A CULTURAL-EVOLUTIONARY MODEL OF POLITENESS STRATEGIES AND REPUTATION

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1. Introduction

Why do we say 'I am sorry' or 'thank you'? Although politeness is part and parcel of the fabric of human interaction, and as such of great interest to social psychology, human ethology and human behavioral ecology (Brown, 2015; Wacewicz, Żywiczyński, & McCrohon, 2015), research into the social costs and benefits of speaking politely is in its infancy. From a utility-based and cost-benefit perspective, many forms of polite language can be seen as instances of "strategic use of conversational politeness" (SCP). Existing utility-based accounts of SCP (cf. Pinker, 2007; Clark, 2012; Quinley, 2012) assume the costs of polite communications to be cashed out in somewhat nebulous social commodity - 'face' (Goffman, 1967; Brown & Levinson, 1987). In contrast, the recently proposed Responsibility Exchange Theory (RET) by Chaudhry and Loewenstein (2019) explains SCP in situations involving a transfer of credit or blame by grounding costs and benefits in more tangible social constructs: (perceived) competence and (perceived) warmth. In this research, we extend their epistemic model into a broader, evolutionary model of SCP.

2. Responsibility Exchange Theory

The crux of RET is in the two proposed valued social commodities, perceived competence (c) and perceived warmth (w), which jointly form the social image of a person and underwrite the communicators' utility functions. Giving away credit through *thanking* (or *apologizing*) decreases the speaker's c value, but at the same time increases of the hearer's c value. However, these two polite communications also act to increase the speaker's w value. Conversely, claiming credit through *bragging* (or *blaming*) acts exactly the other way around: it increases the speaker's c value and decreases that of the hearer, while these two rather impolite communications decrease the speaker's w value (see Table 1).

Table 1. Speaker acts, its Politeness classification, and its effect on the speaker's and hearer's social images c and w (adapted, Chaudhry & Loewenstein, 2019).

Speaker's act	Classification	Effect on speaker	Effect on Hearer
Thanking, apologizing	Polite	$-c, +w$	$+c$
Bragging, blaming	Impolite	$+c, -w$	$-c$

3. An evolutionary dynamic in a population of agents

Based on RET, we built a game-theoretic model of two agents whose behaviors affect their social image, so that in each situation an agent can gain or lose an amount of c or w depending on her strategy and that of the other agent. We develop a symmetric game where agents choose among four possible strategies that represent combinations of the speaker's acts: i) being polite P (always thank/apologize, never brag/blame), ii) being impolite IP (never thank/apologize, always brag/blame), iii) always quiet AQ (never thank/apologize/brag/blame), and iv) always communicative AC (always thank/apologize/brag/blame). As rational players, agents aim at maximizing their image-based utilities c and w.

In the next step, we used tools from evolutionary game theory (EGT) to study the dynamics and stability aspects of the game, and found the following:

1. When $c < w$ (social image in warmth is more valued than social image in competence), then the polite strategy P is the only *evolutionarily stable strategy* (Maynard Smith & Price, 1973) of the game.

2. When $c > w$ (social image in warmth is less valued than social image in competence), then none of the four strategies is evolutionarily stable and evolutionary dynamics (e.g. the replicator dynamics; Taylor & Jonker, 1978) produce a 'Cycle of Politeness', where one strategy replaces another one over time in the following order: $AQ \rightarrow IP \rightarrow AC \rightarrow P \rightarrow AQ \rightarrow ...$

4. Discussion: Politeness and reputation

Our cultural-evolutionary model of linguistic politeness describes the fitness of differently polite behavioral strategies – but can this extend to the biological fitness of their human vectors, i.e. language users? Departing from the proximate-level currencies of w and c, we propose to consider a more speculative but more ultimate-level reformulation. Accordingly, SCP often involves an interplay between the two most basic aspects of one's reputation, where perceived competence relates to a person's *status* (reputation for the capacity for acquiring and holding resources) and perceived warmth relates to one's *generosity* (reputation for the propensity for sharing resources). The important common denominator is that both acquiring and sharing resources fundamentally determine one's desirability as a cooperative partner, so the grounding of reputational payoffs invites making contact with general theories of cooperation, such as 'the leading eight' (Ohtsuki & Iwasa, 2006) or 'biological markets theory' (Noë & Hammerstein, 1995).

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