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REGULAR ISSUE PAPER

Cooperating or competing in three languages: cultural accommodation or alienation?

Competing
in three
languages

167

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Abstract

Purpose – The purpose of this paper is to study the effect of using foreign languages on cooperative behavior in a prisoner's dilemma setting. The cultural accommodation hypothesis suggests that people are less cooperative in English, associated with the Anglophone cultural cluster, than in French, which is – as is Belgium – associated with the more cooperative Latin European cultural cluster.

Design/methodology/approach – Choices are framed as pricing strategies in the context of duopolistic competition. In total, 422 Flemish-Belgium participants with English and French as foreign and Dutch as their native language played in one of three language treatments.

Findings – While the authors observe differences between the native and both foreign languages, which are moderated by gender, the authors do not find any difference in effects between the two foreign languages that are associated with different cultures. Extending cultural accommodation arguments, the data suggests an effect specific to the use of the two selected foreign languages.

Originality/value – The authors contribute to this literature by reporting an experimental test of cultural accommodation and alienation effects related to two foreign languages. The authors explore novel arguments, related to cognitive psychology and gender effects.

Keywords Cultural accommodation, Cultural alienation, Foreign language effect, Gender effect, Lab experiment

Paper type Research paper

Introduction

Already in the 1990s, over 50 percent of the world's population did speak a foreign language (De Houwer, 1998), and the move to use English as the *lingua franca* has increased rapidly in global organizations (Feely and Harzing, 2003). In their work life, people come to speak a foreign language more frequently. Many of them coordinate, negotiate, compete, and cooperate in a foreign instead of their native language. The use of a non-native language as a corporate language, however, can negatively impact aspects of organizational behavior, such as reducing trust toward work colleagues, status loss, and increasing anxiety (Neeley, 2013), as well as provoking feelings of superiority or inferiority (Vaara *et al.*, 2005). Despite broad research on the effects of cross-cultural differences on economic behavior (e.g. Gächter *et al.*, 2010) and of language differences on individuals' self-reported attitudes and behaviors (e.g. Bond and Yang, 1982; Gomez, 2003; Kimmelmeier and Cheng, 2004; Neeley, 2013; Ralston *et al.*, 1995; Trafimow *et al.*, 1997; Zhang and Guttormsen, 2016) and on group-level dynamics (e.g. Vaara *et al.*, 2005; Harzing and Feely, 2008), the effect of using foreign languages on individual economic behavior remained understudied, to date (Akkermans *et al.*, 2010; Harzing *et al.*, 2011; Keysar *et al.*, 2012; Volk *et al.*, 2014). The current



study focuses on the effect of a type of conduct that is critical for modern management of relationships within and across organizations: competition vs cooperation (see Bogaert *et al.*, 2012). The study employs an incentivized – that is, with immediate financial impact – randomized experiment.

We take the cultural accommodation argument as our steppingstone: the use of different languages can trigger different sets of values in the minds of people (Akkermans *et al.*, 2010; Bond and Yang, 1982; Hong *et al.*, 2000; Ralston *et al.*, 1995). Language could be an effective means of activating cultural constructs (Hong *et al.*, 2000), such that languages associated with more collectivistic cultures, for instance, activate more collectivistic values (Trafimow *et al.*, 1997). Such effects have been demonstrated to be independent of individuals' foreign language proficiencies (Akkermans *et al.*, 2010; Harzing, 2005). The activation of culture-specific constructs, however, is dependent on prior exposure to the corresponding culture (Akkermans *et al.*, 2010), the accessibility of the construct that can be triggered by recent activation (Hong *et al.*, 2000), and the applicability of the construct to the stimulus (Hong *et al.*, 2003).

Complementary to cultural accommodation, some researchers speculate that tests of cultural accommodation could be confounded if speaking a foreign language frees individuals of their own instead of priming foreign cultural values (Akkermans *et al.*, 2010). In fact, reducing the salience of individuals' native norms, prescriptions, and values – and, thereby, alienation from their native culture – is implicit in cultural accommodation, which suggests that instead of norms and values of the native culture, those of the foreign culture drive individuals' behaviors. The salience of native norms, however, might not just be replaced by salience of foreign norms, but also individual dispositions and innate values might drive such individuals' behaviors when using foreign languages. For such cultural alienation, behavioral differences depend only on individuals' responses to using a foreign language, but not – as for cultural accommodation – on the specific culture associated with the foreign language.

Mechanisms that might potentially induce cultural alienation without cultural accommodation are factors related to foreign language use such as foreign language anxiety (Tenzer *et al.*, 2014), cognitive load (Volk *et al.*, 2014), psychological distance (Trope *et al.*, 2007), and de-contextualization (Zhang and Guttormsen, 2016), as well as happiness to demonstrate foreign language proficiency or taking pride in being addressed in a foreign language (Zhang and Guttormsen, 2016). A direct (and less confounded) empirical test of cultural accommodation is, therefore, a comparison of behaviors in two foreign language contexts, where both foreign languages are associated with distinct cultures (Akkermans *et al.*, 2010). If behaviors in both these foreign language treatments differ but converge each with features of the associated cultures, then the specific languages and not just the feature of having to work in/with a foreign language matter. Studies involving two foreign languages, however, are rare in general (e.g. Dewaele, 2005).

We contribute to this literature by reporting an experimental test of cultural accommodation effects related to two foreign languages. With 421 Belgian, specifically Flemish, participants with Dutch as their native, and English and French as foreign languages, our sample is comparatively large. Belgium is a trilingual country with large Dutch-speaking (60 percent) and large French-speaking (40 percent) communities, plus a tiny German-speaking community of about 80,000 people, each occupying a distinct region within the borders of the country. The specific role of French in the context of these language groups is addressed below. Overall, the Flemish culture is similar to the French, but different from the culture associated with English. The related cultural clusters (Hofstede, 1997, 2001) differ with respect to individualism (vs collectivism) and masculinity (vs femininity), which both have been convincingly argued to relate to cooperation norms (Akkermans *et al.*, 2010; Cox *et al.*, 1991; Gupta *et al.*, 2002)[1].

Prior research demonstrates accommodation effects for English *vis-à-vis* French treatments (Ervin, 1964; Giles *et al.*, 1973; Harzing, 2005). Thus, if cultural accommodation is effective, then behavioral differences with respect to cooperation can be expected, especially between the English in comparison to the French treatments. We do not, however, observe any difference between these two foreign language treatments. Instead, we reveal significant differences between the native language and both foreign language treatments. Thus, our data do not seem to be consistent with a cultural accommodation perspective, but rather with a cultural alienation argument. We also observe that this foreign language effect is substantially moderated by gender, such that a gender gap in cooperation behavior only shows up for foreign language treatments.

Literature review and hypotheses

Cultural accommodation

The cultural accommodation hypothesis posits that “individuals will respond in a manner that favors or accommodates the culture associated with the language of presentation” (Ralston *et al.*, 1995, pp. 714-715). That is, when using a foreign language, a speaker is prone to align with the norms and values associated with the foreign language (Bond and Yang, 1982; Briley *et al.*, 2005; Ross *et al.*, 2002). Hong *et al.* (2000) argued that language is a prime that not only effectively activates cultural constructs, but which is also associated with distinct cultural systems co-existing within an individual. Many studies have shown this effect by investigating responses to surveys administered in different languages (e.g. Ralston *et al.*, 1995; Harzing and Maznevski, 2002). In a cross-cultural study comprising 24 countries, Harzing (2005) report that responses in English by non-natives converged with responses by English natives (control group) and that the cultural differences between countries were reduced for the English responses. Furthermore, Hong *et al.* (2000) found that a recent activation of a construct related to a foreign culture can enhance its salience and, thereby, leverage the cultural accommodation effects.

The cultural accommodation argument is based on the assumption of relatively stable individual associations of languages and cultures. An important mechanism through which such associations might be established is reflected by the Sapir-Whorf hypothesis (in its strong and weak form) and linguistic relativity. At its basis is “the idea that culture, *through language*, affects the way we think, especially perhaps our classification of the experienced world” (Gumperz and Levinson, 1996, p. 1; emphasis in original). Differences in classification, however, create different foci, which eventually influence perceptions, values, and resulting behaviors (Carroll, 1956; Gilbert *et al.*, 2008). Independent of where an initial association of culture and language comes from and whether the association is perfect, imperfect, strong or weak, “incidental acculturation” (Yang and Bond, 1980) may play a role in stabilizing this association: whilst learning a language, people get exposed to the related culture and this “[c]ulture independently influences thought [...] *through the socialization* of the individual within a culture” (Ralston *et al.*, 1995, p. 715; emphasis added). Consistent with this view, Akkermans *et al.* (2010) found that the effect of using English – independent of people’s level of foreign language proficiency – becomes even stronger with exposure to the corresponding Anglo-Saxon culture.

Anglophone vs Latin European cultures. Many theoretical and empirical studies on cultural accommodation (e.g. Akkermans *et al.*, 2010; Ralston *et al.*, 1995) refer to Hofstede’s classification of countries into cultural clusters, which is based on a set of broadly defined cultural dimensions. The more recent Global Leadership and Organizational Behavior Effectiveness (GLOBE) project (House *et al.*, 2004) refined these dimensions to further distinguish societal practices (as things are) from societal values (as things should be). Because we are interested in values and how they drive individual behavior (in contrast to

institutional practices), we focus on the values, especially on those that have been related to cooperative behavior. Note that, due to lack of disaggregated data for regions within Belgium, we have to primarily rely on Hofstede's dimensions (for a discussion of different culture theories, see Tung and Verbeke, 2010).

First, the dimension of individualism vs collectivism has been linked to cooperation behavior (e.g. Cox *et al.*, 1991; Herrmann *et al.*, 2008). It measures the extent to which "everyone is expected to look after himself" (Hofstede, 1997, p. 51). In the GLOBE project, multiple dimensions relate to collectivism. We focus on institutional collectivism values, which reflect societies that reward a collective distribution of resources (House *et al.*, 2004). These values are more strongly related to Hofstede's measurement (which is best considered as in-group (family) collectivism values) than any of GLOBE's other collectivism dimensions (Brewer and Venaik, 2011). In individualistic cultures, individuals tend to focus on themselves and their immediate family only. Relations with others tend to be loose (Hofstede, 1997). With reference to Schwartz (1990) and Triandis (1995), Singelis *et al.* (1995, pp. 243-244) summarize that "[c]ollectivists [...] consider it obvious that the group goals should have priority over their personal goals. Individualists [...] consider it obvious that their personal goals should have priority over the group goals."

The dimension of collectivism and individualism might be enriched by considering individuals' acceptance of equality, which leads to concepts of vertical and horizontal individualism and collectivism (Triandis, 1995; Singelis *et al.*, 1995). For our study of cooperation behavior in settings where individual objectives may conflict with group goals, it is less important whether or not individuals accept inequality in a group, but only whether or not they consider the group goals as more important than their individual aims. Emphasizing the group over the individual goal would be supportive of less competitive and more cooperative behavior, such that collectivism converges with cooperation and individualism with competition (Cox *et al.*, 1991; Triandis *et al.*, 1985; Triandis, 1991; Triandis and Suh, 2002; Wagner, 1995).

Second, Hofstede's dimension of masculinity vs femininity is yet under-researched with respect to its influence on cooperative behavior (Akkermans *et al.*, 2010; Hofstede, 1998). The dimension of masculinity not only refers to the distribution of gender roles in society, but also to "the degree to which values like assertiveness, performance, success and competition [...] prevail over values like the quality of life, maintaining warm personal relationships, care for the weak, and solidarity" (Hofstede, 1994, p. 6). Given these two aspects of this dimension, the GLOBE project further splits Hofstede's masculinity dimension in its facets of assertiveness and gender egalitarianism. Because gender egalitarian values are less relevant for cooperation behavior if – as in our study – people do not see the partner and do not know her or his gender, we focus on assertiveness values. Assertiveness refers to the extent to which individuals are expected to be confrontational, straightforward, and aggressive in their relationships with others. High scores on this dimension identify societies that value control, competitiveness and calculative trust, as opposed to lower scores that indicate societies with a profile valuing cooperative behavior.

Based on his cultural dimensions, Hofstede (1997) has grouped countries into relatively homogenous cultural clusters. This clustering has been shown to be associated with cooperative behavior (Gächter *et al.*, 2010; Herrmann *et al.*, 2008). Out of the different cultural clusters identified by Hofstede (1997), our study focuses on the two that are relevant to our empirical data – that is, the Anglophone and the Latin European clusters. France and Belgium (with all its parts, including Flanders, the part of Belgium that we focus on) are members of the Latin European cluster. The UK and the USA, which are associated with the English language, are members of the Anglophone cluster (Gupta *et al.*, 2002; Ronen and Shenkar, 1985). Table I summarizes scores on the selected cultural dimensions for Belgium,

including a split between the Flemish-speaking Flanders and the French-speaking Wallonia, and for those countries typically associated with the English and French language.

The Anglophone cluster is associated with weaker in-group collectivism and is less supportive of institutional collectivism (Gupta *et al.*, 2002). A collaborative team orientation is not ranked amongst the highest-scoring dimensions for the Anglophone countries (House *et al.*, 2004). Americans, prototypes of Anglophone people, are socially rewarded to be self-elevating, assertive, and dominant (Freeman *et al.*, 2009). In fact, Triandis and Gelfand (1998) note that “[i]n American samples, self-reliance was linked to competition (e.g. agreement with ‘winning is everything’)” (p. 122). These descriptions are consistent with Table I reporting comparatively high scores on both individualism and masculinity for the UK and the USA.

The Latin European cluster, on the contrary, “is distinguished by weak practices of performance orientation, institutional collectivism, and humane orientation indicating the affective autonomy orientation of Latin European societies” (Gupta *et al.*, 2002, p. 14). It values cooperation amongst team members (House *et al.*, 2004). As part of the Latin European cluster, Belgium is considered a moderately feminine society where aggressiveness is not valued, but rather mutual agreement and compromise. This is best illustrated with the Belgian social compromise model. When negotiating in Belgium, all parties are expected to reach a compromise rather than taking the win-lose assertive Anglophone approach. Furthermore, both Belgium and France are associated with the Continental European business model that is – compared to its competition-oriented Anglo-Saxon counterpart – more cooperative, and based on collectively binding practices and templates (Bachmann and van Witteloostuijn, 2009; Sapir, 2006). The scores reported in Table I consistently suggest that the Latin European cluster shares more collectivistic values as well as less assertive and confrontational values than countries in the Anglophone cluster, which implies that more cooperation is expected in the Latin European *vis-à-vis* the Anglophone cluster.

Gender-specific sensitivity to cultural accommodation. Cultural accommodation posits a framing effect, where behavior changes due to contextual variation – i.e., the language of communication. Different streams of literature suggest that women are more likely to be affected by such variations. First, Croson and Gneezy’s (2009) review of experimental literature on gender differences in cooperative behavior, the behavior of interest in this study, convincingly demonstrates that women’s behavior is more than men’s behavior likely to be affected by contextual variation. Second, Tannen’s (1990) influential work convincingly demonstrates that women use different communication styles than men. With respect to the influence of context, Dewaele (2005, p. 124) more specifically argues that “men would concentrate more on the communicative aspect of communication while women also include a meta-communicative, interpersonal, and affective aspect.” The attentiveness for these latter meta-communicative aspects might contribute to women’s higher context-dependency with respect to their behaviors.

Hence, subtle contextual signals affected by the use of a specific foreign language will be grasped by women more often than by men, which in turn, is more likely to affect women’s behavior. The observation that women also tend to hold more favorable attitudes toward

	Flanders	Wallonia	Belgium	France	USA	Great Britain
Individualism ^a	78	72	75	71	91	89
Institutional collectivism values ^b				5.27	4.2	
Masculinity vs femininity ^a	43	60	54	43	62	66
Assertiveness values ^b				3.57	4.36	

Sources: ^aHofstede (2001); ^bHouse *et al.* (2004)

Table I.
Culture: overview of
relevant scores

foreign languages (Baker and MacIntyre, 2000; Dewaele, 2005; Dörnyei and Clément, 2001), might further leverage women's likelihood to actually adopt values and norms associated with a specific foreign language. Individuals are more likely to take over values and adjust to norms enforced and suggested from sources they like and toward which they hold positive attitudes (Festinger, 1962). In sum, this suggests that women are more affected than men in their likelihood to adopt values and norms associated with the foreign language and, thus, regarding the stability of their behavior when switching from one language to another.

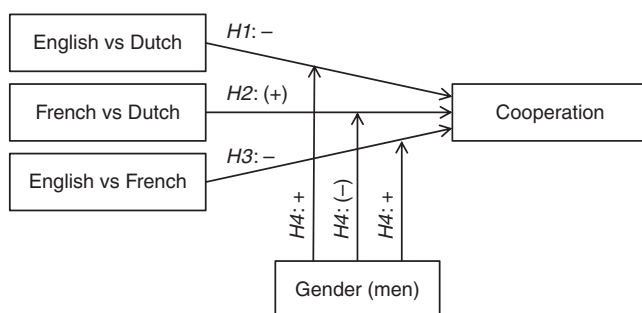
Cultural heterogeneity within Belgium. Belgium is a multi-lingual society, with two large language groups: the Dutch-speaking Flemish (about six million) and the French-speaking Walloons (about four million, including Brussels, which formally is not part of Wallonia). This has two implications that are highly relevant in the context of our experiment. First, the cultural values of the Dutch-speaking community can be quite different from those of the French-speaking population within Belgium (Akkermans *et al.*, 2010; Dewaele, 2005). Illustrating this, Table I reports the scores for the cultural dimensions for Dutch-speaking Flanders and French-speaking Wallonia. In terms of the collectivism-individualism dimension, both language communities score very similar (78 and 72, respectively). However, the cultural values are substantially different as to the femininity-masculinity dimension, with the Dutch-speaking and French-speaking communities being associated with scores of 43 and 60, respectively. The Dutch-speaking population, in particular, shows an even larger preference for consensus rather than competition, which is a characteristic of feminine countries. Focusing on the Dutch-speaking Flemish part of Belgium is appropriate in as much as this maximizes the cultural difference with both the Anglophone more individualistic and less feminine countries, and minimizes the distance to France and hence increases the asymmetry between the two foreign language contexts.

Second, given the historical economic-social conflict between the Dutch- and French-speaking communities in Belgium[2], Flemish attitudes toward French might well be biased. In a study of 100 Flemish high school students, Dewaele (2005) finds that "Attitudes towards English were found to be much more positive than those towards French" (p. 118), but "that gender was significantly linked to attitudes towards French [...], with the female participants being much more positive than the male participants. No gender difference existed in attitudes towards English" (p. 128). This triggers two observations. First, we need to test and control for possibly negatively biased attitudes toward French compared to English. Second, in the context of Dutch-speaking Flemish participants, French language effects may be gender-specific in the sense that females are affected more strongly.

Hypotheses. Based on the cultural accommodation hypothesis, the comparison of the cultures associated with the English and French language, the higher context-sensitivity of females compared to males, and the cultural heterogeneity within Belgium, we can formulate our hypotheses regarding the cooperation behavior of Flemish-Belgian people in Dutch (native language), and in French and English (foreign language) contexts. Figure 1 visualizes the expected effects of differences in language use on cooperation. The observation that Belgium is part of the Latin European cluster, and considering the scores on the individualism vs collectivism dimension as well as those on the masculinity vs femininity dimension (Table I), suggests that – if the cultural accommodation hypothesis holds – Dutch-speaking Flemish-Belgian people are likely to be less cooperative when the language of presentation is English – that is, in English language contexts:

H1. Dutch-speaking Flemish people display less cooperative behavior in English *vis-à-vis* native language contexts.

Belgium, including its Flemish part (Flanders), and France, the country dominantly associated with the French language, are not only classified into the same Latin European

Figure 1.
Conceptual model

cultural cluster (Hofstede, 1997), but also the specific scores reveal strong similarities, particularly for Flanders and France (see Table I). If differences can be observed at all, the score of France is further away from the Anglophone scores than the score of Flanders. So, *ceteris paribus*, we expect that Flemish people will not become less but rather – if there is a difference at all – more cooperative in French language contexts:

H2. Dutch-speaking Flemish people display similarly cooperative or more cooperative behavior in French *vis-à-vis* native language contexts.

Additionally, our expectations about differences in behavior in the English *vis-à-vis* French language contexts can be based on data from the GLOBE project (GLOBE lacks data on Belgium). Note that cultural accommodation effects have been demonstrated for English *vis-à-vis* French treatments (Ervin, 1964; Giles *et al.*, 1973; Harzing, 2005), but in these studies either one of the languages was the mother tongue. Considering the scores on the individualism vs collectivism and the related institutional collectivism dimension as well as on the masculinity vs femininity and the related assertiveness dimension (see Table I), we develop – based on the cultural accommodation hypothesis – our third hypothesis about the difference between the English and the French language context:

H3. Dutch-speaking Flemish display less cooperative behavior in English *vis-à-vis* French language contexts.

Following our discussion on gender-specific sensitivity to framing effects, in general, and language effects, in particular, these differences in responsiveness to contextual stimuli might imply that gender is a relevant moderator concerning the magnitude of the cultural accommodation effect.

H4. The language effects are stronger for females than for males: (a) less cooperative behavior in English *vis-à-vis* Dutch contexts is more pronounced for females; (b) if there is more cooperative behavior in French *vis-à-vis* Dutch language contexts, then this is more pronounced for females; and (c) less cooperative behavior in English *vis-à-vis* French language contexts is more pronounced for females.

Method

In order to identify the causal effects of using a foreign language on behavior, we employ a randomized laboratory experiment. Randomized experiments can be considered the “Holy Grail” for unraveling causal relationships (van Witteloostuijn, 2015). Unfortunately, and as noted by Reeb *et al.* (2012, p. 211), “in international business research, we are seldom afforded the luxury of a randomized controlled experiment.” This especially applies to

questions that can only be addressed in real-life contexts. Deep fundamental processes determining individual behaviors that can be argued to be generalizable to real-life contexts, however, can be studied outside the specific business context, such as through laboratory studies (van Witteloostuijn, 2015). The effect of language on individual cooperation behavior, we argue, is such a deep and fundamental behavior that does not fully rest of contextual factors, but also – to some extent – generalizes across contexts.

We measure cooperative behavior by means of cooperative choices in two versions of a multi-period no-feedback prisoner's dilemma game. We employ a 3 (language) \times 2 (information condition) \times 2 (gender) design, which is a mixture of experimental and quasi-experimental elements including between- and within-subject variation. Between subjects, we vary the language (Dutch, English, or French by random assignment)[3]. We employ two versions of a prisoner's dilemma game that vary (within-subject variation) with respect to the information about the partners' cooperative behavior. Additionally, we distinguish between male and female participants – the quasi-experimental element. The experiment, run in the three different languages, is complemented with a questionnaire. To get comparable responses to psychometric questions, the questionnaire was administered in the participants' native language Dutch. To avoid any interference with the language treatments in the experiment, the questionnaire was distributed among the likely participants in class long – i.e., two months – before the experiment.

Participants

Because the language of a treatment does not affect the monetary incentives (see below) and because such a contextual framing effect might be small, it may be difficult to detect. Therefore, we need large power, and hence a large sample, for our study. Due to the requirements regarding randomization across language treatments and a large sample, we had to rely on students, something that is not considered as problematic in studies of fundamental human processes that – like the language effects – are likely to generalize across contexts (Bello *et al.*, 2009). Fundamental processes, such as being cooperative or not, are concerned with basic traits of human nature that are relatively stable independent of context and life experiences (Bello *et al.*, 2009). So, while student samples might be questionable in proximate international business (IB) research that explores situation-specific issues such as strategic decision making in the international context, student samples are appropriate in fundamental IB research that addresses deep aspects of human nature and propensity (Bello *et al.*, 2009). As illustrated in more detail by Bönke *et al.* (2016), students' apparent disadvantage of lacking professional experiences (e.g. in IB) can also turn into a methodological advantage when studying fundamental human processes, because reverse causality issues resulting from self-selection into settings causing these experiences are less likely to confound the study results.

In 2010, first-year Bachelor students at the University of Antwerp in Flanders, the Dutch-speaking part of Belgium, were asked to participate in the study as part of their course "Management and Organization," taught in Dutch, without revealing its scientific purpose. From a pedagogical perspective, they were told that these experiments were run to exemplify organization-theoretic issues, which were discussed during the course after the experiments: the third author gave a plenary lecture, explaining what the students could learn from the experiments in terms of basic game-theoretic concepts, as well as through the lens of psychological mechanisms and managerial implications.

Due to dropout and late entrants, there is no perfect match between students participating in the leading questionnaire (administered two months in advance) and the experiment; for 543 subjects, we have got both. Due to the focus on Dutch as the native language, we excluded those students who indicated that English or French is their native language (32) or that they were not born in Dutch-speaking countries or worked or lived

abroad – i.e., Belgium or the Netherlands (47). We, thus, ensure that participants were raised, educated, and socialized in these Dutch-speaking countries, but not in English- or French-speaking countries. Due to missing values as to relevant variables, we excluded another 42 participants. Our final sample consists of 421 people. Summary statistics (and binary correlations) are reported in Table II. Observing a significant correlation between French treatment and French language proficiency indicates that incidentally randomization has been imperfect, such that we need to statistically control for various language-related variables.

The Belgian context

Flanders is an appropriate context for a study like ours, where we need participants fluent in three languages. Besides Dutch, French is one of Belgium's formal languages and English as the lingua franca is a natural third language. Indeed, Dutch-speaking Flemish students are well-trained in both French and English, already starting with primary school teaching. Clearly, our sample of participants feels at ease with all three languages. Furthermore, they are likely to have direct or indirect experience with both French and Anglophone cultures because both France and the UK are geographically neighboring countries of Belgium.

What may complicate matters, however, is the reported tension between Dutch-speaking Flanders and French-speaking Wallonia (Willemyns, 2002; Dewaele, 2005). This implies that we cannot be sure a priori how our Flemish respondents relate to the French language; does a possibly latent conflict with Wallonia dominate a possible effect related to the French culture? To address this, we followed two strategies. First, we included a question in the survey asking for respondents' language-related country associations. Indeed, 96 percent of our respondents relate the English language to either the UK or the USA. Perhaps surprisingly, 94 percent of the participants associate the French language primarily with France, but not with Wallonia. Thus, we may suppose that the French language is more likely to raise associations with France than with Wallonia. Second and as described below, we included measures of participants' attitudes toward French and English into our questionnaire and statistically control for differences in these variables within our regression analyses.

Pre-experimental questionnaire

The questionnaire was used to elicit crucial control variables. In order to ensure that language effects would not derive from the subjects' differential competency in each foreign language, we asked for their language proficiency in English and French, as well as for the extent of exposure to these languages with respect to frequency of reading in these languages. Following Akkermans *et al.* (2010), language proficiency in both English and French was assessed by subjects' responses to "How would you describe your own ability to understand written English/French?", based on an eight-point scale (very poor/poor/moderate/average/good/very good/excellent/as my mother tongue). We focus on the passive use of language, because this is what may affect participants' responses in the experiment, i.e. they are asked to read and understand foreign text, but they are not asked to use the foreign language in an active way. Frequency of reading in these languages was assessed based on the response to "How often do you read in English/French (e.g. text books, newspapers and magazines)?" with four response categories (daily/several times a week/once a week/once a month or less). Given the specific conditions in Belgium, we aimed at an implicit measure of attitudes toward the French and English language. We asked participants to respond on a scale from 1 (strongly disagree) to 7 (strongly agree) to the statement "If I could speak fluent English [French], I would not mind speaking English [French] as often as I speak my native language."

Table II.
Summary statistics
and correlations (at
the subject level)

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
<i>Demographics</i>														
1 Male	0.54	0.50												
2 Age (years)	19.92	1.72	-0.03											
3 Non-religiosity	0.25	0.44	0.08	0.07										
<i>Personality</i>														
4 Locus of control	10.12	3.54	0.17****	0.10**	0.10**									
<i>Proficiency</i>														
5 English	5.29	1.28	0.16****	0.17****	0.05	0.04								
6 French	4.35	1.40	-0.07	0.00	-0.09*	0.03	0.25****							
<i>Frequency</i>														
7 English	1.89	0.98	0.21****	0.10**	0.12**	0.12**	0.44****	0.01						
8 French	1.28	0.56	0.04	-0.06	-0.06	0.06	0.07	0.29****	0.34****					
<i>Attitude</i>														
9 English	5.79	1.31	-0.04	0.11**	0.02	0.10**	0.22****	-0.04	0.18****	-0.02				
10 French	5.50	1.52	-0.09*	0.13****	0.05	0.18****	0.06	0.17****	0.01	0.10*	0.66****			
<i>Treatment</i>														
11 English	0.30	0.46	-0.01	0.02	-0.01	-0.04	0.01	0.00	0.10**	0.07	0.05	0.06		
12 French	0.32	0.47	-0.01	-0.09*	0.03	0.03	-0.07	-0.13***	-0.04	-0.05	0.00	-0.05	-0.45****	
<i>Dependent variable</i>														
13 Cooperativeness ^a	9.67	6.47	-0.14****	0.05	-0.04	-0.14****	-0.03	-0.03	-0.06	-0.09*	0.03	-0.01	0.01	0.02

Notes: $n = 421$. ^aCooperativeness as share of cooperative choices across all decisions made by a subject. Significance levels: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; **** $p < 0.001$

The questionnaire also asked for a few basic demographic control variables. Age and gender (male = 1, and female = 0) were measured by asking the participants to indicate their age and gender in the questionnaire. For religiosity, which is found in literature to be related to cooperative behavior (Guiso *et al.*, 2003), we asked the participants what their religious background was. Subsequently, this variable was recoded as 0 (not religious) and 1 (religious, in most cases Catholic or Protestant). As an additional control variable, we included locus of control, which has been found to be related to behavior in prisoner's dilemma games (Boone *et al.*, 1999b; on the related construct of illusion of control and cooperation behavior, see Morris and Sim, 1998). Locus of control was assessed using Rotter's (1966) scale, which consists of 23 items forcing respondents to choose between two statements, one reflecting an internal and one reflecting an external locus of control, and six filler items. The score was constructed by counting the number of choices of the internal statement. Cronbach's α was 0.64, which is in the typically reported range for this scale (Boone *et al.*, 1996; Rotter, 1966).

Experimental design

Participants were provided with a script that introduced the experimental setting: a set of prisoner's dilemma games presented as price-setting (Bertrand) duopolies as described in Boone *et al.* (1999a, b) and Akkermans *et al.* (2010). For our study, we focus on the no-feedback conditions where participants play with a fictitious partner, knowing that their partner is fictitious and that they will not get immediate feedback about the opponent's decision. The three players (in each language treatment) accumulating the highest profit until the end of the experiment received 100, 50, and 25 euros, respectively (winners were announced in subsequent classes).

It was assumed that two firms operate in the same market. The firms were identical, offering the same homogenous product and being equally efficient. As a result of ample financial resources, bankruptcy was not an issue in this game. Both firms could choose between two price strategies: setting a low price (competitive strategy) or setting a high price (cooperative strategy). Consumers selected their preferred product based on prices only. The profits (from the perspective of the focal firm) depend on the pair of price strategies chosen by each of the two paired firms, generating high profits (€600,000) if the focal firm sets a low and the other a high price, very high losses (€600,000) if the focal firm opts for a high and the other for a low price, moderately high profits (€300,000) if both set high prices, and small losses (€30,000) if both set low prices. Participants set their prices on a monthly basis for each month of the (next) year; hence, they made 12 one-shot and irreversible decisions in a row. We will refer to these 12 decisions as 12 rounds.

Two versions of the game were played, one after the other; in between, we revealed the information about the other firm's behavior (within-subject treatment). First, participants were required to decide for 12 months without having any information about the other firm (treatment: uncertain about opponent). Subsequently, they were told to assume that the other firm had consistently chosen to set a high price in each month of the previous year. Then, they had to set their price strategy for another 12 months (treatment: information about cooperating opponent). In the latter condition, the fear component – i.e., the danger of being exploited – becomes less salient compared to the cooperative attitudes (Cox *et al.*, 1991). We, therefore, expect the effects related to individualistic vs collectivistic values to be strongest for the treatment with less uncertainty about the opponent's cooperative behavior.

There were three language treatments as between subject manipulation. In our setting, the subjects do not talk, but the foreign language effect also emerges while listening to and reading the foreign language (compare Goh, 2000). The Dutch and English versions were taken from published studies – i.e., Boone *et al.* (1999a) and Akkermans *et al.* (2010). The English version of the script was translated into French by the Department of Linguistics of

the University of Antwerp. To ensure the full understanding of the rules of the game, these were made explicit and stressed before the experiment had started. Questions were answered in the language of each treatment, and further assistance in the same language was offered individually when needed. The experiment lasted about 25 minutes per language treatment. It was conducted by a Belgian experimenter fluent in all three languages. The experimenter was assisted by a group of colleagues who monitored and enforced the rules of the experiment. The experimenter gave consistent instructions at a steady pace (and in a neutral tone) throughout each treatment, using the language of each treatment only (as did the assistants).

All three language conditions took place on the same day, one immediately after the other, implying that participants had very limited, if any, opportunity to exchange experiences between sessions. Participants were randomly assigned to these sessions (French first, Dutch next, and English last). All communication throughout the session was exclusively in the language of the treatment. The students were not informed beforehand about the language in which the experiment would be delivered, nor that sessions would be different in this respect. Within these sessions, participants were seated randomly. The layout of the classroom was arranged such that the distance between participants was large enough to guarantee that every participant could play the experiment without being distracted by anyone else. Both at the beginning and after each treatment was completed, participants were guaranteed strict confidentiality concerning all the data they provided for this study (both through the questionnaire and the experiment).

Results

The binary choices between cooperative vs competitive behavior in each round of the experiment reflect our dependent variable, which takes the value of 1 for a cooperative choice and 0 for a competitive choice. Figure 2 descriptively plots the average observed frequency of cooperative choices for each subgroup in our 3 (language) × 2 (information condition) × 2 (gender) design. For an initial statistical test, we follow Cox *et al.* (1991), who use a similar design, and calculate the numbers of each participant's cooperative choices in each treatment and run a repeated measure analysis of variance. Language does not have a significant effect ($MS = 5.18$, $F = 0.25$, and $p = 0.78$), but gender ($MS = 189.59$, $F = 9.26$, and $p < 0.01$) and information ($MS = 292.35$, $F = 27.33$, and $p < 0.01$) do have significant main effects. There is a significant interaction effect between language and gender – that is, there is a weak gender-specific language effect ($MS = 57.51$, $F = 2.81$, and $p = 0.06$). There is no

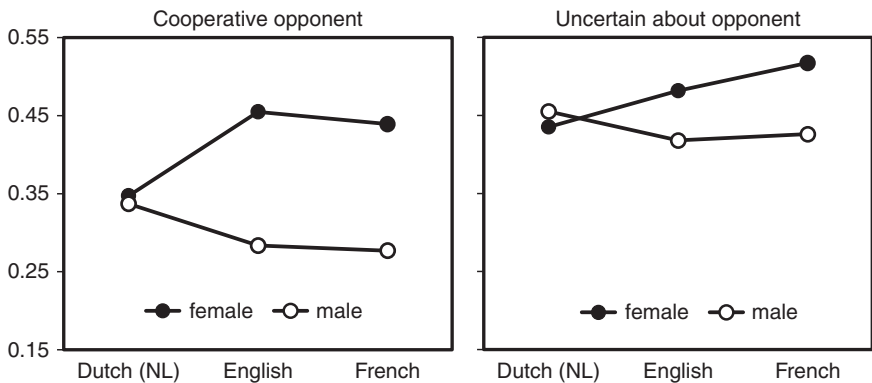


Figure 2. Relative frequency of cooperative choices for all subgroups (language × information condition × gender)

Notes: $n = 421$. NL, native language

significant interaction of language with the information condition ($MS = 2.63$, $F = 0.25$, and $p = 0.78$), nor is there a significant three-way interaction between gender, language, and information condition ($MS = 3.83$, $F = 0.36$, and $p = 0.70$). The moderation of information condition by gender is weak but statistically significant ($MS = 36.00$, $F = 3.37$, and $p = 0.07$). This initial analysis reveals that all three dimensions of our experiment (i.e., gender, language, and information) affected behavior of our participants, with the language displaying a gender-specific effect.

In order to analyze our data in more detail, we employ logistic regression analyses with the cooperative choice as the binary dependent variable. We included demographic, psychometric, and game-related control variables. The latter involve dummy variables to control for the effect of the rounds in each game (as decisions were made for 12 months); this came up as significant, justifying our choice for not considering solely the aggregated sum of cooperative choices. To account for correlation between decisions made by the same subject, we estimated cluster-robust standard errors. Alternative procedures such as cluster-bootstrapped standard errors for ordinary logistic regressions as well as random-effects logistic regressions (compare Cameron and Trivedi, 2009) do not change our conclusions (available upon request).

Table III provides the results of a hierarchical moderated regression analysis. We first estimated Model 1 including demographic variables (gender as a dummy for males, age, and religiosity as a dummy for non-religiosity), a psychometric control variable (locus of control), variables related to foreign language proficiency, foreign language reading frequency, and language attitudes, as well as round dummies as game-related control variables. Among the control variables, only gender and locus of control affected cooperation behavior; men and individuals with an internal locus of control were, on average, less cooperative[4]. As a first step, we included a dummy to test for the effect of the information condition in Model 2. Consistent with prior research (Boone *et al.*, 1999b; Cox *et al.*, 1991), we found significantly more cooperation in conditions with uncertainty about the opponent's cooperative behavior. As a second step, we tested for effects of foreign languages by including two dummies representing the English and French treatments in Model 3. Interestingly, neither were the estimated coefficients significant nor did the model fit (the log-pseudo likelihood and the χ^2) substantially improve.

As a third step, we included the interactions of the language treatments with gender in Model 4. The model fit substantially improved, and both interaction terms were statistically significant ($p < 0.05$). Since the main effect of gender became smaller and statistically insignificant (compared to Model 3), the gender effect was mostly driven by gender-specific reactions to the foreign languages. Regarding our core question as to the language effects, we found that females became more cooperative in both foreign languages, and that males differed significantly from this pattern. Though not significant, it seems that they became less cooperative compared to their behavior in the native language treatment.

Comparing the English and French treatments, we see that all effects related to English were similar to those related to French; in fact, none of them differed significantly, neither the main effect ($\beta_{\text{English}} - \beta_{\text{French}} = -0.02$, $SE = 0.18$, and $p = 0.92$), nor the interaction with gender ($\beta_{\text{English} \times \text{Gender}} - \beta_{\text{French} \times \text{Gender}} = 0.00$, $SE = 0.29$, and $p = 1.00$), the interaction with the information condition ($\beta_{\text{Uncertainty} \times \text{English}} - \beta_{\text{Uncertainty} \times \text{French}} = -0.10$, $S.E. = 0.16$, and $p = 0.51$), or the corresponding three-way interaction ($\beta_{\text{Uncertainty} \times \text{English} \times \text{Gender}} - \beta_{\text{Uncertainty} \times \text{French} \times \text{Gender}} = 0.07$, $SE = 0.22$, and $p = 0.74$). As a fourth step in Model 5, we tested whether or not the language and gender effects differed between the two information conditions. None of the corresponding interaction terms was significant (also a joint test of the five terms is insignificant: $\chi^2(5) = 4.39$, and $p = 0.49$) and the model fit did not increase (the estimation's χ^2 statistic even decreases). Thus, the information condition did not significantly moderate any of the other effects.

Table III.
Hierarchical
moderated logistic
regression analysis
based on dummies for
each foreign language

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	-0.50 (0.10)****	-0.50 (0.10)****	-0.54 (0.12)****	-0.74 (0.14)****	-0.74 (0.14)****
Male	-0.26 (0.11)**	-0.26 (0.11)**	-0.26 (0.11)**	0.10 (0.18)	0.10 (0.18)
Age	0.11 (0.10)	0.11 (0.10)	0.11 (0.10)	0.11 (0.09)	0.11 (0.09)
No religion	-0.05 (0.14)	-0.05 (0.14)	-0.06 (0.14)	-0.04 (0.14)	-0.04 (0.14)
Locus of control	-0.13 (0.06)**	-0.13 (0.06)**	-0.13 (0.06)**	-0.14 (0.06)**	-0.14 (0.06)**
Proficiency in English	-0.01 (0.06)	-0.01 (0.06)	-0.01 (0.06)	-0.01 (0.06)	-0.01 (0.06)
Proficiency in French	-0.00 (0.07)	-0.00 (0.07)	0.00 (0.07)	0.00 (0.07)	0.00 (0.07)
Frequency reading English	-0.01 (0.07)	-0.01 (0.07)	-0.01 (0.07)	-0.02 (0.07)	-0.02 (0.07)
Frequency reading French	-0.08 (0.06)	-0.08 (0.06)	-0.08 (0.06)	-0.08 (0.06)	-0.08 (0.06)
Attitude toward English	0.04 (0.09)	0.04 (0.10)	0.04 (0.10)	0.04 (0.10)	0.04 (0.10)
Attitude toward French	-0.07 (0.09)	-0.07 (0.09)	-0.07 (0.09)	-0.07 (0.09)	-0.07 (0.09)
Round dummies (χ^2)	Incl. (38.20)****	Incl. (38.25)****	Incl. (38.28)****	Incl. (38.30)****	Incl. (38.26)****
Uncertain about opponent		0.22 (0.04)****	0.22 (0.04)****	0.22 (0.04)****	0.19 (0.08)**
English			0.07 (0.13)	0.36 (0.17)**	0.36 (0.17)**
French			0.08 (0.14)	0.38 (0.18)**	0.38 (0.18)**
English × Male				-0.57 (0.26)**	-0.57 (0.26)**
French × Male				-0.56 (0.27)**	-0.57 (0.27)**
Uncertain × English				0.06 (0.12)	0.06 (0.12)
Uncertain × French				-0.13 (0.14)	-0.13 (0.14)
Uncertain × English × Male				-0.03 (0.13)	-0.03 (0.13)
Uncertain × French × Male				0.18 (0.20)	0.18 (0.20)
Observations (clusters)	10,104 (421)	10,104 (421)	10,104 (421)	10,104 (421)	10,104 (421)
Log-pseudo likelihood (χ^2)	-6723.0 (57.93)****	-6667.3 (92.12)****	-6666.0 (93.30)****	-6644.2 (100.68)****	-6634.7 (100.22)****

Notes: Clustered heteroscedasticity-robust standard errors in parentheses. For round dummies, we report the χ^2 -value of the joint significance test of all round dummies. Significance levels: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; **** $p < 0.001$

The equivalence of results observed for the two foreign languages suggests that we should not consider separate effects specific for English and French, but that we instead observed a general foreign language effect. In line with this observation, we introduced a dummy variable Foreign for foreign languages and – for completeness – a contrast code for English (+1) vs French (–1) (Table IV, Model 6). The observation that all effects related to the English vs French contrast code were insignificant (as is a joint test of all four terms: $\chi^2(4) = 0.61$, and $p = 0.96$) further supported our conclusion that English and French show the same effects and interact with gender in the same way.

Table IV reports additional estimates for illustrative purposes. Models 7a and 7b report estimations separately for females and males. As could be expected from prior analyses, there was a significantly positive effect on females' cooperation, but a smaller, statistically not significant negative, effect on males' cooperativeness. Models 8a and 8b report separate estimations for the two information conditions. While finding – as could be expected from the descriptive plots in Figure 2 – that the coefficients were smaller for the condition with uncertainty, the language effects were equal in direction and significant in both conditions.

Discussion

Inconsistency with cultural accommodation hypothesis

Regarding our key hypothesis suggesting more cooperative behavior in the French vs the English treatment (*H3*), we find that neither females nor males show differences in behavior between the English and French treatments. There is clearly no support for *H3*. Further, *H1*, predicting that compared to the native language treatment, behavior becomes less cooperative in the English treatment, cannot be supported either. On the contrary, we can even reject this hypothesis for females: Compared to their native language treatments, females are more cooperative in the English treatment. *H2*, suggesting that behavior in the French treatment is similar or more cooperative compared to the native language treatment, can only be partially supported: Females become more cooperative in French treatments, but males do not show a statistically significant difference in cooperation behavior. This would support *H4b* arguing that a stronger sensitivity to context variation of females needs to be accounted for in tandem with the cultural accommodation logic. However, this is not consistent with our data. After all, it is exactly females for which we can reject the cultural accommodation hypothesis based on *H1*.

In defense of the cultural accommodation logic, cultural accommodation through using a foreign language could be influenced by the prevalence of distinct gender roles (Costa *et al.*, 2001). Indeed, in masculine societies, social gender roles are clearly distinct: “Men are supposed to be assertive, tough, and focused on material success; women are supposed to be more modest, tender, and concerned with the quality of life” (Hofstede, 2001, p. 297). Hence, people's response to using a foreign language associated with a masculine culture may differ to the extent that it is associated with different meaning for men and women, respectively. Since in a more masculine society men are expected to be much more competitive than women, accommodating values and norms associated with such a culture might make men more competitive than women. As the English and French cultures differ with respect to their masculinity, which suggests roles that are more distinct for men vs women in English rather than in French, we may expect gender-specific reactions due to cultural accommodation. This, for example, could explain why among the Flemish, males get less and females get more cooperative in the English treatment associated with a more masculine culture. It cannot explain, however, the difference between the Dutch and French treatments, which both are associated with – relative to Anglophone cultures – more feminine and less individualistic cultures. In sum, neither the gender-specific sensitivity to context variations nor the alternative and *ex post* suggested adaptation based on gender-specific role models associated with a foreign language could convincingly explain the observed behavioral pattern.

Table IV.
Logistic regression
analyses based
on dummy for
foreign languages and
foreign language
contrast code

	Model 6	Model 7a (females only)	Model 7b (males only)	Model 8a (cooperative opponent)	Model 8b (uncertain about opponent)
Constant	-0.74 (0.14)****	-0.80 (0.16)****	-0.55 (0.15)****	-0.87 (0.19)****	-0.61 (0.14)****
Male	0.10 (0.18)			0.10 (0.25)	0.09 (0.18)
Age	0.11 (0.09)	0.15 (0.12)	0.12 (0.13)	0.21 (0.10)**	0.03 (0.11)
No religion	-0.04 (0.14)	-0.44 (0.19)**	0.23 (0.20)	-0.15 (0.20)	0.05 (0.14)
Locus of control	-0.14 (0.06)**	-0.11 (0.08)	-0.16 (0.09)*	-0.21 (0.08)***	-0.07 (0.06)
Proficiency in English	-0.01 (0.06)	0.09 (0.08)	-0.08 (0.10)	-0.07 (0.09)	0.04 (0.07)
Proficiency in French	-0.00 (0.07)	-0.08 (0.07)	0.05 (0.10)	-0.09 (0.09)	0.09 (0.07)
Frequency reading English	-0.02 (0.07)	-0.07 (0.10)	-0.02 (0.10)	-0.10 (0.10)	0.05 (0.07)
Frequency reading French	-0.08 (0.06)	-0.03 (0.07)	-0.13 (0.10)	-0.04 (0.08)	-0.12 (0.07)*
Attitude toward English	0.04 (0.10)	0.03 (0.15)	0.03 (0.12)	0.15 (0.14)	-0.06 (0.10)
Attitude toward French	-0.07 (0.09)	-0.03 (0.15)	-0.10 (0.11)	-0.14 (0.13)	-0.01 (0.10)
Round dummies (χ^2)	incl. (38.26)****	incl. (49.78)****	incl. (19.40)*	incl. (20.94)**	incl. (29.72)***
Uncertain about opponent	0.19 (0.08)**	0.19 (0.08)**	0.25 (0.09)***		0.30 (0.15)**
Foreign	0.37 (0.15)**	0.36 (0.15)**	-0.22 (0.17)	0.44 (0.22)**	-0.42 (0.23)*
Foreign × Gender	-0.57 (0.22)***			-0.73 (0.31)**	-0.03 (0.15)
EngVsFre	-0.01 (0.09)	-0.03 (0.09)	-0.00 (0.11)	0.05 (0.14)	
EngVsFre × Gender	0.00 (0.14)			-0.03 (0.15)	
Uncertain × Foreign	-0.08 (0.11)	-0.08 (0.11)	0.07 (0.12)		
Uncertain × Male	0.07 (0.12)				
Uncertain × Foreign × Male	0.15 (0.16)				
Uncertain × EngVsFre	-0.05 (0.08)	-0.05 (0.08)	-0.02 (0.07)		
Uncertain × EngVsFre × Male	0.04 (0.11)				
Observations (clusters)	10,104 (421)	4,656 (194)	5,448 (227)	5,052 (421)	5,052 (421)
Log-pseudo likelihood (χ^2)	-6634.7 (100.22)****	-3111.5 (83.66)****	-3480.4 (53.79)****	-3156.4 (53.94)****	-3438.8 (43.53)**

Notes: Clustered heteroscedasticity-robust standard errors in parentheses. For round dummies, we report the χ^2 -value of the joint significance test of all round dummies. The contrast code EngVsFre is coded as +1 for English and -1 for French; the coefficient of Foreign (with +1 for foreign and 0 for native language) reflects the average effect of both foreign languages. Significance levels: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; **** $p < 0.001$

Cultural alienation as an alternative explanation

While we cannot find support for the cultural accommodation hypothesis, the data nevertheless reveals a very clear pattern: there is a significant difference between our participants' behavior in the native language compared to the foreign language treatments, but the specific foreign language – whether English or French – does not affect their behavior, neither directly nor as a moderator of other conditions such as gender or information about opponents. This observation suggests that there might be foreign language-related mechanisms affecting people's behavior that do not depend on the specific culture associated with a specific language, but just relate to the mere fact that the language of communication is or is not foreign. If people's actions are assumed to be representative of their culture in a native language context, our observation would be in support of a cultural alienation perspective, where a foreign language context frees people of their own culture (see the related discussion in Akkermans *et al.*, 2010).

Prior research has identified mechanisms that could be related to such an observation. One characteristic feature of using foreign languages is an increase in cognitive load (Takano and Noda, 1993), which requires more conscious cognitive processing (Hernandez, 2009). Cognitive load refers to the mental weight imposed on working memory when a person performs a task, such as speaking a foreign language (Volk *et al.*, 2014). This mental burden caused by a foreign language can be reinforced further when a person's foreign language anxiety is high (Chen and Chang, 2009). Experimental evidence on the side effects of cognitive load demonstrates that – independent of the foreign language issue – cognitive load changes strategic behavior, such that it increases both cooperation in prisoner's dilemma games (Duffy and Smith, 2014) and altruism in dictator games (Cornelissen *et al.*, 2011). We might expect similar effects when being exposed to foreign language contexts. Cornelissen *et al.* (2011) also report that the relationship between cognitive load and behavior is mediated by perceptions of interpersonal closeness, which suggests that there might be an even more fundamental mechanism at work here.

A foreign language can make a situation less strongly linked to one's direct experiences, and may consequently increase psychological distance. Based on studying differences in the brain areas that are activated when dealing with native and foreign languages, respectively, Hernandez (2009) concludes that processing a foreign language is felt as more detached by subjects (even if they learned the foreign language at an age of five years). Such feelings of detachment and psychological distance influence people's decision making in the way that the same objects or events are evaluated in more abstract terms and at higher levels, based on more general characteristics (Trope *et al.*, 2007). More specific to linguistic issues, Alter and Oppenheimer (2008) report empirical evidence that increasing the linguistic complexity of texts makes people shifting their decisions in ways that they are more reflective of more abstract and general attitudes. This view is consistent with other researchers' empirical observations. For instance, perceptions of interpersonal distance (e.g. induced by cognitive load) affect behavior in dictator games, being more strongly associated with fundamental and general attitudes (Cornelissen *et al.*, 2011). Like the previous argument related to cognitive load, also this reasoning based on psychological distance would suggest that in foreign language contexts people evaluate a situation on the basis of their generic or fundamental attitudes; in native language contexts, in contrast, they evaluate situations based on more specific situational characteristics that are less reflective of people's basic values. The difference in behavior between native and foreign language treatments could, therefore, reflect the difference between more abstract and general attitudes (foreign language treatments) *vis-à-vis* more concrete and specific attitudes (native language treatments).

While we have stressed the rigor of testing the cultural accommodation hypothesis, we can only report indications of a cultural alienation effect and speculate about its origin.

Therefore, future research should more thoroughly test the cultural alienation hypothesis. This requires that researchers do not only need to assess behavioral differences for multiple sufficiently distinct foreign languages, but also have to study the same foreign language for multiple sufficiently distinct native languages. As this ideal form of such a two (native languages) by two (foreign languages) design is difficult to implement, second-best solutions need to be developed. If, through such tests, cultural alienation can be demonstrated, implying that, in addition to the convergence of people from many different cultures when responding in English (Harzing, 2005), we also observe a convergence independent of the foreign language, then we may indeed catch a glimpse of a few very fundamental processes underlying behavior shared among the majority of human beings. This would not only shed light on people's behavior in foreign language contexts, but will equally help us to understand human behavior in native language contexts.

Language-specific gender effects

Our data reveal a very interesting pattern regarding gender differences, joining a stream of research documenting gender differences related to effects of cultures (Costa *et al.* 2001), in social dilemma games (Croson and Gneezy, 2009) and with respect to linguistic issues (Baker and MacIntyre, 2000; Dewaele, 2005; Dörnyei and Clément, 2001). On the one hand, in their native language, males and females behave alike; on the other hand, in both English and French language treatments, there are substantial gender differences, with females being more cooperative than males. The difference is not only statistically significant, but also substantial – the cooperation likelihood of males and females differs between 15 and 20 percentage points. While such effects cannot be explained by literature related to the cultural accommodation hypothesis, the above-developed *ex post* interpretation of our findings together with language-related literature on gender differences might tentatively point at two possible explanations.

First, males and females might differ with respect to their general and abstract attitudes regarding cooperation (Beutel and Johnson, 2004; Beutel and Marini, 1995). If these differences in general and abstract attitudes are overwritten by sufficiently strong cultures (e.g. the Flemish culture that emphasizes equality) or specific experiences (see below), then such gender differences may well be more likely to show up in contexts that are conducive of triggering more general and less specific attitudes. Consistent with this view, Akkermans *et al.* (2010) report for an experiment in the Netherlands (with a more competitive culture than Belgium) that females are more cooperative in a game where they do not know whom they play with and what they might expect from their opponent. Similarly, other studies find that females start more cooperatively in repeated prisoner's dilemma games, but that the gender differences disappear over time and with experience (Ortmann and Tichy, 1999). Furthermore, Eckel and Grossman (1996) report that females are more likely than males to punish unfair behavior. However, when punishment becomes more expensive to the punishing person, females reduce their punishment, while males fail to do so. In summary, we may interpret our results as indicating that foreign languages make people following more fundamental values and that fundamental gender differences that are possibly covered by a strong egalitarian culture may show up in the face of ambiguity or in contexts characterized by large psychological distance and high cognitive load.

Second, it has been argued that women use different cooperative communication styles than men (Tannen, 1990), and that these differences in communication styles between men and women within a given country (intra-national diversity) can be as significant as cross-cultural differences (Tung, 1993). Within one's native context and, particularly, when communicating through one's native language, individuals may – through their

socialization processes – have learnt how to avoid misunderstandings and, thereby, to establish the same understanding despite differing in gender. Such harmonization tendencies might be especially effective in feminine societies, such as Belgium. If individuals, however, are thrown into a foreign language context, these experiences are less effective and the different genders may fall back to their original and more fundamental ways of communication. As a consequence, they might differently interpret the same foreign language interaction, such as the experimental instructions in our experiment, which eventually may lead us to observe gender-related differences in individuals' responses to the same language treatment.

While these explanations of the gender difference are highly speculative, the effect, however, is robust and shows up equally in two foreign language treatments (in a rather conservative between-subject design). We, therefore, suggest that future research should take into account the possibility of gender-specific mechanisms in language effects. Specifically, we suggest taking into account mechanisms that go beyond the argument that females' behavior is more context-specific than males' behavior (e.g. Croson and Gneezy, 2009): the mechanisms itself underlying the language effect may well be highly gender-specific. Consequently, researchers should not just include gender as a control variable, but – as demonstrated in this study – also consider gender-based moderating effects.

Limitations

Although our study provides significant insights into the role of foreign languages on cooperative and competitive behavior, it is not without limitations. Experimental studies have the strength of greater internal validity, but they may suffer from lower external validity (cf. van Witteloostuijn, 2015). Generalizability needs to be improved by replication of the study in different countries and with different language pairs. While the large and relatively homogeneous student population and the random assignment to treatments help to mitigate potential threats from unobserved heterogeneity (a typical problem of between subject and quasi-experimental designs), and endogeneity problems resulting from experience and self-selection (from our perspective, typical threats to field studies), these also limit generalizability to other populations, such as working adults. Although student populations are appropriate when exploring fundamental human processes (Bello *et al.*, 2009), as we do here, field experiments might be a natural next step. Given that we look at a contextual effect, which affects participants in a very subtle way, we might – despite finding relatively large effects in our student sample – expect smaller effect sizes in more heterogeneous and less specific populations. Consequently, sufficiently large sample sizes are required for testing these effects.

Furthermore, our selection of languages was a convenience decision. Access to a sufficiently large population of people who share the same native language and are fluent in the same two foreign languages and are likely to have experience with the related cultures (e.g. due to geographic closeness) is difficult. It becomes even more difficult if the two foreign languages are required to differ substantially with respect to associated cultural values influencing the behavior of interest – in our case, cooperation. While differentiating the cultures of the distinct Anglophone and Latin European clusters based on two dimensions – i.e., individualism/collectivism and masculinity/femininity – some countries from each of these two clusters might in fact be closer to one another on individual dimensions. For instance, Triandis (1995) suggests that both the USA and France are examples of countries with vertical individualism and, thus, might be assumed to be quite similar. Future research may, therefore, replicate and extend our study based on a pair of foreign languages that belong to cultures that differ even more with respect to as many values related to cooperative behavior as possible (e.g. Chinese and English).

Our arguments and the way we have set up the case for cultural accommodation build on rather generalized values associated with a culture. Our participants, due to having neighboring countries with English or French as official languages, might have more contextualized and situation-specific values associated with these two foreign languages[5]. To the best of our knowledge, such contextualized effects have not yet been addressed in the context of cultural accommodation. Future studies might be able to adjust their experimental approaches to acknowledge and better cope with the possibility of accommodation of more contextualized values. In fact, these contextualized values might be a specific challenge to experimental approaches that build on incentivized and behaviorally rather specific laboratory or classroom experiments. The asymmetry in the scope of the predictor and the criterion variable is a challenge that future studies should address more thoroughly.

Our study is also limited with respect to testing explanations of empirical patterns that do not match our *ex ante* theorizing. Our study design did not allow for including measurements related to variables that may shed light on effects that have been recently suggested, after setting up the study reported here. For instance, measures of cognitive load related to processing foreign language stimuli (cf. Volk *et al.*, 2014) or measures of individuals' dispositions to engage in deliberate rather than intuitive decision making (cf. Urbig *et al.*, 2016) would be of relevance. A recently suggested and validated measurement of foreign language anxiety (Gargalianou *et al.*, 2016) might also help shedding new light on effects that relate to speaking a foreign language, but do not relate to the specific culture associated with a foreign language.

Furthermore, future research might acknowledge the above-developed argument that accommodating values for another culture could differently affect men and women. Investigating what norms and values individuals actually associate with specific foreign cultures, with men possibly differing from women, might be a worthwhile future research direction. Such efforts may also allow shedding more light on effects of intra-language between-country differences. Differences in participants' reactions to speaking a foreign language such as English may result from associating different countries and different sub-cultures with English. For instance, given that the stereotypes about British, Australian, and US behavior when queuing for and boarding a bus may differ quite substantially, related "intra-Anglophone" differences may also affect studies of cultural accommodation (see footnote 5). We believe that such subjective perceptions of culture may make tests of the cultural accommodation hypothesis more sensitive to actually detect effects.

Conclusion

We started our investigation of the effects of foreign language use on cooperation behavior based on the cultural accommodation hypothesis (Akkermans *et al.*, 2010; Bond and Yang, 1982; Ralston *et al.*, 1995). We were not able to actually support the derived hypotheses, but, in fact, for some aspects need to reject the cultural accommodation hypothesis. Our analyses, instead, reveal a rather consistent pattern suggesting that using a foreign language alone affects behavior independent of the culture associated with the foreign language. While this is consistent with very recent theorizing on effects of using a foreign language (e.g. Volk *et al.*, 2014), our study also adds a new aspect. Our data reveals a rather robust gender-based moderation of the foreign language effect. Independent of the foreign language, men and women react differently to foreign language stimuli. While we have suggested differences related to the responsiveness of men and women with respect to foreign language use, in our *ex post* discussion, we also provide arguments suggesting that even the direction of effects might differ between genders. We hope that our findings and the related discussions of the potential role of gender in individuals' responses to foreign language use can, indeed, advance related research.

Notes

1. There is an ongoing discussion regarding the conceptual basis of Hofstede's dimensions and the use of Hofstede's framework, especially with respect to assuming homogeneity within a cultural group (see e.g. Tung and Verbeke, 2010). It is not the intention in this paper to delve into this debate. Within our discussion of limitations of our study, we briefly touch upon related topics.
2. Shortly after 1830, the year of foundation of Belgium as an independent state, the "language struggle" dominated the country's political life. The powerful groups within the state spoke French, whereas the Dutch-speaking population was heavily discriminated against by the government in all facets of social life throughout the nineteenth century: for instance, Dutch-speaking Belgians were not hired as civil servants at the time. A so-called Flemish Movement fought a battle for the Dutch-speaking community's linguistic and social rights with Dutch being recognized as an official language in Belgium alongside with French in 1889. Constitutional changes turned Belgium into the federal state, which is now with the two linguistic communities co-existing politically, socially and culturally within the borders of Belgium. Willemyns (2002) provides a more detailed description of the Belgium case.
3. Given that every participant is assigned to only one language, an effective randomization, and thus a reliably identification of the causal effect of foreign language use, requires all participants to speak all three languages. Any self-selection based on language skills can bias the results – i.e., differences in behavior between language treatments might not result from language effects, but from different people being familiar with different foreign languages.
4. Split sample analyses that are reported below (see Table IV) provide a more detailed analysis of the control variables. Locus of control is generally negatively associated with cooperation; variations between subsamples are not statistically significant. While religion has no effect on average, religion seems to specifically affect women's cooperativeness: i.e., women without religion are less cooperative. For men, the effect is opposite though not statistically significant. Also age does not have an effect on average, but when being confronted with a cooperative partner, older individuals tend to be more cooperative than younger ones.
5. We thank an anonymous reviewer for raising this very interesting issue.

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