PathDiagrams

Dustin Fife

12/4/2020

```
require(tidyverse)
```

```
## Loading required package: tidyverse
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.0 --
```

```
## v ggplot2 3.3.2     v purrr   0.3.4
## v tibble  3.0.4     v dplyr   1.0.2
## v tidyr   1.1.2     v stringr 1.4.0
## v readr   1.3.1     v forcats 0.5.0
```

```
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
require(lavaan)
```

```
## Loading required package: lavaan
```

```
## This is lavaan 0.6-7
```

```
## lavaan is BETA software! Please report any bugs.
```

```
require(flexplavaan)
```

```
## Loading required package: flexplavaan
```

```
## Registered S3 method overwritten by 'GGally':
##   method from
##   +.gg   ggplot2
```

```
## Warning: replacing previous import 'flexplot::flip_data' by 'ggplot2::flip_data'
## when loading 'flexplavaan'
```

```
fit_o = fitMeasures(force_fit$lavaan) %>% round(digits=3)
fit_n = fitMeasures(nonlinear$lavaan) %>% round(digits=3)
measures = c("chisq", "df", "pvalue", "cfi", "tli", "bic", "rmsea", "srmr")
tab = data.frame(Original=fit_o[measures], Nonlinear=fit_n[measures])
row.names(tab) = c("$\\chi^2$", "$df$", "$p$", "CFI", "TLI", "BIC", "RMSEA", "SRMR")
knitr::kable(tab, row.names=T, caption="Global Fit Indices for the Original and Nonlinear Model for the
```

Table 1: Global Fit Indices for the Original and Nonlinear Model for the Jedi Dataset.

	Original	Nonlinear
χ^2	19.445	26.340
df	13.000	31.000
p	0.110	0.705

	Original	Nonlinear
CFI	0.996	1.000
TLI	0.994	1.004
BIC	42616.177	50388.554
RMSEA	0.026	0.000
SRMR	0.025	0.022

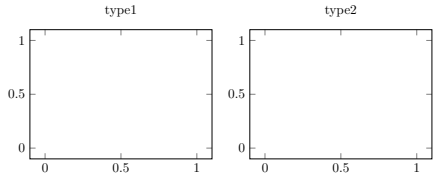


Figure 1: The model on the left is the user-specified model, while the model on the right is the data-generating model. These two models make very different theoretical statements, but have the same implied correlation between the variables. Visualizing the raw data from these models can help identify structural problems for the model on the left.

R Markdown

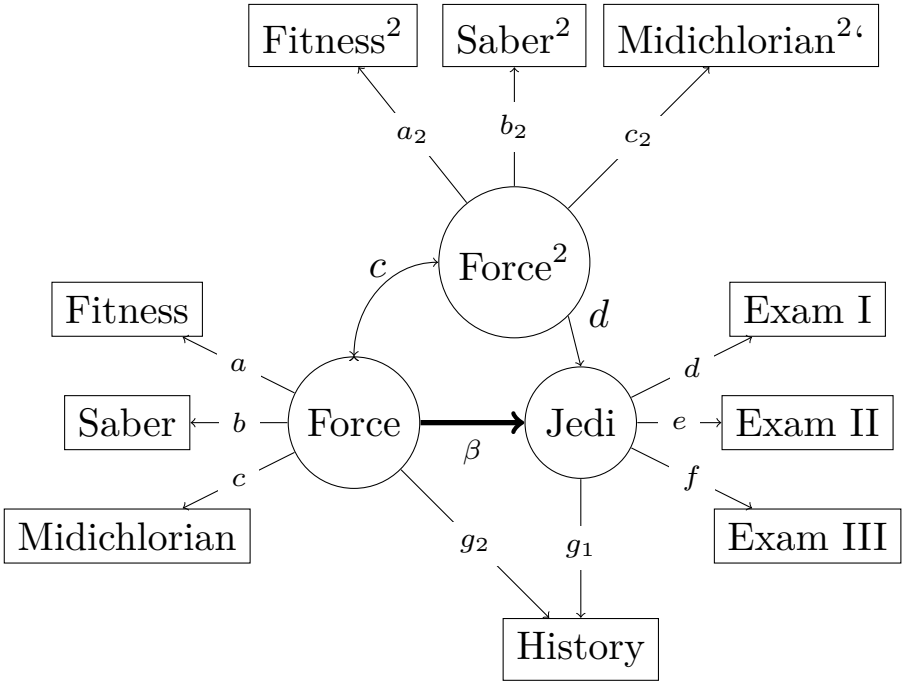


Figure 2: Nonlinear model for the dataset generated from 3.

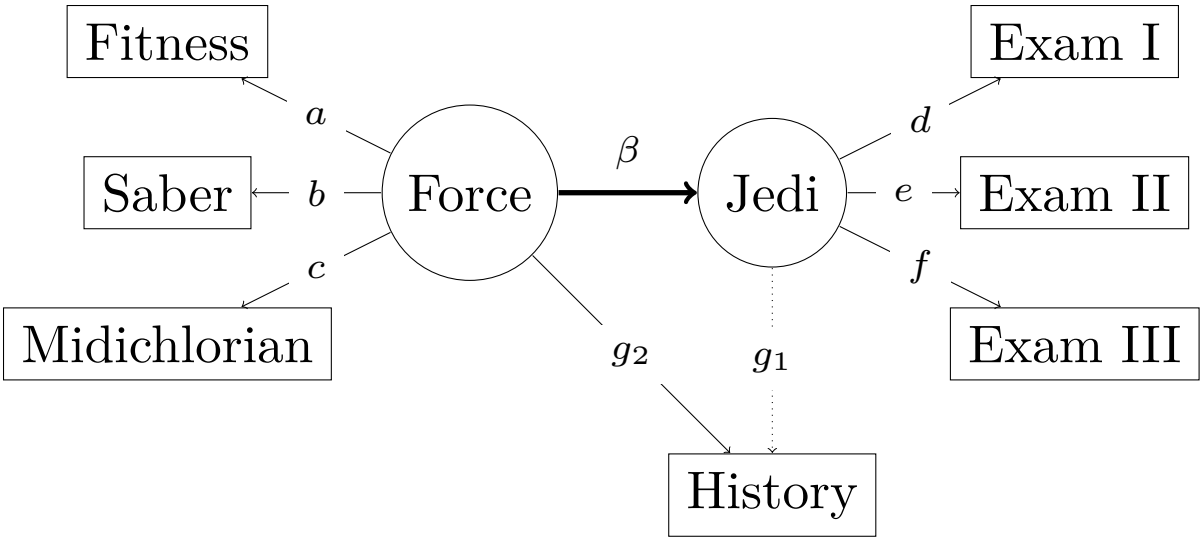
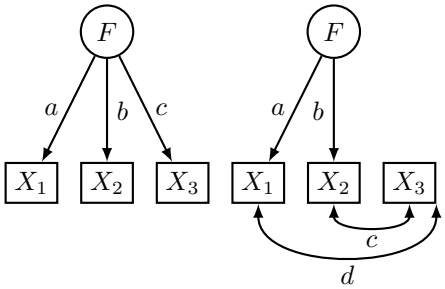


Figure 3: Model specified by the Jedi council. The incorrectly specified path is shown as a thicker line, while the missing path is shown as a dotted line.



This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.