Supplemental Materials

to accompany

The Role of Caregiver Emotion Regulation in Youth Mental Health

during the COVID-19 Pandemic: A Longitudinal Study

Stephanie Gyuri Kim, Alexandra M. Rodman, Maya L. Rosen, Steven W. Kasparek, Makeda Mayes, Liliana J. Lengua, Andrew N. Meltzoff & Katie A. McLaughlin

**Supplemental Materials**

**Supplemental Analyses**

We conducted confirmatory factor analyses (CFA) to examine whether the factor structures of the Children’s Response Styles Questionnaire (CRSQ; Abela et al., 2002) and the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) identified during the COVID-19 pandemic correspond with the originally identified factor structures of these measures. CFA confirmed that the factor structures for these measures remained stable during the COVID-19 pandemic.

One-factor models for CRSQ (caregiver and youth, respectively) and two-factor models for ERQ (caregiver and youth, respectively) were tested using full information maximum likelihood (FIML) estimation. Specifically, we used maximum likelihood with robust standard errors (MLR) to address non-normality in the item-level indicator variables for CRSQ. Model fit was evaluated using CFI, RMSEA, and SRMR. CFI > .90 and SRMR < .10 indicated acceptable model fit (Kline, 2005). RMSEA < .08 indicated a fair fit, RMSEA < .10 a mediocre fit, and RMSEA > .10 a poor fit (Brown & Cudek, 1992; McCallum & Austin, 2000). A cutoff value of 0.09 for SRMR was also recommended when used in conjunction with RMSEA > .06 (Hu & Bentler, 1999). In cases of poor model fit, modification indices were examined, and residual correlations between indicators were added if justified based on similarities in item content or wording.

The fit indices of the one-factor models for the rumination subscale of CRSQ indicated acceptable model fit for both caregivers and youth (see Table S1). Two significant residual correlations were added between items with similar content (e.g., “Go away by yourself and think about why you feel this way” and “Go someplace alone to think about your feelings) for both caregiver and youth CFA models. Item factor loadings were all positive and satisfactory (standardized loadings > .30) for both caregivers and youth, ranging from .34 to .81.

The two-factor models for ERQ also demonstrated acceptable model fit for both caregivers and youth (see Table S1). One significant residual correlation was added between items for the caregiver model, and two significant residual correlations were added for the youth model (e.g., “When I want to feel happier, I think about something different” and “When I want to feel less bad (e.g., sad, angry or worried), I think about something different”). An additional residual correlation was not added for the caregiver model as adding a residual covariance did not significantly improve the model fit (Δ*χ*2 = 1.80, Δ*df* = 1, *p* = .179). Item factor loadings were all positive and satisfactory (standardized loadings > .30) for both caregivers and youth, ranging from .37 to .90.

Overall, the ER scales used in the present study are suitable for assessing corresponding constructs during the COVID-19 pandemic. From a practical standpoint, including a few additional residual covariances often has minimal impact on the utility of a measure. Prior literature has shown that this approach has been employed when theoretically justified (e.g., Aldao & Nolen-Hoeksema, 2010; Gullone & Taffe, 2011; Matsumoto et al., 2008; Preece et al., 2017). Indeed, it is likely that the residual covariances observed in our current models result from a method effect caused by similarities in item wording or sentence structure (Podsakoff et al., 2003).

**Table S1.**

*Children’s Response Style Questionnaire (Rumination): Items and Factor Loadings*

|  |  |  |
| --- | --- | --- |
|  | **Caregiver** | **Youth** |
| **Standardized factor loadings** |  |  |
| 1. Think about how alone you feel. | .62\*\*\* | .56\*\*\* |
| 2. Go away by yourself and think about why you feel this way. | .41\*\*\* | .37\*\*\* |
| 3. Think "I'm ruining everything." | .74\*\*\* | .69\*\*\* |
| 4. Think about how sad you feel. | .64\*\*\* | .65\*\*\* |
| 5. Go someplace alone to think about your feelings. | .34\*\*\* | .47\*\*\* |
| 6. Think about other times when you felt sad. | .40\*\*\* | .57\*\*\* |
| 7. Think about a recent situation wishing it had gone better. | .64\*\*\* | .63\*\*\* |
| 8. Think "There must be something wrong with me or I wouldn't feel this way." | .81\*\*\* | .73\*\*\* |
| 9. Think about all of your failures, faults, and mistakes. | .75\*\*\* | .75\*\*\* |
| 10. Think "Why can't I handle things better." | .81\*\*\* | .75\*\*\* |
| 11. Think about how you don't feel like doing anything. | .69\*\*\* | .57\*\*\* |
| **Item correlations** |  |  |
| Item 2 ~~ Item 5 | .66\*\*\* | .56\*\*\* |
| Item 4 ~~ Item 6 | .30\*\*\* | .30\*\*\* |
| **Model fit indices** | CFI = 0.916  RMSEA = 0.089  SRMR = 0.071 | CFI = 0.929  RMSEA = 0.071  SRMR = 0.065 |

*Note*. CFI = comparative fit index; RMSEA = root mean squared error of approximation; SRMR = standardized root mean square residual. \*\*\**p* < .001.

**Table S2.**

*Emotion Regulation Questionnaire (Expressive Suppression and Cognitive Reappraisal): Items and Factor Loadings*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Caregiver** | | **Youth** | |
| **Standardized factor loadings** | **ES** | **CR** | **ES** | **CR** |
| 1. When I want to feel happier, I think about something different. | - | .43\*\*\* | - | .37\*\*\* |
| 2. I keep my feelings to myself. | .64\*\*\* | - | .72\*\*\* | - |
| 3. When I want to feel less bad (e.g., sad, angry or worried), I think about something different. | - | .49\*\*\* | - | .46\*\*\* |
| 4. When I am feeling happy, I am careful not to show it. | .44\*\*\* | - | .53\*\*\* | - |
| 5. When I am worried about something, I make myself think about it in a way that helps me feel better. | - | .61\*\*\* | - | .58\*\*\* |
| 6. I control my feelings by not showing them. | .74\*\*\* | - | .81\*\*\* | - |
| 7. When I want to feel happier about something, I change the way I am thinking about it. | - | .76\*\*\* | - | .65\*\*\* |
| 8. I control my feelings about things by changing the way I think about them. | - | .79\*\*\* | - | .67\*\*\* |
| 9. When I am feeling bad (e.g., sad, angry, or worried), I am careful not to show it. | .71\*\*\* | - | .69\*\*\* | - |
| 10. When I want to feel less bad (e.g., sad, angry, or worried) about something, I change the way I am thinking about it. | - | .89\*\*\* | - | .90\*\*\* |
| **Item correlations** |  |  |  |  |
| Item 1 ~~ Item 3 | .52\*\*\* | | .47\*\*\* | |
| Item 7 ~~ Item 8 |  | | .40\*\*\* | |
| **Factor correlations** | .10 | | -.15 | |
| **Model fit indices** | CFI = 0.961  RMSEA = 0.065  SRMR = 0.051 | | CFI = 0.957  RMSEA = 0.066  SRMR = 0.055 | |

*Note*. ES = expressive suppression; CR = cognitive reappraisal. CFI = comparative fit index; RMSEA = root mean squared error of approximation; SRMR = standardized root mean square residual. \*\*\**p* < .001.

**References**

Abela, J. R. Z., Brozina, K., & Haigh, E. P. (2002). An examination of the response styles theory of depression in third- and seventh-grade children: A short-term longitudinal study. *Journal of Abnormal Child Psychology*, *30*(5), 515–527. https://doi.org/10.1023/A:1019873015594

Aldao, A., & Nolen-Hoeksema, S. (2010). Specificity of cognitive emotion regulation strategies: A transdiagnostic examination. *Behaviour Research and Therapy*, *48*(10), 974-983. https://doi.org/10.1016/j.brat.2010.06.002

Browne, M. W., & Cudeck, R. (1992). Alternative ways of assessing model fit. *Sociological Methods & Research*, *21*(2), 230-258. https://doi.org/10.1177/0049124192021002005

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, *85*(2), 348–362. https://doi.org/10.1037/0022-3514.85.2.348

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

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Kline, R.B. (2005), *Principles and practice of structural equation modeling*. New York: The Guilford Press.

MacCallum, R. C., & Austin, J. T. (2000). Applications of structural equation modeling in psychological research. *Annual Review of Psychology*, *51*(1), 201-226. https://doi.org/ 10.1146/annurev.psych.51.1.201

Matsumoto, D., Yoo, S. H., & Nakagawa, S. (2008). Culture, emotion regulation, and adjustment. *Journal of Personality and Social Psychology*, *94*, 925–937. https://doi.org/ 10.1037/0022-3514.94.6.925

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Preece, D., Becerra, R., Allan, A., Robinson, K., & Dandy, J. (2017). Establishing the theoretical components of alexithymia via factor analysis: Introduction and validation of the attention-appraisal model of alexithymia. *Personality and Individual Differences*, *119*, 341–352. https://doi.org/10.1016/j.paid.2017.08.003