Sentiment Analysis to Compare Characters across Translations of the Odyssey

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Introduction

In mythology, Monsters often serve as cultural expressions of danger because they challenge social norms (Lecture 3.3). Particularly, in Greek mythology, there are many examples of monsters as foreign creatures, conveying ancient Greek wariness of foreign cultures (Lecture 3.2). There also exist many female monsters that suggest fears regarding challenge to the patriarchy in ancient Greek society (Lecture 3.3). In Homer's *Odyssey*, we see examples of both of these types of monsters. Polyphemus, a Cyclopes, is a clear example of a foreign monstrosity. Odysseus emphasizes the differences between the culture of the Cyclopes and his own, observing they "do not plant their food from seed, nor plow, … hold no councils, have no common laws", and live in individual family units instead of a communal setting (Wilson, 9.109-114). Women such as Calypso and Circe also serve as obstacles to Odysseus during his journey home. Odysseus' men's interactions with Circe provide an example of female monsters relaying cultural fears about women challenging the patriarchal status quo. Circe is described as a "goddess" and "enchantress", but her powers terrify the men as she turns them into pigs that "squealed at their imprisonment" (Wilson, 228-275). Compared to characters such as Penelope and Eurycleia that do not have any physical powers, we can find that the only women that do have powers in the *Odyssey* serve as obstacles for Odysseus to overcome during his journey. In these ways we can see that ancient Greek society held different attitudes towards people of

different demographic backgrounds, and for certain groups such as women with power and foreigners, these attitudes were more negative.

This information poses the question of whether such attitudes are prevalent in Homer's *Odyssey*. In particular, an essential question is "to what extent does the manner in which a character is framed relate to their demographic background (gender, economic status, creature type) in the *Odyssey*?"

To refine this question, the manner a character is framed can be measured through analyzing how positive or negative the sentiments of the words used to describe that character are. The demographic backgrounds of interest include the following:

> Gender: The existence of female monsters is suggestive of fears related to women challenging the patriarchy in ancient Greek society. Heroes in ancient Greek mythology are all male (Lecture 4.2). These are suggestive of a gender bias that one would expect to lead to more positive framing of male characters than female characters in mythological stories. We see evidence of this occurring in the *Odyssey* when Telemachus responds to Odysseus' advice to check his slaves attitudes: "I agree you should / find out about the women—which of them / are innocent, and which dishonor you. / However, I have no desire to traipse / around to test the men" (Wilson, 16.317-321). Then, it is worth exploring if there is more evidence of a gender bias in terms of how characters are described.

Economic Status: In ancient Greek mythology, heroes were generally male aristocrats born into wealth (Lecture 4.2). While slaves or people from lower socioeconomic levels may be portrayed positively in some instances, only the aristocrats will be framed as being heroes. Therefore we would expect that aristocrats with greater economic status will generally be framed more positively than their slaves. The *Odyssey* has a particular case where the antagonists, the suitors, are also wealthy aristocrats. Then, one would expect to see the aristocrats and the slaves that support them to be portrayed negatively, while the heroes Odysseus and Telemachus and the slaves that support them will be portrayed positively. For the reasons explained earlier, one would expect slaves to be framed less positively than their respective aristocratic counterparts.

Creature Type: The main creature types encountered in the *Odyssey* are gods, humans, and monsters. While the Greek gods are powerful and can be helpful mentor figures for characters, their personalities are often human-like and they can make petty decisions. The importance of respect to the gods is alluded to in Helius' punishment of the men that eat his cattle, and Poseidon's punishment of Odysseus for killing his son Polyphemus. Therefore, one might expect to see more respectful or positive language towards the gods as compared to a general human character in the *Odyssey.* On the other hand, as described before, monsters represent threats to the norms of ancient Greek society. Therefore, one would expect to see more negative descriptions of monsters.

An important aspect of this analysis is the limitation surrounding analyzing English translations of the *Odyssey*. During the translation of a work, the translator attempts to "discover the

linguistic charge, the structural rhythms, the subtle implications, the complexities of meaning and suggestion in vocabulary and phrasing, and the ambient, cultural inferences and conclusions these tonalities allow us to extrapolate" (Grossman, 2010). Therefore, it is important to note that the choices a translator makes plays a significant role in a reader/listener's understanding of characters and events in a piece of literature. This raises the question "to what extent does the translator of a work of literature affect the manner in which these characters are framed?" More specifically, I seek to answer this question using Homer's *Odyssey*.

Historical evidence suggests that the manner in which a work is translated can be significantly impactful. For example, more antiquated European translations of the *Odyssey* presented ancient Greeks as white despite the racial intermixing of the ancient Greek population, which has resulted in the portrayal of the ancient Greeks as white in many popular works (Lecture: Race and Racecraft in the Odyssey). Then, one can also expect a similar level of ability for the translator to impact regarding the framing of a character. Therefore, I hypothesize that the translator of a work of literature will impact the framing of characters presented to a large extent.

Methodology

Data Collection

Both questions revolve around gathering data with information about characters and the manner in which they are framed given an English translation of the *Odyssey*. The second question requires obtaining multiple translations of the Odyssey in order to make comparisons between each other. I decided to obtain these translations from Project Gutenberg[1] because it is a widely

[1] https://www.gutenberg.org/

used resource containing legally accessible plaintext versions of eBooks. I decided to use the following translations of the *Odyssey* because they were frequently downloaded and provided translations created in multiple time periods:

> *The Odyssey: Rendered into English prose for the use of those who cannot read the original* translated by Samuel Butler (1835-1902):
> https://www.gutenberg.org/ebooks/1727
>
> *The Odyssey* translated by Alexander Pope (1688-1744):
> https://www.gutenberg.org/ebooks/3160
>
> *The Odyssey of Homer* translated by Samuel H. Butcher (1850-1910):
> https://www.gutenberg.org/ebooks/1728
>
> *The Odyssey of Homer* translated by William Cowper (1731-1800):
> https://www.gutenberg.org/ebooks/24269

Once these data sources were obtained, Python code was written to create a usable data frame with information about the characters included in each sentence of the relevant translation of the *Odyssey*, as well as the sentiment scores of the sentence. The code can be found on https://github.com/Abhi-Gan/Odyssey-Sentiment-Analysis. The process by which this was done is as follows:

Data Cleaning

Data can easily be stored in string format from the text files provided on Project Gutenberg. After doing so, it is important to filter down the string to only analyze relevant portions of the text and also to ensure the data is in a state that is ready to be processed.

The first thing to note is that I only want to analyze the portion of the text that pertains to the actual story of the *Odyssey*. This means I should ignore portions of the text such as information added by Project Gutenberg, the preface and table of contents of the written translation, footnotes, and any written analysis of the *Odyssey* performed by the translator. This was done by manually identifying phrases where Book I starts and Book XXIV ends, obtaining the string indexes where these phrases occur, and then filtering down the string to only the portion between the two indexes.

Next, I removed escape codes, special characters, and extraneous spaces from the string, and then converted it to lower case. These steps were important so that the string could be directly fed into the TextBlob library that facilitates the desired sentiment analysis.

Data Frame Creation

In order to answer the two questions described earlier, it is necessary to be able to create a data frame with the following information for each character: the way in which they are framed, their gender, their economic status, and their creature type.

Measuring Character Framing

First, it is important to define how we will store information about the manner in which a character is framed. I decided to use the TextBlob library, which has a sentiment function that can provide a polarity score and subjectivity score of an inputted sentence in a tuple called Sentiment. For reference, the TextBlob library describes that its sentiment analyzer uses the same "the same implementation as the pattern library" (Loria et al., 2020), which describes that:

"Written text can be broadly categorized into two types: facts and opinions. Opinions carry people's sentiments, appraisals and feelings toward the world. The pattern.en module bundles a lexicon of adjectives (e.g., good, bad, amazing, irritating, ...) that occur frequently in product reviews, annotated with scores for sentiment polarity (positive ↔ negative) and subjectivity (objective ↔ subjective).

The sentiment() function returns a (polarity, subjectivity)-tuple for the given sentence, based on the adjectives it contains, where polarity is a value between -1.0 and +1.0 and subjectivity between 0.0 and 1.0." (Smedt & Daelamans, n.d.)

More concisely, the polarity and subjectivity scores of a sentence are calculated by identifying the adjectives in a sentence, finding the polarity and subjectivity scores that they have been assigned by human evaluation, and then averaging these values for the sentence's overall scores. Polarity is meant to evaluate how positive or negative the connotation of a word is, on a scale from -1 to +1, and subjectivity is meant to evaluate how objective or subjective a word is, on a scale from 0 to 1 (Smedt & Daelamans, n.d.).

To obtain the polarity and subjectivity scores for an individual character, I find all the sentences that include the character's name, and then average their polarity and subjectivity scores. The polarity score will be the main measurement of how a character is framed, and the subjectivity score can provide some additional information about how subjective or objective these descriptions are.

It is important to note that there are important limitations of this methodology. Such an approach to find polarity and subjectivity scores of a given sentence "only cares about individual words and completely ignores the context in which it is used" (Es, 2022). However, given the popularity of the TextBlob library, this approach should still perform relatively well.

Measuring Economic Status

Each character must be assigned an economic status, which will be manually done based on the character name. Since economic status should reflect ordering, we can establish 5 different levels of economic status that correspond to the numerical values 0-4. In order, slaves/servants, commonfolk, general aristocrats (people of wealth but not in a position of royalty), royalty (kings, queens, princes, etc.), and gods will be assigned the numerical values 0, 1, 2, 3, and 4, respectively.

Measuring Creature Type

As mentioned in the Introduction section, the main creature types encountered in the Odyssey are gods, humans, and monsters. Creatures that are not humans nor gods will be counted as monsters as they will be representing something that disrupts the natural order.

Characters Included

I will use the characters Odysseus/Ulysses, Telemachus, Penelope, Athena/Minerva/Athene, Calypso, Circe, Polyphemus/Polyphemes, Scylla, Antinous, Eumaeus, Euryclea/Eurycleia, Zeus/Jove, Poseidon/Neptune in my analysis, as they are relevant characters in the *Odyssey* that span different categories in terms of gender, creature type, and economic status. It is important to note that in some translations of the *Odyssey*, different names were used in reference to the same character. For example, Samuel Butcher's translation of the *Odyssey* refers to Odysseus as Odysseus, while the other translations refer to Odysseus as "Ulysses".

The characters included, and their corresponding information can be summarized in the following (Figure 1):

	Character	Gender	Economic Status	Creature_Type
0	odysseus	m	3.0	human
1	telemachus	m	3.0	human
2	penelope	f	3.0	human
3	athena	f	4.0	god
4	calypso	f	4.0	god
5	circe	f	4.0	god
6	polyphemus	m	1.0	monster
7	scylla	f	NaN	monster
8	antinous	m	2.0	human
9	eumaeus	m	0.0	human
10	euryclea	f	0.0	human
11	zeus	m	4.0	god
12	poseidon	f	4.0	god

Figure 1. Dataframe of 13 characters in the *Odyssey* along with their gender, economic status, and creature type.

Note that Scylla is not assigned an economic status as her isolation and interactions with other creatures do not suggest possibilities for economic interaction.

Data Frame Creation Process

A primary step in being able to answer the questions posed is producing a data frame that contains observations for each character that includes information about each character, the sentiment (polarity/subjectivity) with which they are described, as well as their demographic categories (gender, economic status, and creature type), as well as the translation the

measurements are found from. Since the data for polarity and subjectivity for each character is found by taking a mean of all relevant sentences, it may also be relevant to keep track of the standard deviation of these attributes across all relevant sentences as well as the number of sentences. This allows us to understand whether differences in the polarity and subjectivity scores are actually significant between characters. For ease of reference, I will call this data frame the "character data frame" because each observation contains information about a character.

This creation of this dataset is facilitated by the creation of a first dataset that simply contains the polarity and subjectivity of each sentence of a translation of the *Odyssey*, as well as the characters mentioned in the sentence. From this dataset, the rows relevant to a specific character can easily be filtered down, and then statistics for the average polarity and subjectivity of relevant sentences, as well as the standard deviations for these statistics can be used in an observation of the data frame with character information described in the previous paragraph. A dataset with sentence information as described in this paragraph is generated for each translation of the *Odyssey*. For ease of reference, we will call this sort of data frame a "sentence data frame".

Note that a sentence dataframe will be generated from each translation of the *Odyssey*, and all of these sentence dataframes will be used to create the character dataframe. In order to maintain the ability to compare polarity scores between different translations of the *Odyssey*, each character will have separate rows with calculations for polarity and sentiment scores for each translation of the *Odyssey*, and then one additional row for these statistics across all translations.

Different translations of the *Odyssey* are likely to have different distributions of polarity and sentiment scores. This means that it will be difficult to directly compare scores across the translations. To solve this problem, I computed standardized polarity and subjectivity scores. This was done by going through each sentence in the sentence dataframe, then subtracting the mean polarity and subjectivity from the scores for the current sentence, and then dividing by the standard deviation of the polarity and subjectivity scores, respectively. In doing so, for a single translation of the *Odyssey*, the mean of all the standardized scores will be 0 and the standard deviation will be 1. This centers the distribution of polarity and sentiment scores around 0 for all translations which makes it easier to compare results between them.

Data Analysis

Data analysis was conducted largely through visual analysis using the R programming language. The data frame created in Python was exported to a csv file so that its information could be analyzed in R. Visual analysis largely consisted of plotting mean and standard error bars between various categorical groups. Standard error of a sample was calculated by dividing standard deviation by the square root of the number of observations. A lack of overlap between the standard error bars of two categorical groups implies a potentially statistically significant difference between these categories. However, this type of analysis is not completely conclusive because statistical tests are needed to confirm or reject these relationships. Due to the time constraints of this project, I limited myself to this level of analysis.

Results

The two questions I sought to answer were

1) To what extent does the manner in which a character is framed relate to their demographic background (gender, economic status, creature type) in the *Odyssey*?
2) To what extent does the translator of a work of literature affect the manner in which these characters are framed?

Character Framing and Demographic Background

In order to answer the question "to what extent does the manner in which a character is framed relate to their demographic background (gender, economic status, creature type) in the *Odyssey*?", I first visualized the mean standardized polarity scores of each character in each translation of the *Odyssey* (Figures 2-5).

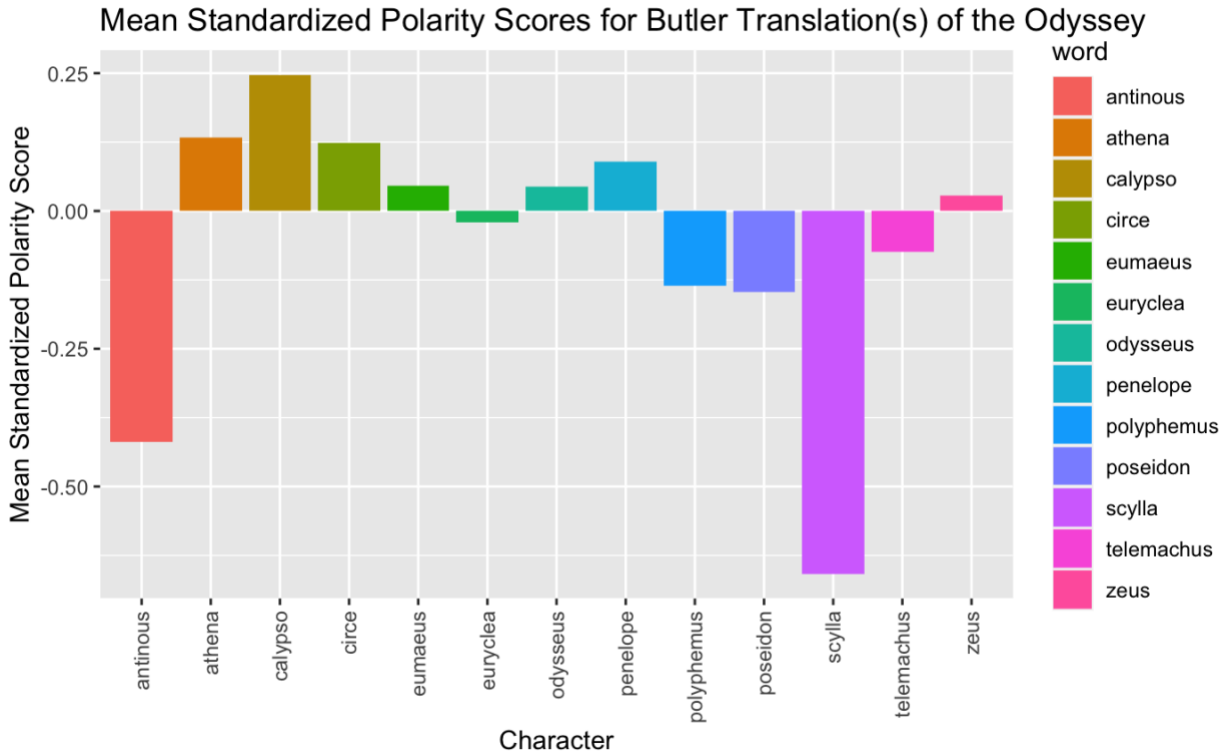

Figure 2. Mean standardized polarity scores for 13 characters in Samuel Butler's translation of the *Odyssey*.

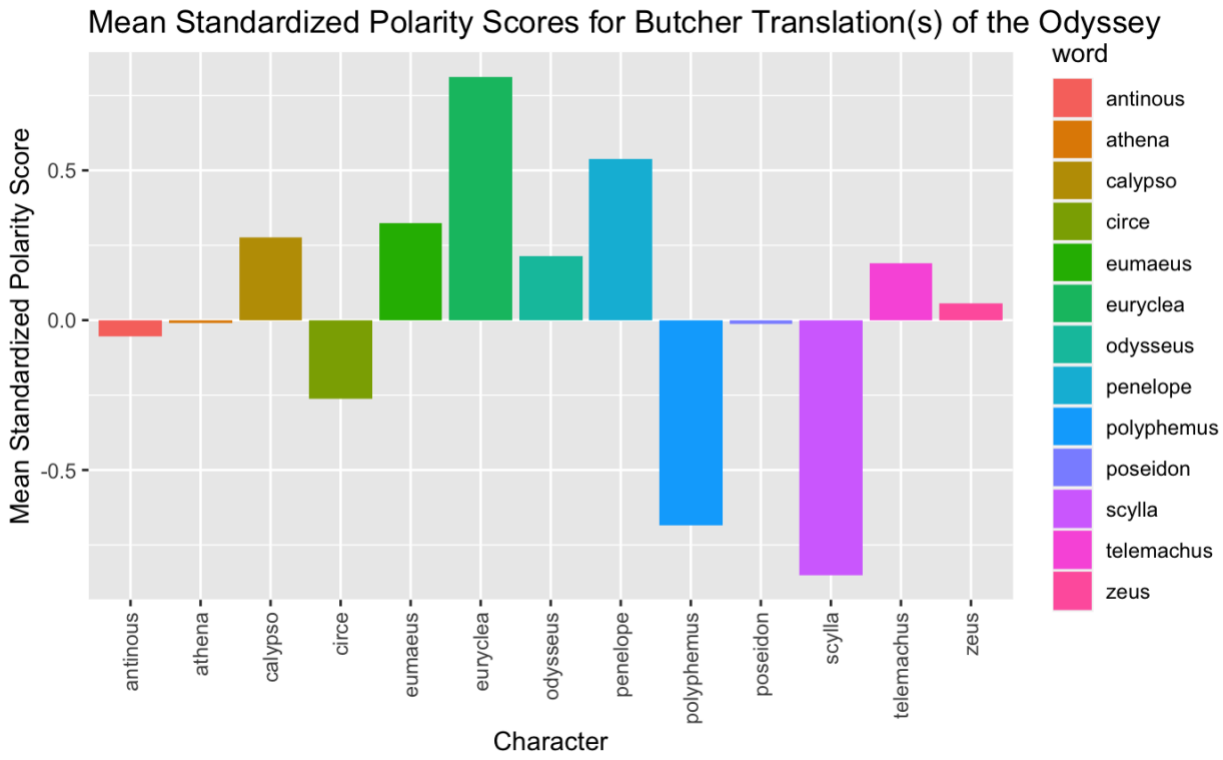

Figure 3. Mean standardized polarity scores for 13 characters in Samuel Butcher's translation of the *Odyssey*.

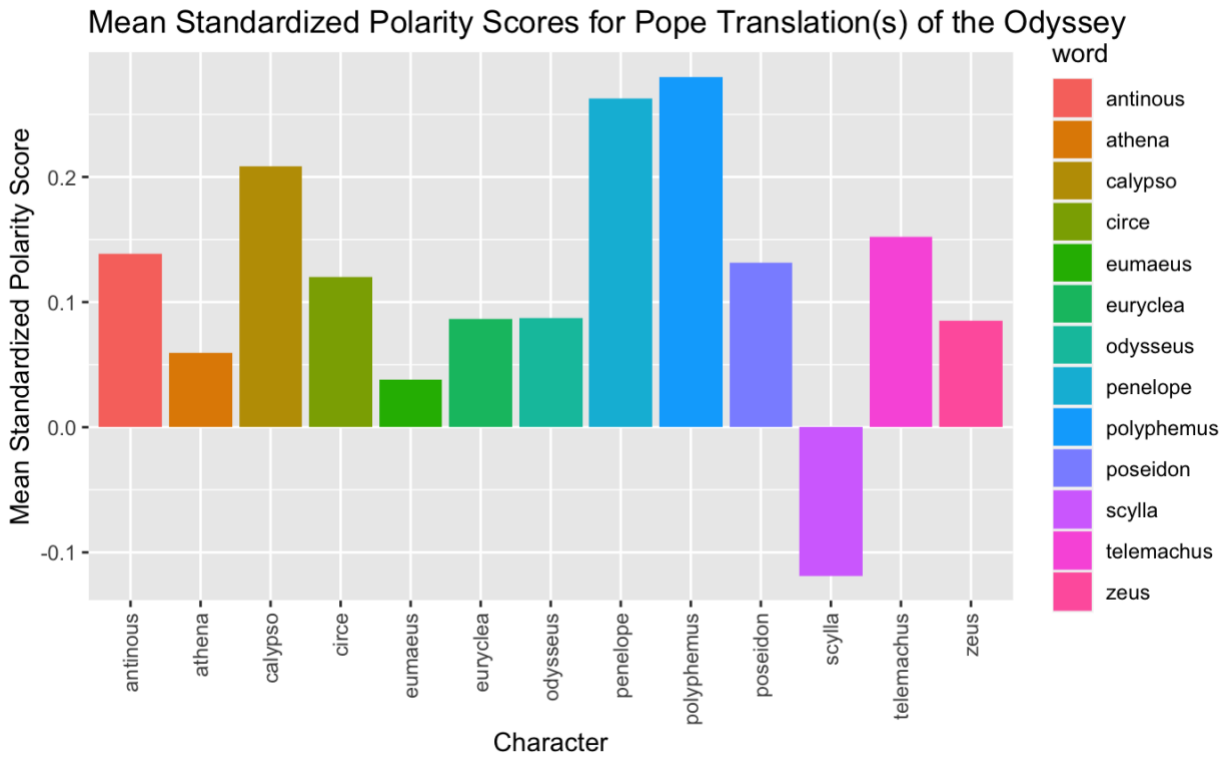

Figure 4. Mean standardized polarity scores for 13 characters in Alexander Pope's translation of the *Odyssey*.

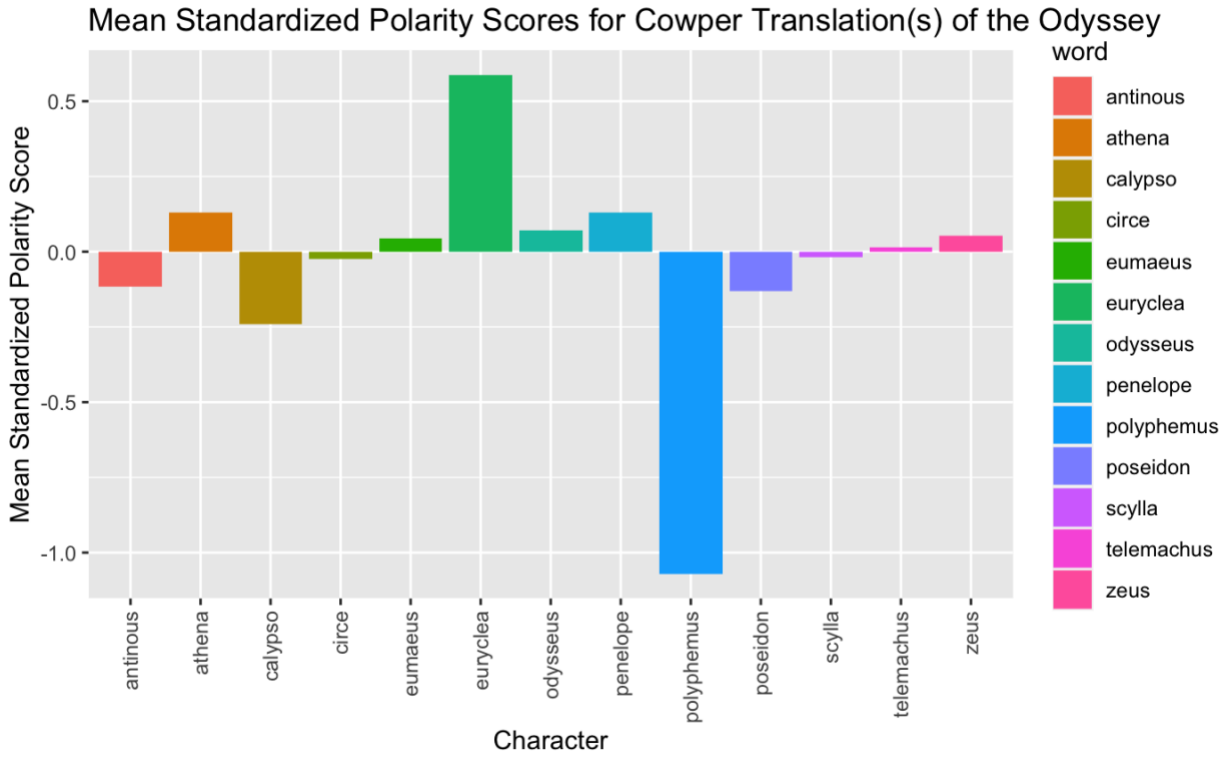

Figure 5. Mean standardized polarity scores for 13 characters in William Cowper's translation of the *Odyssey*.

Figures 2-5 show an added layer of complexity in that the mean standardized polarity scores appear to vary across different translation of the *Odyssey*, even when considering the relative scores between characters. However, finding the mean and standard deviation of the polarity scores for each character across all four translations of the *Odyssey* provides a clearer image (Figure 6).

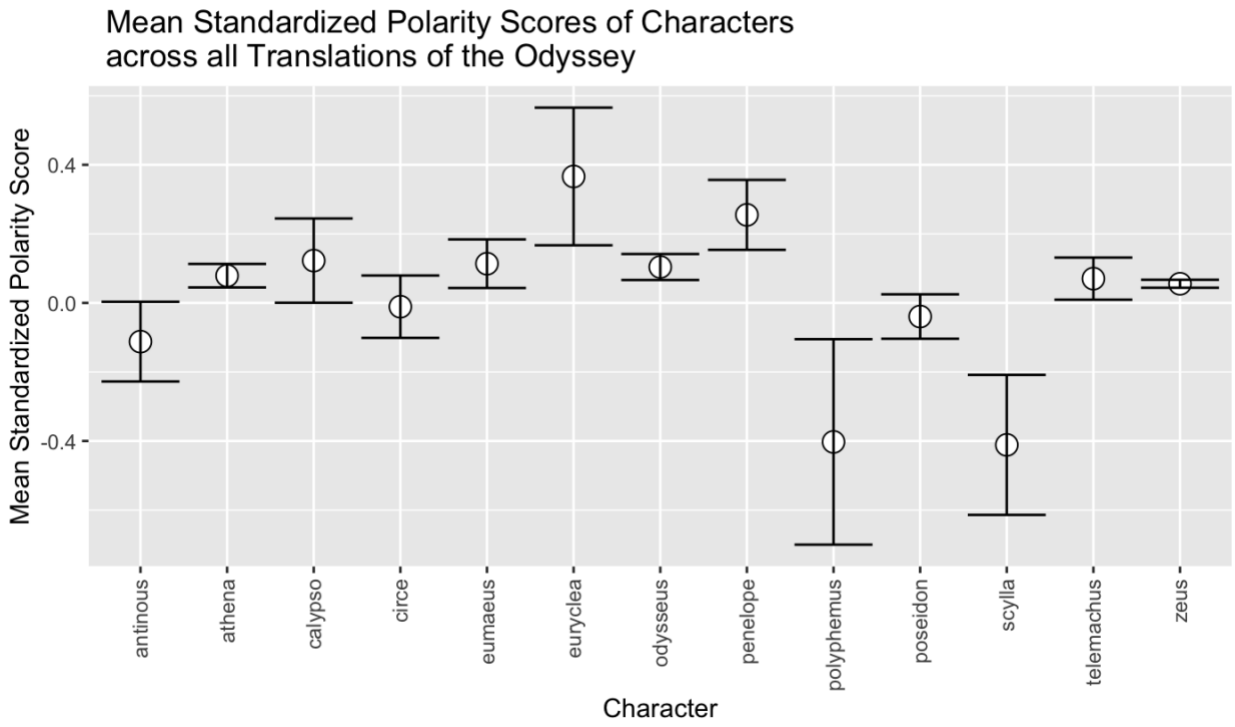

Figure 6. Average of mean standardized polarity scores for 13 characters in four translations of the *Odyssey*.

Figure 6 suggests that there may be a significant difference in the mean standardized polarity scores between characters whose error bars do not overlap. In general, antagonist characters such

as Antinous, Circe, Polyphemus, Scylla, and Poseidon appear to have lower standardized polarity scores than protagonist characters Odysseus and Telemachus. Surprisingly, supporting characters such as Euryclea and Penelope appear to have greater standardized polarity scores than the protagonists Odysseus and Telemachus. This makes sense when analyzing the text(s). For example, in Samuel Butcher's translation of the *Odyssey*, Euryclea has the greatest standardized polarity of all the characters. When looking at the top 20 sentences by polarity in which Euryclea's name is mentioned in this translation of the *Odyssey*, we see the following (Figure 7):

```
[34] top_euryclea[0:20]["sentence"]

4159    then the good nurse eurycleia answered him: ye...
3663    then wise eurycleia answered, saying: my child...
4179    then the good nurse eurycleia made answer: yea...
3503    thus he spake, and telemachus hearkened to his...
4007    and he called forth the nurse eurycleia from t...
4182    so he spake, and the good nurse eurycleia was ...
4150    then odysseus of many counsels spake to telema...
3633    now autolycus once had gone to the rich land o...
4194    then the good nurse eurycleia answered her: i ...
794     then the good nurse eurycleia answered her: de...
292     and the close-fitted doors, the folding doors,...
4178    so odysseus called to the good nurse eurycleia...
3505    then the good nurse eurycleia answered him, sa...
4198    then the good nurse eurycleia answered her: i ...
298     so spake he, and the good nurse eurycleia wail...
4253    but come, eurycleia, spread for him the good b...
4211    then the good nurse eurycleia made answer to h...
3761    but the good lady eurycleia, daughter of ops s...
158     but telemachus, where his chamber was builded ...
3618    up now, wise eurycleia, and wash this man, who...
Name: sentence, dtype: object
```

Figure 7. Top 20 sentences in which Euryclea's name is mentioned in Samuel Butcher's translation of the *Odyssey*. Note that in this translation of the *Odyssey* she is referred to as Eurycleia.

Euryclea's name is frequently prefaced by the adjectives "good", and she is sometimes referred to as "wise". Then, it makes sense that she receives such a high polarity score. Similarly, Penelope's name is frequently prefaced by the adjective "wise" (Figure 8).

```
[36] top_penelope[0:20]["sentence"]

3600                then wise penelope answered him: ah!
3275    now when wise penelope heard of the stranger b...
3455    yet, for all that, sorrow for penelope touched...
919     myself i know it well, how wise penelope is me...
2603    but as for me i dwell apart by the swine and g...
3294    and penelope laughed, and straightway spake to...
4225    then wise penelope answered him, saying: child...
3288    then wise penelope answered him, saying: go, c...
4205    . . . . then wise penelope answered her: dear ...
3313    then the wise penelope answered: not witless i...
3987    then wise penelope answered him: eurymachus, n...
3857    now the daughter of icarius, wise penelope, ha...
3615    then wise penelope answered him: dear stranger...
3393    now the goddess, grey-eyed athene, put it into...
3454    and the fair melantho chid him shamefully, mel...
3302    then the steadfast goodly odysseus answered hi...
3537    then wise penelope answered him, and said: str...
3427    but eurymachus spake to penelope, saying: daug...
3428    then wise penelope answered him: eurymachus, s...
2681    there do thou rest the night, and bid him go t...
Name: sentence, dtype: object
```

Figure 8. Top 20 sentences in which Penelope's name is mentioned in Samuel Butcher's translation of the *Odyssey*.

However, one may also wonder why Odysseus and Telemachus do not appear to be close to having the greatest polarity scores, despite being the characters the *Odyssey* primarily revolves around. For consistency, I performed a similar analysis on Samuel Butcher's translation of the Odyssey to find that Odysseus and Telemachus are frequently described as "goodly" and "wise", respectively (Figures 9 and 10). These are still positive characteristics. However, it is possible

that because Odysseus and Telemachus are involved so frequently in the *Odyssey*, taking the mean of all the sentences containing their names draws their overall polarity score closer to the average polarity of the translation in question. This would mean that their standardized polarity scores will be brought closer to zero. Another explanation is that Odysseus and Telemachus are also involved in situations where they encounter antagonist characters that are described with negative adjectives. These negative adjectives would also count towards the polarity scores of Odysseus and Telemachus, as my methodology does not distinguish between who an adjective refers to in a sentence; it merely considers if the character in question's name has been mentioned in the sentence.

```
[44] top_odysseus[0:20]["sentence"]

0s

      1076    then the goodly odysseus awoke and sat up, pon...
      3638    therefore it was that odysseus went to receive...
      3982    dost thou think if yonder stranger strings the...
      4465    so soon as they looked on odysseus and took kn...
      3595    and he showed me all the wealth that odysseus ...
      894     therewith the great slayer of argos departed, ...
      3215    then odysseus of many counsels answered him an...
      3292    oh, if odysseus might come again to his own co...
      4234    and odysseus of many counsels answered him say...
      382     now look you, all the while that myself and go...
      1127    then she called on odysseus, and spake and hai...
      2470    and after they twain had taken this counsel to...
      942     and goodly odysseus rejoiced as he set his sai...
      2901    and goodly odysseus took note of the fawning o...
      802     if ever wise odysseus in his halls burnt for t...
      4099    but when with the sword we shall have overcome...
      359     and she gave telemachus the fair two-handled c...
      4408    so with this intent the goodly odysseus went u...
      3280    so she spake among her maidens, sitting in her...
      3739    now goodly odysseus caught the voice of her we...
      Name: sentence, dtype: object
```

Figure 9. Top 20 sentences in which Odysseus' name is mentioned in Samuel Butcher's translation of the *Odyssey*.

```
[46] top_telemachus[0:20]["sentence"]

2997    then wise telemachus answered him, saying: val...
532     meanwhile those twain, the hero telemachus and...
627     thus they slept there in the vestibule of the ...
3242    then antinous answered him and spake, saying: ...
410     and wise telemachus answered him, and said: ne...
3215    then odysseus of many counsels answered him an...
2990    then wise telemachus answered him, saying: ver...
2919    now when they had put from them the desire of ...
2728    and wise telemachus answered him, saying: yea ...
359     and she gave telemachus the fair two-handled c...
425     and wise telemachus answered her, saying: ment...
507     meanwhile she bathed telemachus, even fair pol...
632     then wise telemachus answered him, and said: m...
780     they are set on slaying telemachus with the ed...
2747    then telemachus spake unto the son of nestor, ...
2736    then wise telemachus answered her, saying: now...
303     then wise telemachus answered her, saying: tak...
3111    then wise telemachus answered him, saying: pir...
3123    and wise telemachus answered her, saying: yea ...
3321    and wise telemachus answered him, and said: ev...
Name: sentence, dtype: object
```

Figure 10. Top 20 sentences in which Telemachus' name is mentioned in Samuel Butcher's translation of the *Odyssey*.

I then graphed the mean polarity scores across all translations of the *Odyssey* to compare various demographic groups (Figures 11-13).

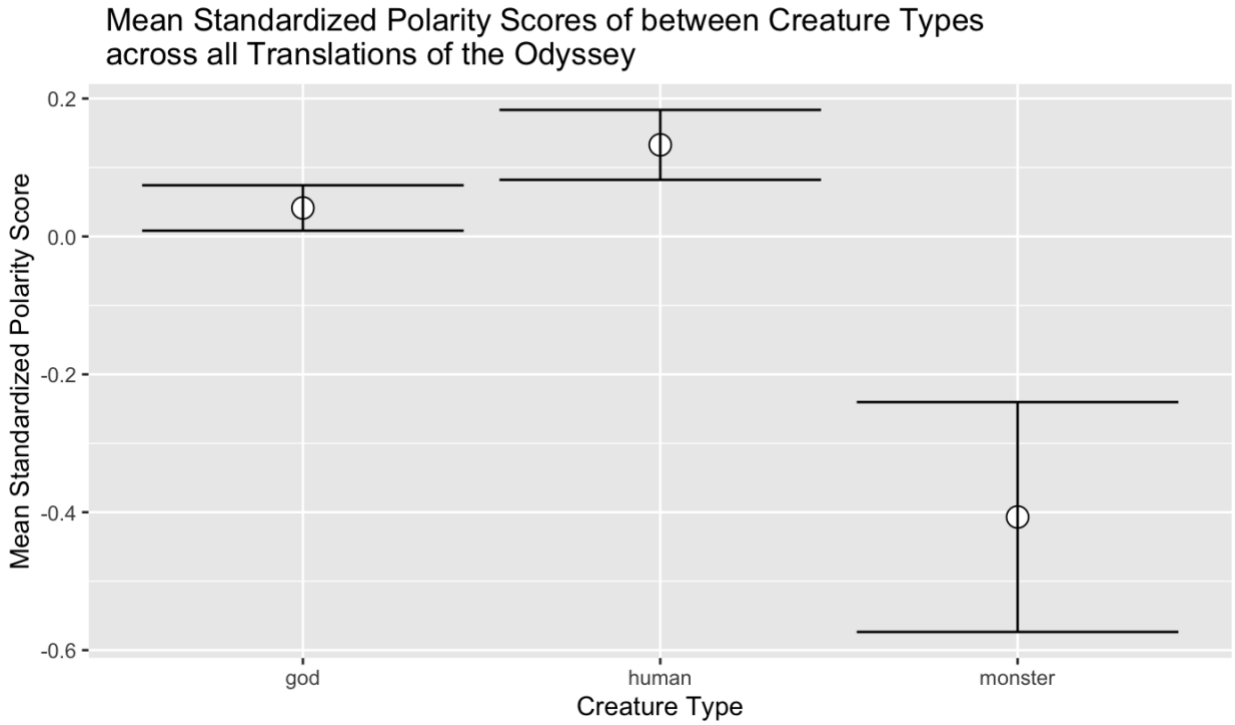

Figure 11. Mean standardized polarity scores for each creature type across all four translations of the *Odyssey*.

Figure 11 plots the mean and standard error bars for the polarity scores of sentences across all translations of the Odyssey for gods, humans, and monsters. The error bars do not overlap in any of the categories, which suggests that there may be a statistically significant difference in the standardized polarity scores between gods, humans, and monsters. That monsters appear to have lower standardized polarity scores than gods and humans makes sense because they are generally viewed as enemies that may disrupt the natural social order. It is interesting to note that humans appear to have greater standardized polarity scores than gods. This may be because of the specific assortment of human and god characters that were chosen for analysis. Calypso, Circe, and Poseidon all created obstacles for Odysseus during his journey, and therefore may have been

associated with negatively connotated sentences. On the other hand, the only human of the 13 included that is antagonistic in nature is Antinous.

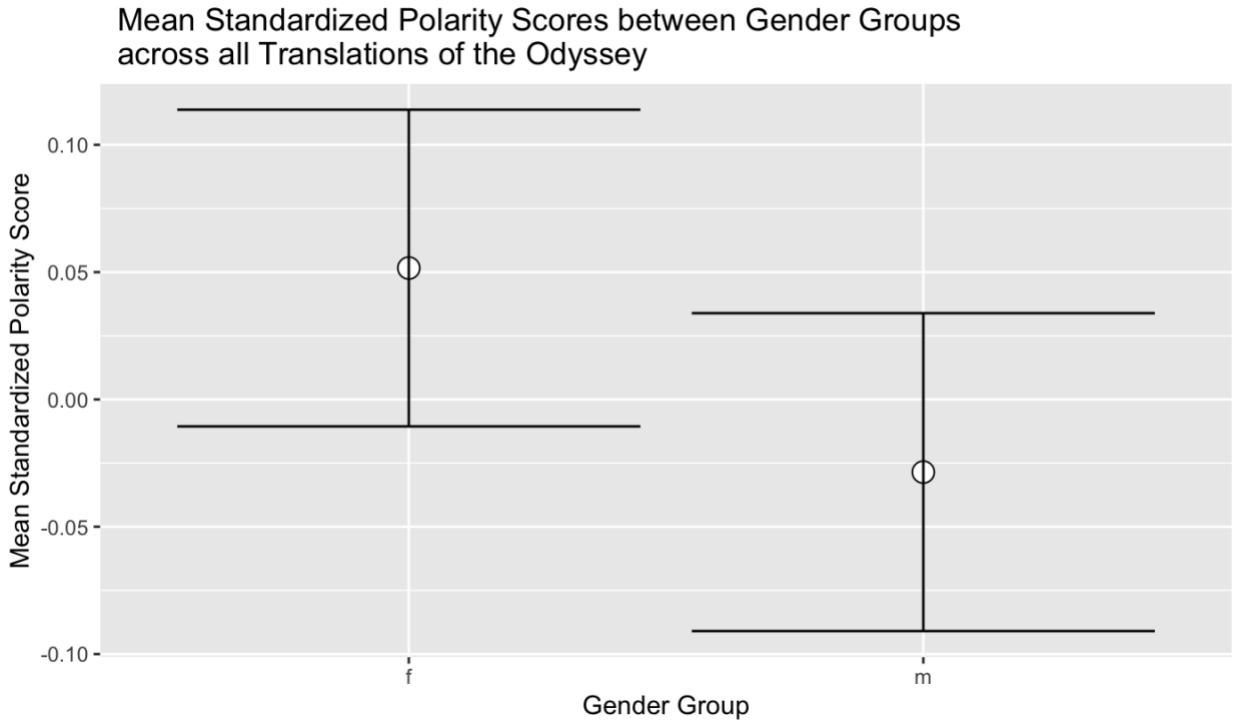

Figure 12. Mean standardized polarity scores for each gender group across all four translations of the *Odyssey*. "f" denotes the female gender. "m" denotes the male gender.

In Figure 12, the error bars for the mean standardized polarity scores overlap between the two gender groups depicted. While the mean standardized polarity scores for females is greater than that of males, the overlapping of the standard error bars means that this is not ample evidence to suggest that there may be a statistically significant difference between standardized polarity scores between male and female characters. This was not the expected outcome, because I had hypothesized that due to certain reservations about powerful women by ancient Greek society (mentioned in the introduction), women would be associated with lower polarity scores. Interestingly, not only do women appear to have greater standardized polarity scores on average,

but men have a negative average standardized polarity score. This may be a result of the specific group of men included in this analysis. Odysseus and Telemachus have frequent encounters with characters that serve as obstacles and are characterized negatively, which will associate lower value polarity scores with them. This may offset the positive adjectives with which they are described. Antinous and Poseidon serve as antagonists in this story. The mean standardized polarity score of Zeus appears to consistently be relatively low and positive (Figures 2-5). This may explain why the male characters selected appear to have negative mean standardized polarity scores.

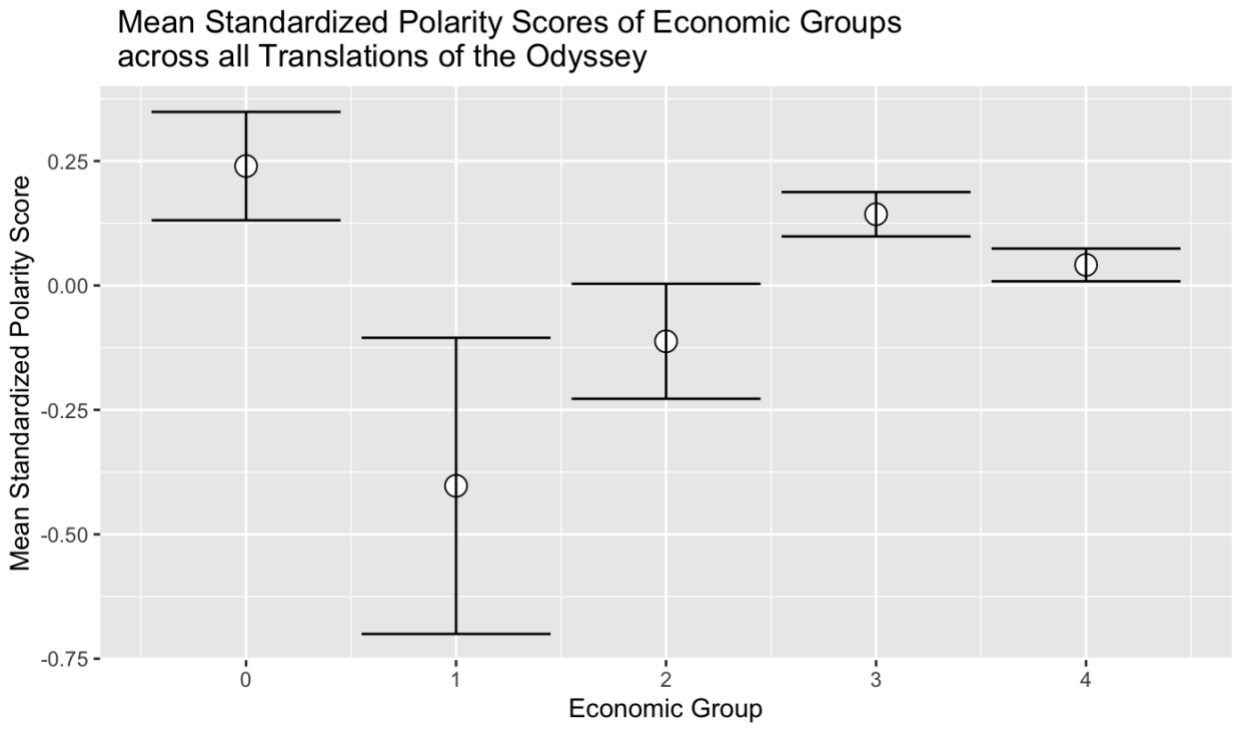

Figure 13. Mean standardized polarity scores for each economic group across all four translations of the *Odyssey*. Economic Groups 0, 1, 2, 3, and 4 represent slaves/servants, common folk, general aristocrats, royalty, and gods, respectively.

In Figure 13, the mean standardized polarity score for sentences across all translations of the *Odyssey* with standard error bars is plotted. The only error bars that overlap are between economic groups 1 and 2, which represent common folk and general aristocrats, respectively. This suggests that there may be a statistically significant difference between all of the other economic groups. Overall, we see that group 0 appears to have the greatest mean standardized polarity score, followed by 3, 4, 2 and 1. This is interesting as despite social biases that favor aristocrats and the wealthy, the poorest economic group appears to be associated with words with the most positive connotations. However, these results are likely affected by the choice in characters selected to analyze. Group 0 only includes Eumaeus and Euryclea, who are servants that are loyal and close to Odysseus. Since they are supporters of the protagonist, it makes sense that their polarities are high. Group 1 only includes Polyphemus, who is an antagonist, which is the likely cause for his association with words with negative polarity. Due to the small number of characters analyzed, the choices made in which characters go into which specific group play a large role.

Character Framing and Translator

In order to answer the question "to what extent does the translator of a work of literature affect the manner in which its characters are framed?" by comparing how polarity and subjectivity scores vary across different translations of the Odyssey, both overall and by character.

I first visualized the overall polarity and subjectivity scores for each translation of the *Odyssey* (Figure 14-15). In Figure 14, the mean polarity score for Samuel Butcher's translation of the *Odyssey* appears to be greater than the mean polarity scores of the other three translations used. The standard error bars do not overlap, suggesting that this difference may be statistically

significant. Similarly, in Figure 15, the standard error bars do not overlap for the subjectivity scores of Samuel Butcher's translation of the *Odyssey* and the other three translations, suggesting a possible statistically significant difference in the subjectivity scores between these translations. This reinforces the importance of using a standardization technique to standardize the scores before attempting to compare the relative framings of characters across all four translations of the *Odyssey*, which was needed to answer my first question. These differences can be explained by the use of different writing styles across different translators. The choices of adjectives that each translator makes can lead to overall changes in measured polarity and subjectivity score. In general, it appears that Butcher's writing has an overall greater polarity and subjectivity than

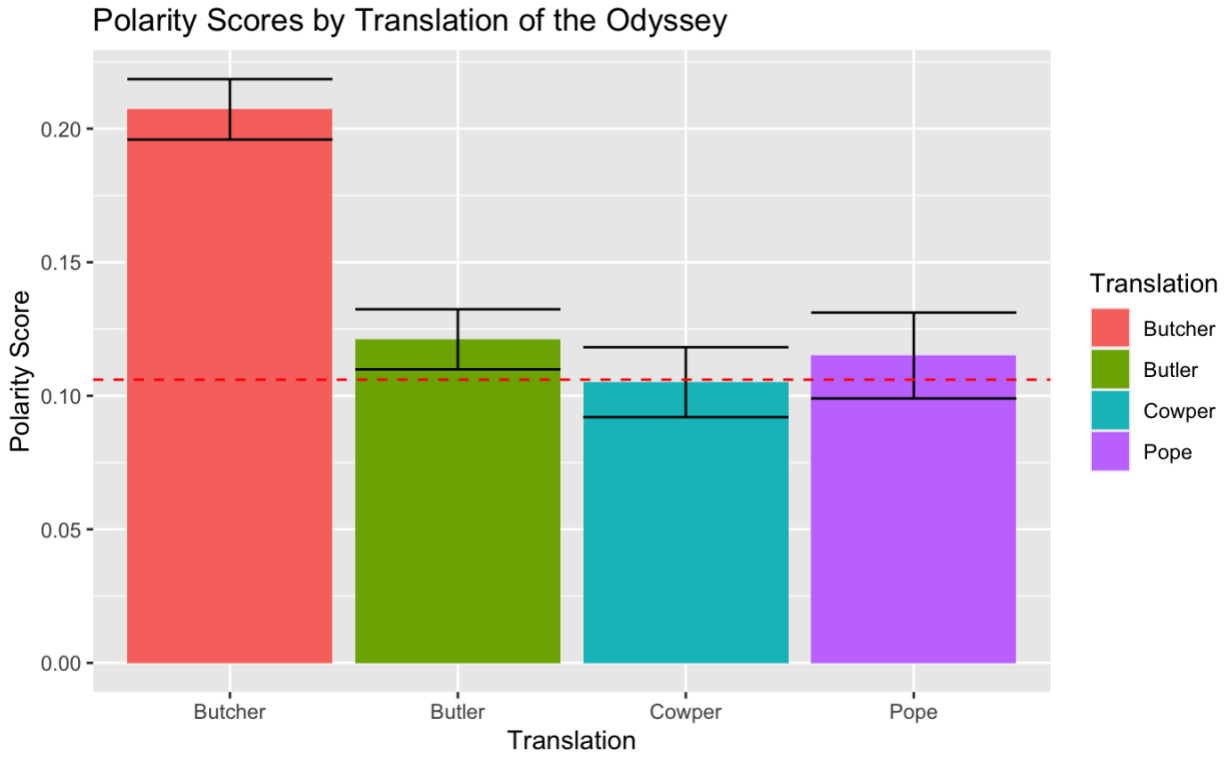

Figure 14. Mean polarity scores and standard error for all sentences in each translation of the *Odyssey*. The dashed line represents the mean polarity score of all sentences in all four translations of the *Odyssey*.

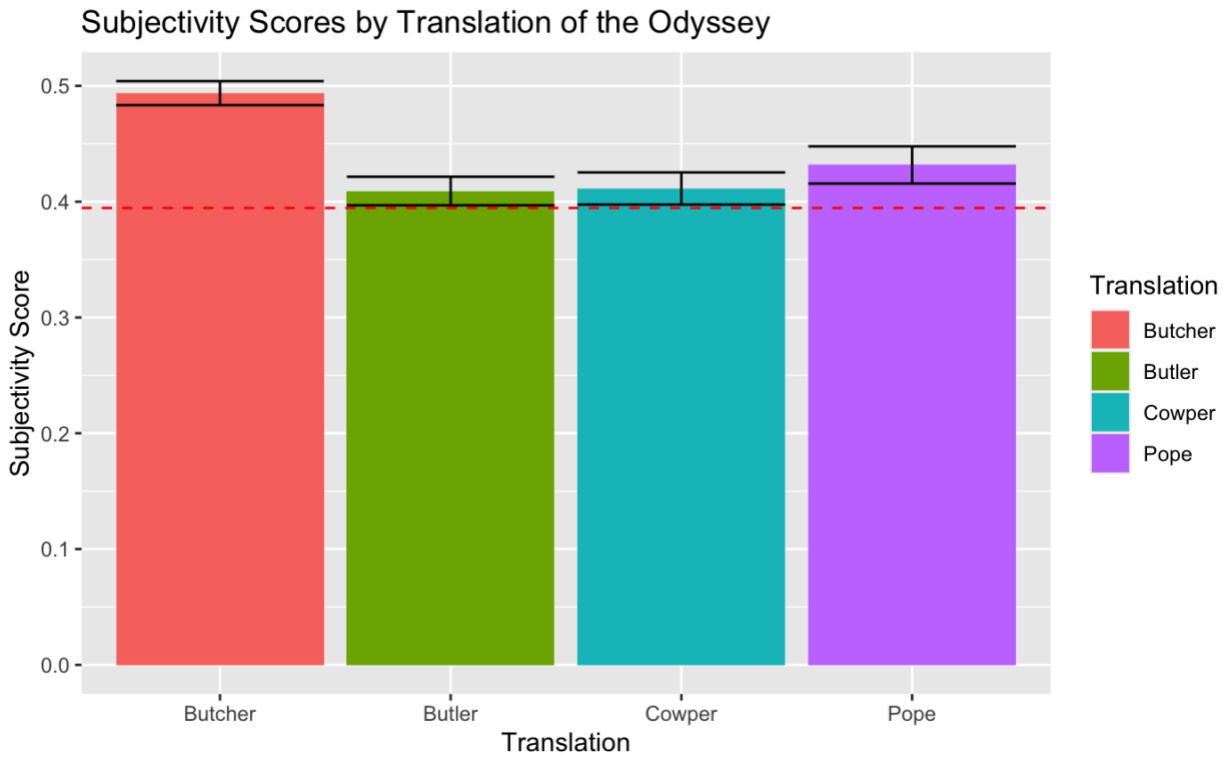

Figure 15. Mean subjectivity scores and standard error for all sentences in each translation of the *Odyssey*. The dashed line represents the mean subjectivity score of all sentences in all four translation of the *Odyssey*.

From Figures 14 and 15, we gain an overall understanding of how each translator's writing compares to each other as a whole. However, I am interested in being able to compare the framing of characters across translations of the *Odyssey*. To do this, I can compare the standardized polarity scores of each character between the different translations. Figures 2-5 assist with this as they show the mean standardized polarity scores for each character separated by translation of the *Odyssey*. It is of special interest to look at characters for which the mean standardized polarity scores appear to change significantly between the translations of the *Odyssey*. Based on the size of the standard error bars in Figure 6, mean standardized polarity score varies the most between translations of the *Odyssey* for the characters Polyphemus, Scylla,

Euryclea, Calypso and Antinous. I then plotted the mean standardized polarity scores across the four translations of the Odyssey for each of these five characters (Figures 16-20).

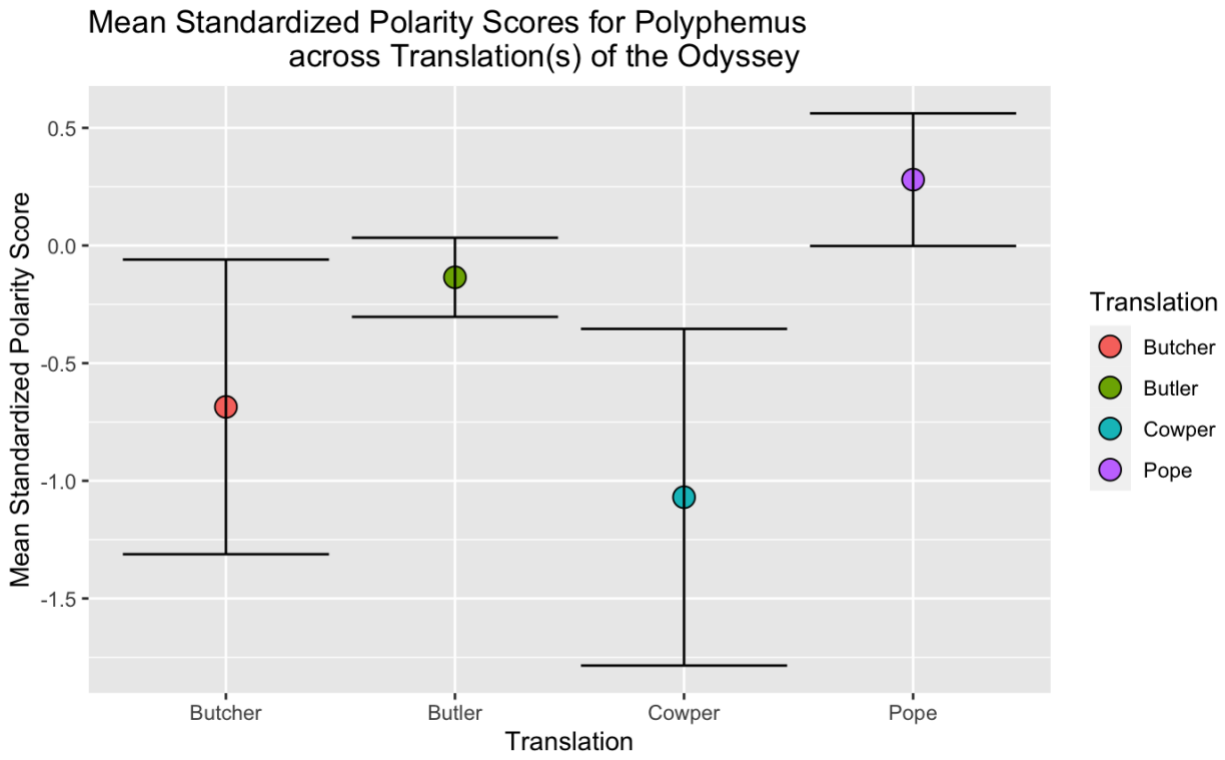

Figure 16. Mean standardized polarity score of Polyphemus for each translation of the *Odyssey*.

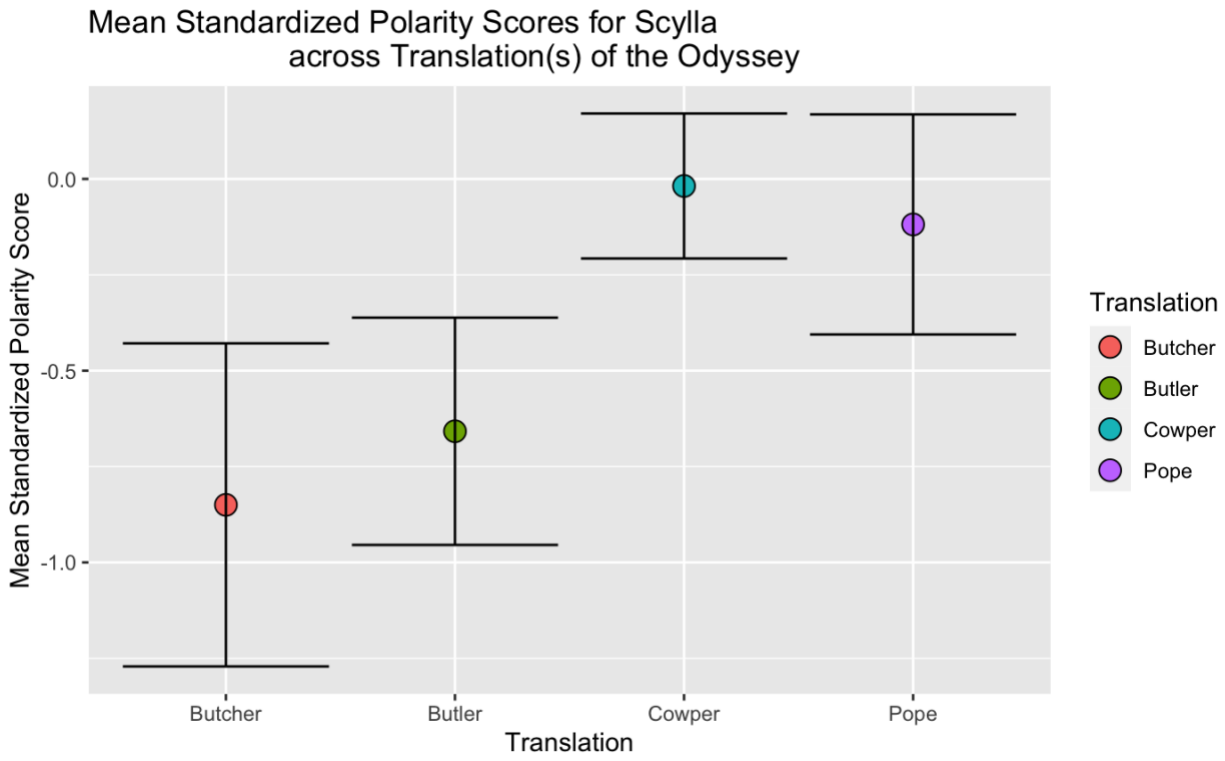

Figure 17. Mean standardized polarity score of Scylla for each translation of the *Odyssey*.

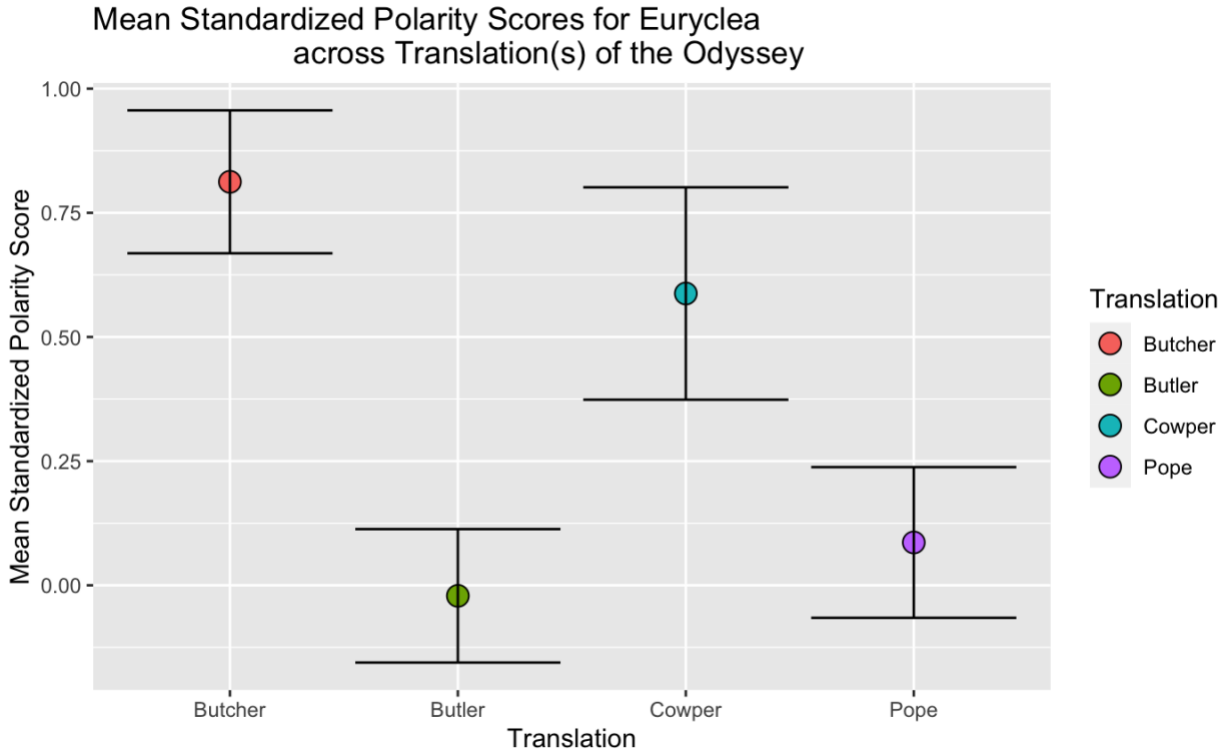

Figure 18. Mean standardized polarity score of Euryclea for each translation of the *Odyssey*.

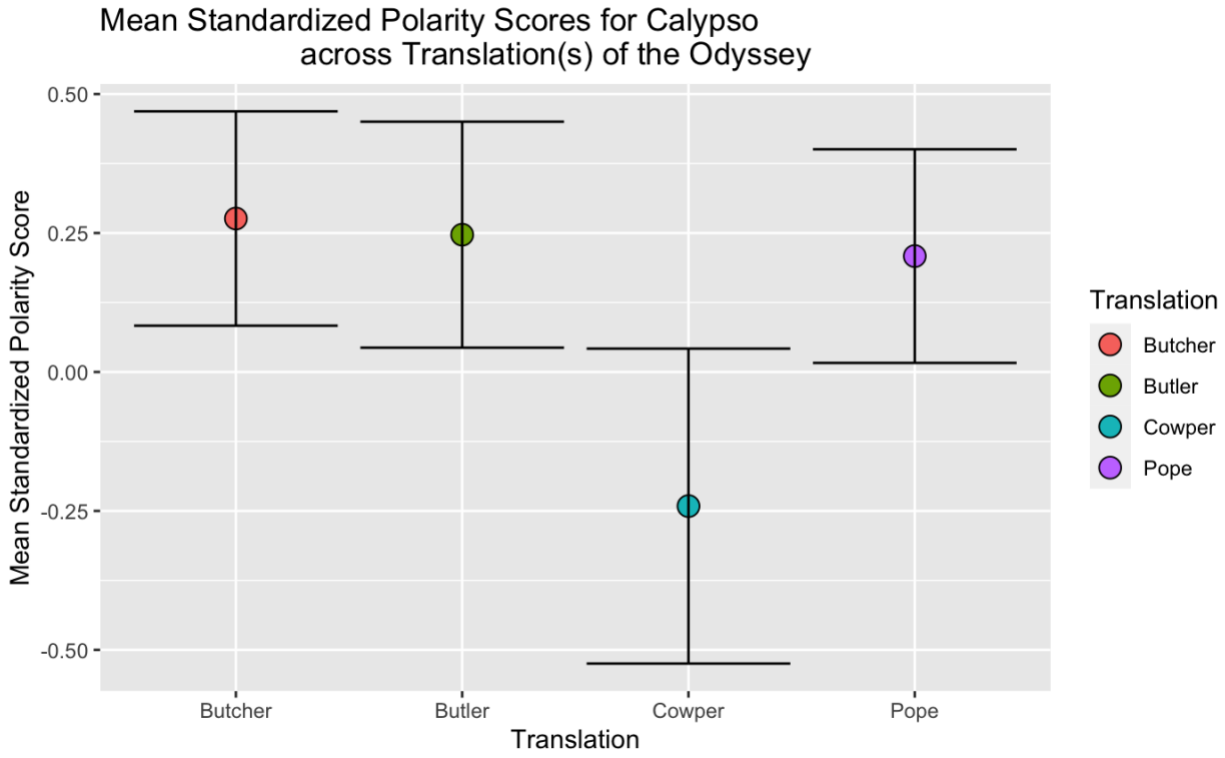

Figure 19. Mean standardized polarity score of Calypso for each translation of the *Odyssey*.

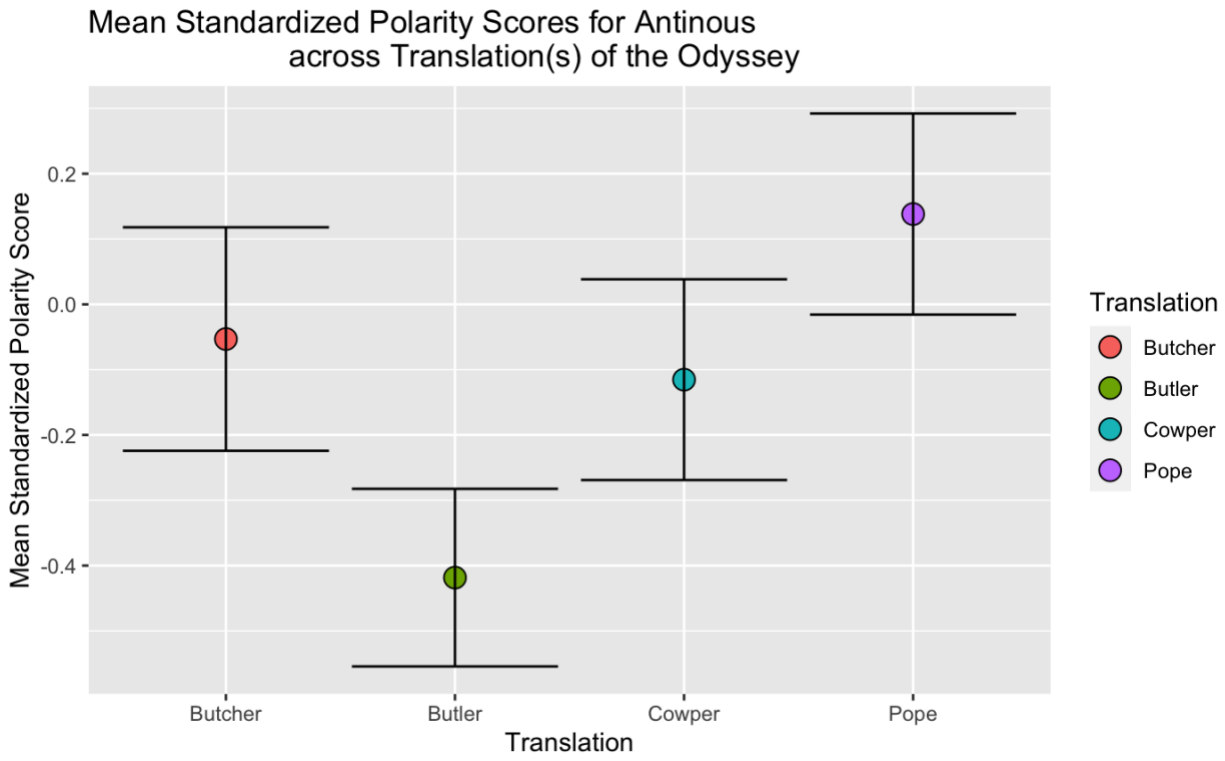

Figure 20. Mean standardized polarity score of Antinous for each translation of the *Odyssey*.

In Figures 16-20, there is always at least one pair of translations of the *Odyssey* for which the standard error bars do not overlap, suggesting a statistically significant difference in the standardized polarity score of a character between these translations. In fact, in Figure 21, we can see that this is the case for all thirteen characters analyzed in this paper except for Athena and Zeus. Therefore, there is evidence to suggest that the standardized polarity scores of (certain) characters varies significantly between different translations of the *Odyssey*.

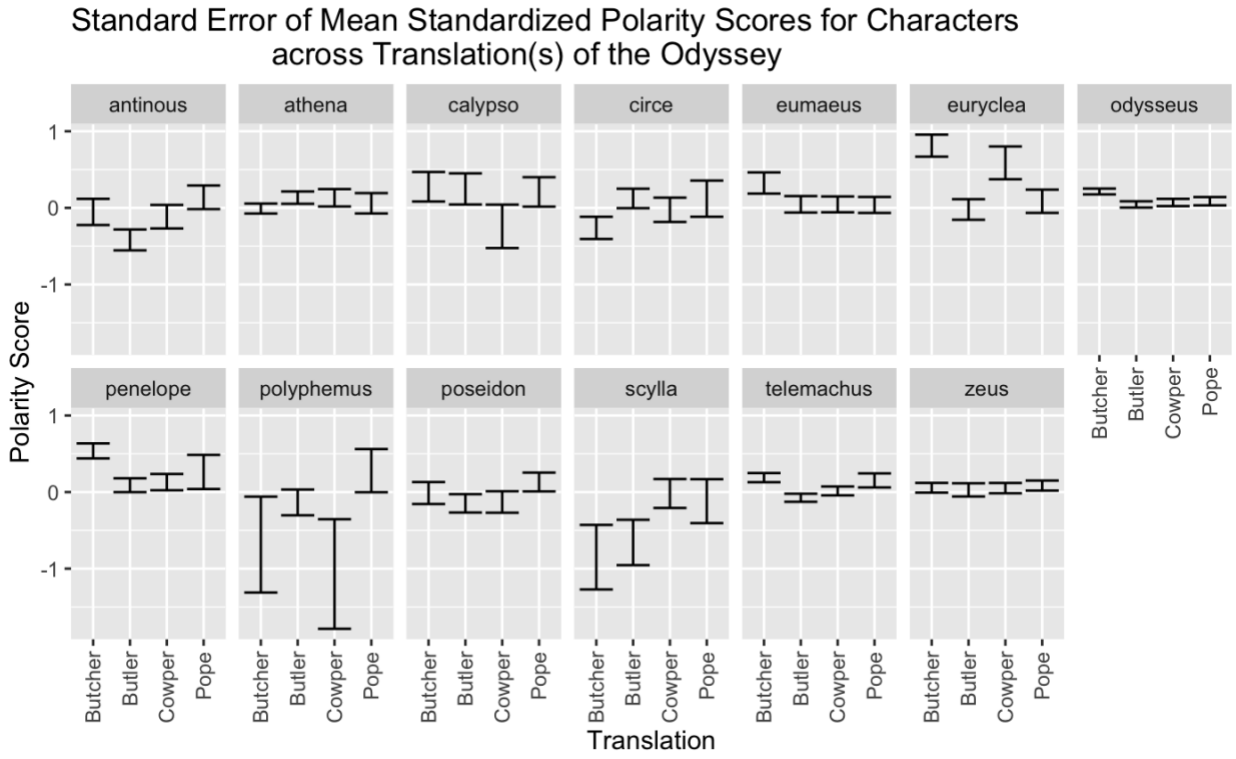

Figure 21. Standard error bars of mean standardized polarity scores for each character for each translation of the *Odyssey*.

Conclusions

In regards to the question "To what extent does the manner in which a character is framed relate to their demographic background (gender, economic status, creature type) in the Odyssey?", my results show that the polarity with which a character is framed may be related to creature type and economic status; evidence suggests that there may be a statistically significant difference in standardized polarity scores between different creature type groups as well as between different economic groups. However, there is not ample evidence to suggest a statistically significant difference in polarity across gender categories. From this we can conclude that the manner in which a character is framed may be related to demographic background to a significant extent,

but certain aspects of demographic background, such as economic status and creature type, matter more than others, such as gender.

In regards to the question "to what extent does the translator of a work of literature affect the manner in which these characters are framed?", my results suggest that the manner in which a character is framed (in terms of polarity) may vary significantly based on the translator. Evidence suggests that there may be a statistically significant difference in the standardized polarity of characters between various widely used translations of the *Odyssey*. Furthermore, evidence suggests that the overall polarity and subjectivity of translations as a whole also may vary significantly between different translations.

Note that these results are largely influenced by which characters and translations are chosen for analysis, as there are only 13 characters and 4 translations observed in total in this paper. Analysis with a greater number of characters and across a wider variety of translations may provide for more accurate and statistically meaningful results. Furthermore, the analysis conducted in this paper is not completely conclusive; future statistical analysis is necessary to completely determine the nature and strength of these relationships.

There are several potential implications if future research confirms these results. First, understanding how the polarity with which characters in the *Odyssey* are framed based on their demographic backgrounds can provide insight into the cultural attitudes of the ancient Greeks towards different demographic groups. Such analysis provides a computational framework to understand cultures through their literature. Second, confirming the differences in the framing of

characters between different versions of the *Odyssey* can be informative of the importance of the role of a translator. Potentially, this work could be expanded to answer questions such as how the portrayal of characters in translations are affected by the time period and cultural origin of the translator. These answers can enable us to make more informed decisions when selecting translations as well as to better understand the nature of how mythology evolves over time and space.

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