



# A German-English comparison of Thesaurus-based value maps reveals underlying semantic structures of cultural moral differences



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## Abstract

Moral value differences across cultures are typically framed in terms of differences in the importance of specific values within cultures, as determined by surveys of populations' and individuals' attitudes and by other qualitative methods. This study uses an alternative approach for investigating cultural differences in values based on data from thesaurus databases that represent the linguistic use of value terms. Based on a bottom-up procedure to generate 78 value classes out of 460 value terms both for English (US) and German, we outline how cultural differences between English value terms and their German translations are shown through differences in synonyms and related word groups on value maps for German and English value terms.

## Introduction & Hypothesis

Value differences across cultures are usually framed in terms of the different weights a particular culture puts on specific values leading to a value ranking. For example, western individualist cultures are considered to prioritize values such as autonomy and freedom, whereas East-Asian collectivist cultures put more emphasis on harmony and community. Hunter-gatherer immediate-return cultures put more emphasis on generosity and community sharing whereas Western capitalist cultures emphasize personal rights and private property. In order to investigate such different understandings of the importance of values, surveys and qualitative instruments are usually used (Schwartz 2012).

We present an alternative approach for investigating cultural differences based on data that represent the linguistic use of value terms using Thesaurus databases. We follow the intuition that this data reflects similarities in language use. We hypothesize that differences in the importance and understanding of certain moral values within a culture will show up in different "semantic neighborhoods" of terms representing those values. To test this hypothesis, we calculated value distances and value maps based on Thesaurus data for English (USA) and German (Germany). We then compared value pairs whose differences may reflect common differences in understanding of values related to the common conceptions of individual freedom and social justice in either country.

## Method

In a nine-step procedure (Fig. 1) we identified 78 value groups using a bottom-up approach:

- 1) Identify terms describing values both in English and German in order to allow for cross-cultural comparison of the value maps.
- 2) Create a word-bag for each term containing all (partial) synonyms, using thesaurus listings: Databases "thesaurus.com" for English and "woxikon.de" for German were used to give each English term and its German equivalent a related group of words.
- 3) Check for additional value candidates in the synonyms, resulting in a list of total 460 terms and word-bags per language.
- 4) Clustering & visualization: We determined the relative overlap of word-bags representing each term (distance metrics) to calculate distances between values. The value clusters are visualized in 2D using a novel tool, superparamagnetic agent maps (Ott et al. 2011), and the visualization has been optimized in several iterations. In addition, clustering provided suggestions how the terms may be grouped.
- 5-9) Identify and assign terms to 78 groups (clusters) of synonyms: The suggestions provided by the map were given to English and German experts (philosophers, psychologists, language experts) who made refinements to the groups using the map as heuristics. After pooling the expert feedback, an improved version of value grouping was given to the experts for a second revision. In this way, 78 value groups were identified (21 English and 11 German values remained unattributed). The final value map was created using the synonyms of all terms of a group for the word-bag of the group and by applying the procedure of step 4. In the map, we only show the term that the experts considered to be the best descriptor of the group.

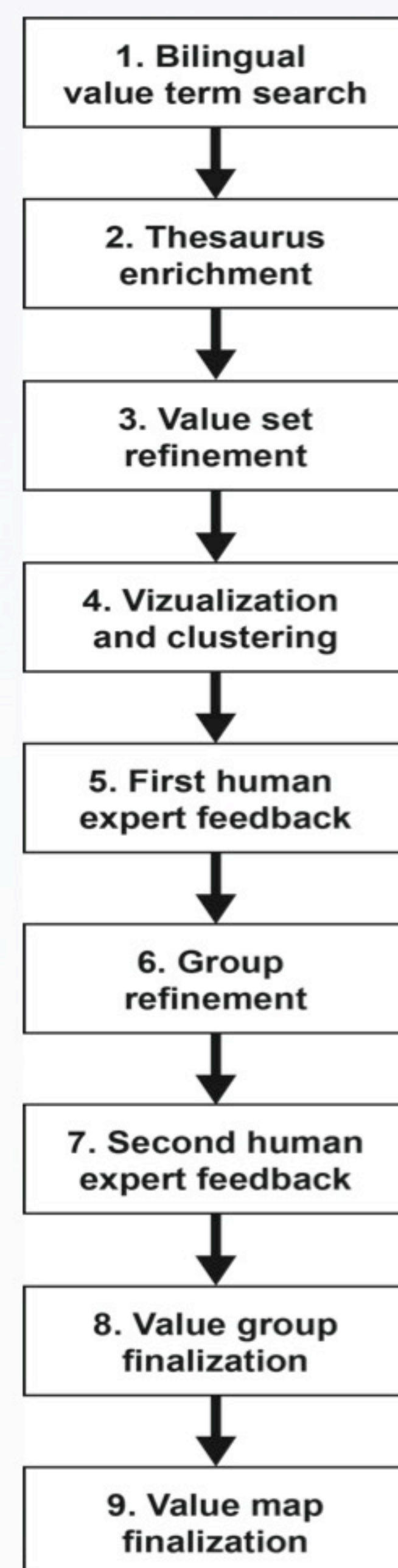


Figure 1 - Overview of the method

## Results

Our study found different semantic neighborhoods of value terms in the related languages. These differences show up in two ways: 1) In the composition of the value groups (i.e. which of the 460 terms of each language form a group using our procedure outlined in "methods"). 2) In the neighborhood of each group in the value space.

An example for the first difference is the group "love" vs. "Liebe" that includes four terms in English (affection, dedication, devotion, love) but only three terms in German (Hingabe, Innigkeit, Liebe). For outlining examples of the second difference, we display the maps for the English and German value groups in Figs. 2 and 3. Remember that a 2D map cannot display the topology of the original 78D space perfectly. To outline this, on our 2D map, smaller position points and lighter grey scaling indicate values whose neighborhoods are not represented to scale (i.e. the values' neighbors on the 2D map only roughly represent the original neighbors in the 78D space). The red lines on the two-dimensional map connect the four (or five) most closely-related value groups as modeled by our 78-dimensional space for the four values discussed in our table (see Discussion).

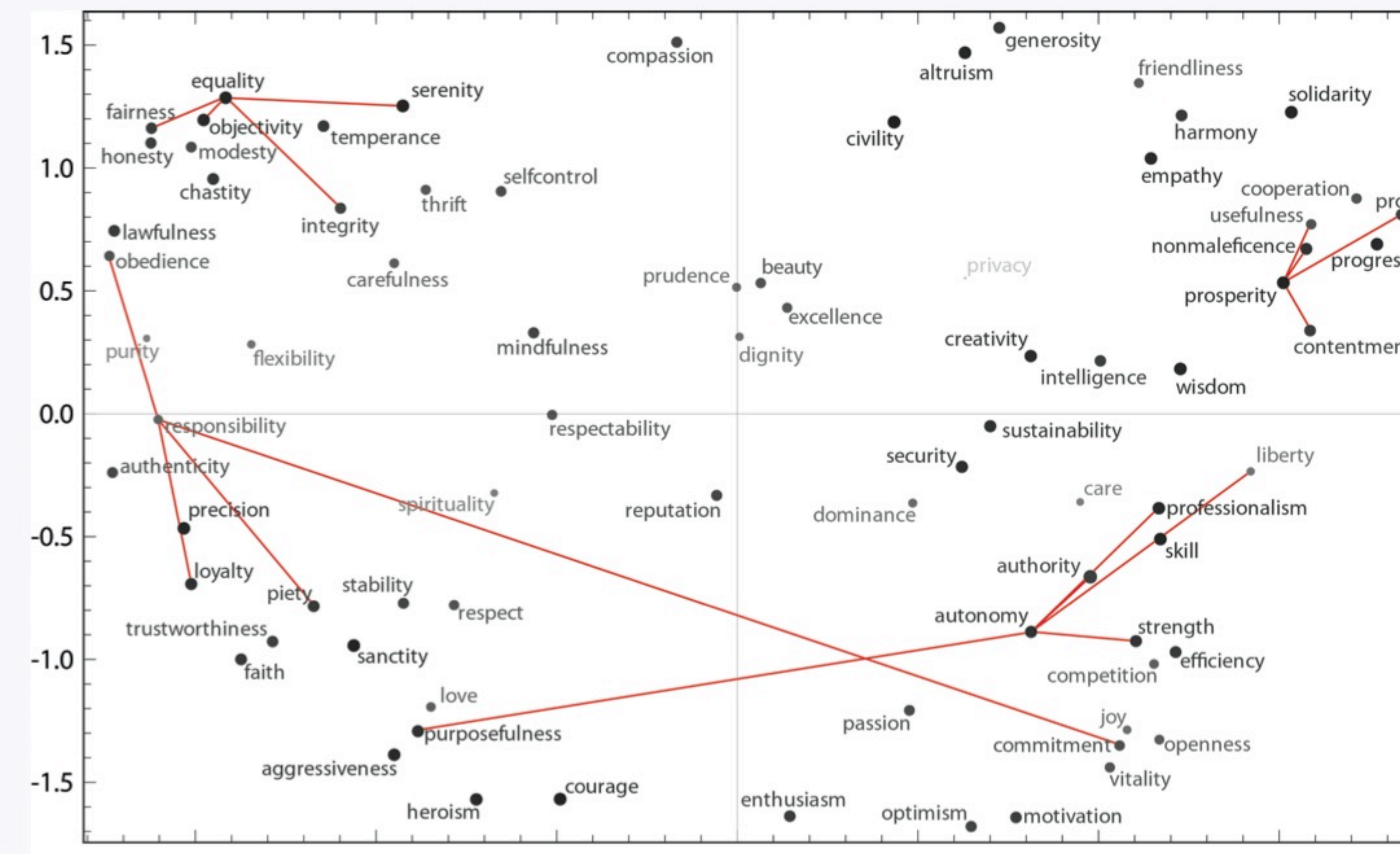


Figure 2 - English value map: 2-dimensional representation of the positions of the 78 value groups. The map displays the most representative term of each group based on the opinion of the experts

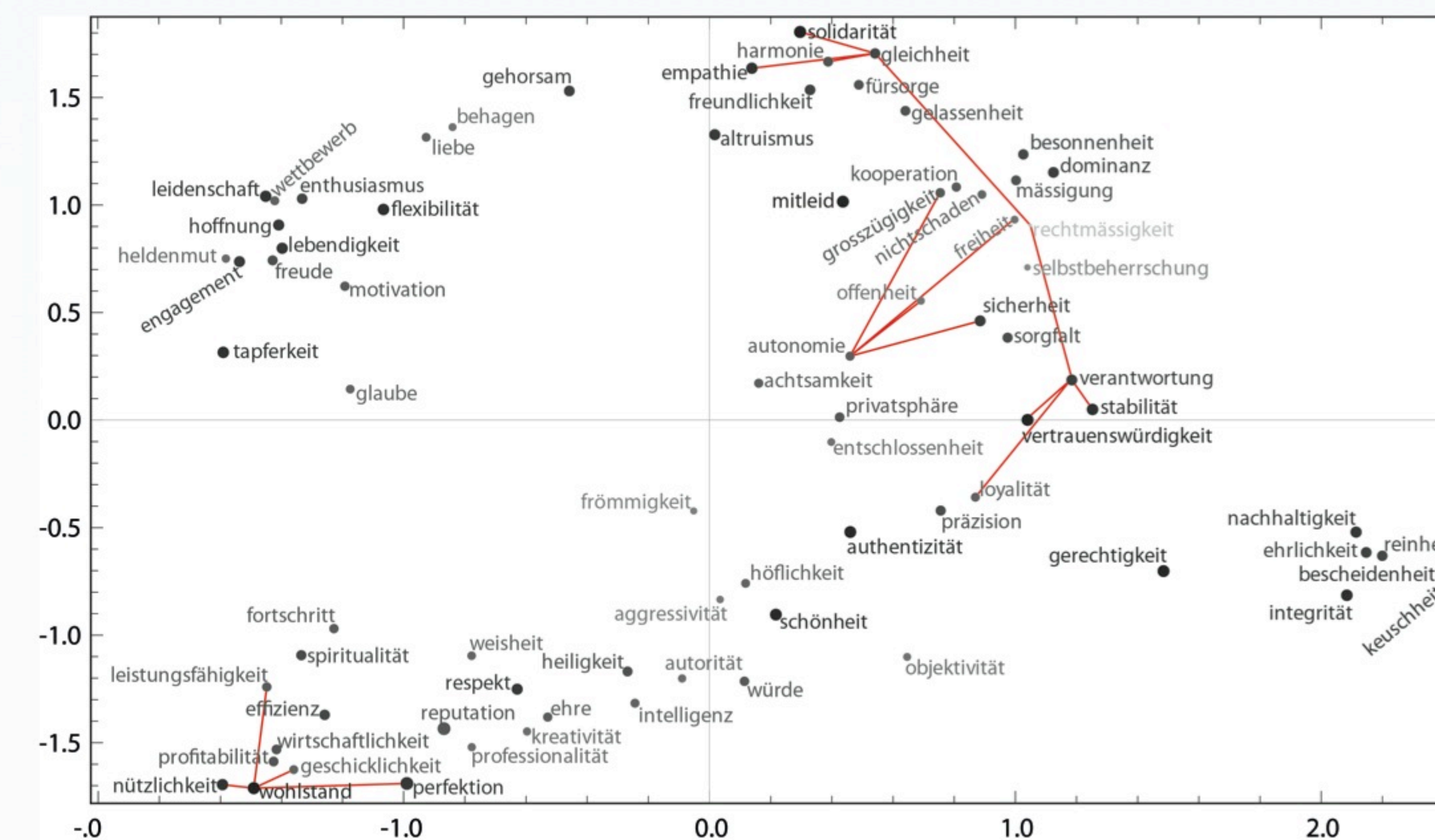


Figure 3 - German value map: 2-dimensional representation of the positions of the 78 value groups (see caption fig. 2 for further explanations)

## Discussion

Our results suggest the need for further investigation to determine whether the found differences in the semantic value space of German and English (US) words reflect real differences in appreciation of values across German and American cultures. As a Thesaurus emerges out of long-term language practices, popular emphasis of distinctions between "American" or "German" values may show up in the map. For example, according to US opinion, the semantic neighborhood of autonomy and prosperity in relation to America's achievement-oriented culture may show the "typical" American mentality of individualism (Spence 1985), whereas (social) equality and responsibility are terms often used in the German political discourse (BPB).

We have analyzed those pairs (i.e., translated) of values by investigating their "semantic neighborhood" in the original data space. The four examples below exemplify that differences in semantic neighborhoods seem to support popular beliefs on differences in understanding and interpretation of the meaning of moral values in Germany and the USA (Table 1). For example, the American understanding of equality goes into the direction of "treating everybody in the same way", whereas the German "Gleichheit" reflects the fact that equality in Germany is often discussed with respect to protecting the society from economic inequality in order to preserve harmony within society. In addition, being autonomous in the US involves mainly personal control over the environment, whereas the semantic neighborhood of the German "Autonomie" indicates a more relational understanding of autonomy.

	American Understanding	German Understanding
<b>Autonomy [Autonomie]</b>	Authority, liberty, professionalism, purposefulness, strength	Freiheit [freedom], Grosszügigkeit [generosity], Offenheit [openness], Sicherheit [security]
<b>Equality [Gleichheit]</b>	Objectivity, fairness, integrity, serenity	Rechtmässigkeit [lawfulness], Harmonie [harmony], Empathie [empathy], Solidarität [solidarity]
<b>Prosperity [Wohlstand]</b>	Nonmaleficence, contentment, profit, usefulness	Nützlichkeit [usefulness], Geschicklichkeit [skill], Perfektion [excellence], Leistungsfähigkeit [strength]
<b>Responsibility [Verantwortung]</b>	Commitment, piety, loyalty, obedience	Loyalität [loyalty], Vertrauenswürdigkeit [trustworthiness], Stabilität [stability], Rechtmässigkeit [lawfulness]

Table 1 - The semantic neighborhoods of selected value pairs in US-English and German

## Conclusion

We found that differences in understanding of values across cultures are expressed through different semantic neighborhoods of value terms in the related languages. Our findings are of value both for methodological and research purposes:

- 1) Relying on "thesaurus similarity" as outlined in our study (i.e., the identified value groups) can be used to optimize the translation of survey tools across languages.
- 2) Understanding differences in semantic neighborhoods is relevant for data mining of social networks or digital communication, which becomes increasingly important for psychological research (Reips & Garaizar 2011).
- 3) Maps resulting from such studies can be used as exploratory tools for identifying further differences with respect to the importance and semantic framing of values across cultures.

## Work Cited

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