1. Run the first example in umxRAM (like last week)
2. Get a `umxSummary(m1, showEstimates = "raw")`
   - Does it fit well?
3. Get a summary() of the model
   - What fit statistics can you see?
   - chi-square measure of fit
   - AIC: Akaike Information Criterion (fit penalised by degrees of freedom)
   - Akaike Information Criterion
   - CFI: Comparative fit Index
   - TLI: Tucker-Lewis index
   - Root mean square error of approximation RMSEA
4. Is fit good, according to AIC, TLI? What are common criteria for good fit?
   - RMSEA ≤ .05
   - TLI ≥ .95
5. Can you tell from the AIC if fit is good?
   - No, it is a comparative measure: need to compare to the AIC of another model.
6. Look up the formula for AIC in `?summary.MxModel`
   - Explain this to a lab-mate.
7. Look up the formula for AIC in `?summary.MxModel`

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* Explain this to a lab-mate.
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8. Look up the formula for RMSEA on the internet (Kenny, elsewhere)
   - What are the key parameters?
   - $\chi^2$, df, and N (sample size)
   - What makes RMSEA get smaller?
     - plug in some values and see.
   - What makes the denominator get bigger?
9. get the `mxRefModels` for your model m1
   - `ref = mxRefModels(m1, run = T)`
   - What does mxRefModels return?
   - A list of 2 models: Saturated and Independence
   - What are these 2 reference models?
   - There are more parameters (6) used in the saturated model, and fewer (3) in the independence model
   - Why?
10. Run the example given in `?mxRefModels`
    - run summary(m1) without providing the reference models
    - run summary(), providing the refModels= parameter
    - What changed? What fit statistics are available now, that were not before?
11. Draw an independence model for three variables.
12. Make it into saturated model for three variables.
13. open http://davidakenny.net/cm/fit.htm
    - Try and figure out why the new statistics became available when the independence and

saturated models became available

14. Take turns explaining to a lab-mate what optimization does
15. Build a new model "m2".
    - Make it like the one in step 5, but leave out the path from wt → mpg
    - `umxPath("disp", to = "mpg")`
16. `umxCompare` m1 and m2
    - umxCompare(m1, m2)
    - Which is preferred by AIC?
    - m1 - the AIC is lower

## Refs

1. David Kenny page
    - http://davidakenny.net/cm/fit.htm
2. umx home page
    - http://tbates.github.io
3. OpenMx home page
    - http://openmx.ssri.psu.edu