Hotel Review Data Analyses Updates

2019.04.25

# Service lexicon for negative reviews

- staff
- service
- check in
- check out
- receptionist
- impolite
- not polite
- rude
- waiter
- waitress

- personnel
- reception
- gruff
- inpatient
- indifferent
- dismissive
- Unfriendly
- unhelpful
- Not friendly
- Not helpful
- not welcoming
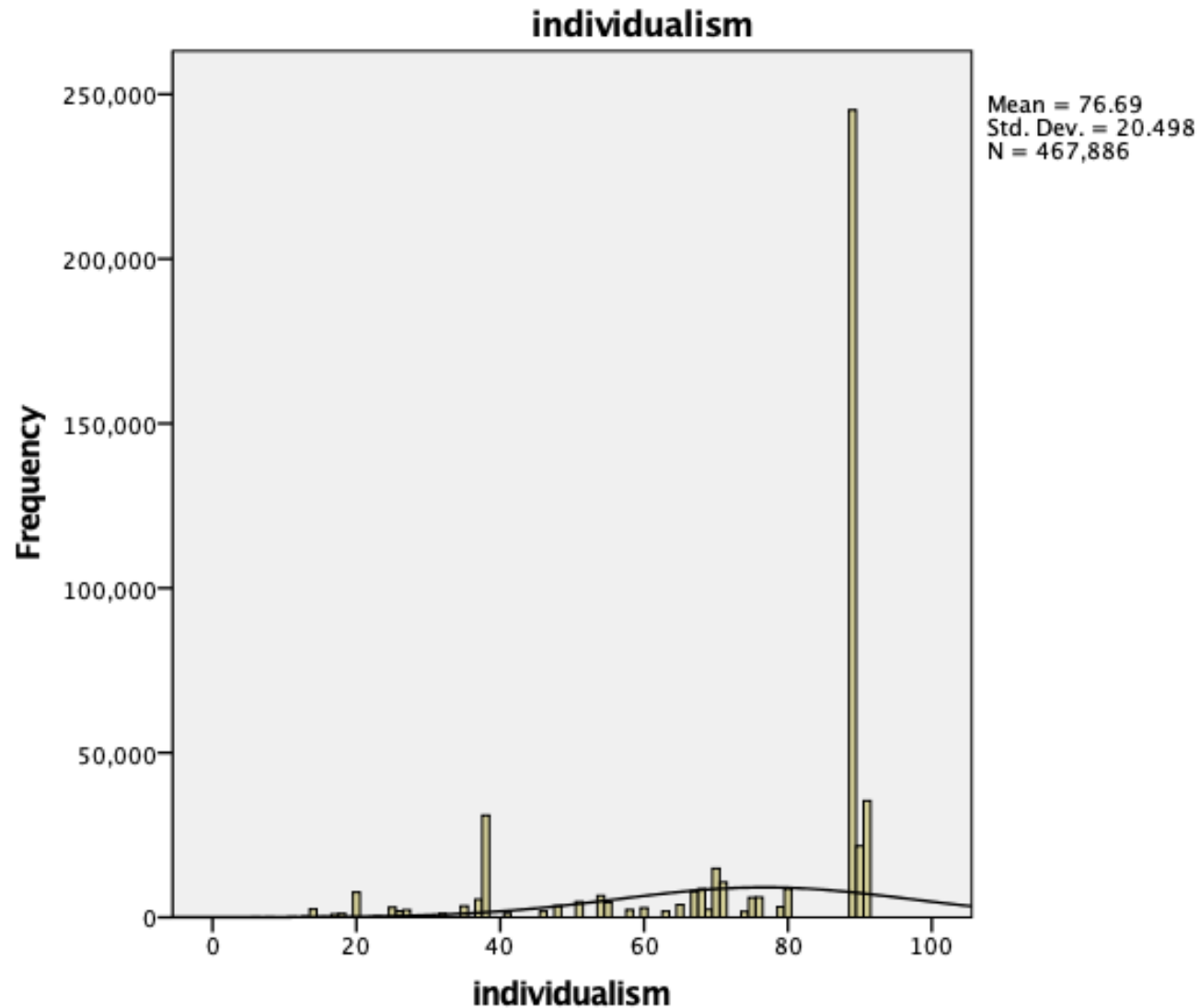- Unwelcome

* Newly added

Service lexicon for positive reviews

- staff
- service
- check in
- check out
- receptionist
- reception
- personnel
- personel
- waiter
- waitress
- manager

- patient
- friendly
- polite
- welcoming
- humble

Reviewer Nationality Distribution

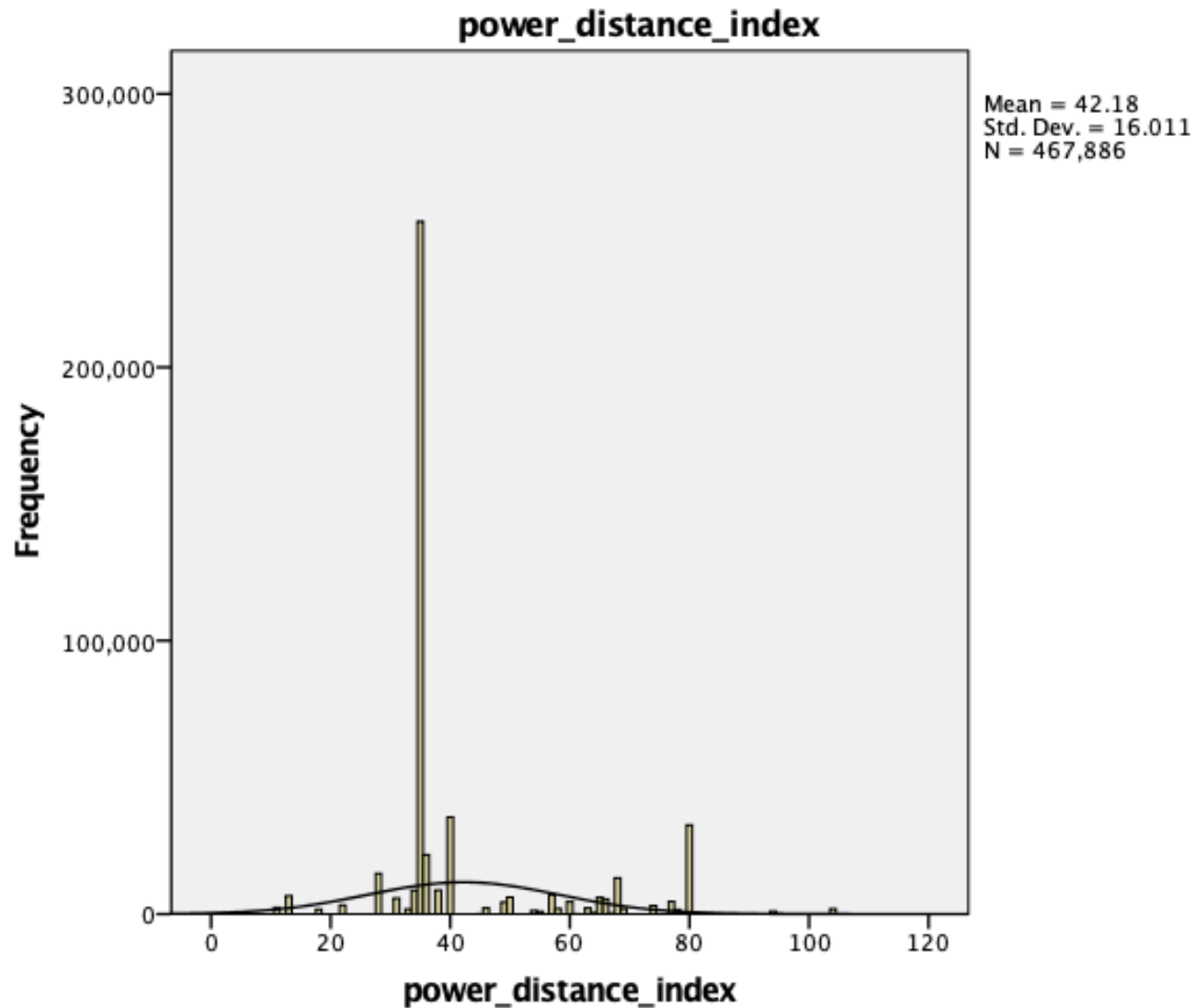Reviewer Nationality
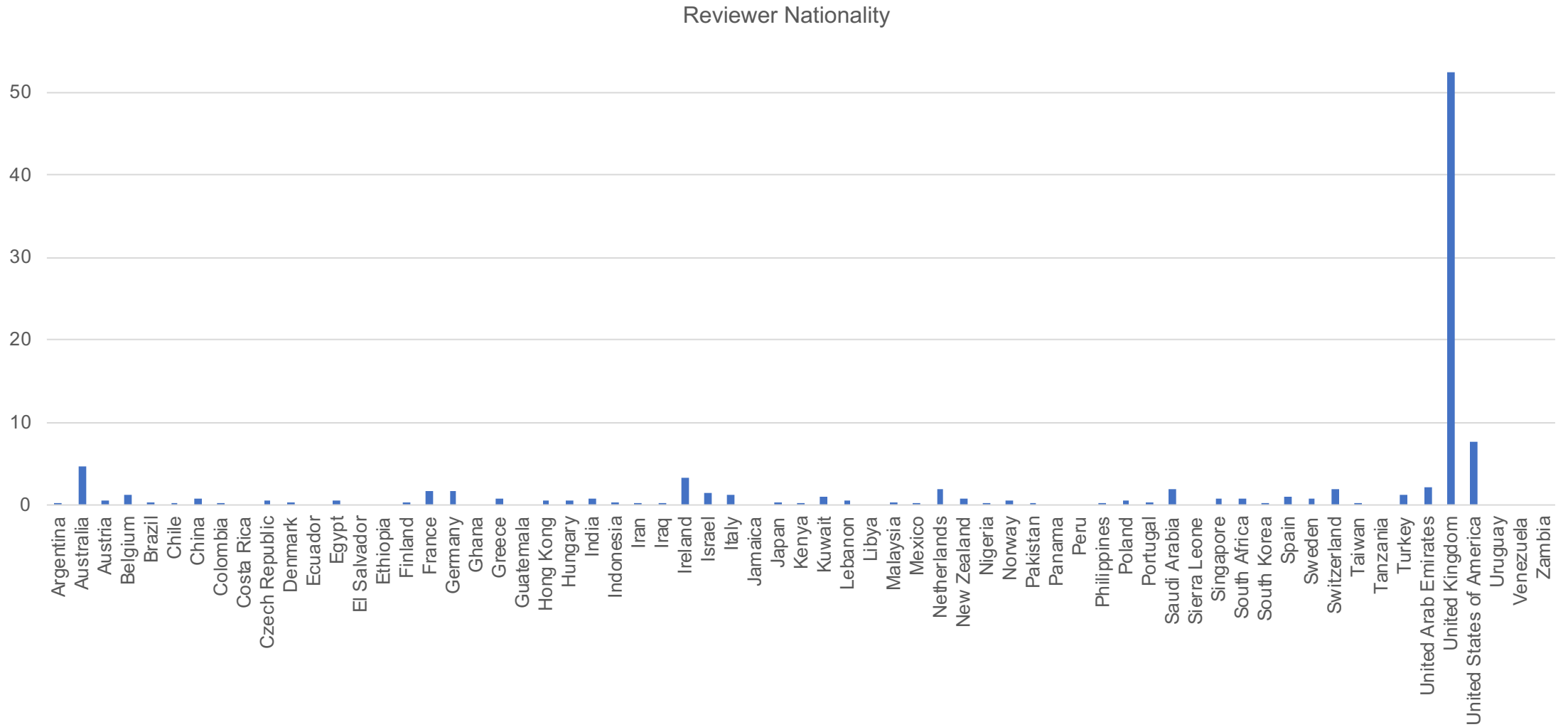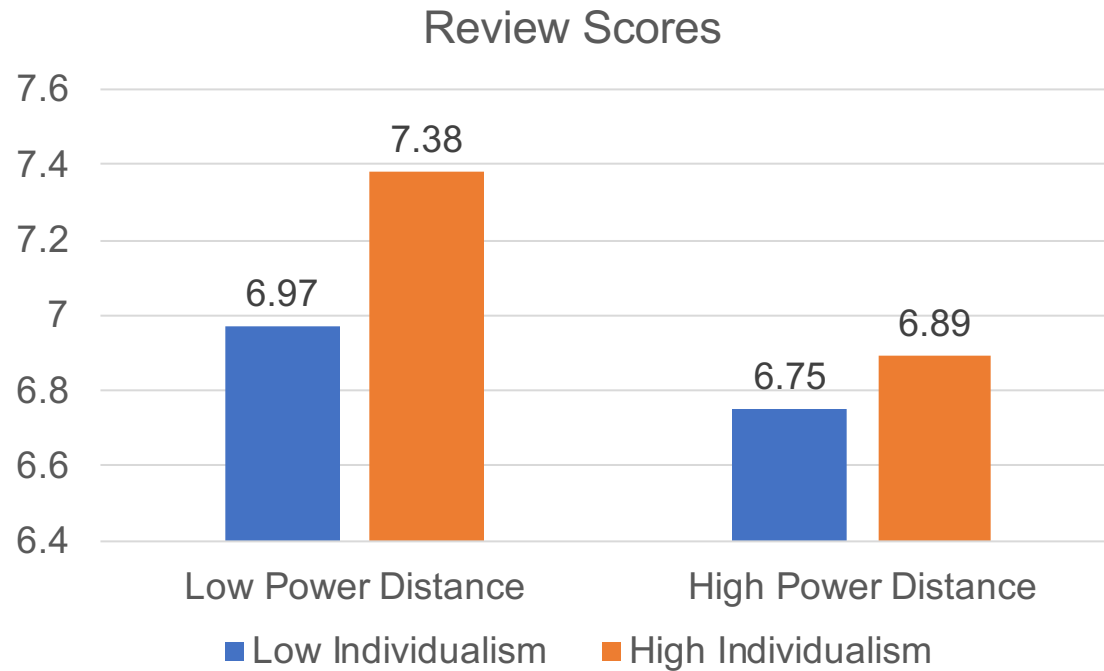
Individualism Index Histogram

The normal curve is skewed toward right.

Power Distance Index Histogram

The normal curve is skewed toward left.

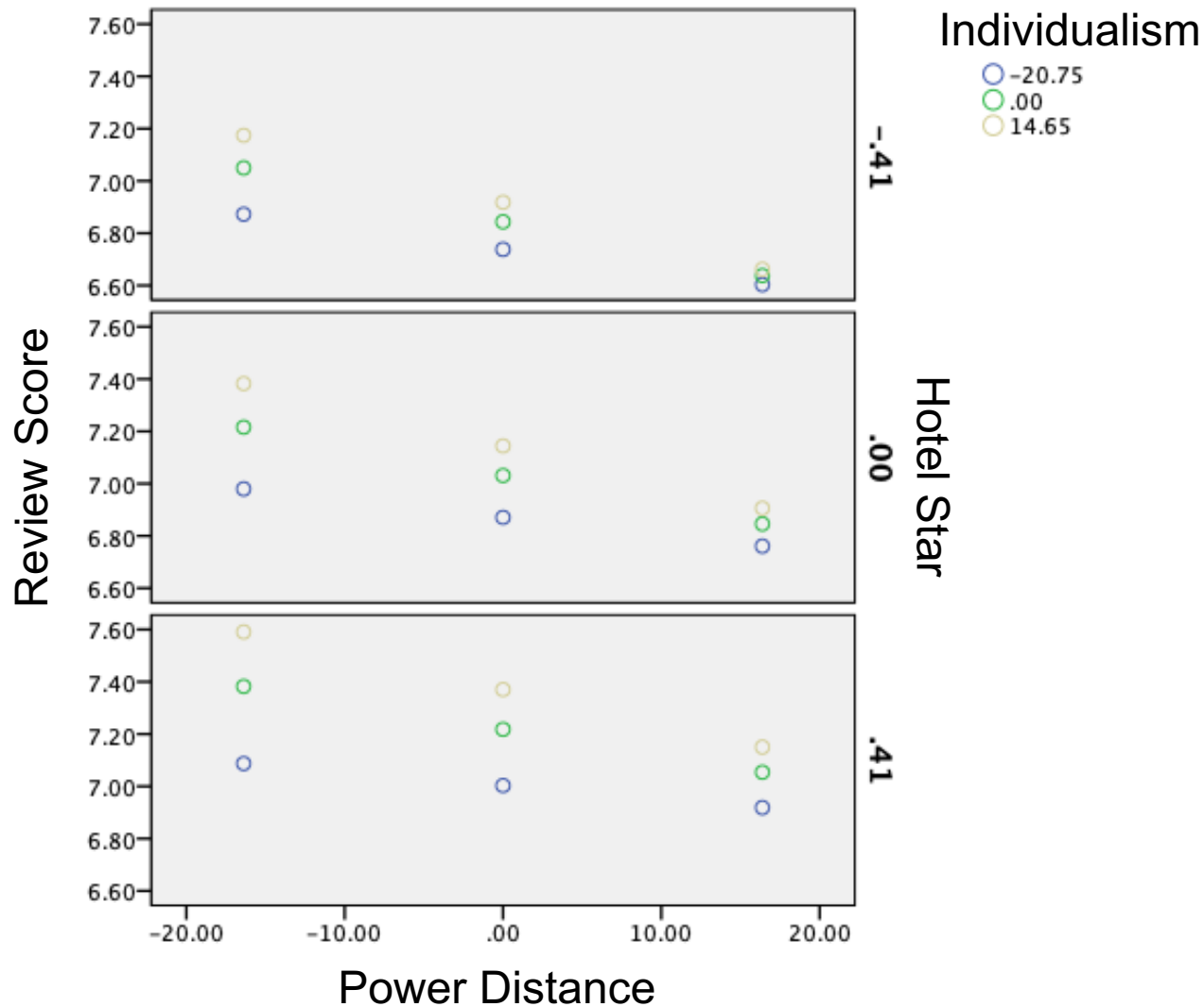# Interaction of Individualism and Power Distance on Review Scores

Review Scores

Spotlight Analysis

*** For this analysis, we only selected the review scores that the negative review is service-relevant.

Interaction: F[1,52354] = 39.63, p < .001
All the simple main effects are significant.

Reviewers from high PD + high IND countries have the second lowest review scores, and they have significantly lower scores than reviewers from low PD + low IND countries.

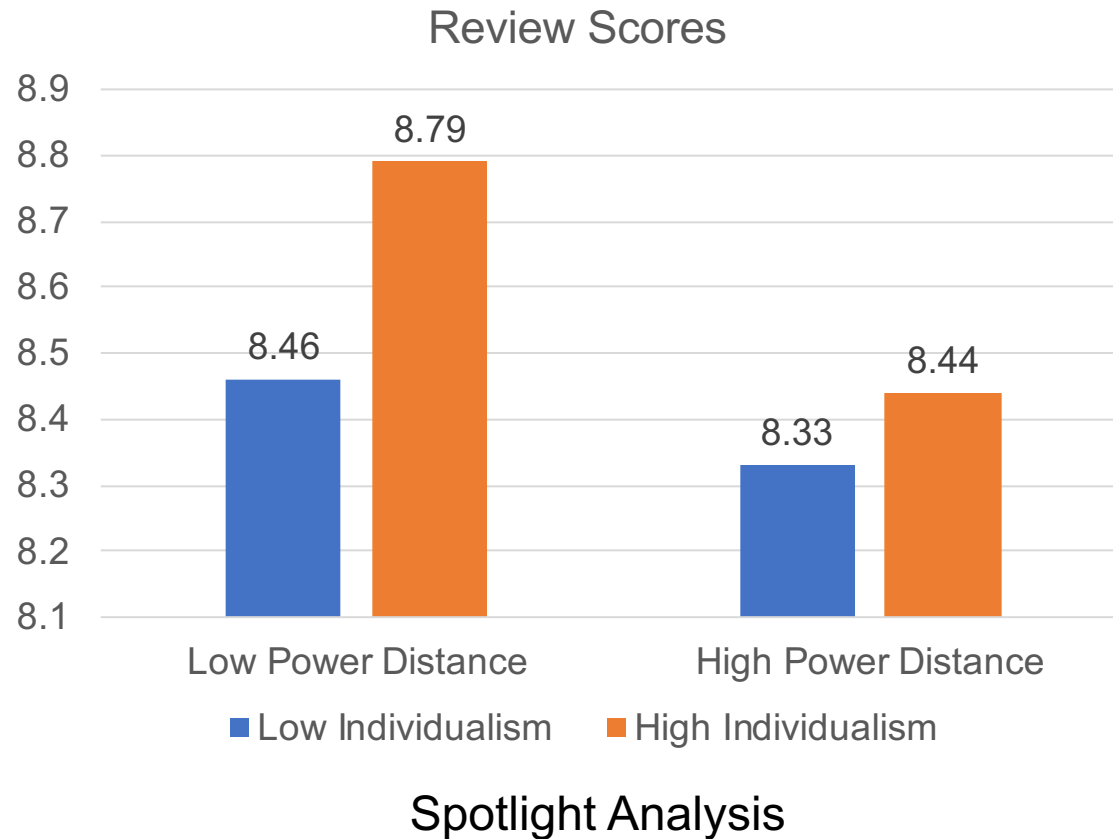# Interaction of Individualism, Power Distance, Hotel Star Rating on Review Scores

*** For this analysis, we only selected the review scores that the negative review is service-relevant.

Three-way interaction term:
$F[1,50910] = .100$, $p = .751$

Interaction of Individualism and Power Distance on Review Scores

Review Scores

Spotlight Analysis
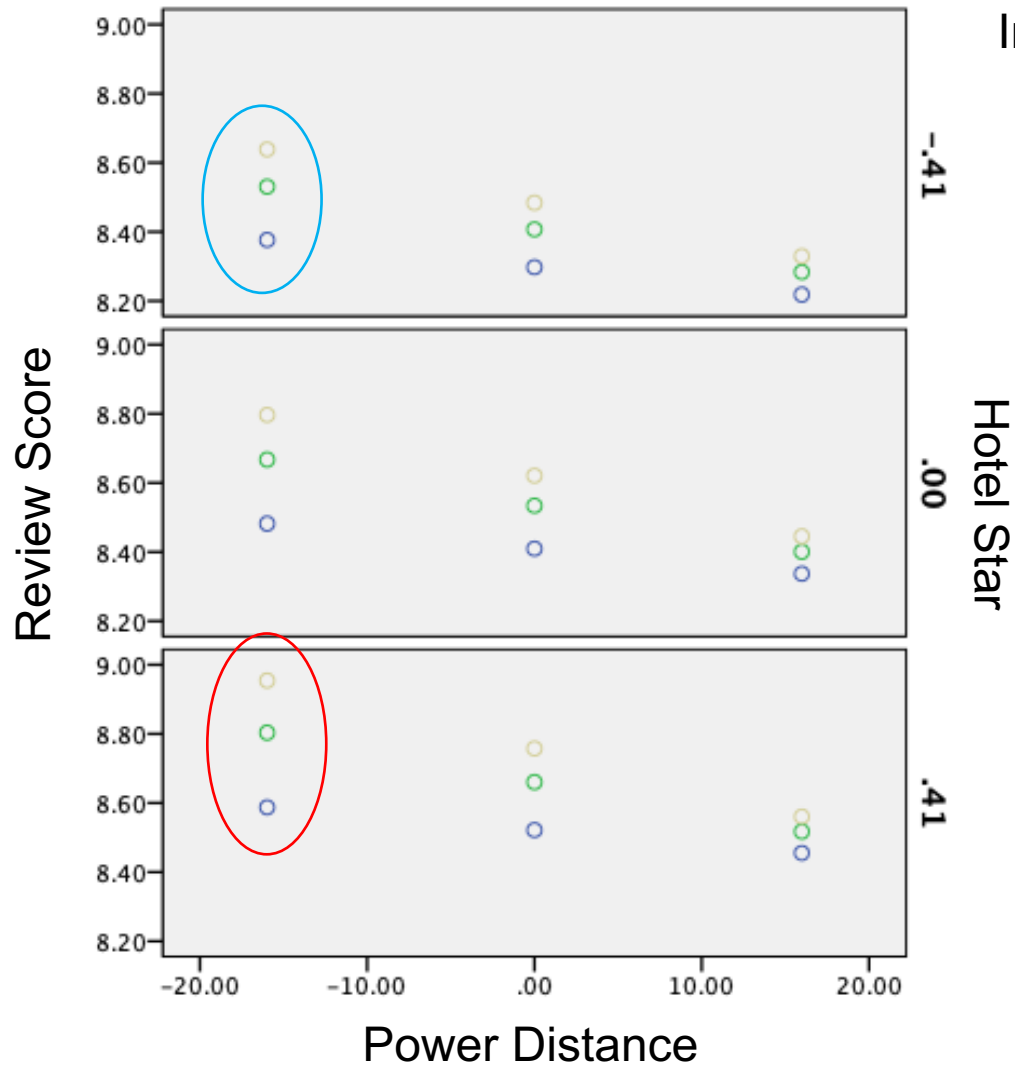
Low Individualism   High Individualism

*** For this analysis, we only selected the review scores that the negative review is **not** service-relevant.

Interaction: $F[1,415524] = 376.35$, $p < .001$
All the simple main effects are significant.

The results pattern is similar to the pattern of service-relevant negative reviews, but here all the scores are higher than the latter ones.

Interaction of Individualism, Power Distance, Hotel Star Rating on Review Scores
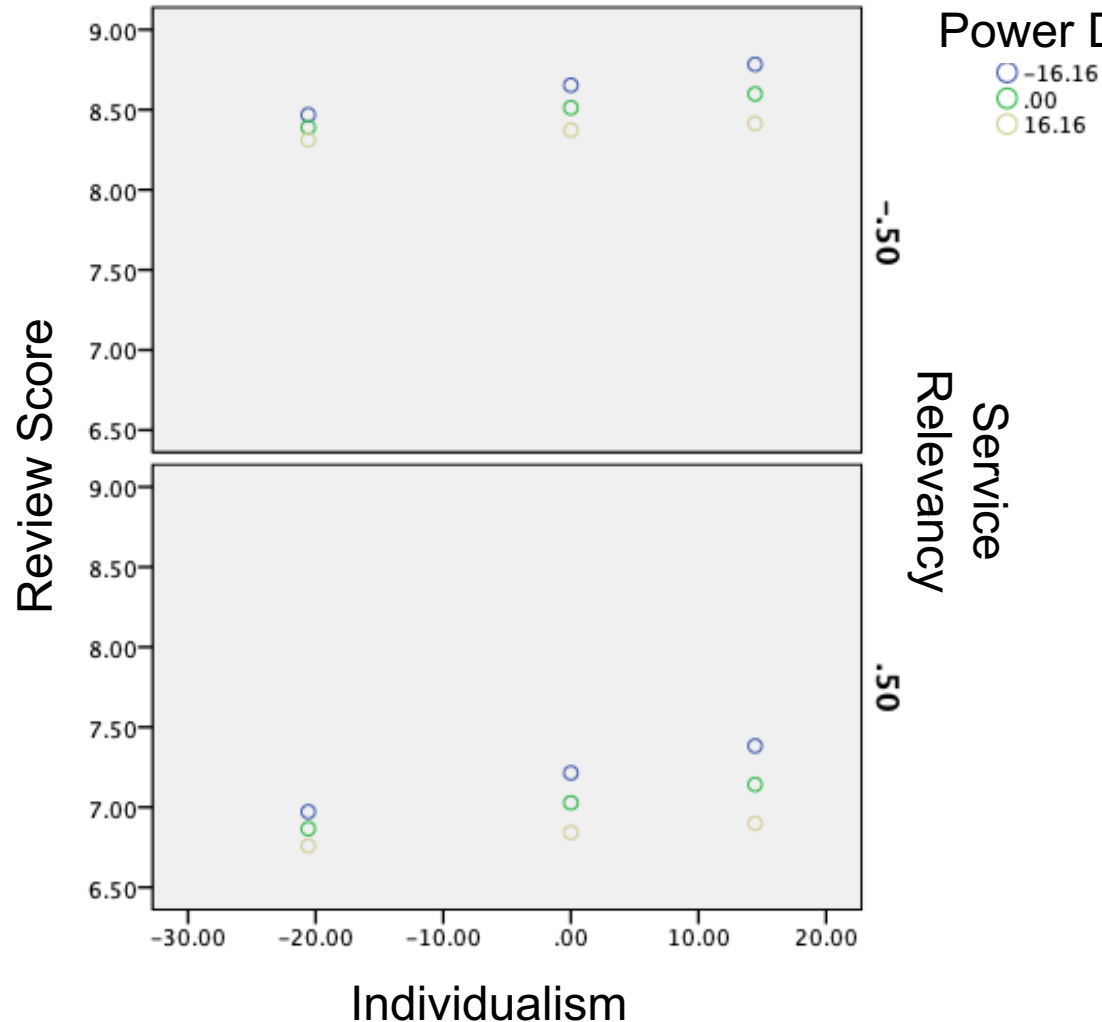
Three-way interaction term:
$F[1,404298] = 21.35, p < .001$

In general, lower individualism scores lead to lower review scores, and higher power distance scores lead to lower review scores. And lower hotel star ratings lead to lower review scores.

Though the three-way interaction is significant, the effect is not large enough to be observed on the plot.
The major observable difference is that when hotel star rating is relatively high, and power distance is relatively low, different levels of individualism scores lead to larger differences in review scores (highlighted in red), as compared to when hotel star rating is relatively low, and power distance is relatively low (highlighted in blue).

Interaction of Individualism, Power Distance, Service Relevancy (Based on Negative Reviews) on Review Scores

Comparison highlighted

Service-relevant Negative Reviews	Service-relevant Positive Reviews
Non Service-relevant Negative Reviews	Non Service-relevant Positive Reviews

Three-way interaction term: F[1,104709] = 21.35, p < .001

The **pattern** of interaction between individualism and power distance is similar across service relevancy (-.5 = not service-relevant; .5 = service relevant).

Due to large difference in sample size between service-relevant and not service-relevant reviews, I randomly selected 52359 reviews in not service-relevant reviews for the analysis.

Interaction of Individualism, Power Distance, Review Type (negative/positive) on Review Scores
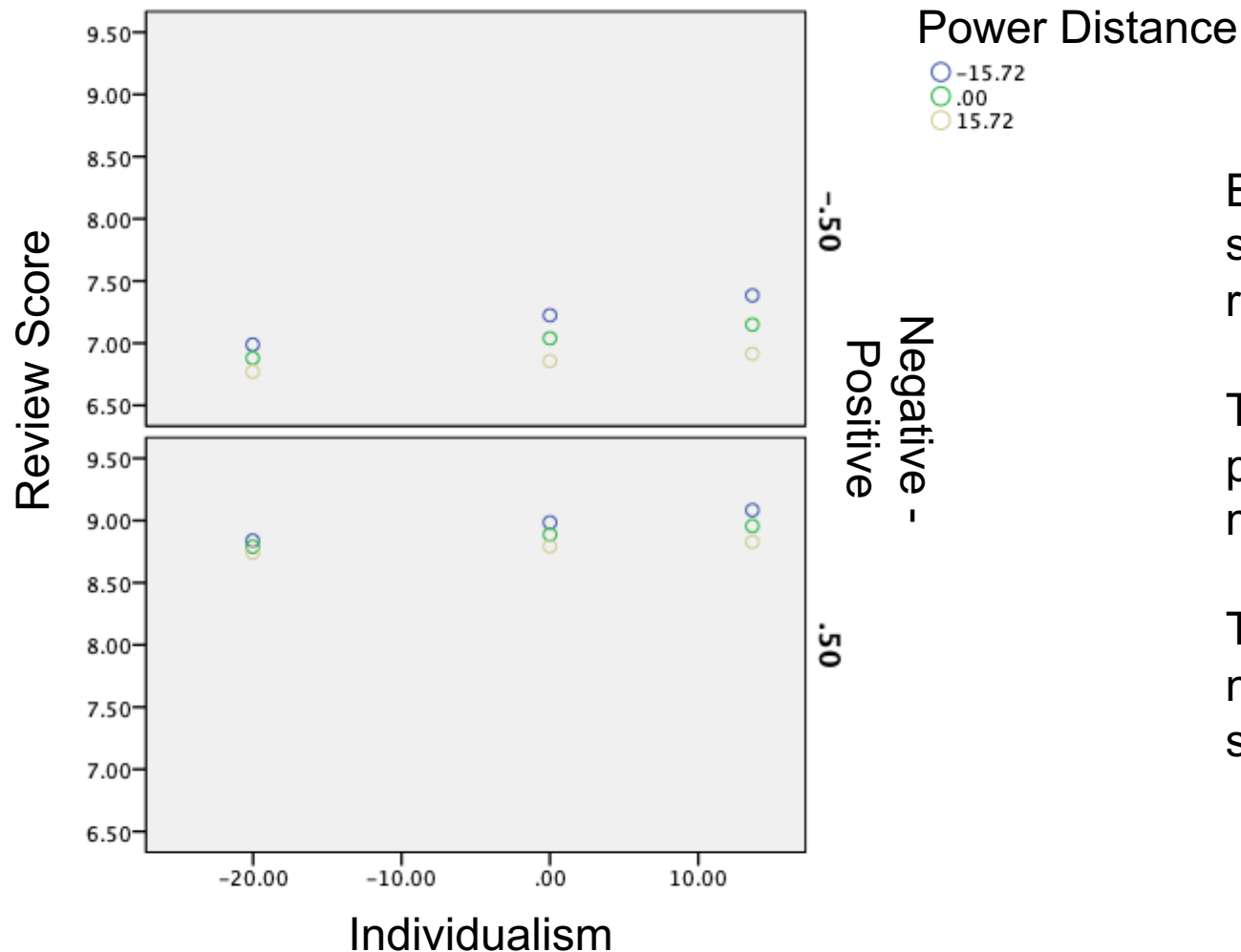
Comparison highlighted

N = 52359　　　　　N = 201300

Service-relevant Negative Reviews	Service-relevant Positive Reviews
Non Service-relevant Negative Reviews	Non Service-relevant Positive Reviews

Note that the selected service-relevant positive reviews were written by reviewers who did not write service-relevant negative reviews at the same time, which makes it a between-subjects analysis.

Due to large difference in sample size between service-relevant positive and negative reviews, I randomly selected 52359 reviews in positive service-relevant reviews for the analysis.

New Updates on 05/16/2019

Interaction of Individualism, Power Distance, Review Type (negative/positive) on Review Scores

Both negative reviews and positive reviews are service-relevant (-.5 = service-relevant negative reviews, .5 = service-relevant positive reviews).

Three-way interaction term: $F[1,104709] = 3.83$, $p = .050$. The rest two-way interaction effects and main effects were all significant, $p < .001$.

The effects of power distance is stronger in negative service-relevant reviews than positive service-relevant reviews.

New Updates on 05/16/2019

Interaction of Individualism, Power Distance, Service Relevancy (Based on Negative Reviews) on Sentiment Scores
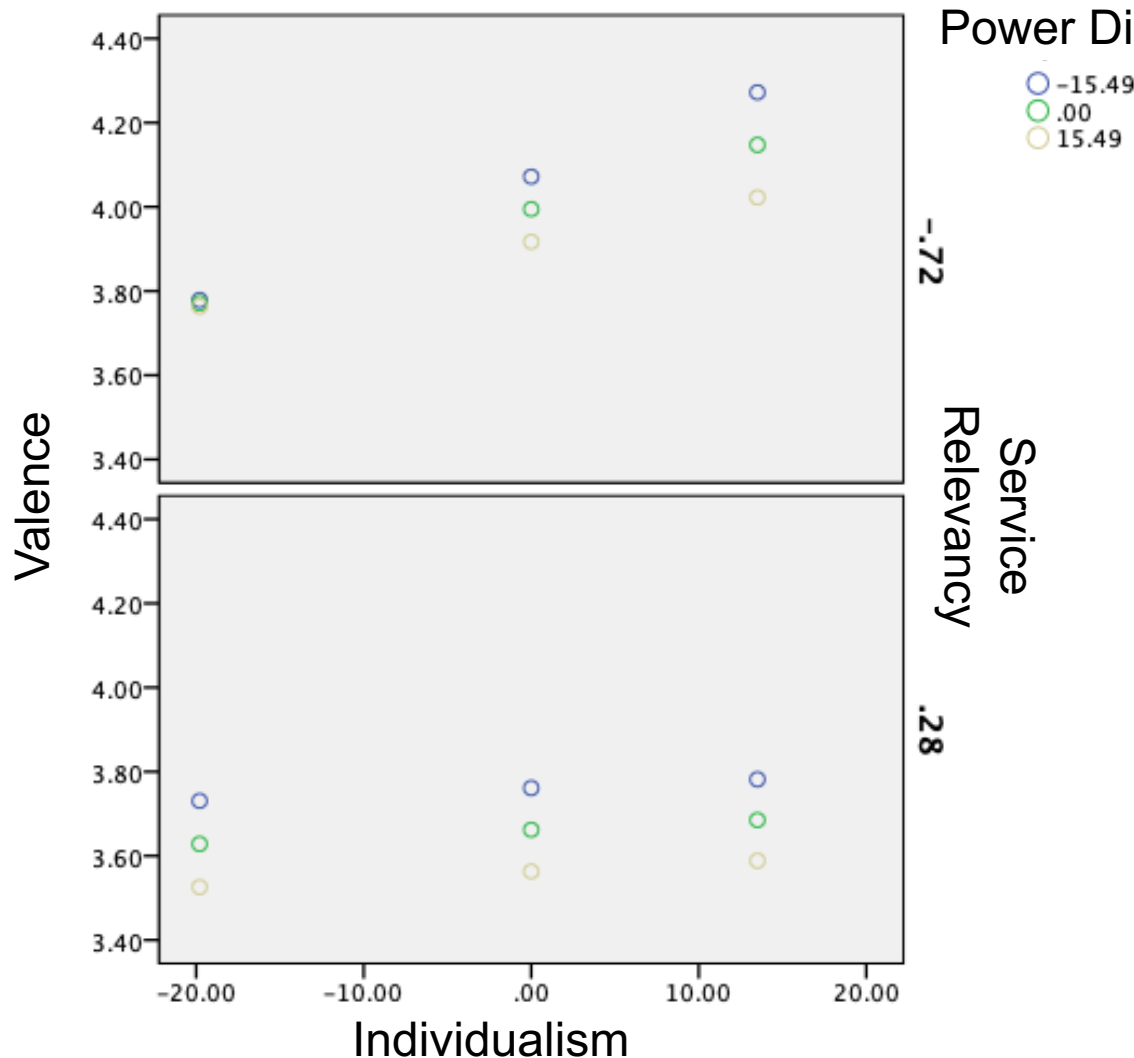
Comparison highlighted

Service-relevant Negative Reviews	Service-relevant Positive Reviews
Non Service-relevant Negative Reviews	Non Service-relevant Positive Reviews

Three sentiment scores (i.e., valence, extremity, and emotionality) were generated using Evaluative Lexicon 2.0 (Rocklage, Rucker, and Nordgren 2018)

How Rocklage et al. (2018) defines these three variables?

- Valence: whether the reaction is positive or negative.
  - In the output, valence_avg: the weighted average valence of the text.
- Extremity: the extent of that positivity or negativity.
  - In the output, extremity_avg: the weighted average extremity of the EL words, regardless of valence.
- Emotionality: the degree to which an individual's attitude or reaction is based on emotion (its emotionality).
  - In the output, emotionality_PosMinNeg: the difference between the weighted averaged positive and negative emotionality. This creates an emotionality continuum from greater negative emotionality to greater positive emotionality.

Interaction of Individualism, Power Distance, Service Relevancy (Based on Negative Reviews) on Valence

Three-way interaction term: F[1,50494] = 5.101, p = .024

The effect of individualism on valence is much weaker among service-relevant negative reviews (.28), as compared to non service-relevant negative reviews (-.72).

Among service-relevant reviews (.28), the effect of power distance is relatively stable; Among non service-relevant reviews (-.72), the effect of power distance on valence becomes stronger when individualism score is relatively higher.

*Higher valence score means more positive valence
Evaluative lexicon 2.0 only generated the sentimental scores for about a half of the reviews, which explains there is much missing data.

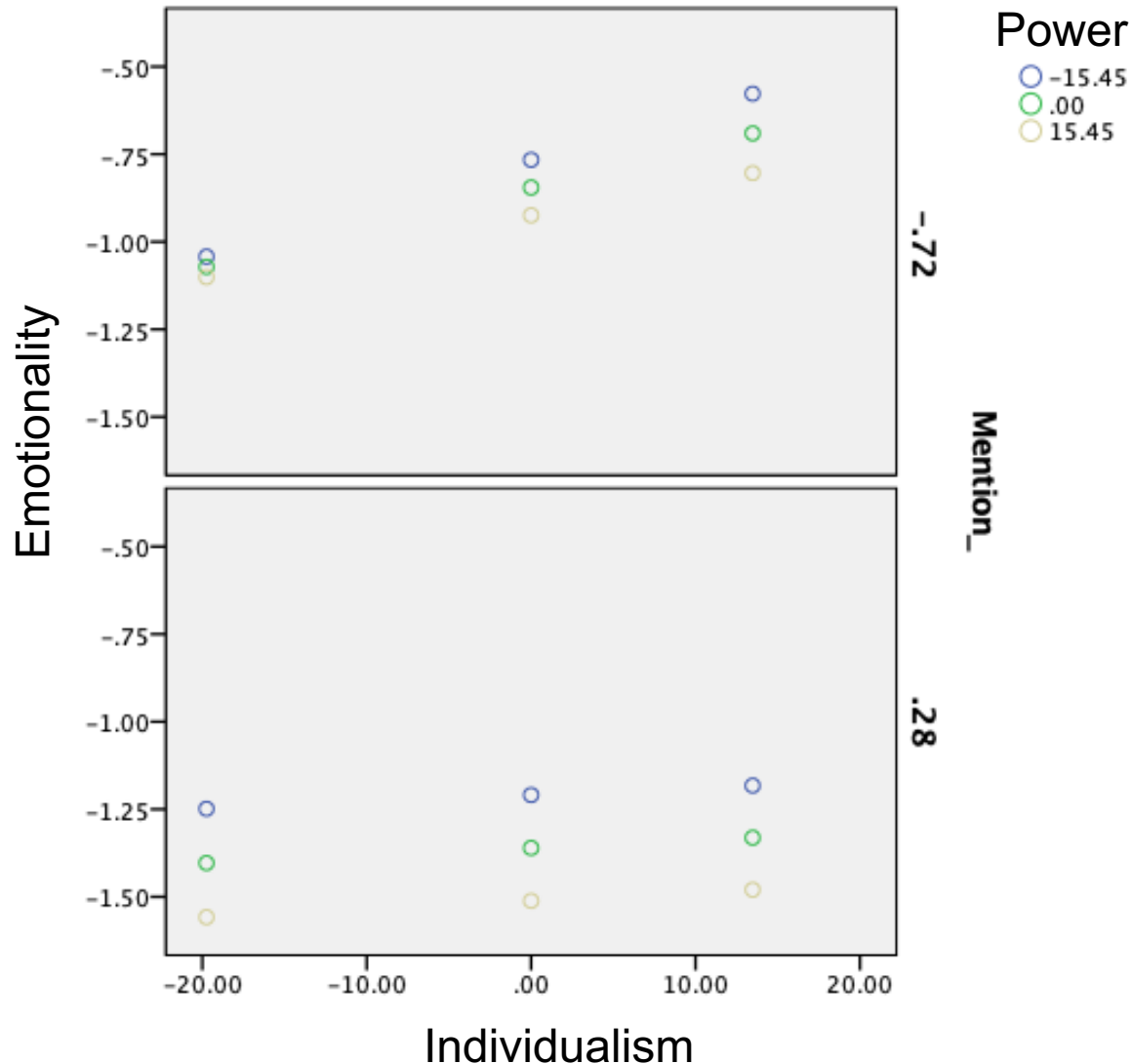# Interaction of Individualism, Power Distance, Service Relevancy (Based on Negative Reviews) on Extremity

Power Distance
○ −15.49
○ .00
○ 15.49
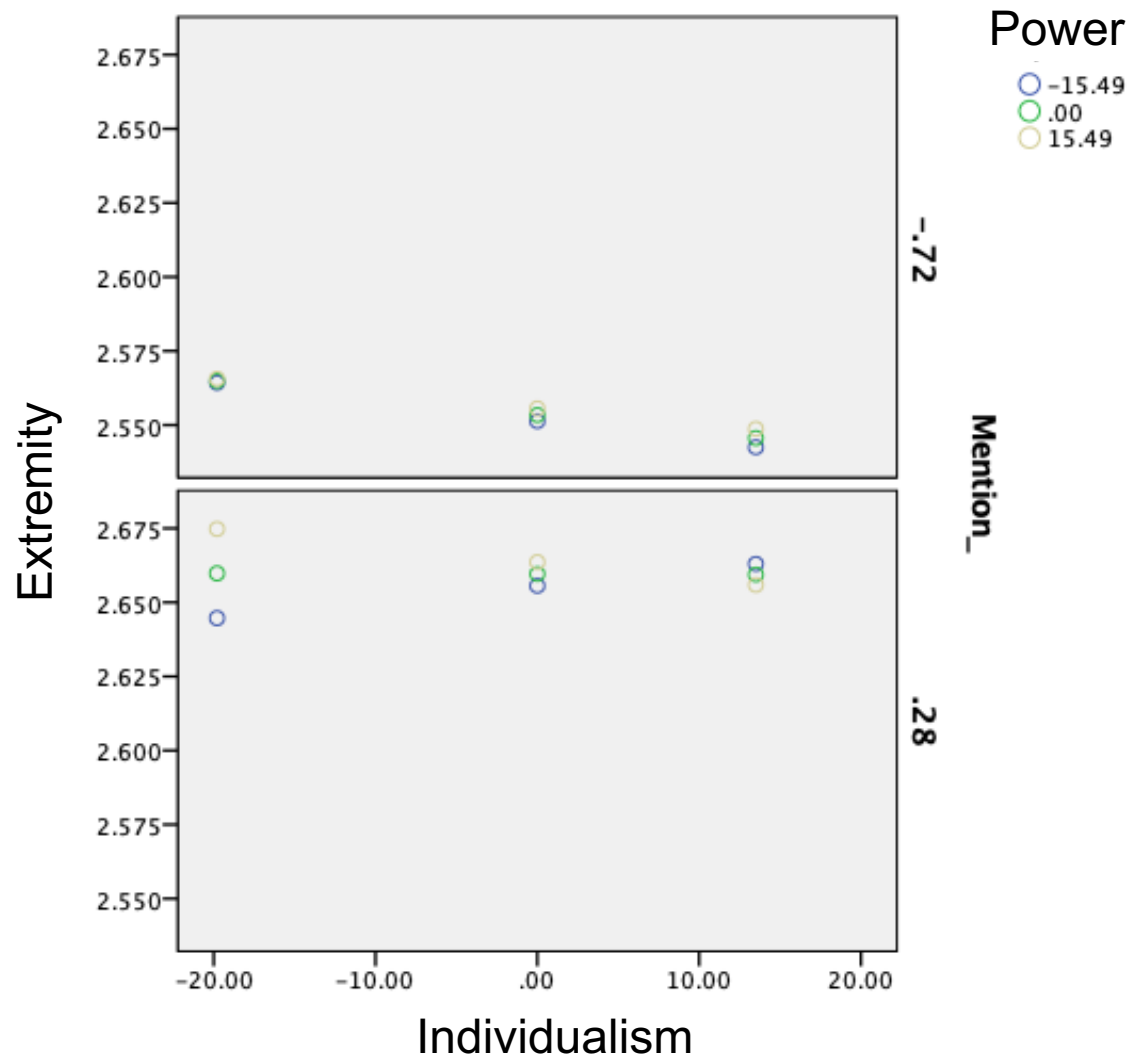
Three-way interaction term: F[1,50494] = 1.732, p = .188

Only the main effect of service-relevancy is significant, B = .106, SE = .01, p < .001.

Service-relevant negative reviews have higher extremity scores than non service-relevant negative reviews.

# Interaction of Individualism, Power Distance, Service Relevancy (Based on Negative Reviews) on Emotionality

Power Distance
- ○ −15.45
- ○ .00
- ○ 15.45

Three-way interaction term:
F[1,50494] = 1.134, p = .287

This pattern is similar to the three-way pattern of valence
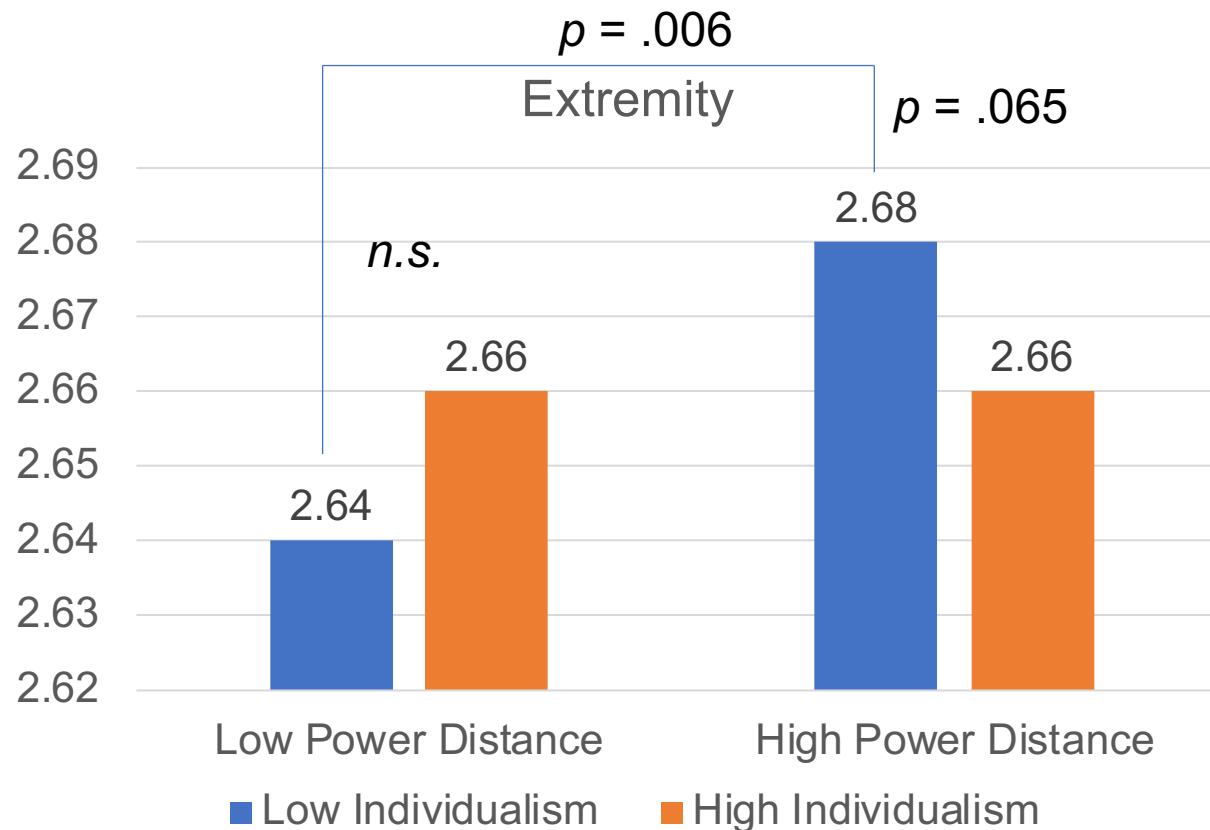
*More negative values mean greater negative emotionality.

Interaction of Individualism and Power Distance on Valence (among service-relevant negative reviews)
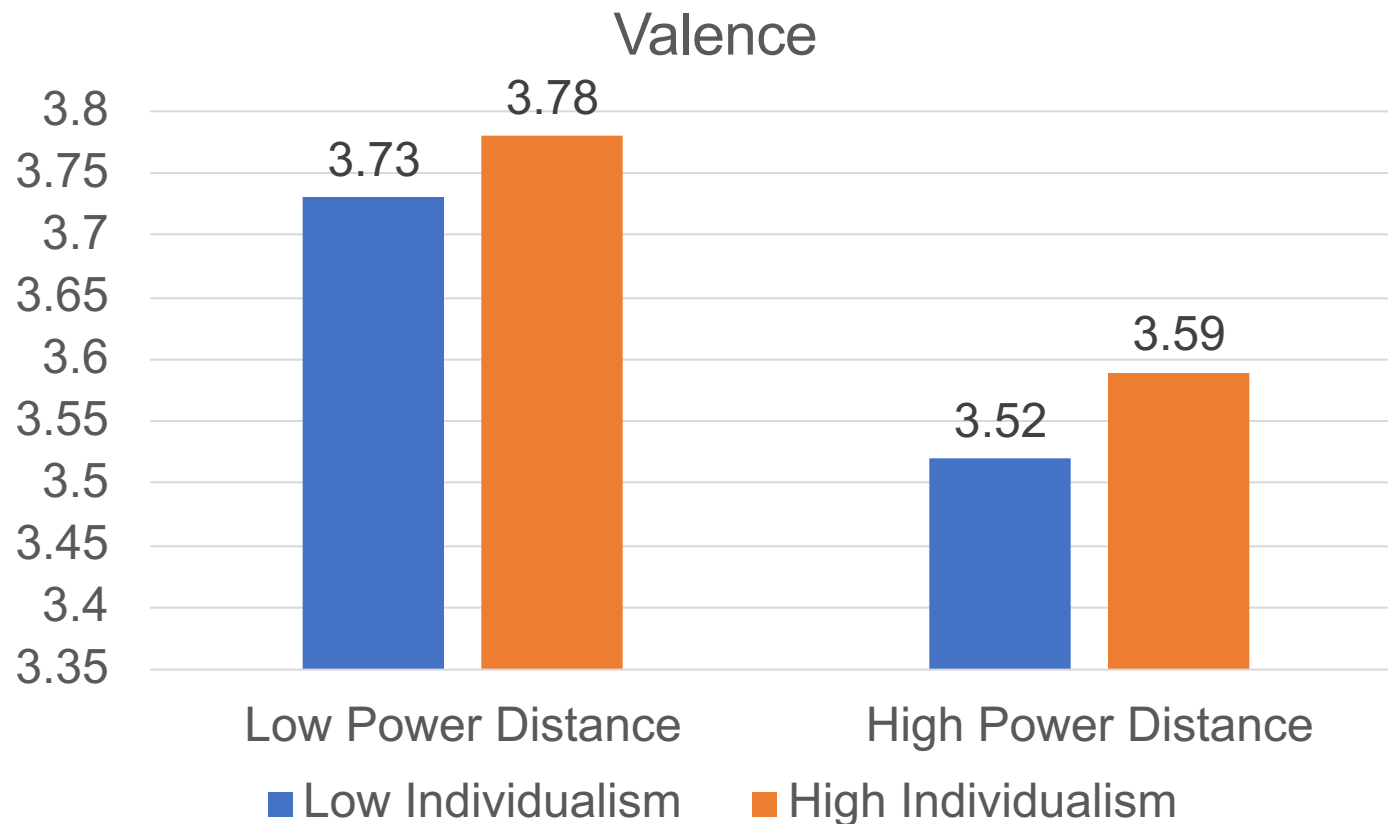
Service-relevant Negative Reviews	Service-relevant Positive Reviews
Non Service-relevant Negative Reviews	Non Service-relevant Positive Reviews

Two interaction was not significant, F[1,36310] = .0412, p = .840.
The main effect of power distance is significant, B = -.006, SE = .0018, p < .001.
Reviewers from high power distance countries left more negative comments in negative reviews.

Valence

Low Power Distance: 3.73, 3.78
High Power Distance: 3.52, 3.59

Low Individualism High Individualism

Interaction of Individualism and Power Distance on Extremity (among service-relevant negative reviews)
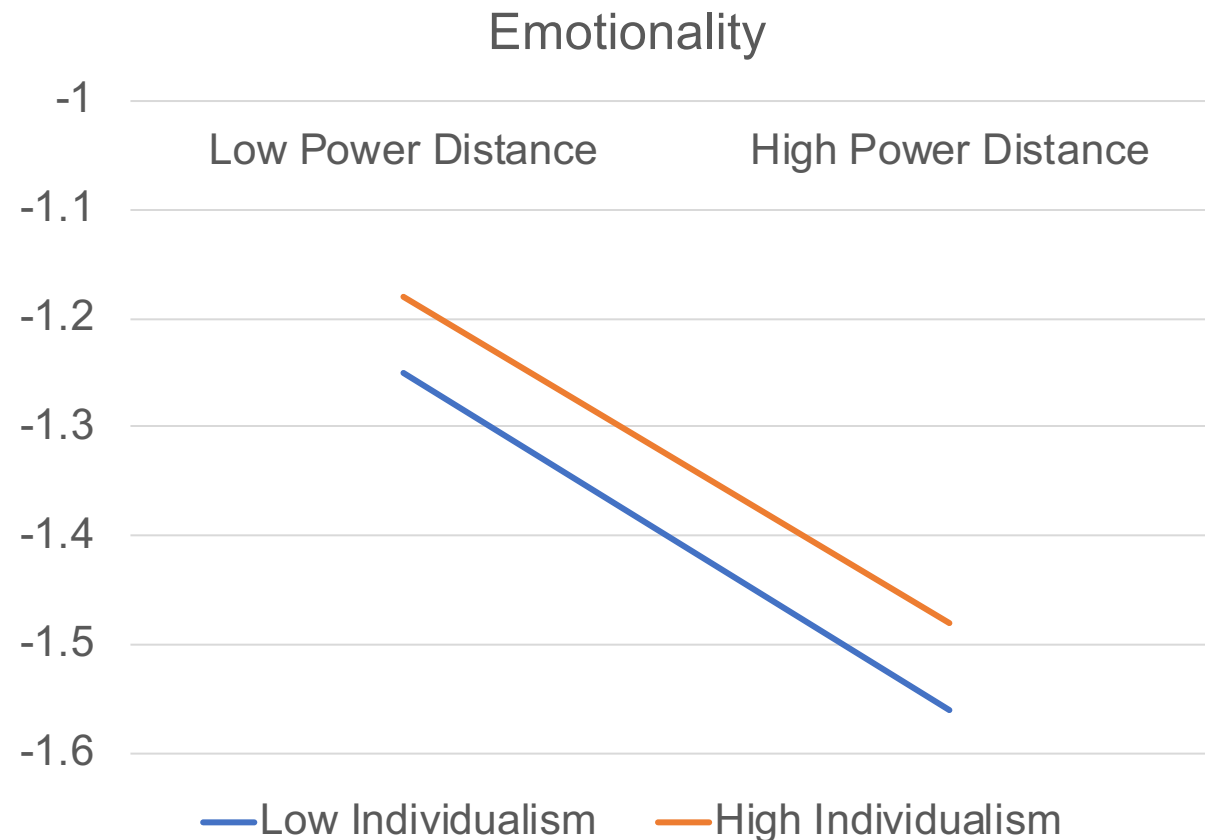

Two-way interaction is significant, F[1,36310] = 5.134, p = .024
The main effects are not significant.

Within low individualism countries, reviewers from high power distance countries expressed more extreme emotions in service-relevant negative reviews than reviewers from low power distance countries.

Interaction of Individualism and Power Distance on Emotionality (among service-relevant negative reviews)

Emotionality

-1
-1.1
-1.2
-1.3
-1.4
-1.5
-1.6

Low Power Distance   High Power Distance

— Low Individualism   — High Individualism

Two interaction was not significant, F[1,36310] = .0195, p = .889.
The main effect of power distance is significant, B = -.01, SE = .003, p < .001. Reviewers from high power distance countries left reviews that entail more negative emotionality than reviewers from low power distance countries.