Top_song_analysis.R

Apurva Sarode

2020-04-16

```
fa <- principal(props, nfactors=2, rotate="varimax")
fa
```

```
## Principal Components Analysis
## Call: principal(r = props, nfactors = 2, rotate = "varimax")
## Standardized loadings (pattern matrix) based upon correlation matrix
##                  RC1   RC2   h2   u2 com
## Energy          0.91  0.13 0.85 0.15 1.0
## Dancebility     0.01  0.91 0.83 0.17 1.0
## Loudness        0.82  0.09 0.68 0.32 1.0
## Valence         0.33  0.77 0.71 0.29 1.3
## Acoustiveness -0.70 -0.21 0.54 0.46 1.2
##
##                        RC1  RC2
## SS loadings           2.10 1.50
## Proportion Var        0.42 0.30
## Cumulative Var        0.42 0.72
## Proportion Explained  0.58 0.42
## Cumulative Proportion 0.58 1.00
##
## Mean item complexity =  1.1
## Test of the hypothesis that 2 components are sufficient.
##
## The root mean square of the residuals (RMSR) is  0.12
##  with the empirical chi square  176.13  with prob <  3.4e-40
##
## Fit based upon off diagonal values = 0.91
```

```
fa$loadings
```

```
##
## Loadings:
##                RC1    RC2
## Energy          0.910  0.128
## Dancebility           0.912
## Loudness        0.822
## Valence         0.327  0.775
## Acoustiveness -0.701 -0.214
##
##                  RC1   RC2
```

```
## SS loadings    2.104 1.502
## Proportion Var 0.421 0.300
## Cumulative Var 0.421 0.721
```

```
fa$communality
```

```
##        Energy   Dancebility      Loudness       Valence Acoustiveness
##     0.8450906     0.8315526     0.6838711     0.7074491     0.5377659
```

```
fa$scores
```

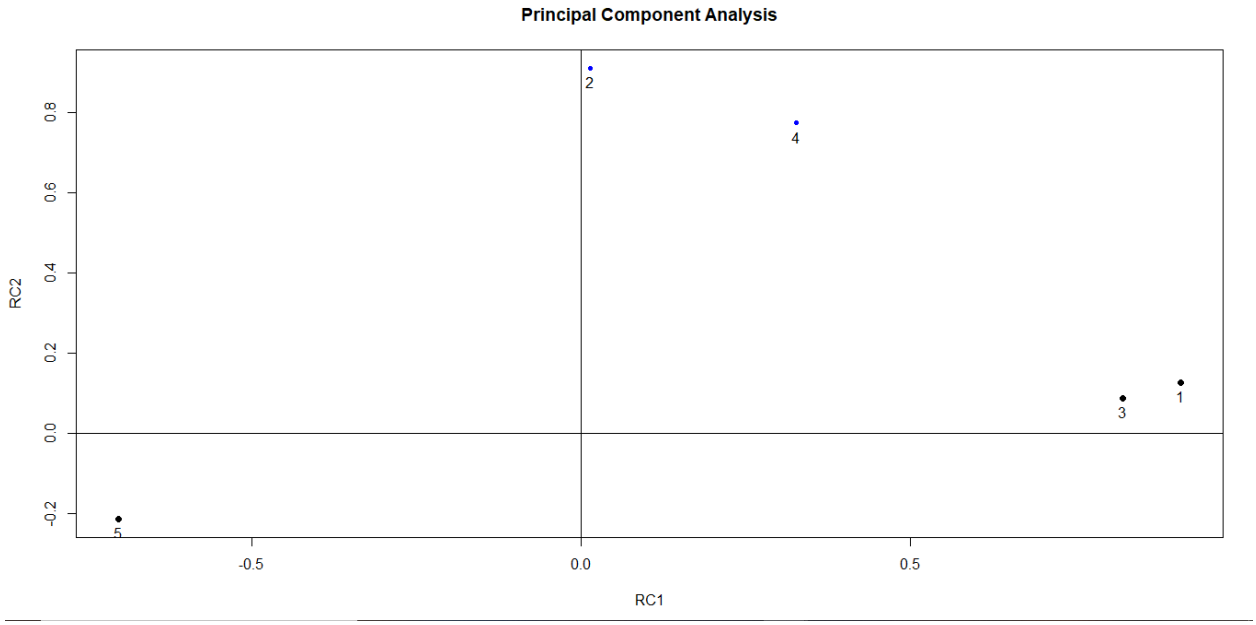
```
##                  RC1           RC2
##   [1,]  0.812151678  0.5414312149
##   [2,]  0.468570126  0.6327361872
##   [3,]  0.903879369  0.7796230617
##   [4,]  1.154067089  0.4812714264
##   [5,]  0.709806799 -0.3520772019
##   [6,]  0.609717169  0.3534452561
##   [7,]  0.681932277  1.0808338104
##   [8,]  0.312652499 -0.9734687597
##   [9,] -2.312124974 -1.3844776769
##  [10,]  0.237113538  0.8414572371
##  [11,]  1.069126791 -0.4523503107
##  [12,]  0.219077070 -0.3491795715
##  [13,]  0.217351145  0.7860148973
##  [14,]  0.174147544  1.3499922718
##  [15,]  0.283975418 -0.3959394520
##  [16,] -0.299814156  0.2645732527
##  [17,]  0.155744258  1.0529355485
##  [18,] -0.458477709  0.8194452123
##  [19,]  0.154042001 -0.3869551123
##  [20,]  0.058030475  1.4666878714
##  [21,] -0.580690320  0.6727090125
##  [22,]  0.553538334 -1.2445661460
##  [23,]  0.161111260  0.9256231293
##  [24,]  0.579077777  0.6646903004
##  [25,]  1.070783805 -0.5698569590
##  [26,]  0.696313970 -0.4005358813
##  [27,]  0.942164280  0.4815903409
##  [28,]  1.478948918  0.1937854133
##  [29,]  0.484617078  0.4544224613
##  [30,]  0.522747139  0.3486970966
##  [31,]  0.956125329  0.6664839792
##  [32,]  1.084764336  0.6698279229
##  [33,]  0.943347655  0.2946690205
##  [34,] -0.894946915 -0.2825568989
##  [35,]  0.636024620 -0.7993701768
##  [36,] -0.223577960  1.5065851601
##  [37,] -1.325118479 -2.7574602259
##  [38,]  1.184343936  0.4098993715
##  [39,]  0.552434148  1.0240125913
```

```
##  [40,]  0.803429429 -1.4495280434
##  [41,]  0.480015731 -0.4600278958
##  [42,] -1.159620268 -0.3429223500
##  [43,]  1.191207480 -2.6950338727
##  [44,]  0.568580097  1.3440424132
##  [45,] -1.586357888 -2.9893665605
##  [46,]  0.485727414  0.5427514003
##  [47,]  1.226922077 -0.1719080455
##  [48,]  1.215007566  0.1132082490
##  [49,]  0.967643938 -1.0121124865
##  [50,]  0.878460646  0.2235256388
##  [51,] -1.167859469 -1.7253427793
##  [52,] -2.776343385 -0.6302375054
##  [53,]  1.172887592 -0.1663971252
##  [54,]  0.709806799 -0.3520772019
##  [55,]  0.177541208  0.3670100915
##  [56,]  1.054842345  0.7640340843
##  [57,]  0.644556307  0.4803952620
##  [58,]  0.348223976  0.2564905186
##  [59,] -0.897062099 -0.1456942927
##  [60,]  0.382705393  0.8108192947
##  [61,]  1.362163328  0.2393142076
##  [62,]  0.787037729 -0.4677992141
##  [63,]  0.053218135 -0.9936829474
##  [64,]  0.219077070 -0.3491795715
##  [65,]  0.354725078 -1.0702445101
##  [66,]  0.518088244  0.0320270921
##  [67,]  0.531459750  0.6831986641
##  [68,]  0.932319451  0.1564107609
##  [69,] -0.538824514  0.3866351831
##  [70,] -1.202196786 -0.2466172611
##  [71,]  0.268786323  0.4694218982
```

```
fa.parallel(props)
```

```
## Parallel analysis suggests that the number of factors =  3  and the number
of components =  2
```

```
fa.plot(fa)
```




```r
fa.diagram(fa) #Visualization of the factors between relationships
```