

Testing Measurement Invariance

For the “before the interaction” model (Figure 2), we first examined whether the CFA model fit well in each of the three samples. All latent factors were allowed to covary. Results show that the CFA model fit well for Chinese ($\chi^2 = 552.78$, $df = 314$, $p < .0001$, RMSEA = .053, 90% CI [.046, .061], CFI = .960, SRMR = .042), U.S. Americans abroad ($\chi^2 = 720.15$, $df = 314$, $p < .0001$, RMSEA = .056, 90% CI [.050, .061], CFI = .950, SRMR = .053), and U.S. Americans in the U.S. ($\chi^2 = 687.84$, $df = 314$, $p < .0001$, RMSEA = .048, 90% CI [.043, .053], CFI = .964, SRMR = .043) separately.

To assess configural invariance, we fit the same CFA model simultaneously to the three samples, allowing all the parameters to be estimated separately for each sample. The model had good fit, $\chi^2 = 1960.77$, $df = 942$, $p < .0001$, RMSEA = .052, 90% CI [.049, .055], CFI = .958, SRMR = .047. Therefore, the model achieved configural invariance.

Moving to pattern invariance, we constrained the loadings to be equal across the three samples, leaving the other parameters freely estimated. The model had good fit, $\chi^2 = 2022.16$, $df = 986$, $p < .0001$, RMSEA = .051, 90% CI [.048, .054], CFI = .958, SRMR = .049. Next, we conducted a χ^2 test between the pattern invariance and the configural invariance models to see if the former fit significantly worse than the latter. The result was significant, $\Delta\chi^2 = 61.39$, $\Delta df = 44$, $p = .043$. However, researchers have suggested that when sample size is large, the χ^2 test could yield statistically significant result even if the differences in parameters are trivial. Instead, a comparison of approximate fit indices, such as CFI, is more appropriate when comparing models (Kline, 2015). Therefore, we used the criterion that when $\Delta CFI \leq .002$, the stricter hypothesis (i.e., pattern invariance) would not be rejected. In this case, $\Delta CFI = 0$. Therefore the model achieved pattern invariance.

Next, we evaluated strong invariance by constraining all the indicator intercepts to be equal in the three samples. The model fit well, $\chi^2 = 2244.00$, $df = 1040$, $p < .0001$, RMSEA = .054, 90% CI [.051, .057], CFI = .951, SRMR = .062. The χ^2 test of strong invariance model and pattern invariance model was significant, $\Delta\chi^2 = 221.84$, $\Delta df = 54$, $p < .00001$. And because $\Delta CFI = .007 > .002$, strong invariance was not achieved. We stopped further assessment of measurement invariance, because strict invariance presupposes strong invariance.

For the “during the interaction” model (Figure 3), we followed the same procedure. Because two items of nonverbal immediacy had similar content, we specified their error covariance in the model. The model had good fit for all three samples separately: Chinese ($\chi^2 = 1208.37$, $df = 750$, $p < .0001$, RMSEA = .048, 90% CI [.043, .053], CFI = .952, SRMR = .048), U.S. Americans abroad ($\chi^2 = 1488.83$, $df = 750$, $p < .0001$, RMSEA = .048, 90% CI [.045, .052], CFI = .947, SRMR = .053), and U.S. Americans in the U.S. ($\chi^2 = 1723.26$, $df = 750$, $p < .0001$, RMSEA = .050, 90% CI [.047, .053], CFI = .946, SRMR = .052).

First we assessed configural invariance. When parameters were freely estimated, the CFA model fit well simultaneously for the three samples, $\chi^2 = 4420.46$, $df = 2250$, $p < .0001$, RMSEA = .049, 90% CI [.047, .051], CFI = .948, SRMR = .051. The model achieved configural invariance.

We then constrained all the loadings to be equal in the three samples, thus testing pattern invariance. The model had good fit, $\chi^2 = 4486.75$, $df = 2316$, $p < .0001$, RMSEA = .048, 90% CI [.046, .050], CFI = .948, SRMR = .053. The χ^2 comparison of the pattern invariance and the configural invariance models was not significant, $\Delta\chi^2 = 66.29$, $\Delta df = 66$, $p = .467$. Also, $\Delta CFI = 0$. The model achieved pattern invariance.

Next we assessed strong invariance. When loadings and intercepts were constrained to be equal,

the model had good fit, $\chi^2 = 4878.60$, $df = 2398$, $p < .0001$, RMSEA = .051, 90% CI [.049, .053], CFI = .940, SRMR = .062. The χ^2 test of the strong invariance against the pattern invariance model was significant, $\Delta\chi^2 = 391.85$, $\Delta df = 82$, $p < .00001$. Also, $\Delta CFI = .008 > .002$. Therefore, strong invariance was not achieved.