**Electronic Supplemental Materials**

Note: These appendices are not intended for the printed article.

External Appendix A: Supplemental Materials for Method ­– Measures

External Appendix B: Supplemental Materials for Method ­– Data analysis

External Appendix C: Supplemental Materials for Results ­– Latent growth models of interest in school science activities and conceptual understanding

External Appendix D: Supplemental Materials for Results ­– Cross-lagged models of interest in school science activities and conceptual understanding

**External Appendix A**

**Supplemental Materials for Instruments**

External Appendix A1. *RIASEC+N Questionnaire*. Scales and items to the question asking “How much are you interested in doing the following activities in chemistry lessons?” Items that were excluded in the reported analysis are crossed out.

|  |  |  |
| --- | --- | --- |
| Scale | Variable | Item |
| Realistic | |  | | --- | | R1 | | ~~R2~~ | | R3 | | R4 | | |  | | --- | | To do experiments guided by an instruction | | To build a machine guided by an instruction | | To arrange all the equipment for an experiment | | To make a chemical product | |
| Investigative | |  | | --- | | I1 | | ~~I2~~ | | I3 | | I4 | | |  | | --- | | To plan experiments to investigate something | | To find the solution to a chemistry problem | | To investigate an object closely | | To find an explanation for an observation | |
| Artistic | |  | | --- | | A1 | | A2 | | ~~A3~~ | | A4 | | |  | | --- | | To draw an observation | | To draw the set-up of an experiment | | To create a poster or a presentation for a chemical topic | | To recreate something seen in nature | |
| Social | |  | | --- | | S1 | | S2 | | S3 | | S4 | | |  | | --- | | To explain something to fellow students in chemistry | | To explain chemical topics to fellow students | | To help fellow students with chemistry tasks | | To help fellow students doing experiments | |
| Enterprising | |  | | --- | | ~~E1~~ | | E2 | | E3 | | E4 | | |  | | --- | | To organize a small chemistry project | | To present the results of a small chemistry project | | To organize a small chemical investigation | | To lead a student group in a group work | |
| Conventional | |  | | --- | | C1 | | C2 | | C3 | | ~~C4~~ | | |  | | --- | | To table the results of an experiment | | To collect and organize chemical products (substances, information, data) | | To make a diagram from the results of an experiment | | To search for and organize chemical information | |
| Networking | |  | | --- | | N1 | | N2 | | N3 | | ~~N4~~ | | |  | | --- | | To talk to fellow students about chemical topics | | To work on a chemical topic together with fellow students | | To investigate a chemical topic together with fellow students | | To experiment with fellow students | |

External Appendix A2. *Achievement test.* Exemplary items with coding scheme (in squared brackets behind each answer option) and item fit indices; Item names reflect the underlying concept area (first two letters; CR = chemical reaction, EN = energy, MA = matter) and the grade level (third and fourth letter; CO = core items, i.e. anchor items that were administered in all grade levels, 05 to 11 for the respective grade level).

|  |  |
| --- | --- |
| **Item CRCO2** | |
| Atoms are an important part in chemical reactions.  What happens in chemical reactions with the atoms? | |
| 1. In chemical reactions, new atoms are formed. [0] 2. In chemical reactions, new bonds are formed. [2] 3. In chemical reactions, atoms mix in a new way. [1] 4. In chemical reactions, the shape of the atoms changes. [0] | |
| Weighted MNSQ | 0,93 |
| Discrimination | 0,7 |
| Item Thresholds | -0.73 -0.13 |
| Distribution of students’ responses | a) 0.12 % ; b) 0.51 % ; c) 0.16 % ; d) 0.14 % ;  missings: 0.08 % (Grades 5 to 11) |
| **Item ENCO4** | |
| In a cup tea is brewed. Then the cup of tea is left.  What happened? | |
| 1. The tea is cooled with time, because a part of its heat energy is destroyed. [0] 2. The tea is cooled with time, because a part of its heat energy is emitted to its environment and a part disappears. [1] 3. The tea cools with time, because everything which is hot, cools down with time. [0] 4. The tea is cooled with time, because a part of its heat energy is emitted to the environment. [2] | |
| Weighted MNSQ | 0,91 |
| Discrimination | 0,7 |
| Item Thresholds | -0.91 -0.33 |
| Distribution of students’ responses | a) 0.09 % ; b) 0.11 % ; c) 0.1 % ; d) 0.66 % ;  missings: 0.04 % (Grades 5 to 11) |

|  |  |
| --- | --- |
| **Item MACO4** | |
| Garage doors made ??of metal open heavier in summer than in winter. This is because metal expands when heated.  Why expand metals when heated? | |
| 1. The metal particles move faster and thus have a greater distance from each other. [2] 2. The metal particles have reacted with the air particles. Thus, the particles become larger. [1] 3. By heating the metal particles melt a little, which is making them further apart. [0] 4. The metal particles are further apart by the heat, their movements do not change. [1] | |
| Weighted MNSQ | 0,96 |
| Discrimination | 0,61 |
| Item Thresholds | -1.18 -0.1 |
| Distribution of students’ responses | a) 0.44 % ; b) 0.09 % ; c) 0.18 % ; d) 0.22 % ;  missings: 0.06 % (Grades 5 to 11) |

|  |  |
| --- | --- |
| **Item CR064** | |
| Chemical reactions are sometimes intense, sometimes you barely notice them.  What happens in chemical reactions with the materials? | |
| 1. In chemical reactions, the starting materials are no longer present after the reaction. [1] 2. In chemical reactions, the colour of materials changes. [0] 3. In chemical reactions, new substances arise, but there can also the starting materials afterwards still be present. [2] 4. In chemical reactions dangerous products are formed. [0] | |
| Weighted MNSQ | 1 |
| Discrimination | 0,68 |
| Item Thresholds | -0.94 -0.63 |
| Distribution of students’ responses | a) 0.09 % ; b) 0.17 % ; c) 0.4 % ; d) 0.11 % ;  missings: 0.23 % (Grade 6 only) |

|  |  |
| --- | --- |
| **Item MA092** | |
| In an airtight glass box 2 g of water are added. The water-filled glass box has a weight of 102 g.The water is allowed to evaporate and the box is weighted again.  How heavy is the box now? | |
| 1. The box weighs less than 100 grams, because the water is turned into air, and air is very light. [0] 2. The box weighs 102 g, because the water is turned into steam, but still weighs as much as before. [1] 3. The box weighs more than 102 g, because it has now become hot and so it has increased. [0] 4. The box weighs less than 102 grams, because some drops of water are gone. [0] | |
| Weighted MNSQ | 0,94 |
| Discrimination | 0,83 |
| Item Thresholds | -0.12 |
| Distribution of students’ responses | a) 0.17 % ; b) 0.6 % ; c) 0.06 % ; d) 0.15 % ;  missings: 0.02 % (Grade 9 only) |

|  |  |
| --- | --- |
| **Item EN113** | |
| Batteries allow us mobility, because we can use electricity on the go.  What processes take place in a battery that provide the electricity? | |
| 1. The substances contained in a battery react with each other, this leads to the transformation of chemical energy to electrical energy. [1] 2. The substances contained in a battery have electrical energy stored, which they release when turning on the device. [0] 3. The substances contained in a battery are broken and released by energy. [0] 4. The substances contained in a battery react with each other, which results in the formation of electrical energy. [0] | |
| Weighted MNSQ | 0,95 |
| Discrimination | 0,68 |
| Item Thresholds | 0.55 |
| Distribution of students’ responses | a) 0.55 % ; b) 0.2 % ; c) 0.04 % ; d) 0.16 % ;  missings: 0.04 % (Grade 11 only) |

**External Appendix B**

**Supplemental Materials for Data analysis**.

External Appendix B1. Missing data and method effect. As students in the present study were nested in different schools and classes, a multilevel approach would be necessary to systematically analyse the effect of this kind of nested data structure. However, this was not possible in the present study due to the limited number of classes participating in this study (*Nclasses* = 25) which is below common recommendations for multilevel approaches. To gain some intuition regarding the extent to which the nested data structure might affect the results, the intra-class correlation (ICC; i.e., the correlation among individuals within the same class; the bigger the ICC, the greater the impact of the class level) was calculated for each variable and measurement point, resulting in a mean value of *M*(ICC) = .12. This value indicates that only 12 % of the variance in the different variables can be accounted for on the class level. Muthen and Satorra (1995) argued that it is not the size of the intra-class correlation, but the design effect (i.e., a function of the intra-class correlation and the average class size) and that a design effect greater than 2 indicates that the clustering in the data needs to be taken into account during estimation. The mean design effect across variables and measurement points in this study is 1.80, again indicating that the nested structure of the data might only marginally affect the results.

External Appendix B2. Reliabilities, descriptive statistics, and correlation coefficients for the RIASEC+N (Realistic, Investigative, Artistic, Social, Enterprising, Conventional, Networking) model and WLE Scores in Grades 9 to 11.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Grade | Scale | n | Mean | SD | Reliability (Cronbach’s α) | Correlation coefficients (Pearson) | | | | | | |
|  | R | I | A | S | E | C | N |
| 9 | Realistic | 486 | 2.89 | .86 | .65 |  |  |  |  |  |  |  |
|  | Investigative | 486 | 2.61 | .88 | .74 | .43 |  |  |  |  |  |  |
|  | Artistic | 489 | 2.58 | .96 | .72 | .40 | .41 |  |  |  |  |  |
|  | Social | 488 | 2.50 | .88 | .89 | .27 | .57 | .26 |  |  |  |  |
|  | Enterprising | 486 | 2.59 | .95 | .76 | .38 | .60 | .37 | .51 |  |  |  |
|  | Conventional | 488 | 2.33 | .86 | .75 | .25 | .55 | .41 | .47 | .49 |  |  |
|  | Networking | 487 | 2.54 | .89 | .76 | .30 | .63 | .34 | .60 | .61 | .61 |  |
|  | WLE Score | 503 | 0.27 | .60 | .74 | .11 | .27 | .01 | .20 | .12 | .11 | .19 |
| 10 | Realistic | 428 | 2.73 | .92 | .68 |  |  |  |  |  |  |  |
|  | Investigative | 427 | 2.50 | .88 | .77 | .45 |  |  |  |  |  |  |
|  | Artistic | 426 | 2.42 | .96 | .73 | .44 | .36 |  |  |  |  |  |
|  | Social | 428 | 2.42 | .87 | .89 | .27 | .57 | .31 |  |  |  |  |
|  | Enterprising | 428 | 2.50 | .93 | .80 | .43 | .63 | .35 | .58 |  |  |  |
|  | Conventional | 426 | 2.26 | .86 | .76 | .27 | .54 | .38 | .47 | .53 |  |  |
|  | Networking | 426 | 2.49 | .91 | .78 | .33 | .70 | .26 | .62 | .67 | .58 |  |
|  | WLE Score | 456 | 0.33 | .54 | .75 | .07 | .23 | -.07 | .23 | .16 | .08 | .24 |
| 11 | Realistic | 395 | 2.63 | .95 | .71 |  |  |  |  |  |  |  |
|  | Investigative | 395 | 2.54 | .88 | .74 | .49 |  |  |  |  |  |  |
|  | Artistic | 393 | 2.37 | .96 | .72 | .47 | .34 |  |  |  |  |  |
|  | Social | 395 | 2.39 | .89 | .90 | .28 | .53 | .26 |  |  |  |  |
|  | Enterprising | 395 | 2.40 | .94 | .80 | .49 | .67 | .37 | .54 |  |  |  |
|  | Conventional | 393 | 2.24 | .87 | .75 | .37 | .54 | .39 | .46 | .52 |  |  |
|  | Networking | 393 | 2.45 | .94 | .84 | .38 | .68 | .26 | .68 | .69 | .59 |  |
|  | WLE Score | 409 | 0.67 | .71 | .77 | .18 | .35 | .02 | .29 | .20 | .20 | .33 |

External Appendix B3. Goodness-of-Fit indices for testing measurement invariance per dimension of the RIASEC+N model. Model fits were compared by CFI and RMSEA difference testing. Hereby, a change of < .01 in CFI supplemented by a change of < .015 in RMSEA between subsequent models is generally considered to indicate invariance (Cheung & Rensvold, 2002). As this criterion was slightly exceeded in the invariance testing of the social dimension (ΔCFI = .011), McDonald's NCI and gammaHat were calculated. These global fit indices were found to be below recommended thresholds (cf. Meade, Johnson, & Braddy, 2008; West, Taylor, & Wu, 2012), so that strong measurement invariance was assumed for the social dimension as well.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Scale | Invariance | ChiSq (df) | CFI | RMSEA | SRMR | ΔCFI | ΔRMSEA | ΔSRMR | ΔNCI | ΔGHAT | ΔadjGHAT |
| Realistic | configural | 12.220 (15) | 1.000 | 0.000 | 0.028 |  |  |  |  |  |  |
|  | metric | 14.156 (19) | 1.000 | 0.000 | 0.029 | 0.000 | 0.000 | 0.001 | 0.002 | 0.000 | 0.011 |
|  | strong | 21.250 (23) | 1.000 | 0.000 | 0.032 | 0.000 | 0.000 | 0.003 | 0.001 | 0.000 | 0.018 |
|  | strict | 23.469 (29) | 1.000 | 0.000 | 0.038 | 0.000 | 0.000 | 0.006 | 0.002 | 0.000 | 0.025 |
| Investigative | configural | 18.710 (15) | 0.996 | 0.019 | 0.029 |  |  |  |  |  |  |
|  | metric | 21.683 (19) | 0.997 | 0.014 | 0.033 | 0.001 | 0.005 | 0.004 | 0.001 | 0.000 | 0.015 |
|  | strong | 24.446 (23) | 0.999 | 0.009 | 0.034 | 0.002 | 0.005 | 0.001 | 0.002 | 0.000 | 0.024 |
|  | strict | 30.015 (29) | 0.999 | 0.007 | 0.045 | 0.000 | 0.002 | 0.011 | 0.002 | 0.000 | 0.033 |
| Artistic | configural | 19.821 (15) | 0.996 | 0.021 | 0.03 |  |  |  |  |  |  |
|  | metric | 26.328 (19) | 0.994 | 0.023 | 0.037 | 0.002 | 0.002 | 0.007 | 0.002 | 0.000 | 0.020 |
|  | strong | 29.693 (23) | 0.994 | 0.020 | 0.039 | 0.000 | 0.003 | 0.002 | 0.001 | 0.000 | 0.032 |
|  | strict | 47.360 (29) | 0.985 | 0.030 | 0.052 | 0.009 | 0.01 | 0.013 | 0.009 | 0.002 | 0.043 |
| Social | configural | 23.187 (15) | 0.992 | 0.028 | 0.026 |  |  |  |  |  |  |
|  | metric | 25.954 (19) | 0.993 | 0.023 | 0.029 | 0.001 | 0.005 | 0.003 | 0.001 | 0.000 | 0.033 |
|  | strong | 40.988 (23) | 0.982 | 0.033 | 0.030 | 0.011 | 0.010 | 0.001 | 0.007 | 0.001 | 0.054 |
|  | strict | 45.671 (29) | 0.983 | 0.028 | 0.033 | 0.001 | 0.005 | 0.003 | 0.006 | 0.001 | 0.072 |
| Enterprising | configural | 22.961 (15) | 0.993 | 0.027 | 0.034 |  |  |  |  |  |  |
|  | metric | 28.411 (19) | 0.992 | 0.026 | 0.041 | 0.001 | 0.001 | 0.007 | 0.001 | 0.000 | 0.032 |
|  | strong | 35.875 (23) | 0.988 | 0.028 | 0.044 | 0.004 | 0.002 | 0.003 | 0.003 | 0.001 | 0.052 |
|  | strict | 48.408 (29) | 0.983 | 0.031 | 0.045 | 0.005 | 0.003 | 0.001 | 0.008 | 0.002 | 0.070 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Conventional | configural | 19.404 (15) | 0.994 | 0.020 | 0.029 |  |  |  |  |  |  |
|  | metric | 26.626 (19) | 0.989 | 0.024 | 0.040 | 0.005 | 0.004 | 0.011 | 0.002 | 0.000 | 0.018 |
|  | strong | 29.995 (23) | 0.990 | 0.021 | 0.044 | 0.001 | 0.003 | 0.004 | 0.002 | 0.000 | 0.029 |
|  | strict | 35.625 (29) | 0.991 | 0.018 | 0.066 | 0.001 | 0.003 | 0.022 | 0.002 | 0.000 | 0.039 |
| Networking | configural | 60.459 (39) | 0.992 | 0.028 | 0.030 |  |  |  |  |  |  |
|  | metric | 64.416 (45) | 0.992 | 0.025 | 0.033 | 0.000 | 0.003 | 0.003 | 0.001 | 0.000 | 0.039 |
|  | strong | 81.186 (51) | 0.988 | 0.029 | 0.034 | 0.004 | 0.004 | 0.001 | 0.006 | 0.001 | 0.066 |
|  | strict | 82.201 (59) | 0.991 | 0.024 | 0.036 | 0.003 | 0.005 | 0.002 | 0.001 | 0.001 | 0.091 |

**External Appendix C**

**Supplemental Materials for Latent growth models of interest in school science activities and conceptual understanding**

External Appendix C1. Fit indices and parameters of the first order latent growth curve models (nonlinear for Artistic and WLE Score, otherwise linear). The LGCM of the investigative dimension with a freely estimated shape didn’t fit the data. The slope variance of the WLE scores was constrained to be non-negative.

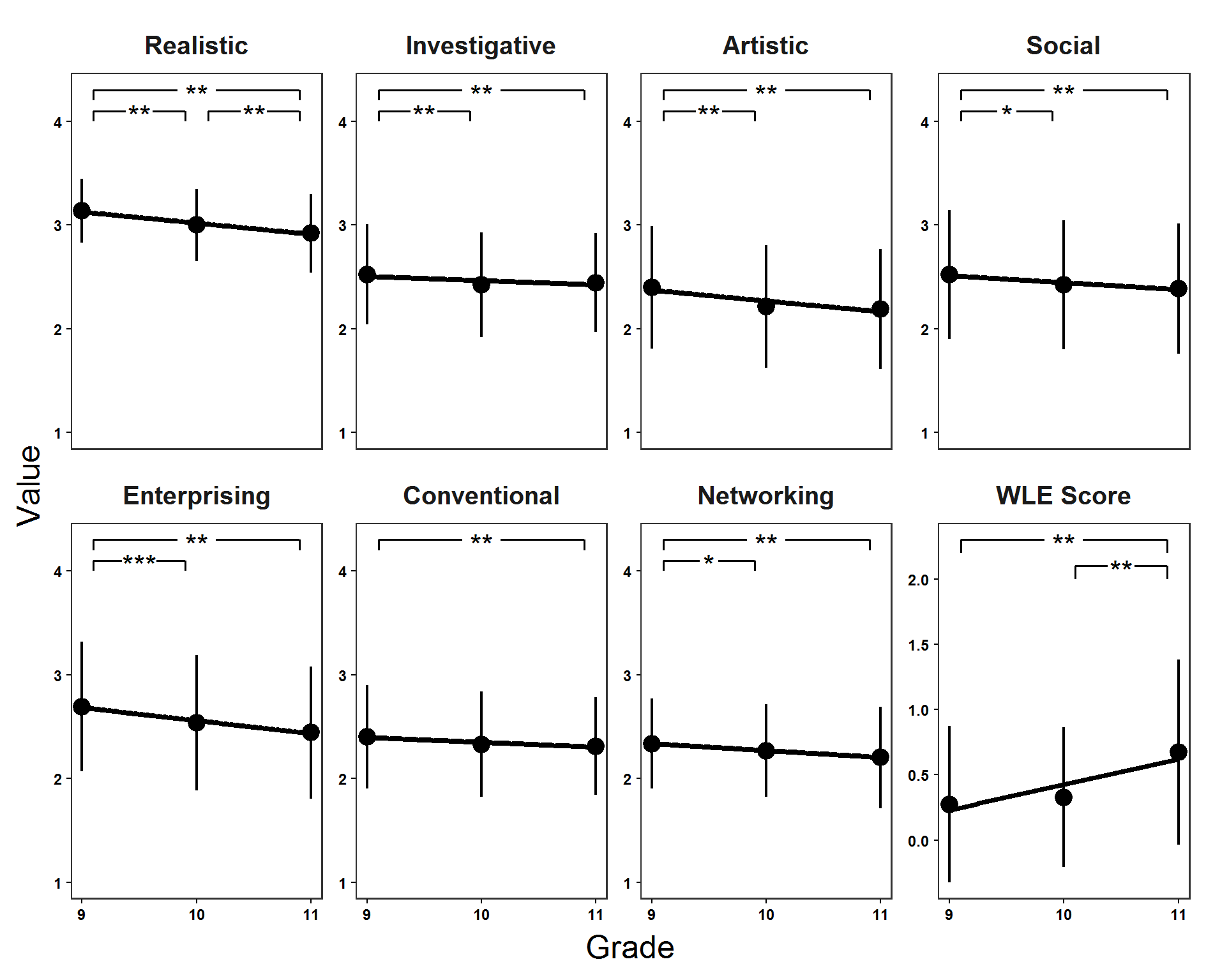
|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Conceptual understanding  (WLE score) | Realistic | Investigative | Artistic | Social | Enterprising | Conventional | Networking |
| Mean initial level | 0.277\*\*\* | 2.949\*\*\* | 2.696\*\*\* | 2.602\*\*\* | 2.490\*\*\* | 2.592\*\*\* | 2.315\*\*\* | 2.540\*\*\* |
| Variance initial level | 0.206\*\*\* | 0.153\*\*\* | 0.633 | 0.476 | 0.366\*\*\* | 0.331\*\*\* | 0.197\*\*\* | 0.266\*\*\* |
| Mean slope | 0.182\*\*\* | -0.134\*\*\* | -0.081\*\*\* | -0.093\*\*\* | -0.071\*\* | -0.112\* | -0.050\* | -0.071\*\* |
| Variance slope | 0.001\*\*\* | 0.035 | 0.105 | 0.076 | 0.057 | 0.038 | 0.041 | 0.013 |
| Correlation I ~ S | 0.885 | 0.285 | -0.730 | -0.638 | -0.317\* | -0.163 | -0.032 | -0.199 |
| Cohen’s d (T1 → T3) | 0.623 | -0.533 | -0.142 | -0.314 | -0.191 | -0.338 | -0.155 | -0.225 |
| CFI | 1.000 | 0.998 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| RMSEA | 0.000 | 0.020 | 0.000 | 0.000 | 0.000 | 0.000 | 0.006 | 0.000 |
| SRMR | 0.004 | 0.014 | 0.001 | 0.000 | 0.012 | 0.010 | 0.014 | 0.006 |

External Appendix C2. Fit indices of the first order latent growth curve models.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Scale | Shape | CFI | TLI | RMSEA | SRMR |
| Realistic | linear | 0.998 | 0.994 | 0.020 | 0.014 |
| Realistic | free | 1.000 | 1.000 | 0.000 | 0.000 |
| Investigative | linear | 0.973 | 0.918 | 0.083 | 0.032 |
| Investigative | free |  |  |  |  |
| Artistic | linear | 0.974 | 0.923 | 0.078 | 0.029 |
| Artistic | free | 1.000 | 1.000 | 0.000 | 0.000 |
| Social | linear | 1.000 | 1.003 | 0.000 | 0.012 |
| Social | free | 1.000 | 1.000 | 0.000 | 0.000 |
| Enterprising | linear | 1.000 | 1.011 | 0.000 | 0.010 |
| Enterprising | free | 1.000 | 1.000 | 0.000 | 0.001 |
| Conventional | linear | 1.000 | 0.999 | 0.006 | 0.014 |
| Conventional | free | 1.000 | 1.000 | 0.000 | 0.001 |
| Networking | linear | 1.000 | 1.025 | 0.000 | 0.006 |
| Networking | free | 1.000 | 1.000 | 0.000 | 0.001 |
| WLE Score | linear | 0.937 | 0.811 | 0.147 | 0.070 |
| WLE Score | free | 1.000 | 1.000 | 0.000 | 0.002 |

External Appendix C3. Fit indices of the True Individual Change Models (Steyer, Shanahan, & Partchev, 2000).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Scale | CFI | TLI | RMSEA | SRMR |
| Realistic | 0.990 | 0.984 | 0.021 | 0.044 |
| Investigative | 0.982 | 0.972 | 0.033 | 0.030 |
| Artistic | 1.000 | 1.003 | 0.000 | 0.032 |
| Social | 0.988 | 0.985 | 0.029 | 0.034 |
| Enterprising | 0.994 | 0.991 | 0.020 | 0.039 |
| Conventional | 0.999 | 0.998 | 0.009 | 0.034 |
| Networking | 0.988 | 0.982 | 0.028 | 0.044 |



External Appendix C4. Mean factor scores and corresponding standard deviations of students’ interest in school science activities (Realistic, Investigative, Artistic, Social, Enterprising, Conventional, Networking) and conceptual understanding (WLE Score) across Grades 9 to 11 based on the True Individual Change Model (for interest variables; Steyer et al., 2000) respectively manifest means (for the WLE score). Significant differences between grades are reported for comparisons between grades within two years of each other (\* p < .05; \*\* p < .01; \*\*\* p < .001).

**External Appendix D**

**Supplemental Materials for Results ­– Cross-lagged models of interest in school science activities and conceptual understanding**

External Appendix D1. Cross-lagged models for interest in school science activities and WLE scores: Standardized factor loadings, path coefficients, residual variances, and model fit indices.

|  | Realistic  model | | Investigative model | | Artistic  model | | Social  model | | Enterprising model | | Conventional model | | Networking model | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | R | WLE Score | I | WLE Score | A | WLE Score | S | WLE Score | E | WLE  Score | C | WLE Score | N | WLE Score |
| Factor loadings | .58 - .74 | | .57 - .86 | | .41 - .88 | | .69 - .91 | | .58 - .87 | | .53 - .89 | | .49 – .90 | |
| Autoregressive effects | | | | | | | | | | | | | | |
| T1 → T2 | .49\*\*\* | .63\*\*\* | .62\*\*\* | .59\*\*\* | .61\*\*\* | .64\*\*\* | .60\*\*\* | .62\*\*\* | .62\*\*\* | .62\*\*\* | .48\*\*\* | .62\*\*\* | .56\*\*\* | .61\*\*\* |
| T2 → T3 | .70\*\*\* | .56\*\*\* | .63\*\*\* | .54\*\*\* | .67\*\*\* | .57\*\*\* | .61\*\*\* | .55\*\*\* | .64\*\*\* | .55\*\*\* | .60\*\*\* | .56\*\*\* | .49\*\*\* | .54\*\*\* |
| Cross-lagged effects | | | | | | | | | | | | | | |
|  | WLE→R | R→WLE | WLE→I | I→WLE | WLE→A | A→WLE | WLE→S | S→WLE | WLE→E | E→WLE | WLE→C | C→WLE | WLE→N | N→WLE |
| T1 → T2 | .03 | .04 | .11\* | .11\*\* | -.02 | .00 | .09\* | .10\*\* | .07 | .09\* | .07 | .06 | .18\*\*\* | .10\*\* |
| T2 → T3 | .03 | .03 | .11\* | .09\*\* | -.01 | .00 | .08\* | .08\*\* | .06 | .07\* | .07 | .05 | .15\*\*\* | .08\*\* |
| Effects of covariates at T1 | | | | | | | | | | | | | | |
| Age | .03 | -.01 | .02 | -.02 | .06 | -.02 | -.06 | -.01 | .01 | -.01 | .04 | -.01 | .05 | -.01 |
| Gender | .23\*\*\* | .11\*\* | .10\* | .12\*\* | -.15\*\*\* | .11\*\* | .03 | .11\*\* | .07 | .11\*\* | -.07 | .11\*\* | -.02 | .11\*\* |
| KFT | .10 | .36\*\*\* | .07 | .36\*\*\* | .00 | .36\*\*\* | .15\*\* | .36\*\*\* | .02 | .36\*\*\* | .07 | .36\*\*\* | .07\* | .36\*\*\* |
| Residual variance | | | | | | | | | | | | | | |
| T1 | .07 | .15 | .03 | .15 | .03 | .15 | .03 | .15 | .01 | .15 | .01 | .15 | .01 | .15 |
| T2 | .26 | .44 | .43 | .44 | .41 | .43 | .39 | .43 | .41 | .43 | .26 | .43 | .40 | .43 |
| T3 | .49 | .42 | .46 | .42 | .50 | .41 | .43 | .42 | .42 | .42 | .39 | .42 | .31 | .42 |
| Model fit | | | | | | | | | | | | | | |
| CFI | 0.943 | | 0.974 | | 0.983 | | 0.988 | | 0.971 | | 0.962 | | 0.971 | |
| RMSEA | 0.037 | | 0.028 | | 0.023 | | 0.022 | | 0.032 | | 0.034 | | 0.032 | |
| SRMR | 0.058 | | 0.038 | | 0.044 | | 0.037 | | 0.046 | | 0.049 | | 0.046 | |

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