**On the interplay of motivational characteristics and academic achievement:   
The role of Need for Cognition**

Supplementary Tables

Tables 1-5 provide the descriptives and intercorrelations of the variables involved in the correlation analyses for overall grades as well as grades in the subjects German, Math, Physics, and Chemistry. For details, see main text.

**Table 1**

Spearman correlations and descriptive statistics of the variables in the analyses on Grade Point Average

|  | GRD1 | ASC1 | INT1 | HFS1 | FOF1 | NFC1 | GRD2 | ASC2 | INT2 | HFS2 | FOF2 | NFC2 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GRD1 | – | .58 | .38 | .34 | -.24 | .44 | ***.75*** | .52 | .34 | .40 | -.23 | .49 |
| ASC1 |  | *.83* | .49 | .37 | -.27 | .38 | .50 | ***.60*** | .32 | .34 | -.18 | .26 |
| INT1 |  |  | *.88* | .32 | -.09 | .35 | .44 | .47 | ***.65*** | .31 | -.05 | .26 |
| HFS1 |  |  |  | *.86* | -.30 | .62 | .32 | .38 | .26 | ***.57*** | -.17 | .50 |
| FOF1 |  |  |  |  | *.88* | -.42 | -.17 | -.28 | -.14 | -.29 | ***.59*** | -.43 |
| NFC1 |  |  |  |  |  | *.89* | .46 | .43 | .25 | .62 | -.32 | ***.71*** |
| GRD2 |  |  |  |  |  |  | – | .53 | .34 | .41 | -.18 | .48 |
| ASC2 |  |  |  |  |  |  |  | *.84* | .53 | .45 | -.25 | .46 |
| INT2 |  |  |  |  |  |  |  |  | *.88* | .31 | -.05 | .34 |
| HFS2 |  |  |  |  |  |  |  |  |  | *.87* | -.28 | .66 |
| FOF2 |  |  |  |  |  |  |  |  |  |  | *.90* | -.39 |
| NFC2 |  |  |  |  |  |  |  |  |  |  |  | *.89* |
| Mean | 3.30 | 3.55 | 3.25 | 2.92 | 1.86 | 4.46 | 3.46 | 3.62 | 3.41 | 2.72 | 1.71 | 4.69 |
| SD | 0.55 | 0.54 | 0.83 | 0.57 | 0.61 | 0.84 | 0.52 | 0.56 | 0.82 | 0.56 | 0.61 | 0.87 |
| Min | 2.00 | 1.75 | 1.00 | 1.14 | 1.00 | 2.19 | 2.10 | 2.25 | 1.00 | 1.00 | 1.00 | 2.50 |
| Max | 5.00 | 5.00 | 5.00 | 4.00 | 4.00 | 6.94 | 5.00 | 5.00 | 5.00 | 4.00 | 3.71 | 6.88 |
| Skew | 0.17 | 0.09 | -0.27 | -0.23 | 0.45 | 0.16 | 0.31 | 0.33 | -0.21 | -0.02 | 0.89 | 0.07 |
| Kurtosis | -0.09 | 0.24 | -0.37 | -0.07 | -0.34 | 0.14 | -0.11 | -0.14 | -0.42 | 0.17 | 0.47 | -0.45 |

*Note.* *N* = 193-259 due to missings; for > .18; coefficients in the diagonal are Cronbach’s , bold-faced coefficients give the 53-59 week retest reliability; GRD = Grade Point Average, ASC = Overall Ability Self-Concept, INT = Overall Interest in School, HFS = Hope for Success, FOF = Fear of Failure, NFC = Need for Cognition at measurement occasion 1, and 2, respectively

Table 1

*Spearman correlations and descriptive statistics of the variables in the analyses on German grades*

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | GRD1 | ASC1 | INT1 | HFS1 | FOF1 | NFC1 | GRD2 | ASC2 | INT2 | HFS2 | FOF2 | NFC2 |
| GRD1 | *—* | .53 | .45 | .26 | -.17 | .33 | ***.67*** | .51 | .40 | .25 | -.18 | .35 |
| ASC1 |  | *.93* | .66 | .16 | -.13 | .18 | .58 | ***.76*** | .60 | .08 | -.05 | .16 |
| INT1 |  |  | *.92* | .16 | -.11 | .23 | .44 | .54 | ***.63*** | .17 | -.14 | .20 |
| HFS1 |  |  |  | *.86* | -.30 | .62 | .21 | .16 | .11 | ***.57*** | -.17 | .50 |
| FOF1 |  |  |  |  | *.88* | -.42 | -.20 | -.22 | -.13 | -.29 | ***.59*** | -.43 |
| NFC1 |  |  |  |  |  | *.89* | .35 | .21 | .16 | .62 | -.32 | ***.71*** |
| GRD2 |  |  |  |  |  |  | *—* | .58 | .46 | .24 | -.21 | .41 |
| ASC2 |  |  |  |  |  |  |  | *.92* | .68 | .10 | -.13 | .25 |
| INT2 |  |  |  |  |  |  |  |  | *.91* | .11 | -.06 | .19 |
| HFS2 |  |  |  |  |  |  |  |  |  | *.87* | -.28 | .66 |
| FOF2 |  |  |  |  |  |  |  |  |  |  | *.90* | -.39 |
| NFC2 |  |  |  |  |  |  |  |  |  |  |  | *.89* |
| Mean | 3.24 | 3.68 | 3.49 | 2.92 | 1.86 | 4.46 | 3.36 | 3.65 | 3.42 | 2.72 | 1.71 | 4.69 |
| SD | 0.79 | 0.82 | 0.99 | 0.57 | 0.61 | 0.84 | 0.80 | 0.76 | 0.94 | 0.56 | 0.61 | 0.87 |
| Min | 1.00 | 1.00 | 1.00 | 1.14 | 1.00 | 2.19 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 2.50 |
| Max | 5.00 | 5.00 | 5.00 | 4.00 | 4.00 | 6.94 | 5.00 | 5.00 | 5.00 | 4.00 | 3.71 | 6.88 |
| Skew | -0.01 | -0.38 | -0.33 | -0.23 | 0.45 | 0.16 | -0.13 | -0.26 | -0.26 | -0.02 | 0.89 | 0.07 |
| Kurtosis | -0.24 | -0.12 | -0.37 | -0.07 | -0.34 | 0.14 | -0.38 | 0.08 | -0.51 | 0.17 | 0.47 | -0.45 |

*Note. N* = 221-259 due to missings; *p < .*05 for *|rs|* > .21; coefficients in the diagonal are Cronbach’s *α*, bold-faced coefficients give the 53-59 week retest reliability; GRD = Grade German, ASC = Ability Self-Concept German, INT = Interest in German, HFS = Hope for Success, FOF = Fear of Failure, NFC = Need for Cognition at measurement occasion 1, and 2, respectively

Table 2

*Spearman correlations and descriptive statistics of the variables in the analyses on Math grades*

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | GRD1 | ASC1 | INT1 | HFS1 | FOF1 | NFC1 | GRD2 | ASC2 | INT2 | HFS2 | FOF2 | NFC2 |
| GRD1 | *—* | .68 | .56 | .24 | -.17 | .30 | ***.54*** | .56 | .46 | .29 | -.11 | .34 |
| ASC1 |  | *.95* | .79 | .26 | -.21 | .28 | .42 | ***.73*** | .58 | .38 | -.19 | .26 |
| INT1 |  |  | *.93* | .30 | -.19 | .35 | .38 | .66 | ***.68*** | .42 | -.20 | .31 |
| HFS1 |  |  |  | *.86* | -.30 | .62 | .16 | .24 | .30 | ***.57*** | -.17 | .50 |
| FOF1 |  |  |  |  | *.88* | -.42 | -.21 | -.22 | -.18 | -.29 | ***.59*** | -.43 |
| NFC1 |  |  |  |  |  | *.89* | .26 | .27 | .35 | .62 | -.32 | ***.71*** |
| GRD2 |  |  |  |  |  |  | *—* | .64 | .58 | .30 | -.12 | .40 |
| ASC2 |  |  |  |  |  |  |  | *.95* | .80 | .37 | -.21 | .31 |
| INT2 |  |  |  |  |  |  |  |  | *.94* | .45 | -.17 | .42 |
| HFS2 |  |  |  |  |  |  |  |  |  | *.87* | -.28 | .66 |
| FOF2 |  |  |  |  |  |  |  |  |  |  | *.90* | -.39 |
| NFC2 |  |  |  |  |  |  |  |  |  |  |  | *.89* |
| Mean | 3.11 | 3.20 | 3.18 | 2.92 | 1.86 | 4.46 | 3.19 | 3.37 | 3.33 | 2.72 | 1.71 | 4.69 |
| SD | 1.02 | 1.01 | 1.14 | 0.57 | 0.61 | 0.84 | 1.10 | 0.98 | 1.10 | 0.56 | 0.61 | 0.87 |
| Min | 1.00 | 1.00 | 1.00 | 1.14 | 1.00 | 2.19 | 0.75 | 1.00 | 1.00 | 1.00 | 1.00 | 2.50 |
| Max | 5.00 | 5.00 | 5.00 | 4.00 | 4.00 | 6.94 | 5.25 | 5.00 | 5.00 | 4.00 | 3.71 | 6.88 |
| Skew | -0.05 | -0.12 | -0.20 | -0.23 | 0.45 | 0.16 | -0.18 | -0.35 | -0.39 | -0.02 | 0.89 | 0.07 |
| Kurtosis | -0.63 | -0.65 | -0.88 | -0.07 | -0.34 | 0.14 | -0.61 | -0.39 | -0.61 | 0.17 | 0.47 | -0.45 |

*Note. N* = 218-259 due to missings; *p < .*05 for *|rs|* > .17; coefficients in the diagonal are Cronbach’s *α*, bold-faced coefficients give the 53-59 week retest reliability; GRD = Grade Math, ASC = Ability Self-Concept Math, INT = Interest in Math, HFS = Hope for Success, FOF = Fear of Failure, NFC = Need for Cognition at measurement occasion 1, and 2, respectively

Table 3

*Spearman correlations and descriptive statistics of the variables in the analyses on Physics grades*

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | GRD1 | ASC1 | INT1 | HFS1 | FOF1 | NFC1 | GRD2 | ASC2 | INT2 | HFS2 | FOF2 | NFC2 |
| GRD1 | *—* | .59 | .46 | .22 | -.13 | .27 | ***.66*** | .45 | .41 | .28 | -.13 | .28 |
| ASC1 |  | *.95* | .80 | .17 | -.09 | .25 | .45 | ***.65*** | .65 | .32 | -.11 | .26 |
| INT1 |  |  | *.94* | .17 | -.08 | .23 | .36 | .64 | ***.71*** | .31 | -.18 | .23 |
| HFS1 |  |  |  | *.86* | -.30 | .62 | .27 | .20 | .25 | ***.57*** | -.17 | .50 |
| FOF1 |  |  |  |  | *.88* | -.42 | -.10 | -.15 | -.13 | -.29 | ***.59*** | -.43 |
| NFC1 |  |  |  |  |  | *.89* | .39 | .25 | .32 | .62 | -.32 | ***.71*** |
| GRD2 |  |  |  |  |  |  | *—* | .50 | .45 | .39 | -.15 | .41 |
| ASC2 |  |  |  |  |  |  |  | *.96* | .85 | .35 | -.23 | .23 |
| INT2 |  |  |  |  |  |  |  |  | *.94* | .38 | -.19 | .29 |
| HFS2 |  |  |  |  |  |  |  |  |  | *.87* | -.28 | .66 |
| FOF2 |  |  |  |  |  |  |  |  |  |  | *.90* | -.39 |
| NFC2 |  |  |  |  |  |  |  |  |  |  |  | *.89* |
| Mean | 3.11 | 2.66 | 2.61 | 2.92 | 1.86 | 4.46 | 3.07 | 2.52 | 2.45 | 2.72 | 1.71 | 4.69 |
| SD | 1.03 | 0.99 | 1.16 | 0.57 | 0.61 | 0.84 | 0.93 | 1.03 | 1.19 | 0.56 | 0.61 | 0.87 |
| Min | 0.00 | 1.00 | 1.00 | 1.14 | 1.00 | 2.19 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 2.50 |
| Max | 5.00 | 5.00 | 5.00 | 4.00 | 4.00 | 6.94 | 5.25 | 5.00 | 5.00 | 4.00 | 3.71 | 6.88 |
| Skew | -0.12 | 0.10 | 0.24 | -0.23 | 0.45 | 0.16 | -0.17 | 0.35 | 0.52 | -0.02 | 0.89 | 0.07 |
| Kurtosis | -0.24 | -0.70 | -0.90 | -0.07 | -0.34 | 0.14 | 0.14 | -0.50 | -0.69 | 0.17 | 0.47 | -0.45 |

*Note. N* = 191-259 due to missings; *p < .*05 for *|rs|* > .13; coefficients in the diagonal are Cronbach’s *α*, bold-faced coefficients give the 53-59 week retest reliability; GRD = Grade Physics, ASC = Ability Self-Concept Physics, INT = Interest in Physics, HFS = Hope for Success, FOF = Fear of Failure, NFC = Need for Cognition at measurement occasion 1, and 2, respectively

Table 4

*Spearman correlations and descriptive statistics of the variables in the analyses on Chemistry grades*

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | GRD1 | ASC1 | INT1 | HFS1 | FOF1 | NFC1 | GRD2 | ASC2 | INT2 | HFS2 | FOF2 | NFC2 |
| GRD1 | *—* | .51 | .44 | .28 | -.25 | .32 | ***.72*** | .44 | .40 | .37 | -.23 | .35 |
| ASC1 |  | *.96* | .82 | .23 | -.13 | .16 | .46 | ***.70*** | .62 | .21 | -.12 | .18 |
| INT1 |  |  | *.95* | .18 | -.03 | .18 | .39 | .67 | ***.68*** | .24 | -.10 | .19 |
| HFS1 |  |  |  | *.86* | -.30 | .62 | .27 | .24 | .21 | ***.57*** | -.17 | .50 |
| FOF1 |  |  |  |  | *.88* | -.42 | -.19 | -.15 | -.06 | -.29 | ***.59*** | -.43 |
| NFC1 |  |  |  |  |  | *.89* | .36 | .20 | .20 | .62 | -.32 | ***.71*** |
| GRD2 |  |  |  |  |  |  | *—* | .52 | .49 | .36 | -.26 | .36 |
| ASC2 |  |  |  |  |  |  |  | *.96* | .86 | .26 | -.15 | .26 |
| INT2 |  |  |  |  |  |  |  |  | *.94* | .24 | -.08 | .26 |
| HFS2 |  |  |  |  |  |  |  |  |  | *.87* | -.28 | .66 |
| FOF2 |  |  |  |  |  |  |  |  |  |  | *.90* | -.39 |
| NFC2 |  |  |  |  |  |  |  |  |  |  |  | *.89* |
| Mean | 3.12 | 2.52 | 2.48 | 2.92 | 1.86 | 4.46 | 3.15 | 2.44 | 2.37 | 2.72 | 1.71 | 4.69 |
| SD | 0.95 | 1.06 | 1.20 | 0.57 | 0.61 | 0.84 | 0.83 | 1.06 | 1.21 | 0.56 | 0.61 | 0.87 |
| Min | 1.00 | 1.00 | 1.00 | 1.14 | 1.00 | 2.19 | 1.25 | 1.00 | 1.00 | 1.00 | 1.00 | 2.50 |
| Max | 5.00 | 5.00 | 5.00 | 4.00 | 4.00 | 6.94 | 5.00 | 5.00 | 5.00 | 4.00 | 3.71 | 6.88 |
| Skew | 0.06 | 0.34 | 0.49 | -0.23 | 0.45 | 0.16 | 0.20 | 0.32 | 0.56 | -0.02 | 0.89 | 0.07 |
| Kurtosis | -0.59 | -0.65 | -0.75 | -0.07 | -0.34 | 0.14 | -0.53 | -0.63 | -0.74 | 0.17 | 0.47 | -0.45 |

*Note. N* = 171-259 due to missings; *p < .*05 for *|rs|* > .18; coefficients in the diagonal are Cronbach’s *α*, bold-faced coefficients give the 53-59 week retest reliability; GRD = Grade Chemistry, ASC = Ability Self-Concept Chemistry, INT = Interest in Chemistry, HFS = Hope for Success, FOF = Fear of Failure, NFC = Need for Cognition at measurement occasion 1, and 2, respectively

Table X

*Reliabilities of the variables of interest*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | T1 | | T2 | | Retest | |
|  | 𝛼 | 𝜔 | 𝛼 | 𝜔 | *rtt* | *n* |
| Grades |  |  |  |  |  |  |
| Overall |  |  |  |  | .75 | 193 |
| German |  |  |  |  | .67 | 221 |
| Math |  |  |  |  | .54 | 218 |
| Physics |  |  |  |  | .66 | 191 |
| Chemistry |  |  |  |  | .72 | 171 |
| *Ability Self-Concept* |  |  |  |  |  |  |
| Overall | .84 | .84 | .84 | .85 | .83 | 277 |
| German | .93 | .94 | .92 | .91 | .90 | 277 |
| Math | .95 | .95 | .95 | .94 | .85 | 277 |
| Physics | .95 | .95 | .96 | .97 | .77 | 277 |
| Chemistry | .96 | .96 | .96 | .97 | .81 | 277 |
| *Interest* |  |  |  |  |  |  |
| Overall | .88 | .89 | .87 | .89 | .81 | 277 |
| German | .92 | .92 | .91 | .91 | .79 | 277 |
| Math | .94 | .93 | .94 | .94 | .80 | 277 |
| Physics | .94 | .95 | .94 | .94 | .81 | 277 |
| Chemistry | .95 | .94 | .94 | .94 | .80 | 277 |
| *Motivational Traits* |  |  |  |  |  |  |
| Hope for Success | .86 | .87 | .87 | .87 | .72 | 277 |
| Fear of Failure | .88 | .88 | .90 | .91 | .75 | 277 |
| Need for Cognition | .88 | .88 | .90 | .89 | .88 | 277 |

*Note.* *n* = 171-221 due to missings, for all instances with *n* = 277, full information likelihood handling of missing cases was employed (see text for details); T1 and T2 = measurement occasions, 𝛼 = Cronbach’s alpha, 𝜔 = MacDonald’s omega, *rtt* = retest reliability (Spearman rank correlations), *n* = sample size to determine retest reliabilities (interval: 53-59 weeks)