Open Science

Assignment 7.1 - Oskar Flygare

Improving your statistical inferences by Daniel Lakens

Theoretical hypothesis

I predict that movies starring Harrison Ford will be equivalent to movies starring Jack Nicholson.

Dependent variables

I will use IMDB ratings and ignore meta scores from metacritic.com.

Sample size

The smallest effect size of interest is d=0.8, my alpha-level is 0.05 and I would like 95 % power for a two-sided test. This means that I'll need at least 42 movies starring each person.

Statistical test

I will use the "two-one-sided t-tests'" (TOST) procedure. I will calculate a 90 % confidence interval around the effect size. When the 90 % confidence interval falls below and excludes d 0.8, I will consider the movie ratings as equivalent.

- Null hypothesis: There is an effect larger than d=0.8.

- Alternative hypothesis: The effect size is within the equivalence range of *d* -0.8 to 0.8.

I predict that the difference will be statistically significant (higher ratings for movies starring Jack Nicholson) and equivalent (90 % confidence interval falls within *d* -0.8 to 0.8).

Pre-registration

https://osf.io/fx5xa/

Meta-data

Website

Downloaded from the IMDB.com website. Data was accessed January 19th 2017.

Search terms:

- Released feature films for Jack Nicholson, sorted by year descending. http://www.imdb.com/search/title?count=100&production*status=released&role=nm0000197&sort=year,desc&title*type=feature&view=simple
- Released feature films for Harrison Ford, sorted by year descending. http://www.imdb.com/search/title?production_status=released&role=nm0000148&sort=year,desc&title_type=feature&view=simple

Understanding the original data

The dataset has three columns

- name: Name of movie
- rating: Average IMDB-rating (1 decimal)
- actor: jn means Jack Nicholson, hf means Harrison Ford

Research Report

Results

I performed a TOST procedure. The results indicated that the observed effect size (d = 0,28, 90 % CI -0,02 ; 0,57) was significantly within the equivalent bounds of d = -0,8 and d = 0,8, t(123)= -2,91, p = 0,002.

Conclusion

These results indicate that average movie ratings on IMDB are equivalent for movies featuring Harrison Ford and Jack Nicholson.