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Conditional advice and inducements: Are readers sensitive to implicit speech acts during comprehension?

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ABSTRACT

Conditionals can implicitly convey a range of speech acts including promises, tips, threats and warnings. These are traditionally divided into the broader categories of advice (tips and warnings) and inducements (promises and threats). One consequence of this distinction is that speech acts from within the same category should be harder to differentiate than those from different categories. We examined this in two self-paced reading experiments. Experiment 1 revealed a *rapid* processing penalty when inducements (promises) and advice (tips) were anaphorically referenced using a mismatching speech act. In Experiment 2 a *delayed* penalty was observed when a speech act (promise or threat) was referenced by a mismatching speech act from the same category of inducements. This suggests that speech acts from the same category are harder to discriminate than those from different categories. Our findings not only support a semantic distinction between speech act categories, but also reveal pragmatic differences within categories.

1. Introduction

In everyday life, much information is communicated using the conditional form *if p then q*. For example, you might read "if you want to lose weight, you need to exercise more", or you might tell your child "if you wash the car, I'll pay you five pounds". Alternatively, you may be advised "if you travel to Thailand, beware of pickpockets" or overhear an employee being told "if you're late again, I'll fire you". Although these statements each follow the general conditional form, they implicitly convey different speech acts. The first communicates a tip, the second a promise, the third a warning and the fourth a threat. The purpose of the experiments reported below is to examine whether readers are sensitive during comprehension to the differing pragmatic functions associated with conditional statements that implicitly communicate different kinds of speech act.

The vast majority of psychological research on conditionals to date has been from a reasoning and decision making perspective (e.g., Evans & Over, 2004; Johnson-Laird & Byrne, 2002). A traditional view from this standpoint is that conditionals simply assert a logical proposition. However, conditional statements in everyday discourse are often used pragmatically to perform speech acts (Searle, 1969). These speech acts can be communicated explicitly (e.g., if you wash the car, I promise to pay you five pounds) or implicitly by omitting the performative verb (e.g., if you wash the car, I'll pay you five pounds). In the latter case, the listener must infer the speaker's intent.

Failure to make this inference and accurately discriminate between speech acts can have serious consequences. For example, a patient reading the conditional advice "If you choose treatment X, then your quality of life will improve" could misinterpret this statement (a tip) as a promise. This seemingly trivial error is potentially dangerous as promises presuppose a stronger causal relationship between antecedent and consequent than a tip, and are therefore likely to induce the stated action to a greater degree than the author might intend (Ohm & Thompson, 2004). For this reason it is important to understand exactly how everyday conditional speech acts are represented during comprehension.

Within the domain of experimental psychology, a pragmatics-focused view on conditionals has recently been adopted (e.g., Bonnefon, 2009; Evans, Neilens, Handley, & Over, 2008; Johnson-Laird & Byrne, 2002). One fundamental line of research has sought to determine how people classify and discriminate between the pragmatic functions of conditional statements. In an initial attempt to model how people classify conditionals López-Rousseau and Ketelaar (2004) presented a simple two-stage pragmatic cues algorithm that successfully categorised over 85% of conditional speech acts as a function of speaker's control of the consequent and utility for the listener. A revision of this algorithm (López-Rousseau & Ketelaar, 2006) which included the superordinate categories of advice and inducement (following a traditional distinction in research on pragmatic conditionals) successfully categorised 92% of conditional promises, threats, tips and warnings (see Fig. 1).

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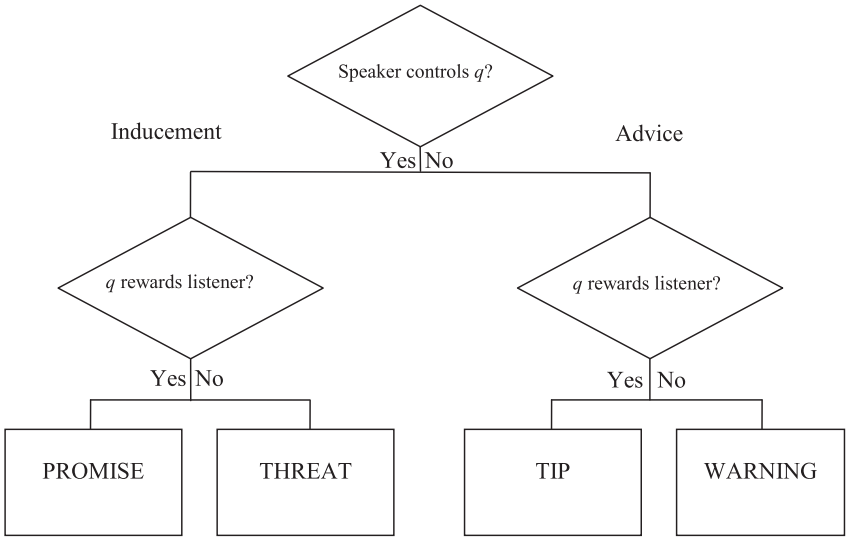

Fig. 1. Pragmatic cues algorithm (López-Rousseau & Ketelaar, 2006).

In an effort to formalise the unique properties of all pragmatic conditionals Bonnefon (2009) developed a utility grid system that represents the utility of the antecedent and consequent events for both the speaker and listener. Following the algorithm developed by López-Rousseau and Ketelaar (2006), the utility grids for promises and tips specify a possible action (q) that has positive utility for the listener. Crucially, if q is a potential action of the speaker, then it is a promise; but if q is not a potential action of the speaker, then it is a tip. Likewise, threats and warnings describe a possible action (*q*) that has negative utility for the listener. In this case, if q is a potential action of the speaker, it is threat; but if q is not a potential action of the speaker, then it is a warning.

These utility grids suggest that successful comprehension requires sensitivity to a range of pragmatic factors. However, it is not clear how people mentally represent these pragmatic relationships as they process conditionals in real time. Indeed, the vast majority of research into conditionals is based on analysis of the final, fully formed, interpretation of a statement, rather than the incremental real-time processes that lead to this conclusion (see Stewart, Haigh, & Kidd, 2009 for an exception). A key aim of the experiments presented below is to determine how conditional speech acts form part of a reader's semantic representation of the utterance during comprehension.

While there is evidence that readers routinely represent a number of common speech acts online (e.g., request, remind, apology, etc.; Holtgraves, 2008), studies focusing on conditional speech acts have been restricted to offline rating and deduction tasks (e.g., Evans et al., 2008; Newstead, Ellis, Evans, & Dennis, 1997). These studies, in combination with recent theoretical perspectives (e.g., Bonnefon, 2009; Evans, 2005; López-Rousseau & Ketelaar, 2006) suggest that conditional promises, tips, threats and warnings can be categorised and represented in one of two ways. Firstly, they can be represented at the semantically coarse-grained level of the speech act category (i.e., inducement or advice). This is equivalent to stopping at Stage 1 in the pragmatic cues algorithm. Alternatively, they can be represented at the semantically finer-grained level of the specific speech act itself, which is equivalent to completing both stages of the algorithm.

One consequence of this distinction relevant to online processing is that it might be more cognitively efficient to represent a conditional in terms of its broad speech act category (as this only requires the operation of only one step in the algorithm) than to represent the specific speech act itself (which requires both steps). This would be consistent with the recent view that many aspects of comprehension involve cognitively efficient processing that often results in an under-specified semantic representation (e.g., Sanford & Graesser, 2006). A second consequence is that speech acts from different categories should be easier to differentiate than those from the same category. In other words, it should be more difficult to discriminate between a promise and a threat (both inducements) than to discriminate between a promise and a tip (which come from different categories).

Determining the level of representation that readers engage in during comprehension is crucial, as a coarse-grained representation could lead to speech acts being misinterpreted and influencing behaviour in unintended ways. At present, nothing is known about the degree of pragmatic information that is accessed during the online processing of conditional information. The experiments below examine how and when readers discriminate between speech acts during online comprehension. Firstly, Experiment 1 looks at readers' sensitivity to the broad distinction between the speech act categories of inducement and advice.

2. Experiment 1

In the word-by-word self paced reading experiment below we presented participants with a number of implicit conditional speech acts (tips and promises) embedded in short vignettes. These speech acts were then anaphorically referenced using either a matching or mismatching speech act noun (e.g., 'this tip…' or 'this promise…'). An example item is provided below.

Chris was looking to a buy a new car. After spending all day in car dealerships he had decided to make an offer on a second hand Audi. The dealer had earlier said "if you buy the car, I'll give you 12 months free insurance."/The dealer had earlier said "if you buy the car, make sure you negotiate with the insurance company for the best deal." This was a useful promise/tip that could save him money. After half an hour of haggling they agreed a deal on the car.

2.1. Prediction

Since promises and tips come from different speech act categories (inducements and advice respectively) a mismatching anaphoric reference violates the first step of the pragmatic cues algorithm because promises and tips have a different locus of control. It is well established that mismatching anaphoric references cause a processing penalty during comprehension compared to when the anaphor and antecedent match (e.g., Stewart, Pickering, & Sanford, 2000). This processing penalty also occurs for much smaller semantic mismatches, such as when the anaphor is an atypical example of a semantic category (e.g., 'goose' is atypical of the semantic category 'bird'; Garrod & Sanford, 1977). Therefore, if a reading time penalty is