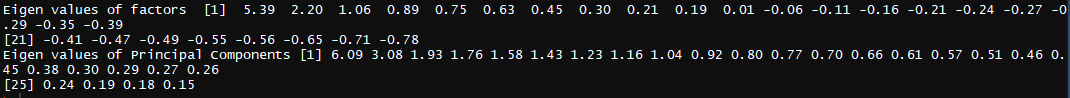
**Kaiser criterion:**

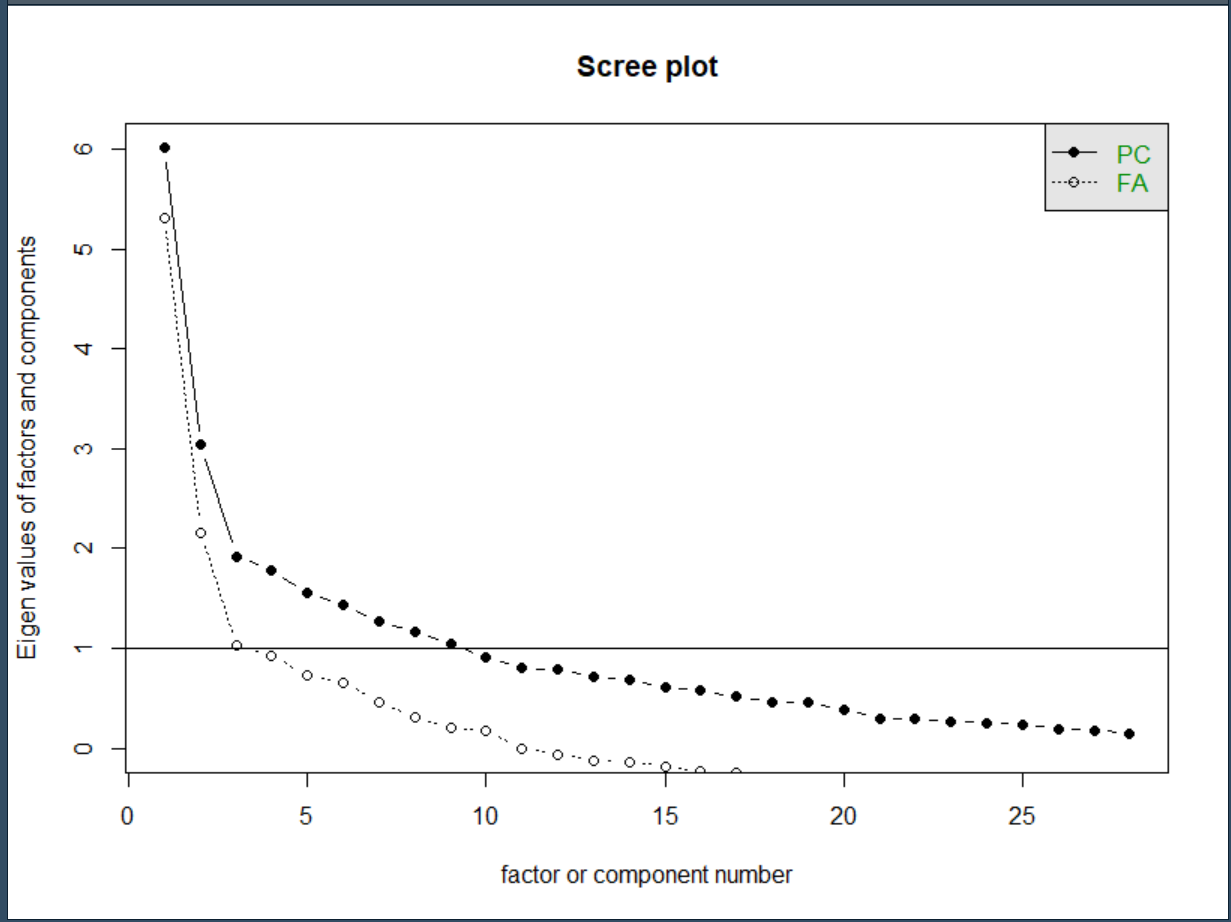
Using the scree() function from the psych package in R, I produced the following list of Eigen values:



As shown, examining the list “Eigen values of factors” results in three eigenvalues exceeding the 1.0 Kaiser criterion, and therefore based on this analysis I recommend examining 3 factors in this data.

*Note from class explanation of analysis – In SPSS, Professor Bowler showed 9 eigenvalues exceeding 1.0. In the readout above, “Eigen values of factors” shows 3 factors, with one just barely above 1.0, indicating to me a likely 2-3 factors. Upon conducting full analysis, examining pattern matrices which I have reproduced below, professor concluded that there are 2 to 3 factors worth studying. I considered this worth following up, and pose it as a question here to the professor – What’s going on here? For example, maybe R is using the term “Principal Components” where it should be using the term “Factors?”*

**Scree Plot:**

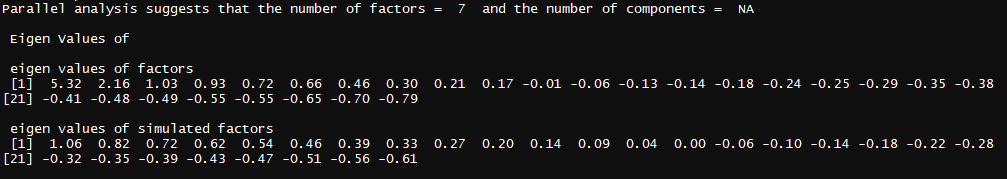


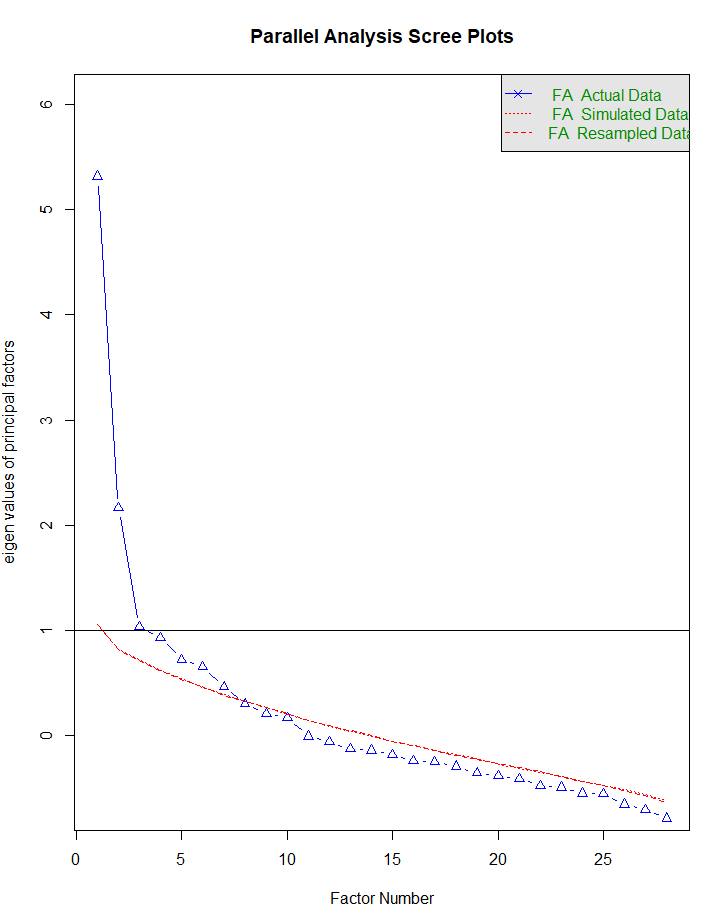
A visual evaluation of the scree plot above indicates 2-3 factors, confirming the Kaiser criterion evaluation as I have interpreted the R readout above. My suspicion voiced regarding Eigen value lists above is visualized here as well.

**Parallel Analysis**

I went on to use the fa.parallel (fa=”fa”) function from the psych package in R to conduct a parallel analysis. I used the default factor method, which is minres. All other settings used were the default. Parallel analysis suggests that the dataset contains 7 factors to extract.

*Parallel analysis demo in class indicated 5 factors; mine is different. Possibly due to different factor method?*

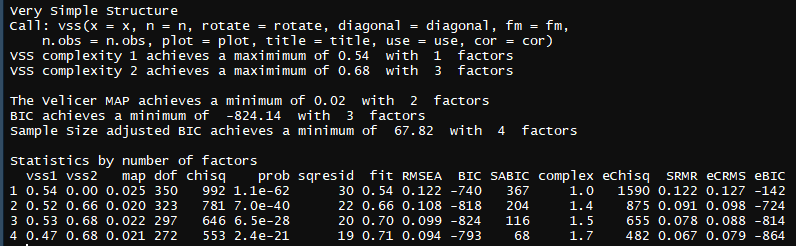




**MAP Test**

For the Velicer Minimum Average Partial criterion (MAP) test, I used the VSS() function from the psych package with the default factoring technique minres. This function outputs results from a variety of exploratory factor analysis techniques. It is not as verbose regarding the MAP test as the SPSS program provided would be. The VSS package suggests

Results with oblmin rotation, target factor number 4:

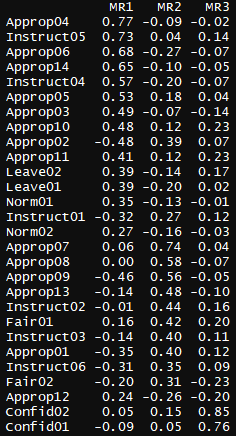


MAP test results in a suggestion of 2 factors to extract. The VSS() function does not appear to output revised MAP results, however there is likely another R package that does.

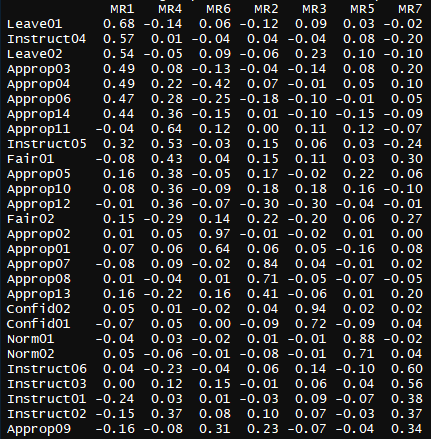
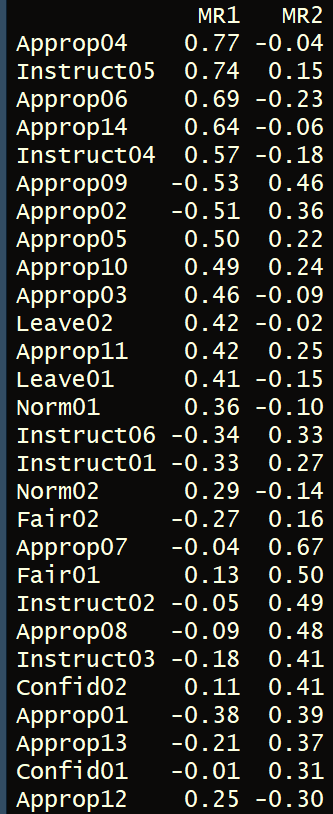
**Factor matrices**

*In R, I did not find where to access oblmin rotation structure matrices as requested.*

3 factor varimax factor analysis, factor loadings:



2 factor and 7 factor pattern matrices, oblmin rotation:

As demonstrated in class using a 6-factor model, with my 7-factor version we see very few survey items fulfill our simplicity benchmarks.

The 2-factor version shows simplicity on 6 items for Factor 1, and 2 items on factor 2. While this would direct us to eliminate many survey items, I am choosing this version because:

1. MAP test indicates 2 factors is most appropriate
2. Scree plot would suggest 2 factors as likely appropriate
3. Kaiser criterion suggested 3 factors, but the 3rd was very close to the benchmark of 1.0

Factors isolated include the following items:

**Factor 1: Polite self-determination**

Approp04 – Cell phone use in class is appropriate only if it does not involve talking, beeping, or other noises.

Instruct05 - Instructors should allow the use of a laptop in class as long as the device is completely silent.

Approp06 - It is appropriate for a student to send/answer email or text using a cell phone during class.

Approp14 - It is appropriate for a student to send or answer email using a laptop during class.

Instruct04 - Instructors should allow the use of a cell phone in class as long as the device is completely silent.

Approp05 - Cell phone use in class is appropriate only if it is done quietly and the phone is being used to look up information that is relevant to the class material being discussed.

**Factor 2: Desire for Fair working environment**

Approp07 - It is disruptive when another student's cell phone goes off (rings or makes other noises) during class.

Fair01 - Cell phones can potentially be used by some students to gain an unfair advantage on quizzes or exams.