**Students’ Emotion Regulation and School-Related Wellbeing:**

**Longitudinal Models Juxtaposing Between- and Within-Person Perspectives**

**- Supplementary Materials –**

This document contains the following materials:

1. Missing Data Analyses

2. Preliminary Analyses

3. References

Tables S1-S4

**1. Missing Data Analyses**

Table S1 and Table S2 show the results from the t-tests for identifying sources of missing data. We also conducted chi-square difference tests to examine missingness for gender, nationality and FSM. Students who had FSM were more likely to complete the questionnaire at Time 2 than students who did not have FSM (*p* < .001). All other differences for missingness at Time 2 were not statistically significant (*p*s >.05). For Time 3, males were less likely than females to participate in completing the Time 3 cognitive reappraisal scale (*p* =.019), the Time 3 suppression scale (*p* =.017), and the Time 3 school-related wellbeing scale (*p* =.018). All other differences for Time 3 missing data were not statistically significant (*p*s >.05). Since the missing data could be accounted for by FSM and gender, these variables were included as covariates in the SEMs.

**2. Preliminary Analyses**

To estimate latent bivariate correlations, a measurement model was created that included reappraisal (6 items at T1, T2 and T3), suppression (4 items at T1, T2 and T3), and wellbeing (6 items at T1, T2 and T3). The residuals of corresponding indicators at T1, T2, and T3,were allowed to correlate for all measures. Previous studies examining the factor structure of the ERQ-CA recommend correlating the residual variances for items 1 and 3 on the cognitive reappraisal sub-scale (‘When I want to feel happier I think about something different’ and ‘When I want to feel less bad… I think about something different’) because the items show large correlations between residuals (Gullone & Taffe, 2012; Ng at al., 2019), likely due to the items having similar wording even though they represent contrasting emotional states (Ng et al., 2019). As such, correlating the residuals of these items is justified (Cole et al., 2007), and they were allowed to correlate at each time point. Gender (0 = male, 1 = female), age, and FSM (FSM; 0 = not eligible for FSM, 1 = eligible for FSM) were added to the measurement model as manifest variables.

***Measurement Invariance***

Tests of measurement invariance are reported in Table S3. The reappraisal and suppression scales demonstrated metric, scalar, and residual invariance, suggesting that the same construct is represented by each of the scales at each measurement occasion. The wellbeing scale showed partial scalar invariance as the item intercepts were the same across all time points for three of the six items on the scale. The items on the scale not displaying scalar invariance were ‘School is going well for me,’ ‘I feel good at school,’ and ‘I like going to school.

**3. References**

Cole, D. A., Ciesla, J. A., & Steiger, J. H. (2007). The insidious effects of failing to include design-driven correlated residuals in latent-variable covariance structure analysis. *Psychological Methods, 12*(4), 381-398. https://doi.org/10.1037/1082-989X.12.4.381

Gullone, E., & Taffe, J. (2012). The Emotion Regulation Questionnaire for Children and Adolescents (ERQ–CA): A psychometric evaluation. *Psychological Assessment, 24*(2), 409-417. https://doi.org/10.1037/a0025777

Ng, Z. J., Huebner, E. S., Maydeu-Olivares, A., & Hills, K. J. (2019). Confirmatory factor analytic structure and measurement invariance of the Emotion Regulation Questionnaire for Children and Adolescents in a longitudinal sample of adolescents. *Journal of Psychoeducational Assessment, 37*(2), 139-153. https://doi.org/10.1177/0734282917732891

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| **Table S1**  *Results of T-Tests for identifying sources of Missing Data for T2 Reappraisal, T2 Suppression, and T2 Wellbeing* | | | | | |
| Variables | Mean Difference | *SE* Difference | *t* | df | *p* |
|  |  |  |  |  |  |
| *T2 Reappraisal* |  |  |  |  |  |
| T1 Reappraisal | -.105 | .035 | -2.959 | 1,714 | .003 |
| T1 Wellbeing | -.249 | .035 | -7.160 | 1,552 | <.001 |
| Age | -.358 | .081 | -4.414 | 2,213 | <.001 |
| *T2 Suppression* |  |  |  |  |  |
| T1 Reappraisal | -.124 | .035 | -3.535 | 1,714 | <.001 |
| T1 Wellbeing | -.237 | .034 | -6.953 | 1,745 | <.001 |
| Age | -.672 | .080 | -8.397 | 2,341 | <.001 |
| *T2 Wellbeing* |  |  |  |  |  |
| T1 Wellbeing | -.238 | .035 | -6.805 | 1,513 | <.001 |
| T1 Reappraisal | -.096 | .036 | -2.717 | 1,714 | .007 |
| Age | -.347 | .083 | -4.181 | 2,355 | <.001 |
|  |  |  |  |  |  |
| *Note.* Mean difference refers to the difference in means for participants who had missing data at Time 2 compared with participants who did not having missing data at Time 2 (0 = missing, 1 = completed). | | | | | |

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| --- | --- | --- | --- | --- | --- |
| **Table S2**  *Results of T-Tests for identifying sources of Missing Data for T3 Reappraisal, T3 Suppression, and T3 Wellbeing* | | | | | |
| Variables | Mean Difference | *SE* Difference | *t* | df | *p* |
|  |  |  |  |  |  |
| *T3 Reappraisal* |  |  |  |  |  |
| T1 Reappraisal | -.107 | .035 | -3.054 | 1714 | .002 |
| T1 Wellbeing | -.185 | .034 | -5.404 | 1751 | <.001 |
| T2 Reappraisal | -.121 | .043 | -2.800 | 1135 | .005 |
| T2 Wellbeing | -.245 | .042 | -5.818 | 1149 | <.001 |
| *T3 Suppression* |  |  |  |  |  |
| T1 Reappraisal | -.106 | .035 | -3.028 | 1714 | .002 |
| T1 Wellbeing | -.184 | .034 | -5.385 | 1751 | <.001 |
| T2 Reappraisal | -.121 | .043 | -2.800 | 1135 | .005 |
| T2 Wellbeing | -.245 | .042 | -5.818 | 1149 | <.001 |
| *T3 Wellbeing* |  |  |  |  |  |
| T1 Reappraisal | -.120 | .035 | -3.423 | 1714 | .001 |
| T1 Wellbeing | -.188 | .034 | -5.487 | 1746 | <.001 |
| T2 Reappraisal | -.121 | .044 | -2.766 | 1086 | .006 |
| T2 Wellbeing | -.247 | .042 | -5.811 | 1098 | <.001 |
|  |  |  |  |  |  |
| *Note.* Mean difference refers to the difference in means for participants who had missing data at Time 3 compared with participants who did not having missing data at Time 3 (0 = missing, 1 = completed). | | | | | |

**Table S3**

*Tests of Measurement Invariance for Reappraisal, Suppression, and School-Related Wellbeing*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Models | χ2(df) | RMSEA | SRMR | CFI | TLI | Δ RMSEA | ΔCFI | ΔTLI |
|  |  |  |  |  |  |  |  |  |
| *Reappraisal* |  |  |  |  |  |  |  |  |
| T1 | 55.65 (8) | .059 | .020 | .986 | .974 |  |  |  |
| T2 | 23.39 (8) | .037 | .012 | .995 | .991 |  |  |  |
| T3 | 15.51 (8) | .028 | .012 | .997 | .995 |  |  |  |
| Configural | 282.52 (111) | .026 | .037 | .983 | .976 |  |  |  |
| Metric Invariance | 295.55 (121) | .025 | .039 | .983 | .978 | -.001 | <.001 | -.002 |
| Scalar Invariance | 306.28 (133) | .024 | .041 | .983 | .980 | -.001 | <.001 | +.002 |
| Residual Invariance | 339.39 (145) | .024 | .041 | .981 | .979 | <.001 | -.002 | -.001 |
|  |  |  |  |  |  |  |  |  |
| *Suppression* |  |  |  |  |  |  |  |  |
| T1 | 6.02 (2) | .039 | .012 | .995 | .986 |  |  |  |
| T2 | 1.37 (2) | .000 | .006 | 1.000 | 1.002 |  |  |  |
| T3 | 1.99 (2) | .000 | .008 | 1.000 | 1.000 |  |  |  |
| Configural | 76.04 (39) | .021 | .028 | .989 | .981 |  |  |  |
| Metric Invariance | 77.40 (45) | .019 | .029 | .990 | .986 | -.002 | +.001 | +.005 |
| Scalar Invariance | 88.95 (53) | .018 | .030 | .989 | .987 | -.001 | -.001 | +.001 |
| Residual Invariance | 111.16 (61) | .020 | .041 | .985 | .984 | +.002 | -.004 | -.003 |
|  |  |  |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Models | χ2(df) | RMSEA | SRMR | CFI | TLI | Δ RMSEA | ΔCFI | ΔTLI |
|  |  |  |  |  |  |  |  |  |
| *Wellbeing* |  |  |  |  |  |  |  |  |
| T1 | 62.34 (9) | .058 | .016 | .987 | .979 |  |  |  |
| T2 | 52.41 (9) | .058 | .017 | .988 | .981 |  |  |  |
| T3 | 66.76 (9) | .072 | .023 | .982 | .969 |  |  |  |
| Configural | 299.697 (114) | .026 | .026 | .985 | .980 |  |  |  |
| Metric Invariance | 312.239 (124) | .025 | .028 | .985 | .982 | -.001 | <.001 | +.002 |
| Scalar Invariance | 468.947 (136) | .032 | .051 | .974 | .970 | +.007 | -.011 | -.012 |
| Partial Scalar Invariancea | 416.867 (136) | .031 | .044 | .977 | .973 | +.006 | -.008 | -.009 |
|  |  |  |  |  |  |  |  |  |
| *Note*. χ2 statistic for all models statistically significant at *p* <.001.  a Equality constraint relaxed on three items: ‘School is going well for me’, ‘I feel good at school’ and ‘I like going to school’ | | | | | | | | |

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| **Table S4** | | | | | | |  |  |
| *Model Fit Indices and Goodness of Fit for the Lag 1 and Lag 2 CLPMs* | | | | | | | | |
|  | χ2 (df) | RMSEA | SRMR | CFI | TLI | AIC | ΔAIC | TRd(df) |
|  |  |  |  |  |  |  |  |  |
| Lag 1 | 1768.44 (1128)\*\*\* | .016 | .039 | .969 | .965 | 158517.25 | 13.41 | 25.80 (9)\*\* |
| Lag 2: Autoregressive paths only | 1753.72 (1125)\*\*\* | .016 | .038 | .969 | .965 | 158505.68 | 1.84 | 11.15 (6) |
| Lag 2: CL & Autoregressive Paths | 1742.51 (1119)\*\*\* | .016 | .037 | .970 | .966 | 158503.84 | — | — |
|  |  |  |  |  |  |  |  |  |
| *Note.* CL = Cross-lagged. \**p*< .05. \*\**p*< .01. \*\*\**p*< .001. | | | | | | | | |