

Language and Cooperation

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“God having designed Man for a sociable Creature, made him not only with an inclination, and under a necessity to have fellowship with those of his own kind; but furnished him also with Language, which was to be the great Instrument, and common Tye of Society”

*Locke (1690) Of Words or Language in General,
In An Essay Concerning Humane Understanding (pp. III, Chapter 1, Section 1)*

Trust and cooperation are social preferences with an economic payoff, as higher trust correlates with higher incomes (Algan & Cahuc, 2014). John Locke (above) is optimistic about the role of language in increasing cooperation. Indeed language is the result of cooperation; we agree on the meanings of words, a process which is the result of historical cooperation (Henrich, 2015). And yet language, like most tools, can be used for multiple aims. Here, we will explore various ways in which language has been shown to help or hinder cooperation.

Language as an In-Group Marker

Humans are ‘parochial altruists’, willing to enforce in-group cooperative norms, but without expecting or exhibiting as much cooperation with people that are less like us (Bernhard, Fischbacher & Fehr; 2006). Heblich, Lameli, & Riener (2015) conduct an experiment in which subjects must choose whether to cooperate or compete with another player. One player must read a text, and so reveal if their accent is local or national. Players cooperate more with those that speak with the same local accent (their in-group), showing that accent can mark social distance, and influence cooperation.

Distinct languages can also mediate cooperation. Espinosa, Fatas, & Ubeda (2019) play a multi-round public goods game in two bilingual areas of Spain, where Spanish identity is near universally felt (Valencia) and where it is more contested (Bilbao). Subjects are placed in a group of four (which speaks the same language as them) and paired with another group of four (which may or may not). Subjects can choose to divide their endowment between a personal account, a ‘club good’ which benefits their own group, or a public good which benefits both groups. Contributions to the club good are similar everywhere, at around 15%. However, in Bilbao contributions to the public good are about a quarter lower in mixed groups than with homogenous ones. In Valencia the opposite effect is found; contributions to the public good are 38% higher in mixed (Catalan/Spanish) groups than with homogenous pairings. These results show that language can be a marker of identity, which

enables or discourages inter-group cooperation, depending upon the social meaning of different languages.

This tendency to discriminate on the basis of language can be learnt in childhood. Angerer et al (2016) run a framed experiment with 828 primary school children in Northern Italy, where German and Italian native-speakers live in the same city. Subjects are matched with others, and play a one-shot prisoners dilemma-like game. They find the youngest children (aged 6) exhibit in-group bias towards classmates, but that language-group discrimination emerges later (it is strongest for 10/11-year-olds, the oldest subjects in their pool), and only in the German-speaking group.

More positively, the chance to communicate (using language) can lessen social distance and increase cooperation (Balliet; 2010). Face-to-face communication is especially effective, with the meta-analysis finding an effect size of 1.2 standard deviations. This shows that communication can strengthen cooperation, plausibly by lessening the social distance between players.

Language as a Label

Language differences can be more subtle, with effects found even for changing a single label within a given language. Alekseev, Charness, & Gneezy (2017) summarises a broad literature looking at how the language used to describe a game may change behaviour, with a focus on neutral versus context-rich descriptions. In an identical Prisoner's Dilemma game, subjects that saw it labelled "The Community" game were more cooperative than those that saw it labelled as "The Wall Street" game (Lieberman, Samuels, & Ross; 2004). Likewise, in a trust game calling other players "partners" led to more trusting decisions than calling them "opponents" (Burnham, McCabe, & Smith; 2000). Alekseev, Charness, & Gneezy (2017) further document examples of such changes in the context of bribery, pollution, and sabotage games.

There are also cases where changes in language led to no effect. Alekseev, Charness, & Gneezy (2017) argue these can be explained by the language changes not causing a difference in associations. This could be because the 'abstract frame' sufficiently corresponds to a known situation (and so the context-rich language cannot make it more salient), or conversely where there is no known situation to make more salient. One intriguing finding is where a "community" frame led to lower contributions. Dufwenberg, Gächter, & Hennig-Schmidt (2011) test the label "community" against "the experiment" in public good games; a context in which "community" can have a negative connotation. In Germany, but not in Switzerland, they find using "community" reduces cooperation. This underlines that the specific language used is highly context dependent, and effects are contingent upon cultural connotations.

These results are different from language as a marker of social identity, but point instead to language activating a language-specific set of norms or preferences. Alekseev, Charness, & Gneezy (2017) discuss the idea that language in cooperative games could act as a coordination device, changing behaviour through changing expectations and norms of

others' behaviour. Alternatively, it could directly affect peoples preferences, such that they simply prefer one course of action to another in a given language frame, regardless of others' behaviour.

Languages in the Lab: Cultural Norms or Personal Preferences?

If individual words can have large effects, it is unsurprising that distinct languages can also affect behaviour. Some early work on cooperation and language comes from unincentivised experiments using business students. English is commonly the language of international business in western multi-national environments, leading several scholars to explore whether English triggers more competitive Anglo-Saxon cultural norms or preferences (relative to continental European cultures).

Akkermans, Harzing, & Witteloostuijn (2010) play an unincentivised Bertrand duopoly game with 348 Dutch business students, in Dutch or English. They find lower cooperation in English (37%) than in Dutch (51%) for those that have spent at least 3 months in an English-speaking country. Gargalianou, Urbig, and van Witteloostuijn, (2017) use a similar design with 421 Belgian business students, but do not find similar results. They play the same game consecutively in French, Dutch and English. They find no significant language effect but find a weakly significant interaction between language and gender, which was not hypothesised before the research was conducted.

Several researchers do use incentivised experiments, and attempt to examine mechanisms for any differences. As discussed above, different levels of cooperation could be a result of language acting as a coordination device (making certain cultural norms salient) or as a result of directly affecting preferences for cooperation. Clist and Verschoor (2017) use 218 bilingual subjects in Eastern Uganda, randomising the language of a public goods game. They find the level of cooperation is around a third higher in Luganda (a more national language) compared to Lugisu (a local language). The effect is strongest for those most associated with Gisu culture, the relevant ethnic group. The strength of this tie is measured by having a Gisu parent or primarily speaking Lugisu at home.

This work has been closely replicated. Clist and Hill (2022) use 349 bilingual subjects in a new urban setting, and dig deeper into mechanisms. They find a strikingly similar result, with an effect size within 0.1 percentage points of Clist and Verschoor's (2017). This is reassuring, as publication bias could have meant that existing published results on language effects are misleading, as significant effects are more likely to be published. They measure both injunctive norms and empirical expectations of others' behaviour in the two languages. Neither can explain behaviour, so it seems language affects these subjects' preferences for cooperation directly.

Clist and Hong (2022) randomise the language of a survey for 172 bilingual Chinese students studying in the UK. In order to better test the idea that language could activate cultural frames, they also recruit 87 mostly British students in the UK, and 104 Chinese students in China. This allows us to see whether Chinese students in the UK are 'more

Chinese' in Mandarin, and 'more British' in English. First, they find large and significant language effects across a range of social preferences including altruism, positive reciprocity and trust. They do not find significantly different negative reciprocity, but the overall average language effect across 19 questions is 0.4 standard deviations. This is larger than the average difference in stated preferences between Chinese students in China and British students in the UK. Second, in the few years that their sample has spent in the UK, speaking English does not activate UK-style preferences. Rather, students are very similar to their Beijing-counterparts in Mandarin, but speaking English appears to free them from identity-based preferences and norms. A longer-term study may find greater assimilation, but in the short run language appears to have an effect by reducing norm-following in the newly acquired language. This again fits with the idea that language influences preferences directly.

Others argue distinct social norms is the explanation of different behaviour. Li (2017) played ten experimental games with 64 bilingual subjects in Hong Kong. Across three trust games he finds significantly higher trust and trustworthiness in Chinese than in English, but in a dictator game there were no differences in altruism. Li (2017) interprets the results in line with the idea that language changes behaviour by changing one's expectations of others behaviour (a norms explanation), rather than by changing their cultural frame and inherent preferences (a direct preference explanation). Whilst only one belief differed by languages across the four trust or altruism games, his explanation for this interpretation is that language effects were only found in the strategic interaction games.

Experimental Evidence on Related Preferences

Several studies focus on other social preferences, not simply cooperation. Lambarraa & Reiner (2015) conducted a field experiment in Morocco, to see whether Arabic (compared to French) primed religious norms. Survey respondents could choose to donate some or all of their payment to a local orphanage. The survey was randomised between Arabic and French versions, with Islamic teaching implying people should be more altruistic when giving is private than when it is public. Their results conform to the prediction that Arabic triggered Islamic norms, which is in contrast to findings in other settings, as anonymity typically reduces altruism.

Others have focused on the foreign language effect, where one's non-native language induces more 'rational' behaviour. On trust, Geipel, Grant & Keysar (2022) found that people in Hong Kong were more likely to be vaccinated against Covid-19 if they receive information in English, relative to Chinese. They interpret this as compatible with a foreign language effect.

Lying is a form of uncooperative behaviour. Bereby-Meyer et al (2020) run an experiment including 573 in-person subjects across three countries (Israel, Spain and the USA), and 902 online English-speaking Korean subjects. They used the popular die-rolling task, randomising the language of the experiment, and paying most subjects. Only two-thirds of subjects passed a range of inclusion criteria. Pooling these subjects together, they report slightly more lying in native languages ($p=0.035$), with the effect size 0.2 on a range of 1-6.

Examining both the foreign language effect and cultural norms, Alempaki, Doğan, & Yang (2021) conduct a similar exercise, though find somewhat different results. Their experimental set-up is to use a real effort game, where people can lie about their performance for their own benefit, but at their partner's cost. Examining both personal and individual norms, they find no language effects for their German sample. However for their Chinese sample, lies are less acceptable in Chinese than in English. Their results on behaviour are similarly nuanced. They find no effect of foreign language on lying in two of the three experiments, but that lying was more prominent in Chinese for Chinese subjects.

Observational Data Testing Whorfian Theories

In the popular imagination, it is common to think that specific language features could affect people's choices. This 'Whorfian' idea influenced Tabellini (2008). He noted that languages with *2nd person differentiation* have multiple words for 'you', such as *tous* and *vous* in French, which denote different levels of politeness. Such distinctions have been present in many languages in history, but more hierarchical cultures keep such distinctions for longer. He also noted some languages allow *Pronoun drop*, in which they omit the first-person pronoun "I". This could indicate a less egotistical culture, meaning that cooperation may be more highly valued. Tabellini (2008) uses individual responses and country-level aggregates from survey data, comparing the responses according to the linguistic features of a respondent's language. He finds languages that do not allow pronoun drop and/or have no *2nd person* differentiations are associated with higher trust, respect and ultimately better-quality governance. The result is consistent with at least two interpretations. Differences in cooperation could be caused by grammatical features, or historical culture may have shaped grammatical features.

Falk et al (2018) revisited Tabellini's ideas using a large experimentally-informed survey. Despite having 80,000 responses, they found no statistically significant relationship between pronoun drop and four social preferences (positive reciprocity, negative reciprocity, altruism and trust). However, only the interview language was recorded, and so we cannot know from this research whether the linguistic features of one's native language influenced measured trust and cooperation. Further, the reported statistical tests use correlations between country-level averages rather than more finely-grained measures.

Summary

Research into language's effect on cooperation is at an early stage, with many questions left unanswered. Whilst most people in the world are bilingual (Grosjean, 2021), relatively few studies have examined how this affects cooperation. We do know that language can act as a marker of social identity in culturally informed ways. It can enable coordination or prime greater cooperation in both distinct languages and using smaller within-language variations. Where language is closely tied to clear cultural norms, it appears to induce the relevant behaviour, but this may only be for bicultural subjects. Current evidence on a foreign language effect, or Whorfian effects, are less well established. Future work may consider multiple ways in which language can undermine or induce cooperation now that some effects have been established.

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