

# Getting the Mood Right: A Game-Theoretic Look at Polite Requests and the Subjunctive

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**Introduction:** Polite requests in English accord with patterns in related languages in that they often invoke the subjunctive mood (Table 2). E.g. *Would you have time to help me find the gas station?* Contrast this with a request made among familiars like *Will you marry me?* and we can see the potential fallout from making the same request in the subjunctive. *Would you marry me?* invites risible responses like *I would, if only you would dress like an adult*. So why is there the discrepancy and what can recent approaches to pragmatics tell us about it?

Since its onset, Pragmatics, has been concerned with not just the logical side of language, but the rational. This led some of the Neo-Griceans to Game Theory, specifically Signaling Games (Lewis 1969) as an approach to unravel semantic and pragmatic content. But language has two tasks, both conveying information and negotiating relationships (Brown and Levinson 1978). As politeness phenomena worldwide attest to the second pillar, we focus on modeling requests through signaling games.

**Signaling and Coordination Games:** Signaling games help agents resolve coordination problems like the *Marriage Game* (Table 1) where agents are unsure of each other’s decisions and have *utilities* based on the collective outcome. A signal sent by a Sender  $S$  to a Receiver  $R$  can induce an optimal outcome for both parties, or *equilibrium*.<sup>1</sup> The basic structure of the game follows: Based on an Observation Type  $t$ , a Sender  $S$  sends a message  $m$  to a Receiver  $R$  who interprets it with an Action  $a$ . Successful coordination is rewarded by a point for each.

**Familiarity, Utility, and Strategy:** There are two competing dynamics in making requests: weighing the imposition of the request and the social distance between conversants. Although there is typically little to be lost socially by asking something of a stranger, the likelihood of compliance may be lessened. Speakers navigate this by invoking the subjunctive *would*, *could*, etc. or asking someone in whom they have invested in socially. This lessens the certainty of the rejection and hence the social cost incurred, aligning with the game-theoretic analysis of indirect speech in Pinker et al(2007). However, it also provides a familiar (friend, lover, etc.) with too many options for evasion. In the Marriage Game (Table 1), unsuccessful communication is punished. The added element of risk in this game incentivizes signaling  $M$  only if  $S$  has a certain level of certainty of  $R$ ’s response; uncertainty about one’s partner leads both to the equilibrium of  $\neg M$ .

We consider the classes of requests *Will you ... ?* and *Would you ... ?* If we think of questions as partitioning the possible worlds fit for an answer, we can derive a scale of certainty  $c$  implicit in the potential responses for *will* ( $c \in \{0, 1\}$ ) vs. *would* ( $c \in [0, 1]$ ). We can now think of the utility a Sender receives from a *Yes* or *No* response in the Marriage Game mentioned above based on the utilities in Table 1 ( $U_G$ ), the Certainty  $c$  indicated by the question, and the Social Investment  $I$ , seen in (1).

Here we assume  $I \in [0, 1]$  to be an increasing function of time and that a *No* response indicates non-coordination. Speakers make requests strategically based on their expectation of the response, so  $S$  must calculate the best message to send based on his expectation of the response and the amount of time invested in  $R$ . A *rational* speaker wants to maximize this expected utility, seen below in (2) and combined with (1) to make (3).

**Proposition 1: Subjunctive mood is rational under uncertainty** Observe that the set of meanings for *will* is a subset of those for *would*. For a  $c$  value of 1, we obtain the same  $EU_S$  for both questions, so why choose *would*? For  $Pr(Yes) < .5$ , we have a clearly negative value in (3). The certainty inherent in a *will* question amplifies this negativity, meaning that an optimal choice for  $S$  is to minimize his losses, choosing the message *would*.

**Proposition 2: Indicative indicates certainty** Parallel to Prop. 1 above, if  $S$  knows that  $Pr(Yes) > .5$ , he has no incentive to use the subjunctive. Here the indicative *will* maximizes expected utility.

**Proposition 3:** Agents must maintain a non-vanishing number of familiar and non-familiar speech partners to maintain the viability of both signaling strategies, based on Jäger(2008).

**Discussion:** Based on work in game-theoretic pragmatics(e.g. Franke 2009), we showed that *will* and *would* exemplify a common distinction among politeness rituals. They share a part-whole relationship not unlike *some-all*. In the full paper, we derive the results in the propositions above, detail conditions on Receiver utility necessary to reach equilibrium, and adapt this same game to a second near-universal phenomenon in politeness, the emergence and disappearance of the T-V distinction (Table 2).

	$A$	$\neg A$
$A$	1;1	0;0
$\neg A$	0;0	1;1

	$M$	$\neg M$
$M$	1;1	-1;0
$\neg M$	0;-1	1;1

**Table 1: Standard Coordination Game vs. Marriage Game:** (Both) Two players, Row and Column, have a symmetric choice between actions  $A$  and  $\neg A$ . The utility of the Row Player is listed first in each entry. (Left) Players unsure of each other’s actions may want to but coordinate to yield an optimal outcome. (Right) Players are unsure of each other’s preferences on Marrying ( $M$ ) or not ( $\neg M$ ). This differs from a standard coordination game in their stronger dispreference for unaligned actions.

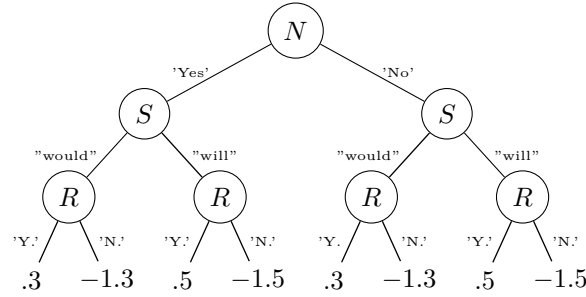
standard	subjunctive	T-form	V-form
will	would	thou (archaic)	You (mod. Eng.)
werden(Ger.)	würden	du (mod.Ger.)	Sie (mod. Ger)
pouvez-vous(Fr.)	pourriez-vous	tu (mod. Fr.)	Vous (mod. Fr.)

**Table 2: Two cross-linguistic indicators of politeness:** Mood(Indicative vs. Subjunctive) and Formality(T-V disinction). Both constructions address Brown and Levinson’s(1978) notion of *negative face*.

$$U_S(\text{Response}) = U_G \times c - I \quad (1)$$

$$EU_S(m) = Pr(\text{Yes}) \times U_S(\text{Yes}) + Pr(\text{No}) \times U_S(\text{No}) \quad (2)$$

$$EU_S(m) = c(2Pr(\text{Yes}) - 1) - I \quad (3)$$



**Figure 1: Extensive form of the signaling game** The speaker ( $S$ ) in this case believes an answer of *Yes* is 90% probable from the receiver ( $R$ ). The certainty  $c = .8$  here. Moves not influenced by any player are made by nature ( $N$ ). At the bottom we find  $U_S$ . Dotted lines indicate states  $R$  cannot distinguish.

## Selected References.

1. Brown and Levinson (1978) *Politeness: Some Universals in Language Use*
2. Franke (2009), *Signal to Act*.
3. Jäger (2008), *Evolutionary stability conditions for signaling games with costly signals*
4. Lewis (1969), *Convention*.
5. Pinker, Nowak, and Lee(2007), *The Logic of Indirect Speech*.

<sup>1</sup>A detailed description of this game will follow in the full paper.