</b>  | <b>.51</b> | <b>.53</b>  | .00         | <b>−.31</b> | –    |      |
| (34) | Gender <sup>d</sup>                              | −.04        | −.02        | −.06        | −.03        | <b>.09</b>  | <b>.08</b> | .01         | <b>.08</b>  | −.06       | −.07        | −.01        | .04         | −.04 | –    |

  

|  |           | (1)  | (2)  | (3)  | (4)  | (5)  | (6)  | (7)  | (8)  | (9)  | (10) | (11) | (12) | (13) | (14) |
|--|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|  | <i>M</i>  | 0.38 | 0.27 | 0.12 | 0.24 | 0.47 | 0.23 | 0.11 | 3.11 | 2.09 | 2.80 | 3.26 | 2.22 | 3.10 | 3.44 |
|  | <i>SD</i> | 0.48 | 0.44 | 0.32 | 0.42 | 0.50 | 0.42 | 0.32 | 0.79 | 0.53 | 1.00 | 0.58 | 0.98 | 1.07 | 0.81 |

  

|  |           | (15) | (16) | (17) | (18) | (19)  | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) |
|--|-----------|------|------|------|------|-------|------|------|------|------|------|------|------|------|------|
|  | <i>M</i>  | 3.35 | –    | –    | –    | 14.74 | 2.23 | 2.75 | 3.00 | 0.02 | 0.02 | 0.16 | 0.21 | 0.12 | 0.40 |
|  | <i>SD</i> | 0.85 | 1.19 | 1.23 | 0.90 | 6.51  | 0.85 | 0.78 | 0.54 | 0.13 | 0.14 | 0.37 | 0.41 | 0.32 | 0.49 |

  

|  |           | (29) | (30) | (31) | (32) | (33)  | (34) |
|--|-----------|------|------|------|------|-------|------|
|  | <i>M</i>  | 0.48 | 0.29 | 0.12 | 0.21 | 49.86 | 0.50 |
|  | <i>SD</i> | 0.50 | 0.45 | 0.33 | 0.41 | 15.91 | 0.50 |

Notes. Significant coefficients are shown in bold ( $p < .05$ ). PT: Private tutoring. G8: Grade 8. G7: Grade 7. IHR: integrated lower and middle secondary school (*Integrierte Haupt- und Realschule*). Grades are reverse coded (1 = fail to 6 = very good). Reference categories: <sup>a</sup>parents not qualified for university admission. <sup>b</sup>parents without university degree. <sup>c</sup>both parents born in Germany. <sup>d</sup>male. \*Correlation coefficient cannot be calculated due to a constant value on at least one variable.

Table A.3: Students with private tutoring in German – intercorrelations and descriptive statistics ( $N_{\max} = 491$ )

| Variable                                             | (1)         | (2)         | (3)         | (4)         | (5)         | (6)         | (7)  | (8)        | (9)        | (10)        | (11)       | (12)       | (13)       | (14)        | (15)        | (16)        | (17)        | (18)        | (19)        | (20)        |
|------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|------|------------|------------|-------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| (1) PT: up to 3 months                               | —           |             |             |             |             |             |      |            |            |             |            |            |            |             |             |             |             |             |             |             |
| (2) PT: 4 to 6 months                                | <b>-.50</b> | —           |             |             |             |             |      |            |            |             |            |            |            |             |             |             |             |             |             |             |
| (3) PT: 7 to 9 months                                | <b>-.31</b> | <b>-.22</b> | —           |             |             |             |      |            |            |             |            |            |            |             |             |             |             |             |             |             |
| (4) PT: 10 and more months                           | <b>-.43</b> | <b>-.30</b> | <b>-.19</b> | —           |             |             |      |            |            |             |            |            |            |             |             |             |             |             |             |             |
| (5) PT intensity: up to 1 hour per week              | <b>.14</b>  | .00         | <b>-.09</b> | <b>-.10</b> | —           |             |      |            |            |             |            |            |            |             |             |             |             |             |             |             |
| (6) PT intensity: 1–2 hours per week                 | <b>-.12</b> | .04         | .00         | <b>.12</b>  | <b>-.46</b> | —           |      |            |            |             |            |            |            |             |             |             |             |             |             |             |
| (7) PT intensity: more than 2 hours per week         | <b>-.15</b> | -.05        | <b>.10</b>  | <b>.16</b>  | <b>-.35</b> | <b>-.24</b> | —    |            |            |             |            |            |            |             |             |             |             |             |             |             |
| (8) Motivation to attend PT                          | .08         | .05         | -.09        | -.07        | -.02        | .03         | -.04 | —          |            |             |            |            |            |             |             |             |             |             |             |             |
| (9) Change in learning time                          | .08         | -.10        | -.04        | .06         | .10         | -.08        | -.06 | .11        | —          |             |            |            |            |             |             |             |             |             |             |             |
| (10) Homework                                        | -.02        | -.02        | -.01        | .05         | -.06        | .10         | -.02 | .07        | <b>.49</b> | —           |            |            |            |             |             |             |             |             |             |             |
| (11) Current lesson content                          | .11         | .01         | -.12        | -.02        | .03         | .14         | -.05 | .10        | <b>.32</b> | <b>.71</b>  | —          |            |            |             |             |             |             |             |             |             |
| (12) Learning strategies                             | .05         | -.06        | .02         | .00         | -.05        | -.13        | .13  | .23        | .22        | <b>.30</b>  | .20        | —          |            |             |             |             |             |             |             |             |
| (13) Earlier lesson content                          | .04         | .01         | -.04        | -.02        | -.05        | .16         | .04  | <b>.31</b> | <b>.27</b> | <b>.46</b>  | <b>.54</b> | .18        | —          |             |             |             |             |             |             |             |
| (14) End-of-year grade (G8)                          | .07         | <b>-.13</b> | .01         | .05         | .02         | -.03        | -.05 | -.07       | .17        | .21         | .14        | -.13       | .03        | —           |             |             |             |             |             |             |
| (15) Midterm grade (G8)                              | .04         | <b>-.15</b> | .06         | .07         | <b>.11</b>  | -.04        | -.08 | -.07       | .17        | .20         | .12        | -.04       | .09        | <b>.69</b>  | —           |             |             |             |             |             |
| (16) Test achievement (G8)                           | <b>.22</b>  | <b>-.15</b> | -.07        | -.04        | <b>.20</b>  | -.01        | -.07 | -.01       | -.10       | -.13        | -.05       | -.19       | .03        | <b>.25</b>  | <b>.27</b>  | —           |             |             |             |             |
| (17) Test achievement (G7)                           | <b>.21</b>  | <b>-.17</b> | <b>-.09</b> | .00         | <b>.13</b>  | .00         | -.03 | -.01       | -.06       | -.01        | -.07       | -.24       | -.07       | <b>.21</b>  | <b>.24</b>  | <b>.70</b>  | —           |             |             |             |
| (18) Mean test achievement school level (G7)         | <b>.19</b>  | <b>-.16</b> | -.03        | -.03        | <b>.10</b>  | -.08        | .03  | -.04       | -.09       | -.02        | .01        | -.11       | -.01       | <b>.17</b>  | <b>.20</b>  | <b>.58</b>  | <b>.59</b>  | —           |             |             |
| (19) General cognitive abilities (G7)                | .06         | -.05        | .01         | -.02        | <b>.13</b>  | -.05        | -.05 | -.07       | .01        | -.07        | -.07       | .00        | -.03       | <b>.19</b>  | <b>.17</b>  | <b>.42</b>  | <b>.43</b>  | <b>.38</b>  | —           |             |
| (20) Performance anxiety (G7)                        | -.07        | .00         | .07         | .02         | <b>-.10</b> | .02         | .08  | <b>.10</b> | .15        | <b>.26</b>  | <b>.26</b> | .22        | <b>.40</b> | -.01        | -.02        | <b>-.18</b> | <b>-.21</b> | <b>-.13</b> | <b>-.15</b> | —           |
| (21) German ability self-concept (G7)                | .08         | .01         | -.05        | -.06        | .08         | .00         | -.08 | .09        | -.10       | -.01        | .17        | .08        | .16        | .08         | <b>.16</b>  | <b>.13</b>  | <b>.18</b>  | .02         | -.07        | -.04        |
| (22) Work habits                                     | .03         | .01         | -.02        | -.03        | .07         | -.03        | -.06 | .03        | -.07       | .08         | .18        | .23        | .20        | <b>.13</b>  | <b>.15</b>  | <b>.12</b>  | <b>.14</b>  | <b>.12</b>  | -.05        | .00         |
| (23) Reading habits                                  | <b>.17</b>  | -.06        | -.05        | <b>-.10</b> | .02         | .00         | -.04 | .01        | .10        | .00         | -.05       | .03        | <b>.24</b> | <b>.11</b>  | <b>.16</b>  | <b>.34</b>  | <b>.35</b>  | <b>.24</b>  | <b>.10</b>  | .01         |
| (24) IHR lower level                                 | -.05        | <b>.09</b>  | .01         | -.06        | -.01        | -.04        | -.04 | .00        | .15        | .23         | .15        | -.03       | .05        | .03         | -.04        | <b>-.18</b> | <b>-.16</b> | <b>-.15</b> | -.05        | .02         |
| (25) IHR higher level                                | -.03        | .03         | .02         | -.01        | -.02        | .03         | .00  | .03        | .04        | .02         | -.03       | .11        | -.18       | -.02        | .00         | .04         | .01         | <b>-.17</b> | .01         | -.05        |
| (26) Intermediate track                              | -.09        | <b>.16</b>  | -.02        | -.05        | .00         | .08         | -.05 | -.01       | .01        | .01         | .10        | -.17       | .19        | <b>-.15</b> | <b>-.15</b> | -.07        | -.05        | <b>-.24</b> | <b>-.11</b> | .08         |
| (27) Comprehensive school: lower level               | -.05        | <b>-.12</b> | .03         | <b>.17</b>  | <b>-.17</b> | <b>.12</b>  | .00  | .04        | .03        | .08         | -.08       | -.03       | -.13       | -.01        | -.04        | <b>-.29</b> | <b>-.28</b> | <b>-.21</b> | <b>-.23</b> | .04         |
| (28) Comprehensive school: higher level              | -.02        | -.04        | .04         | .04         | .08         | .02         | .00  | .01        | -.20       | -.19        | -.04       | .14        | .09        | .05         | <b>.11</b>  | .09         | .06         | -.05        | .00         | -.01        |
| (29) Academic track                                  | <b>.22</b>  | -.08        | -.08        | <b>-.11</b> | <b>.12</b>  | <b>-.13</b> | .03  | -.03       | -.05       | .02         | -.01       | -.01       | .02        | .06         | <b>.09</b>  | <b>.53</b>  | <b>.54</b>  | <b>.79</b>  | <b>.40</b>  | <b>-.11</b> |
| (30) Parent(s) qualified for university <sup>a</sup> | .06         | -.06        | -.01        | .00         | .03         | -.10        | .04  | .01        | -.14       | <b>-.29</b> | -.17       | .09        | .05        | .08         | .07         | <b>.23</b>  | <b>.24</b>  | <b>.37</b>  | <b>.13</b>  | -.07        |
| (31) Parent(s) with university degree <sup>b</sup>   | .09         | -.05        | -.05        | -.01        | .02         | -.08        | .03  | .05        | -.13       | -.11        | -.07       | <b>.24</b> | .10        | .01         | .02         | <b>.19</b>  | <b>.19</b>  | <b>.33</b>  | <b>.12</b>  | -.03        |
| (32) Migration: one parent born abroad <sup>c</sup>  | .00         | .04         | .04         | -.07        | .00         | -.03        | .02  | .03        | .13        | .22         | .22        | .17        | .21        | .03         | .01         | -.06        | -.05        | .03         | -.06        | .01         |

|      |                                                  |             |            |      |      |             |      |      |     |      |            |      |      |      |            |            |             |             |             |             |             |
|------|--------------------------------------------------|-------------|------------|------|------|-------------|------|------|-----|------|------------|------|------|------|------------|------------|-------------|-------------|-------------|-------------|-------------|
| (33) | Migration: both parents born abroad <sup>c</sup> | <b>-.10</b> | <b>.11</b> | -.01 | .01  | <b>-.10</b> | .04  | .03  | .02 | .08  | .06        | .01  | .12  | .22  | -.09       | -.04       | <b>-.17</b> | <b>-.18</b> | <b>-.20</b> | <b>-.10</b> | .09         |
| (34) | Highest ISEI in family                           | .03         | -.06       | .01  | .02  | .04         | -.02 | -.03 | .04 | -.21 | -.14       | -.09 | -.12 | .17  | <b>.12</b> | <b>.12</b> | <b>.22</b>  | <b>.24</b>  | <b>.34</b>  | <b>.14</b>  | <b>-.11</b> |
| (35) | Gender <sup>d</sup>                              | .09         | -.05       | .00  | -.06 | <b>.10</b>  | -.07 | .00  | .07 | .03  | <b>.28</b> | .17  | .10  | -.07 | <b>.13</b> | <b>.16</b> | <b>.16</b>  | <b>.12</b>  | .04         | .04         | <b>.19</b>  |

|      | Variable                                         | (21)        | (22)        | (23)        | (24)        | (25)        | (26)        | (27)        | (28)        | (29)        | (30)        | (31)        | (32)        | (33)        | (34) | (35) |
|------|--------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------|------|
| (21) | German ability self-concept (G7)                 | –           |             |             |             |             |             |             |             |             |             |             |             |             |      |      |
| (22) | Work habits                                      | <b>.40</b>  | –           |             |             |             |             |             |             |             |             |             |             |             |      |      |
| (23) | Reading habits                                   | <b>.28</b>  | <b>.25</b>  | –           |             |             |             |             |             |             |             |             |             |             |      |      |
| (24) | IHR lower level                                  | -.08        | -.01        | -.07        | –           |             |             |             |             |             |             |             |             |             |      |      |
| (25) | IHR higher level                                 | .01         | -.01        | .00         | -.03        | –           |             |             |             |             |             |             |             |             |      |      |
| (26) | Intermediate track                               | .08         | .04         | -.02        | -.08        | -.07        | –           |             |             |             |             |             |             |             |      |      |
| (27) | Comprehensive school: lower level                | <b>-.12</b> | <b>-.15</b> | <b>-.13</b> | <b>-.11</b> | <b>-.10</b> | <b>-.28</b> | –           |             |             |             |             |             |             |      |      |
| (28) | Comprehensive school: higher level               | <b>.13</b>  | .00         | .06         | -.06        | -.05        | <b>-.16</b> | <b>-.21</b> | –           |             |             |             |             |             |      |      |
| (29) | Academic track                                   | .04         | <b>.14</b>  | <b>.23</b>  | <b>-.10</b> | <b>-.10</b> | <b>-.28</b> | <b>-.37</b> | <b>-.21</b> | –           |             |             |             |             |      |      |
| (30) | Parent(s) qualified for university <sup>a</sup>  | -.02        | .03         | <b>.11</b>  | <b>-.12</b> | <b>-.08</b> | -.06        | -.08        | .03         | <b>.34</b>  | –           |             |             |             |      |      |
| (31) | Parent(s) with university degree <sup>b</sup>    | -.04        | .05         | <b>.10</b>  | <b>-.10</b> | -.06        | <b>-.11</b> | -.07        | .05         | <b>.31</b>  | <b>.69</b>  | –           |             |             |      |      |
| (32) | Migration: one parent born abroad <sup>c</sup>   | -.04        | -.04        | <b>-.10</b> | .04         | -.02        | -.08        | -.02        | -.02        | .01         | .07         | .02         | –           |             |      |      |
| (33) | Migration: both parents born abroad <sup>c</sup> | .04         | .04         | -.07        | .07         | .09         | <b>.12</b>  | -.02        | -.01        | <b>-.10</b> | <b>-.13</b> | <b>-.09</b> | <b>-.24</b> | –           |      |      |
| (34) | Highest ISEI in family                           | .04         | .01         | <b>.12</b>  | -.04        | -.08        | <b>-.11</b> | -.08        | <b>.09</b>  | <b>.27</b>  | <b>.52</b>  | <b>.51</b>  | -.02        | <b>-.30</b> | –    |      |
| (35) | Gender <sup>d</sup>                              | <b>.12</b>  | .01         | <b>.25</b>  | -.08        | -.01        | .04         | -.06        | .04         | <b>.10</b>  | -.05        | -.03        | .01         | -.02        | -.03 | –    |

|           | (1)  | (2)  | (3)  | (4)   | (5)  | (6)  | (7)  | (8)  | (9)  | (10) | (11) | (12) | (13) | (14) | (15) |
|-----------|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|
| <i>M</i>  | 0.42 | 0.26 | 0.12 | 0.20  | 0.39 | 0.24 | 0.16 | 3.08 | 2.01 | 2.41 | 2.67 | 2.65 | 2.71 | 3.58 | 3.48 |
| <i>SD</i> | 0.49 | 0.44 | 0.33 | 0.40  | 0.49 | 0.43 | 0.36 | 0.80 | 0.46 | 1.01 | 0.94 | 0.96 | 1.16 | 0.78 | 0.83 |
|           | (16) | (17) | (18) | (19)  | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) |
| <i>M</i>  | –    | –    | –    |       |      |      |      |      |      |      |      |      |      |      |      |
| <i>SD</i> | 0.34 | 0.79 | 0.43 | 13.57 | 2.30 | 2.86 | 2.95 | 2.57 | 0.03 | 0.02 | 0.17 | 0.27 | 0.11 | 0.27 | 0.43 |
|           | 1.14 | 1.14 | 0.69 | 6.69  | 0.88 | 0.69 | 0.54 | 0.88 | 0.17 | 0.15 | 0.38 | 0.45 | 0.31 | 0.44 | 0.49 |
|           | (31) | (32) | (33) | (34)  | (35) |      |      |      |      |      |      |      |      |      |      |
| <i>M</i>  | 0.26 | 0.14 | 0.26 | 47.46 | 0.44 |      |      |      |      |      |      |      |      |      |      |
| <i>SD</i> | 0.44 | 0.34 | 0.44 | 15.80 | 0.50 |      |      |      |      |      |      |      |      |      |      |

Notes. Significant coefficients are shown in bold ( $p < .05$ ). PT: Private tutoring. G8: Grade 8. G7: Grade 7. IHR: integrated lower and middle secondary school (*Integrierte Haupt- und Realschule*). Grades are reverse coded (1 = fail to 6 = very good). Reference categories: <sup>a</sup>parents not qualified for university admission. <sup>b</sup>parents without university degree. <sup>c</sup>both parents born in Germany. <sup>d</sup>male.

Table A.4: Students with private tutoring in learning strategies – intercorrelations and descriptive statistics ( $N_{\max} = 311$ )

| Variable                                              | (1)         | (2)         | (3)         | (4)         | (5)         | (6)         | (7)         | (8)  | (9)        | (10)       | (11)       | (12)       | (13)        | (14)        | (15)        | (16)        | (17)        | (18)        | (19)        | (20)        | (21)        |
|-------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| (1) PT: up to 3 months                                | —           |             |             |             |             |             |             |      |            |            |            |            |             |             |             |             |             |             |             |             |             |
| (2) PT: 4 to 6 months                                 | <b>-.52</b> | —           |             |             |             |             |             |      |            |            |            |            |             |             |             |             |             |             |             |             |             |
| (3) PT: 7 to 9 months                                 | <b>-.44</b> | -.10        | —           |             |             |             |             |      |            |            |            |            |             |             |             |             |             |             |             |             |             |
| (4) PT: 10 and more months                            | <b>-.56</b> | <b>-.13</b> | -.11        | —           |             |             |             |      |            |            |            |            |             |             |             |             |             |             |             |             |             |
| (5) PT intensity: up to 1 hour per week               | <b>.14</b>  | .04         | -.03        | <b>-.21</b> | —           |             |             |      |            |            |            |            |             |             |             |             |             |             |             |             |             |
| (6) PT intensity: 1–2 hours per week                  | -.03        | -.01        | -.01        | .06         | <b>-.43</b> | —           |             |      |            |            |            |            |             |             |             |             |             |             |             |             |             |
| (7) PT intensity: more than 2 hours per week          | <b>-.27</b> | -.02        | <b>.12</b>  | <b>.30</b>  | <b>-.33</b> | <b>-.22</b> | —           |      |            |            |            |            |             |             |             |             |             |             |             |             |             |
| (8) Motivation to attend PT                           | .06         | .07         | -.11        | -.05        | .08         | -.07        | -.08        | —    |            |            |            |            |             |             |             |             |             |             |             |             |             |
| (9) Change in learning time                           | <b>-.43</b> | .28         | .28         | *           | .10         | -.19        | *           | -.02 | —          |            |            |            |             |             |             |             |             |             |             |             |             |
| (10) End-of-year grade (G8)                           | .10         | <b>-.12</b> | -.07        | .03         | .05         | -.01        | <b>-.12</b> | -.01 | .22        | —          |            |            |             |             |             |             |             |             |             |             |             |
| (11) Midterm grade (G8)                               | .07         | -.11        | -.06        | .05         | <b>.15</b>  | -.04        | <b>-.12</b> | -.05 | .09        | <b>.69</b> | —          |            |             |             |             |             |             |             |             |             |             |
| (12) Reading strategy knowledge (G8)                  | <b>.13</b>  | <b>-.13</b> | -.01        | -.05        | .03         | -.02        | -.03        | -.01 | .27        | .09        | .01        | —          |             |             |             |             |             |             |             |             |             |
| (13) Test achievement (G7)                            | <b>.18</b>  | <b>-.24</b> | -.08        | .03         | <b>.13</b>  | .02         | -.03        | .02  | -.17       | <b>.21</b> | <b>.27</b> | <b>.17</b> | —           |             |             |             |             |             |             |             |             |
| (14) Mean test achievement school level (G7)          | <b>.15</b>  | <b>-.19</b> | -.11        | .05         | .09         | -.03        | .00         | .00  | .06        | <b>.20</b> | <b>.22</b> | <b>.22</b> | <b>.64</b>  | —           |             |             |             |             |             |             |             |
| (15) General cognitive abilities (G7)                 | .06         | -.06        | <b>-.11</b> | .06         | .04         | .02         | -.04        | -.03 | .02        | <b>.22</b> | <b>.17</b> | .09        | <b>.44</b>  | <b>.39</b>  | —           |             |             |             |             |             |             |
| (16) Performance anxiety (G7)                         | <b>-.12</b> | .10         | .10         | -.02        | <b>-.10</b> | .02         | .08         | .07  | <b>.43</b> | -.04       | -.04       | .00        | <b>-.25</b> | <b>-.17</b> | <b>-.21</b> | —           |             |             |             |             |             |
| (17) German ability self-concept (G7)                 | .07         | -.04        | .01         | -.08        | <b>.19</b>  | -.07        | -.08        | .11  | -.26       | .07        | <b>.21</b> | .07        | <b>.20</b>  | .08         | -.05        | -.04        | —           |             |             |             |             |
| (18) Work habits                                      | .01         | -.05        | .05         | -.01        | <b>.16</b>  | -.04        | <b>-.11</b> | .04  | .02        | <b>.13</b> | <b>.18</b> | .03        | <b>.19</b>  | <b>.18</b>  | -.03        | -.03        | <b>.41</b>  | —           |             |             |             |
| (19) IHR lower level                                  | -.01        | <b>.13</b>  | -.05        | -.06        | -.02        | -.09        | -.07        | .01  | .20        | .03        | -.07       | -.01       | <b>-.20</b> | <b>-.16</b> | -.07        | .02         | <b>-.15</b> | .01         | —           |             |             |
| (20) IHR higher level                                 | .07         | .01         | -.05        | -.06        | .07         | .01         | -.07        | .10  | .02        | -.01       | -.01       | .02        | .04         | <b>-.17</b> | .02         | -.06        | .05         | -.02        | -.03        | —           |             |
| (21) Intermediate track                               | .01         | -.07        | -.01        | .07         | -.02        | .11         | -.04        | -.02 | -.01       | -.08       | -.11       | -.08       | -.03        | <b>-.23</b> | -.07        | .10         | .05         | .01         | -.08        | -.07        | —           |
| (22) Comprehensive school: lower level                | -.10        | .06         | .09         | .00         | <b>-.11</b> | .04         | .07         | .05  | -.19       | -.06       | -.07       | -.05       | <b>-.33</b> | <b>-.27</b> | <b>-.27</b> | .11         | -.11        | <b>-.23</b> | -.10        | <b>-.10</b> | <b>-.27</b> |
| (23) Comprehensive school: higher level               | .03         | -.05        | -.03        | .02         | .05         | .05         | -.03        | -.03 | .07        | -.02       | .10        | -.07       | .01         | -.07        | -.06        | -.05        | <b>.14</b>  | -.04        | -.05        | -.04        | <b>-.12</b> |
| (24) Academic track                                   | <b>.16</b>  | <b>-.19</b> | -.07        | .01         | .09         | -.07        | -.01        | -.03 | -.10       | <b>.14</b> | <b>.15</b> | <b>.26</b> | <b>.61</b>  | <b>.84</b>  | <b>.43</b>  | <b>-.16</b> | .08         | <b>.19</b>  | <b>-.12</b> | -.11        | <b>-.30</b> |
| (25) Parent(s) qualified for university <sup>a</sup>  | .07         | -.07        | -.09        | .05         | .03         | -.11        | .05         | .04  | -.20       | <b>.15</b> | <b>.12</b> | <b>.11</b> | <b>.28</b>  | <b>.41</b>  | <b>.16</b>  | <b>-.12</b> | .01         | .09         | <b>-.11</b> | -.06        | -.11        |
| (26) Parent(s) with university degree <sup>b</sup>    | <b>.11</b>  | -.09        | -.05        | -.03        | .00         | -.03        | .04         | .11  | -.24       | .08        | .05        | <b>.13</b> | <b>.24</b>  | <b>.41</b>  | <b>.14</b>  | -.06        | -.05        | .06         | -.11        | -.05        | <b>-.18</b> |
| (27) Migration: one parent born abroad <sup>c</sup>   | -.08        | <b>.20</b>  | -.05        | -.03        | .02         | .02         | -.08        | .01  | -.05       | .03        | -.01       | -.05       | -.07        | .02         | -.05        | .04         | -.06        | -.02        | .10         | -.06        | -.08        |
| (28) Migration: both parents born abroad <sup>c</sup> | .01         | -.04        | -.02        | .03         | -.08        | .03         | .07         | -.02 | .15        | -.07       | -.01       | -.02       | <b>-.17</b> | <b>-.18</b> | -.09        | <b>.12</b>  | -.03        | -.03        | .05         | .11         | .04         |
| (29) Highest ISEI in family                           | .04         | -.03        | -.04        | .01         | .03         | -.04        | -.01        | .07  | -.22       | <b>.17</b> | <b>.18</b> | .07        | <b>.29</b>  | <b>.40</b>  | <b>.17</b>  | <b>-.16</b> | .07         | .05         | -.03        | -.08        | <b>-.14</b> |
| (30) Gender <sup>d</sup>                              | <b>.13</b>  | -.08        | -.01        | -.10        | .09         | -.05        | -.03        | .04  | -.09       | <b>.19</b> | <b>.20</b> | <b>.23</b> | <b>.11</b>  | .04         | .00         | <b>.21</b>  | <b>.14</b>  | -.02        | -.07        | .03         | .08         |

|      | Variable                                         | (22)        | (23)       | (24)       | (25)       | (26)       | (27)       | (28)       | (29) | (30) |
|------|--------------------------------------------------|-------------|------------|------------|------------|------------|------------|------------|------|------|
| (22) | Comprehensive school: lower level                | –           |            |            |            |            |            |            |      |      |
| (23) | Comprehensive school: higher level               | <b>–.16</b> | –          |            |            |            |            |            |      |      |
| (24) | Academic track                                   | <b>–.40</b> | <b>.18</b> | –          |            |            |            |            |      |      |
| (25) | Parent(s) qualified for university <sup>a</sup>  | –.05        | .02        | <b>.35</b> | –          |            |            |            |      |      |
| (26) | Parent(s) with university degree <sup>b</sup>    | –.04        | .02        | <b>.37</b> | <b>.70</b> | –          |            |            |      |      |
| (27) | Migration: one parent born abroad <sup>c</sup>   | –.06        | .07        | .04        | .03        | .01        | –          |            |      |      |
| (28) | Migration: both parents born abroad <sup>c</sup> | .01         | .02        | –.08       | –.09       | –.09       | <b>.21</b> | –          |      |      |
| (29) | Highest ISEI in family                           | –.07        | .05        | <b>.30</b> | <b>.54</b> | <b>.54</b> | .04        | <b>.32</b> | –    |      |
| (30) | Gender <sup>d</sup>                              | –.04        | .04        | .08        | –.09       | –.07       | .01        | .04        | .10  | –    |

  

|  |           | (1)  | (2)  | (3)  | (4)  | (5)  | (6)  | (7)  | (8)  | (9)  |
|--|-----------|------|------|------|------|------|------|------|------|------|
|  | <i>M</i>  | 0.69 | 0.11 | 0.08 | 0.12 | 0.40 | 0.22 | 0.14 | 3.07 | 2.10 |
|  | <i>SD</i> | 0.46 | 0.31 | 0.27 | 0.33 | 0.49 | 0.41 | 0.35 | 0.80 | 0.45 |

  

|  |           | (10) | (11) | (12)  | (13)  | (14)  | (15)  | (16) | (17) | (18) |
|--|-----------|------|------|-------|-------|-------|-------|------|------|------|
|  | <i>M</i>  | 3.66 | 3.55 | 28.11 | –0.74 | –0.40 | 13.41 | 2.28 | 2.93 | 2.98 |
|  | <i>SD</i> | 0.77 | 0.83 | 8.09  | 1.19  | 0.72  | 6.82  | 0.89 | 0.72 | 0.55 |

  

|  |           | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) |
|--|-----------|------|------|------|------|------|------|------|------|------|
|  | <i>M</i>  | 0.03 | 0.03 | 0.17 | 0.26 | 0.06 | 0.31 | 0.44 | 0.27 | 0.14 |
|  | <i>SD</i> | 0.17 | 0.16 | 0.38 | 0.44 | 0.25 | 0.46 | 0.50 | 0.45 | 0.34 |

  

|  |           | (28) | (29)  | (30) |
|--|-----------|------|-------|------|
|  | <i>M</i>  | 0.23 | 48.34 | 0.42 |
|  | <i>SD</i> | 0.42 | 16.48 | 0.49 |

Notes. Significant coefficients are shown in bold ( $p < .05$ ). PT: Private tutoring. G8: Grade 8. G7: Grade 7. IHR: integrated lower and middle secondary school (*Integrierte Haupt- und Realschule*). Grades are reverse coded (1 = *fail* to 6 = *very good*). Reference categories: <sup>a</sup>parents not qualified for university admission. <sup>b</sup>parents without university degree. <sup>c</sup>both parents born in Germany. <sup>d</sup>male. \*Correlation coefficient cannot be calculated due to a constant value on at least one variable.

## Appendix B: Effects of characteristics of private tutoring lessons

Table B.1. Effects of characteristics of private tutoring in mathematics on grades in mathematics at the end of Grade 8 ( $N = 1,025$ ).

|                                                 | Model 1     |     | Model 2     |     | Model 3     |     | Model 4     |     | Model 5     |     |
|-------------------------------------------------|-------------|-----|-------------|-----|-------------|-----|-------------|-----|-------------|-----|
|                                                 | beta        | SE  | beta        | SE  | beta        | SE  | beta        | SE  | beta        | SE  |
| PT duration                                     | .01         | .03 | .01         | .03 | .03         | .07 | .02         | .04 | .01         | .03 |
| PT intensity                                    | .01         | .03 | .01         | .03 | .02         | .07 | .00         | .04 | .01         | .03 |
| Change in learning time                         | -.01        | .04 | .01         | .04 | -.01        | .04 | -.01        | .04 | -.01        | .04 |
| Motivation to attend PT                         | -.04        | .03 | -.03        | .03 | -.04        | .03 | -.04        | .03 | -.03        | .07 |
| <i>Instructional foci</i>                       |             |     |             |     |             |     |             |     |             |     |
| Homework                                        |             |     | -.06        | .04 |             |     |             |     |             |     |
| Current lesson content                          |             |     | -.04        | .05 |             |     |             |     |             |     |
| Learning strategies                             |             |     | -.02        | .04 |             |     |             |     |             |     |
| Earlier lesson content                          |             |     | .03         | .05 |             |     |             |     |             |     |
| <i>Interaction terms</i>                        |             |     |             |     |             |     |             |     |             |     |
| Duration x Intensity                            |             |     |             |     | -.02        | .10 |             |     |             |     |
| Duration x prior achievement                    |             |     |             |     |             |     | .00         | .07 |             |     |
| Intensity x prior achievement                   |             |     |             |     |             |     | -.04        | .09 |             |     |
| Duration x motivation                           |             |     |             |     |             |     |             |     | .04         | .05 |
| Intensity x motivation                          |             |     |             |     |             |     |             |     | -.05        | .07 |
| Midterm (G8) grade mathematics                  | <b>.59</b>  | .04 | <b>.59</b>  | .04 | <b>.59</b>  | .04 | <b>.62</b>  | .09 | <b>.59</b>  | .04 |
| General cognitive abilities (G7)                | <b>.06</b>  | .03 | <b>.06</b>  | .03 | <b>.06</b>  | .03 | <b>.06</b>  | .03 | <b>.06</b>  | .03 |
| Mathematics test achievement (G7)               | <b>.12</b>  | .04 | <b>.12</b>  | .04 | <b>.13</b>  | .04 | <b>.13</b>  | .04 | <b>.13</b>  | .04 |
| Mean test achievement school level              | .05         | .07 | .06         | .07 | .05         | .07 | .05         | .07 | .05         | .07 |
| Performance anxiety (G7)                        | <b>-.05</b> | .03 | <b>-.05</b> | .03 | <b>-.05</b> | .03 | <b>-.05</b> | .03 | <b>-.05</b> | .03 |
| Mathematics ability self-concept (G7)           | .06         | .04 | .06         | .04 | .06         | .04 | .06         | .04 | .06         | .04 |
| Work habits mathematics (G7)                    | .02         | .03 | .02         | .03 | .02         | .03 | .02         | .03 | .02         | .03 |
| Interest in mathematics                         | .03         | .04 | .02         | .04 | .03         | .04 | .03         | .04 | .03         | .04 |
| IHR: lower level <sup>a</sup>                   | -.02        | .03 | -.02        | .04 | -.02        | .03 | -.02        | .03 | -.02        | .03 |
| IHR: higher level <sup>a</sup>                  | .03         | .02 | .03         | .02 | .03         | .02 | .03         | .02 | .03         | .02 |
| Intermediate track <sup>a</sup>                 | -.02        | .05 | -.01        | .05 | -.02        | .05 | -.01        | .05 | -.02        | .05 |
| Comprehensive school: lower level <sup>a</sup>  | .08         | .05 | .09         | .05 | .08         | .05 | .08         | .05 | .08         | .05 |
| Comprehensive school: higher level <sup>a</sup> | -.05        | .05 | -.04        | .05 | -.05        | .05 | -.05        | .05 | -.05        | .05 |
| Academic track <sup>a</sup>                     | -.06        | .09 | -.06        | .09 | -.06        | .09 | -.06        | .09 | -.07        | .09 |
| Parent(s) qualified for university <sup>b</sup> | .03         | .05 | .03         | .05 | .03         | .05 | .03         | .05 | .03         | .05 |
| Parent(s) with university degree <sup>c</sup>   | .00         | .05 | .01         | .05 | .00         | .05 | .00         | .05 | .00         | .05 |
| Migration: one parent born abroad <sup>d</sup>  | -.03        | .03 | -.03        | .03 | -.03        | .03 | -.03        | .03 | -.03        | .03 |
| Migration: two parents born abroad <sup>d</sup> | -.01        | .03 | -.02        | .03 | -.01        | .03 | -.01        | .03 | -.02        | .03 |
| Highest ISEI in family                          | -.04        | .04 | -.04        | .04 | -.04        | .04 | -.04        | .04 | -.04        | .04 |
| Gender <sup>e</sup>                             | .03         | .03 | .03         | .03 | .03         | .03 | .03         | .03 | .03         | .03 |

Notes. Significant coefficients are shown in bold ( $p < .05$ ). Continuous variables are stdyx- and binary variables stdy-standardized. PT: Private tutoring. G8: Grade 8. G7: Grade 7. IHR: integrated lower and middle secondary school (*Integrierte Haupt- und Realschule*). Grades are reverse coded (1 = fail to 6 = very good). Reference categories: <sup>a</sup>lower secondary track (*Hauptschule*). <sup>b</sup>parents not qualified for university admission. <sup>c</sup>parents without university degree. <sup>d</sup>both parents born in Germany. <sup>e</sup>male.

Table B.2. Effects of characteristics of private tutoring in mathematics on test achievement in mathematics at the end of Grade 8 ( $N = 1,025$ ).

|                                                 | Model 1    |     | Model 2    |     | Model 3     |     | Model 4    |     | Model 5    |     |
|-------------------------------------------------|------------|-----|------------|-----|-------------|-----|------------|-----|------------|-----|
|                                                 | beta       | SE  | beta       | SE  | beta        | SE  | beta       | SE  | beta       | SE  |
| PT duration                                     | .00        | .02 | .00        | .02 | -.11        | .06 | -.01       | .02 | .00        | .02 |
| PT intensity                                    | -.02       | .02 | -.03       | .02 | <b>-.12</b> | .05 | -.02       | .03 | -.02       | .02 |
| Change in learning time                         | -.05       | .03 | -.05       | .03 | -.05        | .03 | -.05       | .03 | -.05       | .03 |
| Motivation to attend PT                         | .04        | .02 | .03        | .02 | .04         | .02 | .04        | .02 | <b>.15</b> | .07 |
| <i>Instructional foci</i>                       |            |     |            |     |             |     |            |     |            |     |
| Homework                                        |            |     | -.02       | .04 |             |     |            |     |            |     |
| Current lesson content                          |            |     | .02        | .04 |             |     |            |     |            |     |
| Learning strategies                             |            |     | -.02       | .04 |             |     |            |     |            |     |
| Earlier lesson content                          |            |     | .05        | .04 |             |     |            |     |            |     |
| <i>Interaction terms</i>                        |            |     |            |     |             |     |            |     |            |     |
| Duration x Intensity                            |            |     |            |     | <b>.16</b>  | .07 |            |     |            |     |
| Duration x prior achievement                    |            |     |            |     |             |     | -.07       | .05 |            |     |
| Intensity x prior achievement                   |            |     |            |     |             |     | .01        | .06 |            |     |
| Duration x motivation                           |            |     |            |     |             |     |            |     | -.02       | .05 |
| Intensity x motivation                          |            |     |            |     |             |     |            |     | -.11       | .06 |
| Midterm (G8) grade mathematics                  |            |     |            |     |             |     |            |     |            |     |
| General cognitive abilities (G7)                | <b>.10</b> | .03 | <b>.11</b> | .03 | <b>.10</b>  | .03 | <b>.10</b> | .03 | <b>.10</b> | .03 |
| Mathematics test achievement (G7)               | <b>.43</b> | .03 | <b>.42</b> | .03 | <b>.42</b>  | .03 | <b>.48</b> | .07 | <b>.43</b> | .03 |
| Mean test achievement school level              | <b>.21</b> | .05 | <b>.20</b> | .05 | <b>.21</b>  | .05 | <b>.21</b> | .05 | <b>.21</b> | .05 |
| Performance anxiety (G7)                        | -.03       | .02 | -.04       | .02 | -.03        | .02 | -.04       | .02 | -.03       | .02 |
| Mathematics ability self-concept (G7)           | .04        | .03 | .04        | .03 | .03         | .03 | .04        | .03 | .04        | .03 |
| Work habits mathematics (G7)                    | .04        | .02 | .04        | .02 | .04         | .02 | .04        | .02 | .04        | .02 |
| Interest in mathematics                         | -.01       | .03 | .00        | .03 | -.01        | .03 | -.01       | .03 | -.01       | .03 |
| IHR: lower level <sup>a</sup>                   | .02        | .02 | .02        | .02 | .02         | .02 | .02        | .02 | .02        | .02 |
| IHR: higher level <sup>a</sup>                  | .05        | .03 | .04        | .03 | .05         | .03 | .05        | .03 | .05        | .03 |
| Intermediate track <sup>a</sup>                 | <b>.08</b> | .03 | <b>.07</b> | .03 | <b>.08</b>  | .03 | <b>.08</b> | .03 | <b>.07</b> | .03 |
| Comprehensive school: lower level <sup>a</sup>  | .04        | .03 | .03        | .04 | .04         | .03 | .03        | .03 | .03        | .03 |
| Comprehensive school: higher level <sup>a</sup> | <b>.14</b> | .04 | <b>.13</b> | .04 | <b>.14</b>  | .04 | <b>.14</b> | .04 | <b>.14</b> | .03 |
| Academic track <sup>a</sup>                     | <b>.24</b> | .07 | <b>.22</b> | .07 | <b>.23</b>  | .07 | <b>.23</b> | .07 | <b>.23</b> | .07 |
| Parent(s) qualified for university <sup>b</sup> | .01        | .03 | .01        | .03 | .01         | .03 | .01        | .03 | .01        | .03 |
| Parent(s) with university degree <sup>c</sup>   | -.03       | .04 | -.03       | .04 | -.03        | .04 | -.03       | .04 | -.03       | .04 |
| Migration: one parent born abroad <sup>d</sup>  | -.01       | .02 | -.01       | .02 | -.01        | .02 | -.01       | .02 | -.01       | .02 |
| Migration: two parents born abroad <sup>d</sup> | -.02       | .03 | -.02       | .03 | -.02        | .03 | -.02       | .03 | -.02       | .03 |
| Highest ISEI in family                          | -.01       | .04 | .01        | .04 | .01         | .04 | .01        | .04 | -.01       | .04 |
| Gender <sup>e</sup>                             | .00        | .02 | -.01       | .02 | .00         | .02 | .00        | .02 | .00        | .02 |

Notes. Significant coefficients are shown in bold ( $p < .05$ ). Continuous variables are stdyx- and binary variables stdy-standardized. PT: Private tutoring. G8: Grade 8. G7: Grade 7. IHR: integrated lower and middle secondary school (*Integrierte Haupt- und Realschule*). Grades are reverse coded (1 = fail to 6 = very good). Reference categories: <sup>a</sup>lower secondary track (*Hauptschule*). <sup>b</sup>parents not qualified for university admission. <sup>c</sup>parents without university degree. <sup>d</sup>both parents born in Germany. <sup>e</sup>male.

Table B.3. Effects of characteristics of private tutoring in English on English test achievement at the end of Grade 8 ( $N = 603$ ).

|                                                 | Model 1    |     | Model 2    |     | Model 3    |     | Model 4    |     | Model 5    |     |
|-------------------------------------------------|------------|-----|------------|-----|------------|-----|------------|-----|------------|-----|
|                                                 | beta       | SE  | beta       | SE  | beta       | SE  | beta       | SE  | beta       | SE  |
| PT duration                                     | −.02       | .03 | −.02       | .03 | −.02       | .07 | −.02       | .03 | −.02       | .03 |
| PT intensity                                    | .01        | .04 | −.01       | .04 | .01        | .08 | .02        | .04 | .00        | .04 |
| Change in learning time                         | .06        | .09 | .06        | .08 | .06        | .09 | .06        | .09 | .07        | .09 |
| Motivation to attend PT                         | −.02       | .03 | −.03       | .04 | −.02       | .03 | −.02       | .03 | −.06       | .10 |
| <i>Instructional foci</i>                       |            |     |            |     |            |     |            |     |            |     |
| Homework                                        |            |     | −.10       | .08 |            |     |            |     |            |     |
| Current lesson content                          |            |     | .09        | .07 |            |     |            |     |            |     |
| Learning strategies                             |            |     | −.02       | .08 |            |     |            |     |            |     |
| Earlier lesson content                          |            |     | .07        | .07 |            |     |            |     |            |     |
| <i>Interaction terms</i>                        |            |     |            |     |            |     |            |     |            |     |
| Duration x Intensity                            |            |     |            |     | .00        | .11 |            |     |            |     |
| Duration x prior achievement                    |            |     |            |     |            |     | −.02       | .07 |            |     |
| Intensity x prior achievement                   |            |     |            |     |            |     | .05        | .10 |            |     |
| Duration x motivation                           |            |     |            |     |            |     |            |     | −.08       | .08 |
| Intensity x motivation                          |            |     |            |     |            |     |            |     | .12        | .09 |
| Midterm (G8) grade English                      |            |     |            |     |            |     |            |     |            |     |
| General cognitive abilities (G7)                | <b>.07</b> | .03 | <b>.06</b> | .03 | <b>.07</b> | .03 | <b>.07</b> | .03 | <b>.06</b> | .03 |
| English test achievement (G7)                   | <b>.35</b> | .05 | <b>.34</b> | .06 | <b>.35</b> | .05 | <b>.32</b> | .11 | <b>.35</b> | .05 |
| Mean test achievement school level              | <b>.19</b> | .06 | <b>.17</b> | .07 | <b>.19</b> | .06 | <b>.19</b> | .06 | <b>.19</b> | .06 |
| Performance anxiety (G7)                        | −.03       | .03 | −.02       | .04 | −.03       | .03 | −.03       | .03 | −.03       | .04 |
| English ability self-concept (G7)               | <b>.09</b> | .03 | <b>.11</b> | .04 | <b>.09</b> | .04 | <b>.09</b> | .03 | <b>.09</b> | .04 |
| Work habits English (G7)                        | .00        | .04 | −.01       | .04 | .00        | .04 | .00        | .04 | .00        | .04 |
| IHR: higher level <sup>a</sup>                  | <b>.08</b> | .03 | .07        | .04 | <b>.08</b> | .03 | <b>.08</b> | .03 | <b>.08</b> | .03 |
| Intermediate track <sup>a</sup>                 | .09        | .06 | .06        | .07 | .09        | .06 | .09        | .06 | .09        | .06 |
| Comprehensive school: lower level <sup>a</sup>  | −.05       | .07 | −.07       | .08 | −.05       | .07 | −.05       | .07 | −.06       | .07 |
| Comprehensive school: higher level <sup>a</sup> | <b>.15</b> | .05 | <b>.13</b> | .07 | <b>.15</b> | .05 | <b>.15</b> | .05 | <b>.16</b> | .05 |
| Academic track <sup>a</sup>                     | <b>.23</b> | .10 | <b>.24</b> | .11 | <b>.23</b> | .10 | <b>.23</b> | .10 | <b>.24</b> | .10 |
| Parent(s) qualified for university <sup>b</sup> | .05        | .04 | .07        | .05 | .05        | .04 | .05        | .04 | .05        | .04 |
| Parent(s) with university degree <sup>c</sup>   | −.07       | .05 | −.08       | .06 | −.07       | .05 | −.08       | .05 | −.07       | .05 |
| Migration: one parent born abroad <sup>d</sup>  | .02        | .03 | .02        | .03 | .02        | .03 | .02        | .03 | .02        | .03 |
| Migration: two parents born abroad <sup>d</sup> | −.03       | .03 | −.03       | .03 | −.03       | .03 | −.03       | .03 | −.03       | .03 |
| Highest ISEI in family                          | .04        | .05 | .03        | .05 | .04        | .05 | .04        | .05 | .04        | .05 |
| Gender <sup>e</sup>                             | <b>.10</b> | .03 | <b>.12</b> | .03 | <b>.10</b> | .03 | <b>.10</b> | .03 | <b>.10</b> | .03 |

Notes. Significant coefficients are shown in bold ( $p < .05$ ). Continuous variables are stdyx– and binary variables stdy–standardized. PT: Private tutoring. G8: Grade 8. G7: Grade 7. IHR: integrated lower and middle secondary school (*Integrierte Haupt- und Realschule*). Grades are reverse coded (1 = fail to 6 = very good). Reference categories: <sup>a</sup>lower secondary track (*Hauptschule*). <sup>b</sup>parents not qualified for university admission. <sup>c</sup>parents without university degree. <sup>d</sup>both parents born in Germany. <sup>e</sup>male.

Table B.4. Effects of characteristics of private tutoring in German on grades in German at the end of Grade 8 ( $N = 491$ ).

|                                                 | Model 1     |     | Model 2    |     | Model 3     |     | Model 4     |     | Model 5     |     |
|-------------------------------------------------|-------------|-----|------------|-----|-------------|-----|-------------|-----|-------------|-----|
|                                                 | beta        | SE  | beta       | SE  | beta        | SE  | beta        | SE  | beta        | SE  |
| PT duration                                     | −.05        | .04 | −.01       | .08 | .07         | .16 | −.04        | .04 | −.05        | .05 |
| PT intensity                                    | .05         | .06 | −.01       | .13 | .19         | .19 | .07         | .07 | .06         | .06 |
| Change in learning time                         | .17         | .17 | .12        | .17 | .20         | .18 | .18         | .19 | .16         | .20 |
| Motivation to attend PT                         | −.05        | .05 | −.08       | .09 | −.05        | .05 | −.05        | .05 | −.16        | .20 |
| <i>Instructional foci</i>                       |             |     |            |     |             |     |             |     |             |     |
| Homework                                        |             |     | .04        | .48 |             |     |             |     |             |     |
| Current lesson content                          |             |     | .11        | .21 |             |     |             |     |             |     |
| Learning strategies                             |             |     | .07        | .26 |             |     |             |     |             |     |
| Earlier lesson content                          |             |     | −.08       | .35 |             |     |             |     |             |     |
| <i>Interaction terms</i>                        |             |     |            |     |             |     |             |     |             |     |
| Duration x Intensity                            |             |     |            |     | −.21        | .27 |             |     |             |     |
| Duration x prior achievement                    |             |     |            |     |             |     | .07         | .11 |             |     |
| Intensity x prior achievement                   |             |     |            |     |             |     | .11         | .18 |             |     |
| Duration x motivation                           |             |     |            |     |             |     |             |     | .04         | .09 |
| Intensity x motivation                          |             |     |            |     |             |     |             |     | .10         | .20 |
| Midterm (G8) grade German                       | <b>.62</b>  | .05 | <b>.62</b> | .11 | <b>.61</b>  | .05 | <b>.45</b>  | .14 | <b>.62</b>  | .05 |
| General cognitive abilities (G7)                | .07         | .06 | .06        | .11 | .08         | .06 | .07         | .06 | .07         | .06 |
| Reading test achievement (G7)                   | .05         | .07 | .08        | .10 | .05         | .07 | .03         | .06 | .03         | .07 |
| Mean test achievement school level              | <b>.17</b>  | .09 | .16        | .16 | .17         | .09 | .17         | .09 | <b>.18</b>  | .09 |
| Performance anxiety (G7)                        | .01         | .05 | .01        | .14 | .01         | .05 | .01         | .05 | .00         | .06 |
| German ability self-concept (G7)                | .02         | .06 | .03        | .15 | .02         | .06 | .01         | .06 | .02         | .06 |
| Work habits German (G7)                         | .03         | .05 | .04        | .10 | .03         | .05 | .03         | .05 | .03         | .05 |
| Reading habits                                  | −.04        | .05 | .01        | .14 | −.04        | .05 | −.03        | .05 | −.03        | .05 |
| IHR: lower level <sup>a</sup>                   | .01         | .05 | −.02       | .17 | .01         | .05 | .01         | .05 | .01         | .05 |
| IHR: higher level <sup>a</sup>                  | −.03        | .04 | −.02       | .08 | −.03        | .04 | −.03        | .04 | −.03        | .03 |
| Intermediate track <sup>a</sup>                 | −.11        | .06 | −.09       | .17 | −.11        | .06 | −.10        | .06 | −.11        | .06 |
| Comprehensive school: lower level <sup>a</sup>  | −.02        | .07 | .00        | .13 | −.02        | .07 | −.01        | .07 | −.01        | .07 |
| Comprehensive school: higher level <sup>a</sup> | −.05        | .06 | −.07       | .08 | −.06        | .06 | −.04        | .07 | −.05        | .07 |
| Academic track <sup>a</sup>                     | <b>−.27</b> | .10 | −.29       | .18 | <b>−.27</b> | .10 | <b>−.26</b> | .10 | <b>−.26</b> | .10 |
| Parent(s) qualified for university <sup>b</sup> | .08         | .08 | .14        | .17 | .09         | .08 | .08         | .08 | .08         | .08 |
| Parent(s) with university degree <sup>c</sup>   | .01         | .07 | .02        | .08 | .00         | .07 | .00         | .07 | .00         | .06 |
| Migration: one parent born abroad <sup>d</sup>  | .03         | .07 | −.05       | .19 | .03         | .09 | .04         | .08 | .04         | .07 |
| Migration: two parents born abroad <sup>d</sup> | .05         | .07 | .10        | .09 | .05         | .07 | .05         | .07 | .05         | .08 |
| Highest ISEI in family                          | .00         | .06 | .02        | .14 | .00         | .06 | .00         | .07 | −.01        | .07 |
| Gender <sup>e</sup>                             | .06         | .05 | −.01       | .16 | .05         | .05 | .07         | .05 | .06         | .05 |

*Notes.* Significant coefficients are shown in bold ( $p < .05$ ). Continuous variables are stdyx– and binary variables stdy–standardized. PT: Private tutoring. G8: Grade 8. G7: Grade 7. IHR: integrated lower and middle secondary school (*Integrierte Haupt- und Realschule*). Grades are reverse coded (1 = fail to 6 = very good). Reference categories: <sup>a</sup>lower secondary track (*Hauptschule*). <sup>b</sup>parents not qualified for university admission. <sup>c</sup>parents without university degree. <sup>d</sup>both parents born in Germany. <sup>e</sup>male.

Table B.5. Effects of characteristics of private tutoring in German on reading test achievement at the end of Grade 8 ( $N = 491$ ).

|                                                 | Model 1     |     | Model 2     |     | Model 3    |     | Model 4    |     | Model 5    |     |
|-------------------------------------------------|-------------|-----|-------------|-----|------------|-----|------------|-----|------------|-----|
|                                                 | beta        | SE  | beta        | SE  | beta       | SE  | beta       | SE  | beta       | SE  |
| PT duration                                     | -.01        | .04 | .02         | .07 | -.11       | .14 | .00        | .05 | -.01       | .04 |
| PT intensity                                    | <b>-.10</b> | .05 | -.09        | .09 | -.26       | .20 | -.10       | .06 | -.10       | .05 |
| Change in learning time                         | -.14        | .12 | -.05        | .15 | -.20       | .14 | -.13       | .12 | -.11       | .14 |
| Motivation to attend PT                         | .01         | .03 | -.01        | .06 | .01        | .03 | .01        | .03 | -.02       | .17 |
| <i>Instructional foci</i>                       |             |     |             |     |            |     |            |     |            |     |
| Homework                                        |             |     | <b>-.46</b> | .23 |            |     |            |     |            |     |
| Current lesson content                          |             |     | .24         | .21 |            |     |            |     |            |     |
| Learning strategies                             |             |     | .02         | .15 |            |     |            |     |            |     |
| Earlier lesson content                          |             |     | .21         | .20 |            |     |            |     |            |     |
| <i>Interaction terms</i>                        |             |     |             |     |            |     |            |     |            |     |
| Duration x Intensity                            |             |     |             |     | .21        | .25 |            |     |            |     |
| Duration x prior achievement                    |             |     |             |     |            |     | .03        | .10 |            |     |
| Intensity x prior achievement                   |             |     |             |     |            |     | .03        | .12 |            |     |
| Duration x motivation                           |             |     |             |     |            |     |            |     | -.01       | .07 |
| Intensity x motivation                          |             |     |             |     |            |     |            |     | .04        | .15 |
| Midterm (G8) grade German                       |             |     |             |     |            |     |            |     |            |     |
| General cognitive abilities (G7)                | .09         | .05 | .10         | .07 | .07        | .06 | .09        | .05 | .09        | .05 |
| Reading test achievement (G7)                   | <b>.44</b>  | .05 | <b>.48</b>  | .08 | <b>.44</b> | .05 | <b>.39</b> | .11 | <b>.44</b> | .05 |
| Mean test achievement school level              | .16         | .08 | .20         | .11 | .16        | .09 | .16        | .08 | .15        | .09 |
| Performance anxiety (G7)                        | .00         | .04 | -.01        | .09 | .01        | .05 | .01        | .05 | .00        | .05 |
| German ability self-concept (G7)                | -.02        | .04 | -.11        | .08 | -.02       | .05 | -.02       | .04 | -.02       | .04 |
| Work habits German (G7)                         | -.03        | .05 | .01         | .09 | -.03       | .06 | -.03       | .05 | -.03       | .05 |
| Reading habits                                  | <b>.12</b>  | .06 | .08         | .09 | <b>.14</b> | .07 | <b>.12</b> | .06 | <b>.11</b> | .05 |
| IHR: lower level <sup>a</sup>                   | -.04        | .04 | .05         | .09 | -.04       | .05 | -.04       | .05 | -.04       | .04 |
| IHR: higher level <sup>a</sup>                  | <b>.09</b>  | .04 | <b>.13</b>  | .06 | <b>.10</b> | .04 | <b>.10</b> | .04 | <b>.09</b> | .04 |
| Intermediate track <sup>a</sup>                 | .06         | .05 | .04         | .09 | .07        | .06 | .07        | .05 | .07        | .05 |
| Comprehensive school: lower level <sup>a</sup>  | .01         | .07 | .09         | .10 | .02        | .08 | .02        | .07 | .01        | .07 |
| Comprehensive school: higher level <sup>a</sup> | .07         | .06 | .02         | .08 | .06        | .06 | .07        | .06 | .08        | .06 |
| Academic track <sup>a</sup>                     | .13         | .12 | .13         | .14 | .13        | .12 | .14        | .12 | .15        | .12 |
| Parent(s) qualified for university <sup>b</sup> | -.02        | .06 | -.03        | .10 | -.03       | .07 | -.01       | .06 | -.01       | .06 |
| Parent(s) with university degree <sup>c</sup>   | .00         | .06 | .03         | .09 | .01        | .07 | .00        | .06 | .01        | .06 |
| Migration: one parent born abroad <sup>d</sup>  | -.02        | .06 | .02         | .12 | -.02       | .07 | -.02       | .06 | -.02       | .06 |
| Migration: two parents born abroad <sup>d</sup> | -.02        | .06 | -.02        | .08 | -.01       | .06 | -.02       | .06 | -.02       | .06 |
| Highest ISEI in family                          | -.01        | .07 | -.06        | .10 | .00        | .07 | .00        | .06 | .00        | .06 |
| Gender <sup>e</sup>                             | .04         | .04 | .13         | .10 | .04        | .04 | .04        | .04 | .04        | .04 |

Notes. Significant coefficients are shown in bold ( $p < .05$ ). Continuous variables are stdyx– and binary variables stdy–standardized. PT: Private tutoring. G8: Grade 8. G7: Grade 7. IHR: integrated lower and middle secondary school (*Integrierte Haupt- und Realschule*). Grades are reverse coded (1 = fail to 6 = very good). Reference categories: <sup>a</sup>lower secondary track (*Hauptschule*). <sup>b</sup>parents not qualified for university admission. <sup>c</sup>parents without university degree. <sup>d</sup>both parents born in Germany. <sup>e</sup>male.

Table B.6. Effects of characteristics of private tutoring in learning strategies on reading strategy knowledge at the end of Grade 8 ( $N = 311$ ).

|                                                 | Model 1    |     | Model 2    |     | Model 3    |     | Model 4    |     |
|-------------------------------------------------|------------|-----|------------|-----|------------|-----|------------|-----|
|                                                 | beta       | SE  | beta       | SE  | beta       | SE  | beta       | SE  |
| PT duration                                     | -.10       | .07 | -.25       | .25 | -.13       | .13 | -.09       | .08 |
| PT intensity                                    | .18        | .12 | .05        | .21 | -.18       | .18 | .16        | .12 |
| Motivation to attend PT                         | .00        | .07 | .01        | .07 | .00        | .07 | -.09       | .21 |
| <i>Interaction terms</i>                        |            |     |            |     |            |     |            |     |
| Duration x Intensity                            |            |     | .25        | .49 |            |     |            |     |
| Duration x prior achievement                    |            |     |            |     | -.10       | .18 |            |     |
| Intensity x prior achievement                   |            |     |            |     | .02        | .40 |            |     |
| Duration x motivation                           |            |     |            |     |            |     | -.12       | .17 |
| Intensity x motivation                          |            |     |            |     |            |     | .20        | .34 |
| Midterm (G8) grade German                       |            |     |            |     |            |     |            |     |
| General cognitive abilities (G7)                | -.01       | .07 | -.01       | .07 | .00        | .08 | -.01       | .07 |
| Reading test achievement (G7)                   | -.02       | .09 | -.03       | .10 | .06        | .21 | -.04       | .10 |
| Mean test achievement school level              | .18        | .12 | .18        | .12 | .17        | .14 | .17        | .13 |
| Performance anxiety (G7)                        | .00        | .06 | .00        | .06 | .01        | .06 | .01        | .06 |
| German ability self-concept (G7)                | .01        | .07 | .00        | .07 | .01        | .07 | .02        | .07 |
| Work habits German (G7)                         | .04        | .07 | .04        | .07 | .04        | .07 | .03        | .08 |
| reading habits                                  | -.06       | .06 | -.06       | .06 | -.07       | .07 | -.05       | .06 |
| IHR: lower level <sup>a</sup>                   | .07        | .05 | .06        | .06 | .07        | .06 | .08        | .05 |
| IHR: higher level <sup>a</sup>                  | .58        | .06 | .08        | .06 | .09        | .06 | .09        | .06 |
| Intermediate track <sup>a</sup>                 | .05        | .08 | .04        | .08 | .05        | .08 | .05        | .08 |
| Comprehensive school: lower level <sup>a</sup>  | .06        | .08 | .05        | .09 | .05        | .08 | .05        | .08 |
| Comprehensive school: higher level <sup>a</sup> | .02        | .08 | .01        | .08 | .01        | .08 | .02        | .08 |
| Academic track <sup>a</sup>                     | .21        | .16 | .20        | .16 | .20        | .16 | .25        | .19 |
| Parent(s) qualified for university <sup>b</sup> | .02        | .10 | .02        | .10 | .01        | .10 | .03        | .10 |
| Parent(s) with university degree <sup>c</sup>   | -.06       | .11 | -.07       | .11 | -.05       | .11 | -.07       | .11 |
| Migration: one parent born abroad <sup>d</sup>  | -.04       | .06 | -.03       | .06 | -.05       | .08 | -.03       | .07 |
| Migration: two parents born abroad <sup>d</sup> | .00        | .11 | .00        | .11 | .00        | .11 | .00        | .12 |
| Highest ISEI in family                          | .03        | .09 | .04        | .09 | .03        | .09 | .03        | .09 |
| Gender <sup>e</sup>                             | <b>.20</b> | .07 | <b>.21</b> | .07 | <b>.20</b> | .07 | <b>.20</b> | .07 |

*Notes.* As private tutoring in learning strategies is not clearly related to one subject, changes in learning in specific subject are not controlled for. Significant coefficients are shown in bold ( $p < .05$ ). Continuous variables are stdyx- and binary variables stdy-standardized. PT: Private tutoring. G8: Grade 8. G7: Grade 7. IHR: integrated lower and middle secondary school (*Integrierte Haupt- und Realschule*). Grades are reverse coded (1 = fail to 6 = very good). Reference categories: <sup>a</sup>lower secondary track (*Hauptschule*). <sup>b</sup>parents not qualified for university admission. <sup>c</sup>parents without university degree. <sup>d</sup>both parents born in Germany. <sup>e</sup>male.