Reciprocity and epistemicity:
On the (proto)social and cross-cultural 'value' of information transmission

Abstract:

Reciprocity is a (proto)social mechanism that involves (im)politeness as a balance of positive and negative actions among individuals: doing something good to someone is expected to be reciprocated in kind (cf. Culpeper & Tantucci 2021). The same applies for negatively charged behaviour (Ibid.). The present study advances the theory of reciprocity both empirically and theoretically, as it extends the model to contexts of information transmission, i.e. cases where some news is being communicated from one interlocutor to another. What we found is that the way people react to 'being informed of something' remarkably involves (im)politeness and is mediated by two maxims of epistemic reciprocity: Engagement E (*be interested*) maxim and Knowledge exchange K_e maxim (*be interesting in return*). Our case study is centred on Chinese telephone conversations among family members and shows that the costs and benefits realised by an information giver are matched by the information receiver when a propositional contribution to the current flow of information is produced in return. Conversely, when responses occur via bare backchanneling or absence of informative contribution to the on-going interaction, then reciprocity is not properly maintained, and perceptions of impoliteness are more likely to arise. Despite the context-dependent nature of our data, we will further argue that this finding has cross-cultural significance. Our methods triangulate between Likert-scale judgments, large scale corpus-based analysis and multivariate conditional inference tree modelling (Levshina 2015; Tantucci 2021).

1.   Introduction

Reciprocity is a mechanism of (proto)social payments that involves the balancing of positive and negative actions among individuals: doing something good to a social persona is socially expected to be reciprocated in kind (cf. Culpeper & Tantucci 2021). By the same token, negative behaviour is 'normally 'expected to lead to a negative reaction (Ibid.). Reciprocity is arguably (proto)social as it involves responsive tendencies of human behaviour as such (e.g. Von Rohr et al. 2011), which can be identified at any stage of cultural development and in any cultural system of values (cf. Culpeper et al. forthcoming). This is not to say that reciprocity is not affected by intra- and inter-cultural specificity and, therefore, by power and distance. These are all factors that often interrupt contextually a universal tendency towards a balance of behavioural payments.

The present study is centred on epistemic reciprocity, i.e. a balance of social payments involving speech acts of information transmission, and will argue that the way people react to new

information involves (im)politeness. In particular, we will show that, in the context of Chinese telephone conversations among family members, the costs and benefits realised by an information giver are perceived to be matched by the information receiver when a propositionally full and engaging contribution to the current flow of information is produced in return. On the other hand, reciprocity impoliteness is more likely to arise with silence, mere acknowledgment of what was said or absence of knowledge exchange as part of the on-going interaction. These are cases where the information receiver 'does less than expected' in return to receiving a piece of information. We will propose that two fundamental maxims determine the repayment of costs and benefits needed to maintain epistemic reciprocity: the Engagement E maxim (*be interested*) and Knowledge exchange K_e maxim (*be interesting in return*).

The research questions of this study are restricted to the contextual environment of telephone conversations among Chinese family members. However in section 5 we will argue that they can provide a baseline for cross-linguistic speculations. Our research questions are respectively:

- How do people enact reciprocity in contexts of information transmission?
- How do information recipients (IR) reciprocate the costs and benefits produced by information givers (IG)?
- To what degree epistemic status, culture specificity and illocutionary force affect the reciprocity of information transmission?
- Is it possible to identify some interactional maxims that determine the balance of epistemic reciprocity?

The present paper is structured as follows: Section 2 introduces the notion of reciprocity. Section 3 discusses the concept of information transmission from a pragmatic and ecological perspective and in relation to social reciprocity. Section 4 is devoted to the data retrieval and the results of this study, both derived from a Likert-scale questionnaire and a large-scale corpus-based enquiry. In section 5 we formulate respectively the E and K_e maxims of epistemic reciprocity. Our conclusions are given in section 6.

2.   Reciprocity

Despite having played an important role in social and evolutionary psychology (i.a. Trivers 1971; Alexander 1980; Cosmides & Tooby 1992; Gintis et al 2008; Barclay 2012), reciprocity has been somewhat neglected in pragmatic (im)politeness theory. In Brown & Levinson's (1987) cooperation

and mutual self-interest are discussed with reference to interlocutors' "mutual vulnerability of face" (1987: 61). Reciprocity is discussed more explicitly, though briefly, in Spencer-Oatey's (e.g. 2008) rapport management model, especially with regard to the concept of individuals' "sociality rights", where it is stated that "the belief that costs and benefits should be 'fair 'and kept roughly in balance through the principle of reciprocity" (Spencer-Oatey, 2002: 540). More focus to the notion is given in Ohashi (2008, 2010), who proposes a "norm of reciprocity" underpinning a "debit-credit equilibrium", which is illustrated in the context of speech acts of thanking. In Ohashi's model, politeness is treated metaphorically as money, as a kind of social payment (see also e.g. Werkhofer, [1992] 2005: 170-2, 182-7; Watts, 2003: 115). Culpeper (2011: 203-7) discusses the relationship between reciprocity and (im)politeness by noting that individuals establish (im)politeness thresholds involving varying degrees of politeness or impoliteness. These thresholds are updated as the interaction unfolds, via linguistic acts that might match or mismatch one interactant's behaviour. Tantucci et al. (2018) note that (mis)matches in reciprocity naturally vary diachronically and cross-culturally. Guydish et al. (2020) draw on communication accommodation theory (Gallois et al. 2005) and provide an account of 'the amount of talk' that is produced by participants, while imbalances exist depending on context and social roles.

In Culpeper & Tantucci (2021) reciprocity is discussed as a key interactional mechanism serving a (proto)moral balance among interactants and among social groups. They establish a Principle of (Im)politeness Reciprocity (PIR), defined as:

a constraint on human interaction such that there is pressure to match the perceived or anticipated (im)politeness of other participants, thereby maintaining a balance of payments.

(Culpeper & Tantucci 2021: 150)

In their framework, (im)politeness reciprocity therefore underpins a balance of costs and benefits among interactants. For instance, a politely formulated request may be expected to involve 'politeness credit 'which can be reciprocated with politely formulated compliance. Conversely, an impolitely formulated insult would entail a debit, which, in turn, can be balanced with an impolitely formulated counter-insult (Ibid.). They argue that speakers make assumptions about their mutual 'balance of social payments' based on their memory of the past relevant actions of their interlocutors and the degree of (im)politeness that they perceived. This is evident also meta-linguistically, i.e. via idiomatic formulas that are present cross-culturally, such as *I owe you, I'm indebted to you, you'll pay for this, I'll remember this* and so on. With the PIR there is thus a key element of "pressure" for the matching of social payments, which is primarily – though not exclusively – afforded by obligations flowing

from the established (or assumed) moral order of the social structure that the interactants are part of. The PIR provides the tools for a gradient approach to (im)politeness. This is because it is not centred on absolute evaluations of social behaviours (e.g. a directive being necessarily a face threat, cf. Brown & Levinson 1987), but rather on the dynamic and context dependent perception of how much should be done by a social persona A in order to –positively or negatively – repay what was done by another persona B.

2.1   The (proto)social dimension of reciprocity

There is also a strand of research in evolutionary psychology which has been centred on the notion of reciprocity. Trivers (1971) discusses 'reciprocity-based altruism' as a mechanism that occurs when individuals cooperate by trading helpful acts. When the benefits to the recipient of altruistic acts are greater than the cost to the actor, both participants will benefit so long as the act is reciprocated sometime in the future, with emotions such as gratitude, sympathy, and guilt having evolved to regulate systems of reciprocity (Trivers 1985). In a similar vein, Alexander (1987) views the development of moral systems as systems of 'indirect – 'or somewhat delayed – reciprocity. From this angle, moral rules are established to control tendencies of individuals to behave selfishly (e.g., to cheat on a social exchange). This means that, for reciprocal altruism to evolve, a socio-normative mechanism of conditional repayment of costs and benefits must be in place among members of any cooperative activity in order to detect cheaters (Cosmides & Tooby 1992). It is an empirical fact that in human moral communities individuals hold one another accountable for their obligations. They do this via reactive attitudes – such as resentment and blame – to those who have reneged in acts of so-called moral protest, to which they expect/demand an appropriate response in return (Smith 2013).

Such a conceptualisation of reciprocity clearly aims to explain human socio-cultural evolution as being inherently determined by social members 'accounts of each others' behaviours over time and their expectations of future repayments. This is, in turn, what serves the idea of cooperation as collective intentionality (Tomasello 2019, 2020), which allows social members to develop moral obligations that are not simply confined to the here-and-now of an interaction, i.e. not just ones that involve joint attention and immediate intersubjectivity (Tantucci 2020, 2021; Tantucci & Wang 2020b). As Gouldner (1960: 171) points out, "[w]e owe others certain things because of what they have previously done for us, because of the history of previous interaction we have had with them". On the other hand, it would be somewhat simplistic to adopt a view of reciprocity as a mechanism that uniquely unfolds as a 'delayed 'repayment. In fact, reciprocity has been shown to be also a fundamental mechanism at play throughout single speech events or even within adjacency pairs (cf. Tantucci et al. 2018; Culpeper & Tantucci 2021). With this in mind, drawing on the intersubjective

continuum proposed in Tantucci (2021), a terminological distinction is in order. We therefore distinguish between **immediate reciprocity**, viz. what involves the repayment of costs and benefits realised during the immediate context of the here-and-now of an interaction, versus **extended reciprocity**, which has to do with the long-term balancing of social payments and moral obligations among the members of any social group. The present study is centred on the pragmatics of ' real-time ' (mis)matches of immediate reciprocity that are realised by interlocutors when a piece of information is transmitted from an information giver (IG) to an information recipient (IR).

2.2   (Mis)matching reciprocity

Reciprocal matching of politeness is often associated with conventionalised behaviours, as in recursive interactional patterns in contexts of greetings, partings, favours and thanks, requests and compliances, assertions and acknowledgements (Culpeper & Tantucci 2021). An example could be speaker A saying *good night* to B at the end of an evening spent together. At that point B will be under the social pressure to match the threshold of politeness established by A and therefore reciprocate the linguistic act with the same (or a similar) formula: *good night*. Absence of such responsive behaviour would normally produce a mismatch in reciprocity and be normally perceived as 'markedly' impolite. This is because silence would not meet the social expectation that – in that socio-cultural context – the utterance *good night* and the associated speech act should be reciprocated in kind.

Culpeper & Tantucci (2021) demonstrate that in British English different request types are normally followed by certain kinds of response, if a matching balance of reciprocity is to be maintained. For instance, conventionalised responses to requests such as *ok* match utterances formulated with the stem *Can you ...?*, but would not match potentially politer constructions such as *I would be grateful (if) ...*, for which an additional comment of reassurance, e.g. *ok, sure* would be required. The development of greetings has also been shown to be a case in point in highly conventionalised matching reciprocity. In Tantucci et al. (2018) it is shown that the constructional changes of *good morrow* in Early Modern English involve a mutual balance of interactional efforts made by the two parties. This involves the expected matching of what was said by the turn initiator. During the mid 16th and early 17th century the greeting exchange involves a mirroring behaviour by the two parties via usage of the ditransitive [*good morrow* to NP] construction, while towards the end of the 17th century a balanced exchange of interactional efforts was reached via the [*good morrow* VOCATIVE] construction. Exceptional absence of the to NP component, first, and the VOCATIVE one, later could possibly generate ad hoc inferences, with likely chances of producing a 'downward shift 'in reciprocity, i.e. the perception of some impoliteness imbalance.

Accordingly, Culpeper & Tantucci (2021) note that deviations from the PIR are not uncommon as they can trigger further inferencing and suggest that (im)politeness mismatches involve linguistic markedness (cf. Levinson 2000 M-principle on marked 'abnormality') e.g. more prolix or periphrastic forms, infrequent or non-neutral forms, or unexpected absence of linguistic material (e.g. silence in response to a greeting). Usami (2002) notes how (im)polite downshifts and upshifts inherently "reflect the power relationships between the speaker and the addressee" (2002: 204) in Japanese interaction. This has been shown to be true also for contextually situated exchanges in British English (cf. Culpeper & Tantucci 2021: 161).

3.   Information transmission as (proto)social cooperation

Different from greetings and requests, information transmission hinges on the sharing of information among interactants and linguistic structures on how to update their world knowledge (cf. van Eijck & Visser 2010; Levinson 2012). Sperber et al. (2010) note that information transmission involves selection of partners for cooperation, including moral evaluation, monitoring of reliability and vigilance towards cheating (e.g. Cosmides and Tooby, 2005; Harris & Nunez 1996) and contributes to the reliability of people 'reputations, which is key for selecting cooperative partners (e.g. Alexander 1987; Nowak & Sigmund 1998; Milinski et al. 2002). Indeed, speech acts of information transmission contribute to the establishment of the image and reputation of the interlocutors in their community of speakers, with obvious repercussions on whether they can be considered socially reliable, trustful or engaging individuals. This is true for information givers (IG), but also for information recipients (IR) and the way the latter overtly express their cooperative engagement towards the information they are receiving. Most conventionalised ways to enact this are forms of backchanneling, including nodding, pragmatic markers of agreement such as the English *yeah*, *absolutely*, strategies of alignment and so on. These are extremely frequent across languages and cultures, suggesting that the very condition of 'being informed' distinctively involves IR's pressure to repay IG's costs and benefits.

From an ecological perspective, transmission of information is far from being a neutral event. Firstly, the assessment of the validity of information may have contingent effects. I may be told by the member of my tribe called 'James' that behind the bushes ahead of me *the road is safe*, whereas in reality a dangerous predator is there, ready for its next meal. Related to contingent effects of representatives are also long-term effects that may affect the social image of information givers (IG): after finding out that there was indeed a predator behind those bushes, it would not be beneficial for my survival to further rely on information given by James in the future. This mechanism has been studied throughout ontogeny, as children by the age of 4 start processing the reliability of informants, socially problematise the evidential status of propositions (e.g. Author 2021; Authors 2021) and take

past accuracy of informants' representatives into account (e.g. Clément et al., 2004; Birch et al 2008; Scofield & Behrend 2008). For instance, they start predicting that a dishonest informant will provide false information (Couillard & Woodward 1999) or that an incompetent informant will be less reliable (Call & Tomasello 1999; Lampinen & Smith 1995; Clément et al. 2004). What this shows is that epistemicity does not exclusively involve the truth-value of a proposition (e.g. Palmer 2001: 24), but crucially underpins (proto)social cooperation and mechanisms of 'quid pro quo' among the members of a group. The giving and receiving of information involves social acts. Politeness theories have tended to focus on requests, apologies, etc, which are indeed social acts, but they underestimate how social the 'mere' exchange of information via assertions actually is. This is where the PIR comes into play as a model that can effectively tackle the relationship between epistemicity and (im)politeness, as the focus here is on 'balance of costs and benefits' among social behaviours, rather than the avoidance of face threats (Brown & Levinson 1987) or the pursuit of harmony (e.g. Spencer-Oatey 2008).

3.1   Information transmission and factuality

There is a balance between the speakers 'desire to provide valuable information – one that can increase their social prestige as reliable members of the group – and their need to preserve their social image in case their words be proved to be inaccurate. This entails that information givers often need to 'disclaim 'their commitment to the factual nature of what they are communicating, for example via epistemic modal, or evidential strategies, that is strategies that may turn a bare assertion into conjectures, reports, evaluations and so on.

Speech acts of information transmission are traditionally categorised as representatives, as they "commit the speaker (in varying degrees) to something's being the case, to the truth of the expressed proposition" (Searle 1976:10). Representatives themselves can serve different social actions. They may be used to convey information as a bare fact, that is in the form of assertives (c.f. Jary 2010; Kissine 2013), as in *the road is safe*. They may also occur as evaluatives, viz. markedly expressing the speaker's subjective assessment of the likelihood of the proposition (cf. Nuyts 1999; Tantucci 2016b; Tantucci & Wang 2018, 2020a), as in *I think that the road is safe* or *the road might be safe* and so on. Representatives may finally be conveyed via presentative illocutionary force (e.g. Faller 2002; Tantucci 2016a, 2016b), through which the speaker is not the bearer of the truth or the likelihood of the proposition, but simply provides knowledge that s/he acquired – directly or indirectly – from the external world, as in *I heard that the road is safe, apparently the road is safe* and so on.

This taxonomy has important implications for how speakers 'take the risk' to commit to whether a piece of information is true or not (cf. Tantucci 2016b). Recall the example made earlier

about James assertively committing to the truth of the proposition *the road is safe*. Transmitted this way, the statement is given as a factual assertion. The (proto)social effects on James' positive face of this proposition being disproved are much more detrimental than in circumstances in which he had said *I think the road may be safe* (evaluative) or rather via evidential strategies such as *I have just been told that the road is safe* (presentative). What this means is that information recipients (IR) critically assess not only the contents of a piece of information, but also how information is transmitted. Evaluative expressions allow the speaker to 'suspend 'the factuality of what s/he said via expressions of uncertainty e.g. *I think that the road is safe*, *but I am not sure*. Presentative speech acts allow this as well to coherently 'question 'the factuality of what s/he said via expressions of subjective belief: *It seems that the road is safe*, *but I don't think so* (cf. Tantucci 2016a; Van Olmen & Tantucci 2020).

This is ultimately to say that the degree to which a piece of information is transmitted as true has (proto)social implications both for information givers and information recipients. All contextual and propositional conditions being equal, the more a piece of information P is geared towards factuality, the higher the (proto)social value expected to be ascribed to P. However, this will always come with a cost, namely the risk of being disproved and the damage on the information giver's reputation as a reliable member of the group. One of the main concerns of the present study in section 4.4 will be to assess the degree to which different forms of representative speech acts may correlate with (mis)matches in reciprocity among information givers and information receivers.

3.2   Information transmission throughout turns at talk

The notion of knowledge exchange has led to a strand of research on epistemicity in conversation analysis (e.g, Kamio 1997; Heritage 2012, 2013), with social identities being shaped by interlocutors ' territories of knowledge (Berger & Luckmann 1966; Garfinkel 1967; Pollner 1987; Sacks 1984). Kamio (1997) stressed that epistemic status of interactants involves not just the actual possession of information, but the right to articulate it (Drew 1991; Maynard 2003; Terasaki 2004; Stivers et al. 2011). Heritage similarly noted that epistemic access to knowledge is a relative mechanism between interlocutors such that each occupy different positions on an epistemic gradient (Heritage 2010, 2012). A fundamental aspect of epistemic status – one that is somewhat often neglected – is contextual situatedness. This entails that projected interlocutors' knowledge is often bound to the specific socio-cultural situation in which the interaction takes place. A plumber may have, situationally, a much higher epistemic status than an emeritus professor of Physics, say, when the two are discussing the reasons why there is no more hot water in the professor's house. Similarly, in some cultures assertions made by older family members may be considered as more valuable than ones made by younger ones.

This is indeed one of the research questions of this study and one that will be tackled in the case studies in section 4.

Sequentiality is also key for information transmission throughout turns at talk (e.g. Bavelas et al. 2017). An example of this is the turn initial *Oh* in British and American English, which is normally employed for the acknowledgment that what the prior speaker has conveyed was markedly informative (e.g Heritage 2013).

(1)

A: Yeh, hum, I've just rung to tell you, uh, the things have arrived from Barker'n Stone.

B: **Oh, oh** can I come round?

(Adapted from Heritage 2013: 560)

As noted by Heritage (2103), A's turn in (1) is congruent with being exclusively within her epistemic domain, as it is acknowledged as a novel one through *Oh* by the information recipient (Ibid.).

3.3   Information transmission and reciprocity

The Conversation Analysis literature has also referred to reciprocity, as claims are made that 'on the record' expressions of knowledgeable positions drive interactional sequences towards an ideal epistemic equilibrium (Heritage 2012: 48). However, this view is mainly driven by 'how much is known' by each interactant. What has not yet been at issue is whether giving and receiving information involve perceptions of (im)politeness. In this study, we aim to put Culpeper & Tantucci's (2021) PIR into action and assess the way information recipients' (IR) produce overt strategies to (mis)match the costs and benefits that have been realised by information givers (IG).

The balance of epistemic costs and benefits among interlocutors will be shown to be driven by engagement, on the on hand, and by knowledge exchange on the other. The former has to do with strategies aimed at overtly acknowledging that information received is relevant and therefore 'valuable'. The latter has to do with the pressure to produce novel propositional content to return to IG. In this regard, pro-active contribution to the information flow is a decisive element of the epistemic balance of interactional exchanges. Evidence shows that children with specific language impairment tend to merely rely on backchanneling or minimal responses, as they take their turn without contributing to the information flow (Fey 1986; Hadley & Rice 1991; Lahey 1988; Bruce et al. 2010). This strand of research supports the view that operators of backchanneling alone are perceived as a somewhat 'baseline 'form of interactional engagement. This is arguably in contrast with ad hoc strategies by which information recipients pro-actively contribute to the information flow.

In this regard, we will account for the dimension of knowledge exchange by focusing on whether new propositional information is generated in return by IR. Consider example (4) below from our dataset:

(2)

[Back][1]

IG: 反正到纽约去, 看了看自由女神像。

fǎnzhèng dào niǔyuē qù,   kàn le kàn zìyòu nǚshénxiàng

anyway arrive NY, look PF[2] look Liberty Statue
'Anyway, when I went to NY I took a look at the Liberty Statue'.

IG: 不过没有，没有乘船过去。

búguò méiyǒu,   méiyǒu chéngchuán guòqu

but did-not, did-not take boat go-through
'But I didn't, din't go by boat'.

IR: 呃。

è

Back[3]
'Hm.'

Callhome / 0022

As given in (2) above, IR merely acknowledges IG's assertion (*she has never been on a boat*) – via the backchannel 呃 *è* 'hm' – yet without producing any propositional content in response to information that he has received. In the case above our hypothesis is that people would perceive IR's response as a relatively 'weak' way to reciprocate the costs and benefits produced by IG. Things would be rather different if IR would pro-actively produce some informative response in return:

(3)

[Comm + Back][4]

IG: 我，我不知道，我这有没有地址。

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[1] Backchannel.
[2] Perfective.
[3] Responses including only Backchannel.
[4] Responses including Comment + Backchannel.

wǒ, wǒ bù zhīdào, wǒ zhè yǒuméiyǒu   dìzhǐ

I,   I   not know,   I   this have-not-have address

'I, I don't know if I have the address here.'

IR: 哦，我下一次，我这一次是回去碰到他了。

ò, wǒ xià yí cì, wǒ zhè yícì shì huíqù pèngdào   tā le

Oh, I next one time, I. This one time be return encounter him SFP

'Oh, next time, this time I will see him when I go back.'

<div align="right">Callhome / 0003</div>

Example (3) above is also from our dataset and includes both a backchannel and a propositionally informative comment. This is a case in which we would expect IR's response to be perceived as involving a comparatively stronger effort to match the costs and benefits produced by IG. This is because in response to *I don't know if I have the address here,* IR goes beyond mere acknowledgement (i.e. the backchannel 哦 *ò*), and also creatively responds with a new piece of propositional information: *next time I will see him when I go back*, therefore pro-actively contributing to knowledge exchange.

Returning to the first of the two components mentioned above, engagement in this study is tackled via **resonance** (cf. Du Bois 2014; Tantucci & Wang 2021, 2022a, 2022b), which involves ways to re-formulate the form and/or the function of an interlocutor's utterance (cf. Reed 2020; Tantucci & Wang 2021). Different forms of resonance play a key role in the development of young children's social cognition and their ability to recognise the 'like me 'nature of others (Meltzoff and Moore 1977; Meltzoff 2007; Arbib 2012; Reed 2020; O'Madagain & Tomasello 2021) and set interactional goals by textually engaging with the utterances of their peers (Köymen & Kyratzis 2014). When resonance is significantly absent from a speaker's turns at talk, that is an important indicator of overt interactional detachment with what is said by the other persona, which is distinctive of individuals with Autism Spectrum Disorder (cf. Bois et al. 2014; Tantucci & Wang forthcoming). Consider example (6) below from our dataset, in which IR not only replies to what was said by IG, but also formally engages with lexical and grammatical components of her utterance:

(4)

[Res + Back]

IG: 也没有时间到那个蔡淑桃那儿去。

yě méiyǒu   shíjiān dào   nà ge cài shū táo   nàr   qù

also not-have time   arrive that CLAS[5] Cai Shu Tao there go

'I also haven't got the time to go to Cai Shu Tao's.'

IR: 呃，以后再去。

      èn,   yǐhòu zài qù

      Hm, after then go

      'Hm, you can go next time.'

<div align="right">Callhome / 0022</div>

In (4) IR overtly engages with textual elements of IG's turn, i.e. both resonating lexically with the verb 去 *qù* 'go' and syntactically via the temporal construction [TIME *go*] originally used by IG.

With resonance, speakers 'textually' expand on what was said by their interlocutors, which is an overt component for the acknowledgement that their peers' talk is relevant (and thus valuable) for the continuation of the interaction.

In the next section we will illustrate how the dimensions of knowledge exchange and engagement have been addressed both via Likert-scale testing and multifactorial corpus-based analysis.

4. Data retrieval and methodology

Our data retrieval was based on the Chinese Callhome corpus[6], which consists of 120 unscripted telephone conversations between native Chinese speakers, comprising 250,000 words. The speakers of the Callhome were all aware of being recorded and were given no specific guidelines about the topics of their conversations. Every dialogue in the corpus is characterised by a spontaneous interaction among a younger family member (e.g. a child or a nephew) calling an older one (e.g. their father, grandmother and so on). The overwhelming majority of dialogues being between parents and their children, thus our focus was on the older/younger relationship. We manually retrieved the first 1000 representative speech acts realised by younger family members informing older ones (henceforth tagged as Y>O). We then gathered a second sample of 1000 representatives with older family members informing younger ones (henceforth tagged as O>Y). The age mismatch, however, did not play a significant role in the prediction of epistemic reciprocity (cf. results in 4.3 and 4.5). Both datasets only included cases in which the act of informing is not elicited (as in cases where

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[5] Classifier.
[6] https://ca.talkbank.org/access/CallHome/zho.html. Last accessed 10/08/2021.

someone is asked to provide information), but spontaneously realised from one interlocutor to another.

For every speech act of information transmission, we also annotated the second pair part of the information recipient (IR) in order to assess whether his/her reaction would reciprocate the costs and benefits produced by the information giver (IG). The selection of the representatives uttered by IG was based on whether they would fit the criteria for the classification of assertives, evaluatives or presentatives (see section 3.1). Cases where more than one illocutionary force could be arguably ascribed to the IG's utterance (e.g. expressive speech acts that would also include an evaluative component such as that *I think that was a horrible day*) were also included in our dataset and treated with reference to their representative function, i.e. evaluative, assertive or presentative. In the case of the IR's responses, we accounted for speech acts of acknowledgment, expressives, directives, commissives, as well as the three representative categories of assertions, evaluations and presentatives. Finally, we controlled for the propositional content of all representatives of our study by excluding all the ones comprising a propositional face component (Tantucci & Wang 2018), that is to say, all cases where IG would assert or evaluate some state of affairs having to do directly with IR's persona.

The present study develops a multifactorial model to assess whether IRs would match (M) the costs and benefits of IGs or whether they would produce downward (D) or upward shifts (U). Reciprocity has thus been set as our dependent variable, whereas the predictors of the analysis included IG's illocutionary force (IF1), IR's illocutionary force (IF2), IR's use of turn initial backchannels (Back), comments (i.e. any sort of propositional content in addition to bare markers of acknowledgment), resonance (i.e. whether words used by IG are re-used by IG in the form of alignment) and whether IR would disagree with IG. A sample row of the input of these dimensions (out of a total of 2000) is given in Table 1:

Reciprocity	IF1	IF2	Back	Comment	Resonance	Agreement
U	*asser*	*ackn*	*absent*	*yes*	*yes*	*yes*

Table 1.
Annotation scheme

Clearly, while most of the dimensions of this model were based on formal and easily replicable criteria of annotation (e.g. presence vs absence of backchannels, presence vs absence of resonating items and so on), the dependent variable of reciprocity had to be informed by native speakers'

perception of IRs' efforts made to match IG's behaviour. The next section is devoted to the design of the questionnaire and the implementation of the results into our annotation framework.

4.2   Questionnaire design

The test items for our questionnaire were randomly drawn from our dataset, which included 2000 adjacency pairs of information transmission naturally occurring from the Mandarin Callhome corpus [7]. The questionnaire consisted of 36 exchanges in which IR reciprocated some IG's representative speech act expressing discourse new information. Half of the test items included younger family members informing older ones (Y→O), while the other half comprised information transmitted from old family members to younger ones (O→Y). Informants were Chinese university students comprised between age 20-30 who accessed both the original audio and the transcriptions of the exchanges of the questionnaire via the online system Qualtrics[8]. They were asked to rate test items on a five-point scale (cf. examples (5-6-7) in section 3.3), assessing the degree of effort made by IRs in order to match the costs and benefits produced by IGs: *Very little effort; Little effort; Neutral; Some effort; A lot of effort*. While our aim was to capture the degree to which the informants would perceive IR's responses as impolite, we yet decided not to include this terminology in the questionnaire. We made this choice because the layperson may not be aware that ordinary information transmission may involve (im)politeness, as this indeed was one of the research aims of this study.

Additionally, in order to assess (im)politeness reciprocity, it could make sense to determine what is the threshold of (im)politeness of the first-pair part of the exchange, so that the assessment of the response could be judged as a reaction to something that was originally perceived as 'more' or 'less' polite. This is indeed what was done in Culpeper & Tantucci's (2021) study about requestive exchanges in the BNC. On the other hand, with speech acts of information transmission not referring to IR's persona, elements of degree of imposition and face threats are rarely at issue in the IG's turn. The focus of our study was therefore on how speakers react to commonly received information and whether their responsive behaviour as such may trigger perception of (im)politeness mismatches. The questionnaire was made of 36 exchanges which were randomly drawn from our dataset. The retrieval rational was based on the conditions given in Table 2.

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[7] We opted for a mixed method involving a questionnaire design. In our study of metalanguage, the reason why we did not exclusively focus on speakers' ongoing comments as evidence of reciprocity imbalances is that metalanguage of (im)politeness in conversation is a relatively rare phenomenon (i.a. Culpeper 2011), i.e. one that can be studied via ad hoc corpus-based queries in a large corpus, but not quite one that can be captured statistically throughout turns at talk of specific speech events of relatively small corpora.

[8] https://www.qualtrics.com. Last accessed 10/08/21.

Number of utterances x Age	Retrieval rationale
3 x O→Y + 3 x Y→O	Utterances that were not responded to, i.e. the IR would stay silent (tagged as *Silence*).
3 x O→Y + 3 x Y→O	Utterances that were only responded to with a backchanneling marker (*Back*).
3 x O→Y + 3 x Y→O	Utterances that were responded to with a backchanneling marker and an additional comment that would include further propositional information (tagged as *Comm + Back*).
3 x O→Y + 3 x Y→O	Utterances that were responded to with a backchanneling marker and some element of resonance with what was said by IG (tagged as *Res + Back*).
3 x O→Y + 3 x Y→O	Utterances that were responded to with just some comment that would include further propositional information (tagged as *Comm*)
3 x O→Y + 3 x Y→O	Utterances that were responded to with just some element of resonance with what was said by IG (tagged as *Res*).

Table 2.

Rationale for utterances' retrieval

The above selection allowed us to control for elements of interactional engagement (i.e. whether IR would resonate with what was said by IG), knowledge exchange (i.e. whether IR would produce some new propositional information in return) and the socio-cultural component epistemic status of age (O→Y vs Y→O), i.e. whether it would impact on the value ascribed to information provided by IG. Finally, while the actual content of the information given could clearly not be controlled for, with six items available for every condition we were able to mitigate potential cases where the propositional content could be judged as somewhat exceptional by the informants (e.g. extra-informative or 'exceptionally' irrelevant).

4.3   Questionnaire results

Based on the questionnaire results, we fitted a Chi-square test, determining whether and how the informants 'perception of IR's degree of effort made to reciprocate the costs and benefits produced by IG was associated with the six conditions mentioned above. Firstly, we observed no statistical differences in the perception of O→Y vs Y→O. The results that we report therefore include all the

36 test items of the questionnaire, which indeed proved highly significant (X^2= 658.86, df = 20, p-value < 2.2e-16). In Chi-square testing the null hypothesis is that row and column variables of a contingency table (in our case reciprocity vs response types) are independent. Statistical significance is reached when the mismatch between predicted vs expected frequencies is above chance. Such mismatches are called Pearson residuals and are visually represented in blue and red in Figure 1 below:
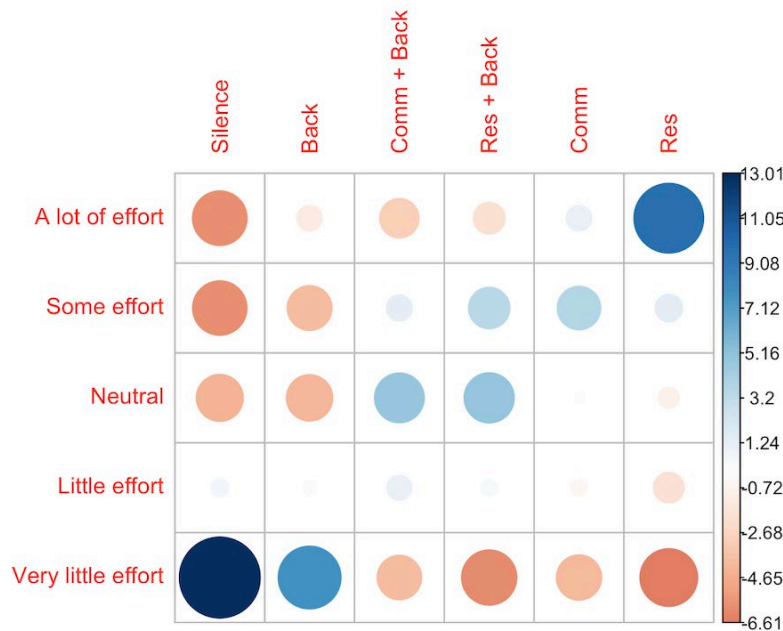

Figure 1.

Pearson residuals of the relationship between perceived reciprocity and response types

Positive residuals appearing in blue indicate a positive association between the perception of IR's reciprocity (mis)matches (*Very little effort, Little effort* and so on) and response types (*Silence, Back* and so on). Conversely, negative residuals are given in red, implying repulsion between the same variables. The degree of association or repulsion is represented both by bubbles' size and shade (i.e. the darker, the more significant), as shown on the Pearson residuals' bar at the right-hand side of the plot. From the above we can clearly see that the strongest attraction (dark blue) is at play between informants' perception of IR's very little effort towards reciprocity when they stayed silent (*Silence*) after being informed by IG, as shown at the bottom left corner of Figure 1, as illustrated in example (5).

(5)

[Silence]

IG:　　就是，就工作经验，那种比较多的，你知道吧。

jiù shì, jiù gōngzuò jīngyàn,   nà zhǒng bǐjiào duō de, nǐ   zhīdào ba

just,   just work   experience, that kind quite many DE, you know SFP[9]

'It's just, just working experience, there are many of that kind you know.'

IR: …

On average, a speaking turn in conversation takes no more than just two seconds (Levinson 2016: 6), while the time lap between turns on average is just a fraction of that, i.e. around 200 ms (Ruhleman 2018: 82). For the annotation of 'Silence' we accounted for a pause among IG's utterances that would last longer than 1.5 seconds, that is, cases where IR would be given the time to reciprocate IG's message, yet with IR clearly failing to do so. In (5) above IR has nothing to say about IG's assertion. Such absence of reaction to information transmission is indeed what informants perceived as the least effort IR could make in order to reciprocate the costs and benefits behind IG's utterance. This was not surprising, as 'doing nothing' in return to a (proto)socially beneficial action (such as informing) intuitively triggers the perception of a negative mismatch among the balance of costs and benefits between two social personas.

Returning to Figure 1, we can see that very little effort was also significantly associated with exclusive use of backchannels (Back), i.e. in cases when IRs would acknowledge information that they received, yet without producing any 'propositional' information in return. Similar to bare silence, isolated backchannels were also perceived as involving very little effort made by IR in order to reciprocate the costs and benefits produced by IGs. Example (2) in section 3.3 is an illustration of this.

However, when backchannels were combined with additional propositional information being returned to IG, the response was then perceived as neutral, as involving a balanced match between the costs and benefits realised by IG and the ones returned by IR. This is illustrated in examples (3-4), section 3.3 and results in the perception of a matching redistribution of social payments (M), as indeed, epistemic costs and benefits produced by IG are more substantially 'paid back' by IR's propositionally contentful response.

Even more interesting was the highest weight of effort ascribed to IR's reactions that would underpin knowledge exchange, yet without the presence of turn initial backchannels:

(6)

[Comm]

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[9] Sentence final particle (cf. Tantucci & Wang 2018, 2020; 2021a, 2021b).

IG:　　他很差劲的人，用不着要求他什么。

　　　　tā hěn chàjìn de rén,　yòng-bu-zháo yāoqiú tā shénme

　　　　he very disappointing DE person, no-need require him something
　　　　'He is an awful person, it would be pointless to ask him anything.'

IR:　　他一点责任都不尽，什么东西，现在我说唯一的…

　　　　tā yīdiǎn zérèn dōu bù jìn,　shénme dōngxi,　xiànzài wǒ shuō wéiyī de

　　　　he a-bit responsibility all incomplete, some thing, now I say only one DE
　　　　'He cannot take any responsibility, now I am the only one dealing with things…'

<div align="right">Callhome / 0735</div>

(7)
[Res]

IG:　　我，我真的没想到那么漂亮，这个地方是。

　　　　wǒ,　wǒ zhēnde méi xiǎngdào　nàme piàoliang,　zhè ge　dìfang shì

　　　　I,　I　think　not think-arrive so.　beautiful,　this CLAS place　is
　　　　'I would have never imagined that it was so beautiful, this place.'

IR:　　是很漂亮的，我觉得我们校园特别漂亮。

　　　　shì hěn piàoliang de,　wǒ juéde wǒmen xiàoyuán tèbié　　piàoliang

　　　　be very beautiful SFP, I think we　campus particularly beautiful
　　　　'It is very beautiful, I think our campus is really beautiful.'

<div align="right">Callhome / 0758</div>

Similar to the exchanges in (4-5), both (6) and (7) involve the IR contributing to the information flow and the knowledge exchange of the adjacency pair. However (6-7) do not include a conventionalised turn-initial backchanneling marker. One might argue that this is counterintuitive. After all, one less component is present in IR's response (namely, a backchannel), which may suggest that something 'less' is done in return to IG. On the other hand, absence of highly conventionalised markers of acknowledgement suggests that both (6) and (7) are produced predominantly' on the fly', without an element that 'normally 'occurs in between the two pair parts, i.e. a backchanneling marker. Backchannels are present in 64% of responses in our dataset (i.e. 1274 cases out of 2000), which clearly indicates that in Chinese conversation, information transmission is most conventionally responded to via specific turn initial backchanneling. When this does not happen, IR's reply is

structurally less 'normal' and therefore more creative, as it is produced 'ad hoc 'to contribute to the current knowledge exchange. It is also important to note that when resonance is present, the perception of reciprocity is also comparatively higher. This entails that, in addition to propositional contribution to the knowledge exchange, formal and functional alignment with what was said by IG also plays a crucial role in 'weighting 'epistemic reciprocity.

All in all, from the analysis above two factors emerge as decisive for the reciprocity of information transmission: 'ad hoc' contribution to knowledge exchange (i.e. in the form of propositional information being produced in return) and marked engagement with IG's message (i.e. in the form of resonance with what was said by IG). These two will inform the two maxims of epistemic reciprocity that we will discuss in section 5.

4.4   Corpus-based annotation

The results from section 4.1 informed the annotation scheme of reciprocity in our corpus-based study. What Figure 1 shows is a data-driven partition of three levels of (mis)matching reciprocity, namely including downward shift (D), match (M) and upward shift (U) (cf. Culpeper and Tantucci 20201 for a similar transposition of Likert scale results into a corpus-based annotation scheme for reciprocity). Based on the results in Figure 1, the D level included either silence or bare presence of backchannels (Back) in IR's turn at talk. The M level regards backchannels followed by comments that would include elements of resonance (Res + Back) and ones that would not (Comm + Back). The U level included propositionally full responses that would (Res) or would not include elements of resonance (Comm). The annotation of the whole dataset checked for inter-rater reliability among three different annotators. The rate of accuracy among the annotators at each stage of analysis – including variables such as Reciprocity, IF1 and IF2 – is hereby given in Cronbach's Alphas and was respectively $\alpha = .74$, $\alpha = .79$ and finally $\alpha = .92$.

4.5   Results from a conditional inference tree analysis

Based on our multifactorial scheme (see Table 1 in section 4), we fitted a random forest model (cf. Hothorn et al. 2006; Tagliamonte & Baayen 2012) to assess how each variable of our study affects impoliteness reciprocity. The random forest model is a machine learning method for classification that is based on a number of individual decision trees (see Ho 1995 among others). Decision trees, in turn, are multivariate models in which the outcome variable (reciprocity in our case) depends on a set of statistical "decisions" that are hierarchically ranked in terms of significance (see Levshina 2021). The simulation of 1000 trees allowed us to reliably assess the degree to which each predictor (e.g.

presence of backchanneling strategies, propositional comments, resonance and so on) would affect impoliteness reciprocity among speakers. The conditional importance of variables is visualised in Figure 2 below:
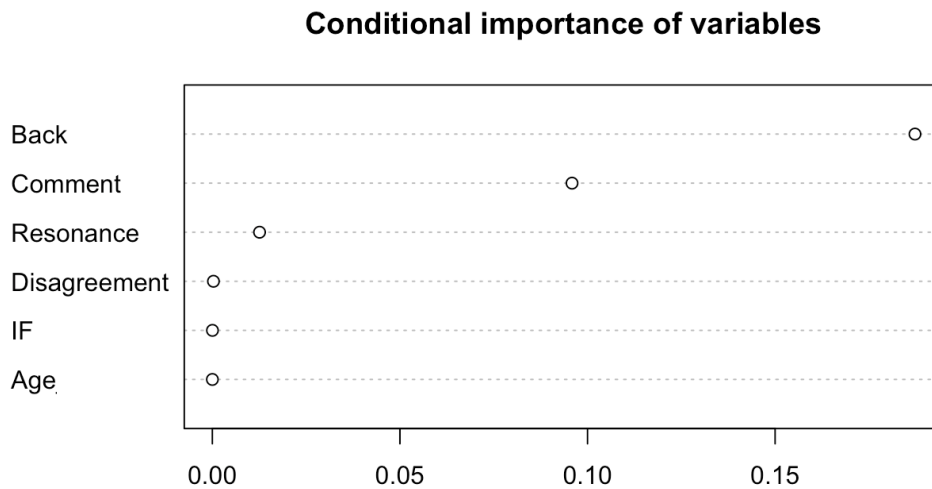
Conditional importance of variables

Figure 2.
Random forest for the multifactorial prediction of reciprocity

The cut-off value for the interpretation of Figure 2 is the absolute importance weight of the variable with the lowest score (see Levshina 2015: 298), which always varies depending on the nature of the data. In this case, the conditional weight of each parameter ranges from around 0 (Age) to a highest score of 0.19 (Backchanneling strategies, reported in the plot as 'Back'). What this tells us is already remarkable. Namely, the Age component of epistemic status is not significant for the prediction of reciprocity in contexts of information transmission. This is an important result which confirms what emerged from the Likert scale in section 4.2. Importantly, the Chinese culture is a Confucian one, whereby a strong emphasis is given to the epistemic status of interactants. Older family members are often addressed with the honorific second personal pronoun 您 *nín*, instead of the more common 你

nǐ, by younger family members. A higher epistemic status is normally ascribed to older family members, as disagreement and rapport challenge are normally avoided by younger ones. This is connected with the Confucian value of 孝 *xiào* (filial piety) which is based on an institutionalised hierarchy of the Chinese family (Zhang 2007), with Chinese parents traditionally expecting their children to obey and conform without question and act on their commands (Hsu 1998, 2002; Wu 1996). The fact that age does not play a significant role here may suggest that reciprocity in contexts of information transmission is less affected by power imbalances than in other speech acts (cf. greetings and requests in Tantucci et al. 2018; Culpeper & Tantucci 2018).

What is also crucial is that the three most important predictors from Figure 2 are the ones that most directly affect knowledge exchange and engagement, namely presence of Backchannels, Comments and Resonance. On the other hand, disagreement and illocutionary force appear to be very weak predictors of reciprocity imbalances. In the case of illocutionary force, that is due to the fact that 1782 out of 2000 of IG's utterances are assertions, which leads to low importance being ascribed to speech acts' variation. A conditional inference tree representation of the 'statistical decisions' leading the results above can be visualised in Figure 3:
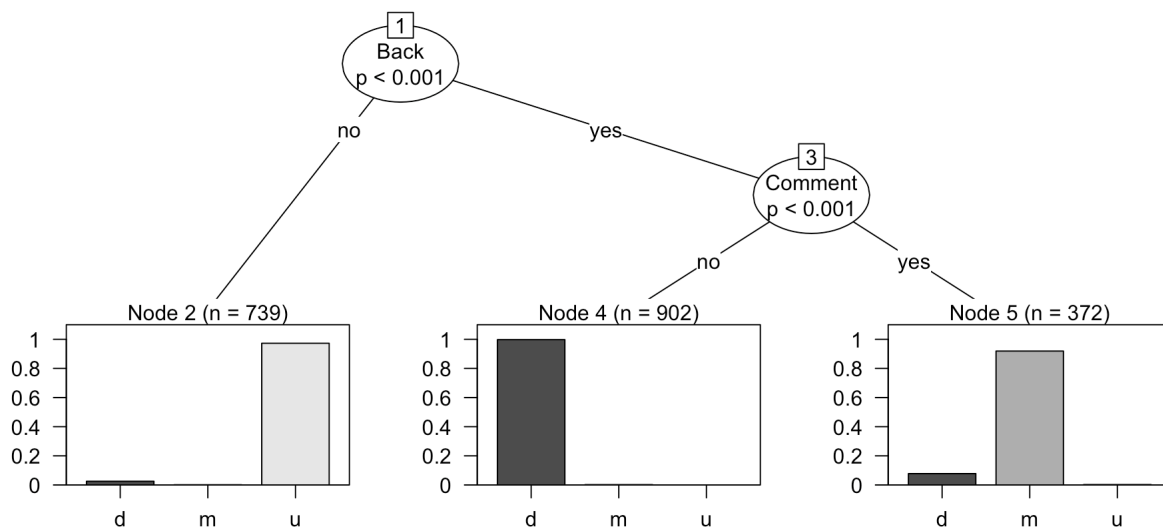

Figure 3.

Conditional inference tree for the multifactorial prediction of reciprocity

The plot in Figure 3 is entirely data-driven and is coded via the 'ctree' function of the 'party' R package. Conditional dependencies among variables derive from statistical significance (the higher the node, the more significant the partition of each split). The top-down order of every node indicates a significant condition for assessing whether IR's response involves a downward shift (D) a match (M) or an upward shift (U). A useful way to interpret the plot above is in terms of conditional decisions made in order to predict reciprocity. In this case, the highest (and therefore most significant) split is triggered by presence vs absence of backchannels in IRs' turn initial position. Simply put, when IRs do not resort to backchannels, there is a highly significant tendency towards upward shift mismatches (U), i.e. cases where a distinctive effort is made to reciprocate the costs and benefits produced by IGs. This is indicated in the bar plot at the bottom-left corner (node 2), where U occupies around 95% of cases when IR avoids using backchannels. As discussed previously, this is most likely due to IRs' recognisable efforts to produce a creative 'ad hoc' response to what they heard. This is in sharp contrast to resorting to conventionalised backchanneling markers, as a less creative contribution to the interaction is produced in return. This is even more evident in node 4 (at the centre of the plot),

indicating an overwhelming tendency towards downward shifts (D) in contexts where IR simply acknowledges what s/he was told yet without producing any additional comment. Consider example (8) below.

(8)

IG: 基本就是两，两栋烧掉。

jībĕn   jiùshì liăng,   liăng dòng shāodiào

basically just. two,   two CLAS burn-down

'Basically both buildings burned down'

IR: 哦 。

ò

BACK

'Oh.'

<div align="right">Callhome / 003</div>

In example (8) an older IG informs IR of a house of a relative that caught fire. IR merely replies with 哦 ò 'Oh', which in Chinese is a highly conventionalised backchannel for the acknowledgment that what is heard is novel and surprising information. However, IR does not creatively respond to what was said by IG. That is, while she indeed marks IG's statement as novel, she does not contribute to knowledge exchange, i.e. no propositional information is produced in return for what she just heard from IG. Similarly, engagement is also not overtly marked, as no elements of IG's utterance are re-elaborated in IR's turn, as no elements of resonance are present. On the other hand, Figure 3 also shows that propositional contribution to knowledge exchange counterbalances this and determines a matching reciprocity (M) rather than a downward mismatch (D). This is particularly evident in node 5 (bottom-right) in contrast to node 4 (center).

All in all, 5 key results clearly emerge from both models in Figures 2 and 3:

i.   The socio-cultural component of epistemic status of age does not affect speakers' interactional tendencies towards epistemic reciprocity. This confirms the questionnaire results in section 4.3.

ii. The three most important dimensions of epistemic reciprocity are backchanneling strategies, presence of contentful comments and resonance.

iii. These three predictors indicate that a negative mismatch in reciprocity is likely to arise when information given is simply acknowledged, without some new propositional information being produced in return.

iv. Negative mismatches in reciprocity correlate with lack of overt engagement (e.g. lack of resonance) and lack of knowledge exchange (i.e. lack of propositional comments in return for what has been said).

v. Positive mismatches in reciprocity correlate with the absence of highly conventionalised backchanneling strategies. This suggests that responses that are creatively produced 'on the fly' (cf. Tantucci & Di Cristofaro) are more likely to have a positive correlation with politeness.

4.6   Epistemic reciprocity and illocutionary force

In this section we finally aim to represent holistically the degree and distribution of reciprocity across all the 2000 adjacency pairs of our study. While illocutionary force was not a significant predictor in combination with the other covariants, that was due to disproportionally high distribution of assertions. Such disproportion in our case is important for capturing the density of interactional patterns of epistemic reciprocity that involve factual information. This is illustrated in the network graph below:
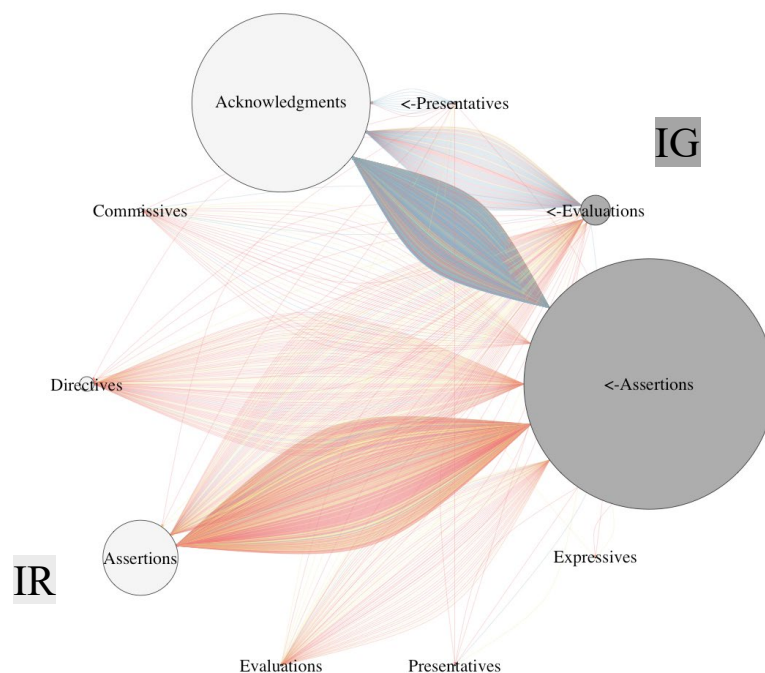

Figure 5.

Networks of reciprocal (mis)matching among IG and IR's speech acts

The ties connecting the bubbles in Figure 5 above represent all the adjacency pairs of this study. They show the degree of reciprocity that IRs' produced as a result of IG's representative speech acts. The latter are labeled as '←Presentatives', '←Evaluations' and '←Assertions' and correspond to the three grey bubbles at the top right corner of each graph. All the remaining bubbles appearing in light grey at the left hand side stand for IR's speech acts that have been made in response to IG. For each speech act, the bigger the bubble, the higher the frequency. Finally – and most crucially – degrees of reciprocity are expressed by the colour of each tie: blue expressing a downward shift (D), yellow a match (M) and red an upward shift (U).

Figure 5 clearly shows how assertions that are responded to with acknowledgements normally lead to a downward shift (hence the dense blue coloured connections between ←Assertions and Acknowledgements). This is due to the fact that acknowledgements very often simply underpin the bare use of conventionalised backchanneling markers. Conversely, when ←Assertions are reciprocated with speech acts that are more likely to deliver factual and contentful information in return, the colour of the ties shifts in between being yellow (M) and red (U). This is most evident in the case of IRs' use of assertions in response to assertions made by IGs. In line with the discussion on illocutionary force and epistemicity in section 3.1, this result crucially supports the idea of a distinctively higher value ascribed to assertively factual information. On the other hand, presentative and evaluative speech acts tend to be far less frequent both in first and second pair parts, as indicated by the scarse number of ties in Figure 5.

All in all, what our data consistently show is that bare acknowledgment 'is not enough' to match the costs and benefits produced by an information giver. What is generally necessary in order to avoid a downward shift, is that some 'ad hoc 'propositional knowledge must be produced in return.

5.   Discussion

Two fundamental component emerged in the analysis of epistemic reciprocity in our data: engagement and knowledge exchange. Speech acts of information transmission are 'valued 'the most when IR returns IG's efforts by producing some propositional content in return, on the one hand, and by resonating with what they heard, on the other. More specifically, from our study two epistemic. Two epistemic maxims of the PIR are in action for determining 'currency' needed to reciprocate speech acts of information transmission:

Engagement (E) maxim:
    Be interested:
        i. Overtly engage with P so as to convey that P is relevant.

ii. Avoid responding to P with information that bears no relevance to P.

Knowledge exchange (K$_e$) maxim:

Be interesting in return:

i. Produce new propositional knowledge Q in return to P.

ii. Avoid absence of any propositional knowledge (either P or Q) in return to P.

The **E maxim** was manipulated via presence of resonance, backchanneling and generation of propositional information. Respectively, resonance has been addressed as a textual indicator of engagement as IR re-uses the linguistic material of IG. A statistically significant tendency of IR not to use and re-combine words and constructions uttered by IG is a formal indicator of lack of overt engagement with IR's language. On a large scale, this is an important clue of absence of propositional strategies to mark whether IG's message is distinctively relevant. Consistent absence of resonance constitutes textual evidence of IR's lack of interest towards IG's speech. The most obvious tendency in this regard are silence or mere backchanneling, which were perceived as the least effortful ways to reciprocate IG's cost and benefits.

The **K$_e$ maxim** was addressed via backchanneling and presence of a propositional comment in return to IG. If either silence or mere backchanneling would occur as a response to information transmission, there would be no knowledge exchange, hence a tendency towards a perceived downward mismatch in reciprocity. If information transmission were reciprocated with an utterance that does not include a backchanneling marker, that would be perceived as a marked effort to contribute to knowledge exchange. The reason for this is arguably that utterances that are realised entirely 'on the fly' (i.e. without highly conventionalised components of acknowledgment) would be perceived as comparatively more creative ways to reciprocate the costs and benefits of IGs. This (i) aspect of the K$_e$ maxim is in line with Leech's interest principle, "*Say what is unpredictable, and hence interesting* (1983: 146). This suggests that highly conventionalised and recurrent behaviour may involve politic conduct (cf. Watts 2003) and contextual appropriateness, but is rarely a source of a markedly positive 'surplus' of politeness. Epistemic interactions that are characterised by E and K$_e$ maxims include textual evidence that IG is *interested* in IR's speech on the one hand, but also willing to make the effort to *be interesting in return*, and therefore reciprocate IG's behavioural efforts.

The E and K$_e$ maxims of epistemic reciprocity are clearly connected with Sperber & Wilson's (2004) Relevance Theory, which in turn states that an ostensive stimulus is optimally relevant when:

i.   It is relevant enough to be worth the audience's processing effort.

ii. It is the most relevant one compatible with communicator's abilities and preferences.

(Sperber & Wilson 2004: 612)

When either or both E or K_e are deficient, a mismatch in reciprocity is likely to arise, which constitutes a formal indicator of potential absence of either i. or ii. and that the presumption of relevance is not satisfied. What is key here is that whilst relevance theory guides the communication of information and information processing, reciprocity is equally needed to account for the social expectation that relevant information should be 'acknowledged' through interaction, with obvious consequences for (im)politeness. The gradient dimension of reciprocity here is crucial, as the aim is not to assess what is impolite and what is polite in absolute terms, but rather to 'measure 'degrees of (im)politeness that are perceived due to (im)balances of social payments between social actors in context. This is an important characteristic of the PIR, as it allows to analyse situated perceptions of (im)politeness for speech acts that have rarely been taken into consideration in the literature, as in the present case of information transmission.

6. Conclusions

This paper further implemented the Principle of (Im)politeness Reciprocity PIR (Culpeper & Tantucci 2021) with a specific focus on information transmission. Both a Likert-scale questionnaire and data from the Mandarin Callhome corpus clearly indicate that epistemic reciprocity underpins a social balance of payments that is primarily driven by two maxims of information transmission, respectively the engagement **E maxim** (*be interested*) and the knowledge exchange **K_e maxim** (*be interesting in return*). This means that the costs and benefits produced by an information giver (IG) who spontaneously provides new information are positively reciprocated when elements of engagement and contentful information transmission are produced in return. Along a gradient scale of responsive behaviours, lack of engagement and/or knowledge exchange have a negative impact on the maintenance of reciprocity. Expectations of matching information transmission are arguably licensed by (proto)social cooperation, which requires as equal as possible a distribution of costs and benefits produced and received among members of the group. In the present case of representatives, only acquiring information without producing knowledge in return may be perceived as the behaviour of an 'epistemic free-rider', viz. as someone who enjoys the benefits of being granted information without reciprocating the effort with an epistemically 'valuable 'action in return.

While this model must be corroborated by further data from different languages, cultures and situation types (e.g. contexts in which information transmission is elicited rather than given spontaneously, or ones with different social distances and power conditions at play), nonetheless this case-study may still provide a baseline for some important speculations. The fact that age mismatch did not significantly inhibit the E and the K_e maxims in a strongly Confucian culture such as the

Chinese one suggests that epistemic reciprocity may, to a degree, remain relatively unconstrained by culture-specific elements of epistemic status. Further research centred on epistemic reciprocity and contextual/cultural variation is needed to verify this. Finally, the paper emphasises that, as the PIR would predict, (mis)matches of (im)politeness tend to correlate with some degree of 'ad hoc' creativity, while highly conventionalised behaviour is normally associated with matching balance of social payments.

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