My kingdom for a horse

On incredible promises and unpersuasive warnings*

Alejandro López-Rousseau, Gil Diesendruck, and Avi Benozio
Madrid, Spain / Bar-Ilan University

Promising and warning are speech acts that have to be credible to be persuasive. The question is: When does a promise become incredible and a warning unpersuasive? Whereas credibility has been researched from a social persuasion perspective, this article empirically answers that question, from an adaptive heuristics perspective. First, we present a satisficing algorithm that discriminates conditional promises, threats, advices, and warnings by pragmatic cues. Then, we discuss an alternative model of this algorithm that further accounts for the credibility of these conditionals by formal principles, and also adds two hypotheses: (1) Threats but not promises are more credible with proportionate than disproportionate consequences, and (2) Both advices and warnings are more persuasive with bilateral than unilateral consequences. Finally, we present two experiments and their follow-ups that, consistent with the pragmatic algorithm, provide evidence against both hypotheses.

Keywords: adaptive heuristics, credibility, persuasion, pragmatic conditionals, promises, satisficing algorithms, speech acts, warnings

1. Introduction

Communication is the interface where cognition meets pragmatics because talking is believing in and acting on un/spoken words. Briefly, speaking is doing (Austin 1962; Grice 1989; Searle 1969). Communicating as ‘talking into’ is apparent in political speeches which are filled with speech acts like promising and warning to win the listeners’ voting minds and balloting hands. Nonetheless, these promises and warnings have to be cognitively credible to be pragmatically persuasive. According to rhetorical communication, leaders have to speak with credible promises and persuasive warnings to followers in order to reduce their uncertainty and push them into action (Legget and Neill 2010). Just like Obama’s (2008) nomination speech promise to young Americans: “If you commit to serving your community

* DOI 10.1075/pcc.19.3.02lop
ISSN 0929–0907 / E-ISSN 1569–9943 © John Benjamins Publishing Company
or your country, we will make sure you can afford a college education”. In fact, two thirds of young voters believed him (Civic Youth 2008). And although voting is not only based on credible promises, politicians’ credibility greatly depends on such promises. As another president more recently said, “it is important for politicians to understand that you should keep your promises and not promise what you cannot keep”, and consequently promising to defeat poverty, he said to be “happy to bet my role in history on such a promise” (Piñera 2010, 2011). Therefore, credible and persuasive promises and warnings do matter, and not just politically but also professionally and personally. The question is: When does a promise become incredible and a warning unpersuasive? This article empirically answers that question.

Recently, Ranganath, Spellman, and Joy-Gava (2010) reviewed research on credibility from a social persuasion (e.g., Petty and Cacciopo 1986) and a cognitive induction perspective (e.g., Osherson, Wilkie, Smith, López, and Shafir 1990) to correlate findings from unrelated paradigms. For instance, the cognitive perspective studies credibility in terms of argument strength or believability of statements devoid of context and intention. Particularly, arguments with familiar categories and unfamiliar properties such as ‘Dogs have merocrines, thus wolves have merocrines’. An argument is strong to the extent that belief in its premise engenders belief in its conclusion, which in turn depends on the similarity of the argument categories. Consequently, the argument above is stronger than ‘Dogs have merocrines, thus cats have merocrines’ because dogs are more similar to wolves than to cats (Osherson et al. 1990). In comparison, the social perspective studies credibility in terms of attitude change or persuasiveness of statements embedded in context and intention. For example, assessing the influence of endorser trustworthiness on advertising effectiveness. From this perspective, an argument is strong to the extent that belief in the speaker persuades the listener to change her attitude regarding the argument. Accordingly, advertisements are more effective the trustworthier the endorsers (Priester and Petty 2003). Note that appealing to credible sources may be persuasive although logically fallacious (for credibility motives as logical fallacies, see Walton 1999).

Ranganath et al. (2010) show similar findings in both perspectives despite their different paradigms. For instance, diversity matters in both. An argument is more credible and persuasive, the more diverse its premises and sources, respectively. In line with this finding, they conclude that “just as having diverse information produces stronger inferences, making connections between diverse research findings should produce better science”, and thus call “for more researchers in different fields who address similar issues to share their cross-disciplinary insights with others” (Ranganath et al. 2010: 121). We answer their call here by sharing our findings on credibility from a third perspective, namely, the adaptive heuristics research (e.g., Gigerenzer, Hertwig, and Pachur 2011).
According to this perspective (for details, see Gigerenzer et al. 2011), behavior and cognition are based on adaptive heuristics, that is, satisfying as opposed to optimizing algorithms for making inferences and decisions that are good enough to survive an urgent but uncertain natural and social world. More pertinently, communication is based on heuristics that specifically evolved to infer the meaning of language. These semantic inferences rest less on logic than on pragmatics. For example, any voter will rightly infer that Obama’s promise, ‘If you serve your country, we will pay your education’, pragmatically implies its opposite, namely, ‘If you do not serve your country, we will not pay your education’. However, this is a formal fallacy because ‘if P then Q’ does not logically imply ‘if not P then not Q’. Therefore, if logic does not actually describe nor prescribe how linguistic inferences are intuitively made, what does? López-Rousseau and Ketelaar (2004, 2006) readily applied the adaptive heuristics perspective to answer this question specifically for speech acts like promising and warning. In particular, by a pragmatic cues algorithm for classifying conditional promises, threats, advices, and warnings such as ‘If you help me, then I will pay you’. This statement is, for example, a promise when meant so by the speaker and taken so by the listener which, according to the algorithm, depends on just two pragmatic cues detailed below. Notice that the algorithm was not meant to exhaust the pragmatic analysis and modeling of those conditionals which can be otherwise defined and differentiated by content, context and intention (e.g., see Fillenbaum 1975, 1977; Searle 1979). Nonetheless, the algorithm was alternatively designed and successfully tested as a satisfying heuristic of pragmatic inference in an urgent and uncertain world.

Evidently, speech acts like promising and warning are not limited to conditional statements, and pragmatics is not limited to pragmatic implicatures. Moreover, a pragmatic analysis of speech acts has to include the context and speaker/listener intention, and a pragmatic model has to include such context and intention as inherent factors. For instance, the statement ‘If you touch me, I will take you out’ has different semantic and pragmatic meanings in case context and intention are of a soldier whispering to his girlfriend who both know that he is looking for a chance to kiss her, or in the case of a soldier screaming at her prisoner who both know that she is looking for a chance to kill him. The seeming same statement means semantically ‘If you touch me, I will invite you’ and pragmatically a promise in the first case, or semantically ‘If you touch me, I will injure you’ and pragmatically a threat in the second case. Furthermore, even when meant as a threat by the soldier, the statement could be taken as a promise by the prisoner just in case he was looking for an excuse to be killed. Other scenarios could be construed and other exceptions could be made by changing context and/or intention that would accordingly change the meaning of the statement. Furthermore, misinformation and misinterpretation are also possible. Gricean maxims of conversation (1989),
however, tell that normally speakers say what they mean and mean what they say, and listeners hear what speakers say and mean. For example, ‘If you help me, I will pay you’ is typically meant and taken as a promise even when devoid of context and intention (López-Rousseau and Ketelaar 2004). As a matter of fact, people discriminate 95% of such promises, threats, advices, and warnings other people make, indicating that their context and intention are rightly presumed by both speakers and listeners (López-Rousseau and Ketelaar 2006). Generally, although the pragmatic meaning of speech acts depends on context and intention, when context and intention are implicit, the pragmatic meaning of speech acts is correctly normalized by both speakers and listeners in almost all cases.

In sum, López-Rousseau and Ketelaar’s algorithm (2004, 2006) shown below was not meant to account for pragmatics and speech acts, context and intention, and/or statements and conditionals in general but rather in particular for a narrow set of conditional speech acts and in a narrow sense of pragmatic interpretation. That is, for conditional promises, threats, advices, and warnings such as ‘If you help me, I will pay you’. In other words, the algorithm can be considered as a limit test of and first step to pragmatic inference under urgency and uncertainty. Similarly, the experiments and follow-ups presented here are not meant to account for an algorithm already probed (for evidence, see López-Rousseau and Ketelaar 2004, 2006) but rather for two hypotheses by Amgoud, Bonnefon and Prade (2007), who later further extended the algorithm.

Figure 1 shows a satisfying algorithm for classifying pragmatic conditionals such as Obama’s promise (for details, see López-Rousseau and Ketelaar 2004, 2006). This qualitative algorithm (hereafter, the algorithm) discriminates ‘if P then Q’ promises, threats, advices, and warnings by two pragmatic cues: (1) Is the con-

![Diagram](image-url)

**Figure 1.** Satisficing algorithm for pragmatic conditionals (López-Rousseau and Ketelaar 2004, 2006).
sequence Q controlled or not by the speaker? and (2) Is the consequence Q positive or negative for the listener? According to the algorithm, a conditional that has a consequence controlled by the speaker is a promise when the consequence is positive for the listener, and a threat when negative. Therefore, ‘If you do that, I will take you out’ is a promise, and ‘If you do that, I will beat you up’ is a threat, because in both cases the consequence is controlled by the speaker (‘I will’) but in the first case the consequence is positive for the listener (‘take you out’), and in the second, negative (‘beat you up’). Otherwise, a conditional that has a consequence not controlled by the speaker is an advice when the consequence is positive for the listener, and a warning when negative. Thus, ‘If you do that, it will make you fit’ is an advice, and ‘If you do that, it will make you sick’ is a warning, because in both cases the consequence is not controlled by the speaker (‘it will’) but in the first case the consequence is positive for the listener (‘make you fit’), and in the second, negative (‘make you sick’). In fact, this parsimoniously simple, serial, and satisficing algorithm discriminates over 90% of the promises, threats, advices, and warnings people actually make, including Obama’s promise (López-Rousseau and Ketelaar 2006).

The algorithm was analytically derived and presented as a partial answer to the question: When confronted with a conditional, given that all conditionals are formally equivalent, how do people know whether they are facing a promise, a threat, or something else? Most certainly because of the conditional’s content, context, and intention as conveyed by linguistic and non-linguistic cues. But content, context, and intention are not always clear and misinterpretation can follow. Thus, people’s heuristic for classifying conditionals is not optimal but satisficing, namely, a simple serial procedure sufficing for satisfactory classifications in most cases but not in all cases. Accordingly, the algorithm is meant to recreate people’s heuristic but restricted to four pragmatic conditionals and two linguistic cues. In fact, the algorithm is meant to be the most simple possible by including the minimum of two cues to classify the four conditionals. Also, the algorithm is meant to be serial by adopting the sequential form of a decision tree which simplifies the classification by discarding two conditionals after the first cue, and another conditional after the second cue. Finally, the algorithm is meant to be satisficing by producing correct classifications in most but not all cases. In this regard, the algorithm would misclassify any excluded conditional (e.g., requests) or any included conditional based on excluded cues (e.g., gestures), whereas people’s heuristic probably includes these cues and correctly classifies those conditionals.

An experiment was designed to empirically test how well the algorithm recreates people’s heuristic for classifying conditionals. Briefly, conditional promises, threats, advices, and warnings devoid of context and intention such as ‘If you help me, I will pay you’ were collected from people, and given to other people.
and the algorithm for classification. Their corresponding performances were then compared. Results show that people classified most conditionals correctly (95%), and that the algorithm did almost as well as people (92%). Both the algorithm’s and people’s classifications were far better than chance (25%), and their misclassifications were randomly distributed. These findings suggest that the algorithm recreates people’s heuristic for classifying promises, threats, advices, and warnings (López-Rousseau and Ketelaar 2006).

Moreover, new reaction-time evidence suggests that the algorithm not only reproduces people’s performance but also reflects cognitive processing, that is, the two-cue algorithm recreates a two-step heuristic for classifying these conditionals (Haigh, Stewart, Wood, and Connell 2011). According to the algorithm, the fact that promises are empirically harder to discriminate from threats than from advices is because its first cue already discriminates promises from advices while its second cue is necessary to discriminate promises from threats. Incidentally, Haigh et al. (2011) tested conditionals embedded in context and intention which can only add to the algorithm as far as context and intention disambiguate equivocal cue values. For instance, the consequence ‘I will take you out’ is positive or negative for the listener depending on the statement context and speaker/listener intention, as already discussed above.

Dascal (1983, 2003) analyzes and models such context and intention for a wide set of speech acts and in a wide sense of pragmatic interpretation. For example, adding co-text to context in reading political writings. More generally, describing listeners’ use of context to interpret speakers’ meaning of statements. Dascal (1983, 2003) distinguishes two types and three levels of context: extra-linguistic (world) or meta-linguistic (language) knowledge, and specific (circumstantial), shallow (conventional), or general (factual) information. For instance, extra-linguistic context of the consequence ‘I will take you out’ may include the listener’s specific knowledge of the speaker’s financial state, shallow knowledge of people’s spending patterns, and general knowledge of the country’s economic crisis, which she can then use to interpret whether he means what he says, namely, inviting her. Dascal also distinguishes context as clue or cue when used to interpret a statement’s meaning in any sense, and as a cue when determining any gap or mismatch in that meaning. In the example above, the listener’s knowledge of the speaker’s broken finances is a cue which she can then use to look for clues that he really intends to invite her. Narrowed to the algorithm, Dascal’s model describes how context may be actually used for the assignment and disambiguation of its cue values.

This algorithm has been extended twice. Bonnefon (2009) translated the specific pragmatic cues decision tree of the algorithm into a general actor-utility-tar-
get grid of a theory of paralogical conditionals that also accounts for requests, for example. More pertinently for present purposes, Amgoud, Bonnefon, and Prade (2007) formalized the algorithm as a quantitative model (hereafter, the model) that also accounts for the strength — credibility or persuasiveness — of promises, threats, advices, and warnings. Like the algorithm, this model classifies Obama’s conditional as a promise, but unlike the algorithm, the model also estimates how credible a promise is. Notice that Amgoud et al. do not distinguish between credibility and persuasiveness although being different measures of strength. More specifically, a speaker’s statement is cognitively credible if the listener believes in it, and is pragmatically persuasive if the listener acts upon it. Therefore, a promise can be credible but not persuasive, and vice versa. For instance, a father’s promise ‘If you help me tonight, I will let you go out tomorrow night’ can be credible but not persuasive for a son who has plans for tonight. On the other hand, a father’s promise ‘If you help me tonight, I will let you go out every night’ can be incredible but still persuasive for a son who does not have plans for tonight. But to keep up with Amgoud et al., we will not distinguish between credibility and persuasiveness at first.

According to the model, the credibility of a promise or threat depends on three principles, namely, speaker control, speaker consequence, and consequence proportionality. Just like promises and threats themselves, their credibility and principles also depend on context and intention but they are left implicit in the model. First, a promise or threat is more credible the more control the speaker has over its positive or negative consequence for the listener, respectively. For instance, ‘If you study, I will take you to the beach’ should be more credible than ‘If you study, I will take you to the moon’. Second, a promise or threat is more credible when its consequence is positive for the speaker, too. For example, ‘If you study, I will take you to the beach I like’. Third, a threat is more credible when proportionate, namely, when the punishment is balanced to the offense. For instance, ‘If you touch me, I will beat you up’ should be more credible than ‘If you touch me, I will beat you up to death’. However, according to the model, this third principle does not apply to promises. Specifically, a promise is not more credible when proportionate, that is, when the reward is balanced to the action. For example, ‘If you study, I will take you out’ should not be more credible than ‘If you study, I will take you out every day’.

This difference between promises and threats is postulated ad hoc by the model to account for the following finding. Verbrugge, Dieussaert, Schaeeken, and van Belle (2004) found that disproportionate promises are less credible but more likely to be kept than disproportionate threats because promises are binding, and threats are not. For example, people do not believe the promise ‘If you are a good boy this afternoon, I will give you 100 euros tonight’ but they do infer that if the boy
behaved, the father will pay, and that if the father has paid, the boy behaved. Similarly, people do not believe the threat ‘If you insult me, my boyfriend will punch you in the face’ but they do not infer that if the girl was insulted, her boyfriend will punch, nor that if her boyfriend has punched, the girl was insulted. Note that these pragmatic inferences amount to conditional reasoning, namely, the probability of Q given P, or P given Q, in a ‘if P then Q’ statement (for pragmatic effectiveness as conditional probability, see also Ohm and Thompson 2004, 2006). However, Amgoud et al. (2007: 10) confounded credibility and reasoning concluding that “unlike threats, rewards do not have to be proportionate” to be believable, and that “the reward ‘If you behave, I will give you $100’ is just as credible than the reward ‘If you behave, I will let you watch a cartoon tonight’” to make inferences. However, they note that this finding is preliminary, and that the incredibility of disproportionate threats but not promises is still an open empirical question, namely, “a limit may exist beyond which a reward is no longer credible”, and “maybe this limit is only much more flexible for rewards than it is for threats” (Amgoud et al. 2007: 11).

We argue here that the conclusion that disproportionate promises are less credible than threats is unfounded by Verbrugge et al. (2004), and that they are more credible is confounded by Amgoud et al. (2007). Basically because the disproportion of ‘gaining 100 dollars for behaving’, where the reward is allegedly unbalanced to the action, and that of ‘being punched for insulting’, where the punishment is allegedly as unbalanced to the offense, are not equivalent to compare. Thus, the conclusion that disproportionate threats but not promises are incredible may be premature. Moreover, according to the algorithm, a promise, threat, advice, or warning has to be pragmatically well-defined in terms of the satisfying cues to be credible or persuasive at all. As a matter of fact, ‘If you insult me, my boyfriend will punch you in the face’ is not a threat but a warning. Therefore, just like the absolute credibility of promises and threats depends on the same cues, there is no reason why the relative credibility of promises and threats should depend on different principles. Consequently, we designed an experiment to test how proportionality really affects the credibility of promises and threats.

As for advices and warnings, their credibility and principles also depend on context and intention but they are left implicit in the model. According to the model, the persuasiveness of an advice or warning depends on two principles, namely, third-agent control and speaker consequence. First, an advice or warning is more persuasive the more control a third agent has over its positive or negative consequence for the listener, respectively. For instance, ‘If you train, it will make you fit’ should be more persuasive than ‘If you train, it will make you centenary’. Second, Amgoud et al. (2007) note, without explanation, that an advice or warning might be more persuasive when its consequence is not only unilaterally positive
or negative for the listener, but also bilaterally and conversely negative or positive for the speaker, respectively. For example, the bilateral advice ‘If you succeed, they will reward you and punish me’ might be more persuasive than the unilateral ‘If you succeed, they will reward you’. Amgoud et al. also note that they do not know of any findings to back up their intuition.

According to the algorithm, bilateral advices and warnings are ill-defined because advices and warnings are unilateral by definition. That is, according to the algorithm’s necessary and sufficient pragmatic cues, the consequence must be positive or negative for the listener only. Moreover, bilateral advices and warnings are equivocal because they can be interpreted in different ways. For example, the bilateral conditional ‘If you succeed, they will reward you and punish me’ could be an unpersuasive advice to succeed for the sake of the listener or a persuasive request to fail for the sake of the speaker. Thus, we designed another experiment to test whether advices and warnings are more persuasive when bilateral than unilateral as Amgoud et al. (2007) indicate, or less persuasive as the algorithm indicates.

2. Experiments

Two experiments were designed to test how proportionality affects the credibility of promises and threats, and how laterality affects the persuasiveness of advices and warnings. In the first experiment we compared the credibility of equivalent proportionate and disproportionate promises and threats by adapting Amgoud et al’s (2007) example of a typical threat, that is, ‘If you throw a tantrum, I will ground you’, and by applying their model’s contrapositive principle, namely, that a threat can be turned into a promise by negating its antecedent and consequent, and vice versa. In particular, ‘If you do not throw a tantrum, I will not ground you’ is the contrapositive promise of the threat above, and pragmatically they both have the same intention, that is, to prevent a tantrum. In general, contrapositive conditionals are to all purposes pragmatically equivalent. Therefore, if threats but not promises are more credible with proportionate than disproportionate consequences, then the proportionate threat ‘If you misbehave today, I will ground you for 1 Friday night’ should be more credible than the same but disproportionate threat ‘If you misbehave today, I will ground you for 100 Friday nights’. However, the inverse proportionate promise ‘If you behave today, I will grant you 1 Friday night out’ should not be more credible than the same but disproportionate promise ‘If you behave today, I will grant you 100 Friday nights out’. Notice that the promises are the same as the threats only inverse, and that both just differ in their proportionality, namely, a 1:1 day-night proportion versus 1:100 disproportion. Therefore, they can all be directly compared. Particularly, note that the disproport-
tion of ‘grounding 100 nights for misbehaving 1 day’ and ‘granting 100 nights for behaving 1 day’ is actually equivalent to compare, and therefore the conclusion that disproportionate threats but not promises are incredible may be definitive if confirmed. According to the algorithm, both threats and promises should be equally more credible when proportionate than disproportionate. In turn, according to the model, proportionality should impact only the credibility of threats.

In the second experiment, we compared the persuasiveness of equivalent unilateral and bilateral advices and warnings by adapting Amgoud et al.’s (2007) example of a typical advice, that is, ‘If you revise the paper, the editor will accept it’, and by applying their model’s contrapositive principle, namely, that an advice can be turned into a warning by negating its antecedent and consequent, and vice versa. In particular, ‘If you do not revise the paper, the editor will not accept it’ is the contrapositive warning of the advice above, and pragmatically they both have the same intention, that is, to promote the revision. Thus, if advices and warnings are more persuasive with bilateral than unilateral consequences, then the bilateral advice ‘If you revise your paper, the editor will accept it and reject mine’ should be more persuasive than the same but unilateral advice ‘If you revise your paper, the editor will accept it’. Also, the inverse bilateral warning ‘If you do not revise your paper, the editor will reject it and accept mine’ should be more persuasive than the same but unilateral warning ‘If you do not revise your paper, the editor will reject it’. Notice that the warnings are the same as the advices only inverse, and that the advices or warnings just differ in their laterality, namely, a positive or negative consequence for the listener versus a positive or negative consequence for the listener and a negative or positive consequence for the speaker, respectively. Therefore, they can all be directly compared. According to Amgoud et al., advices and warnings should be more credible when bilateral than unilateral. In turn, according to the algorithm, bilaterality should lessen the credibility of both.

2.1 Method

Eighty students (49 women and 31 men, $M_{age} = 25$) at Kinneret College in Israel volunteered for two experiments (40 for Experiment 1, and 40 for Experiment 2). A typewritten page contained the instructions and items in Hebrew. Each participant took part in only one condition, in one of the two experiments.

2.2 Experiment 1: Promises and threats

In Experiment 1, there were two conditions with the same instructions, namely, the Promise and Threat conditions. In both, participants were asked to rate how
Incredible promises and unpersuasive warnings

credible two statements of a speaker are to a listener on a scale from 0 (totally incredible) to 100 (totally credible).

In the Promise condition \((n = 20)\), participants rated the same promise twice, once with a proportionate and another with a disproportionate consequence, and with the order counterbalanced across participants. Specifically:

Imagine a mother (speaker) promising her daughter (listener) the following:
A. If you behave today, I will grant you 1 Friday night out.
B. If you behave today, I will grant you 100 Friday nights out.

In the Threat condition \((n = 20)\), participants did the same with the inverse threat: 'If you misbehave today, I will ground you for 1 Friday night' versus 'If you misbehave today, I will ground you for 100 Friday nights'.

2.2.1 Results and discussion

Figure 2 shows the average strength of pragmatic conditionals in each experiment. In Experiment 1, a repeated-measures ANOVA was performed with conditional (promise vs. threat) and proportionality (1:1 vs. 1:100) as between-subjects and within-subjects factor, respectively. There was no main effect of conditional, \(F(1, 38) = 2.05\), n.s., nor an interaction effect between conditional and proportionality, \(F(1, 38) = 0.13\), n.s. That is, promises were equally credible as threats. However, there was a main effect of proportionality, namely, conditionals were less credible when disproportionate than proportionate, \(F(1, 38) = 80.30\), \(p < .01\), partial \(\eta^2 = 0.68\). These results show that promises were as credible as threats, and that disproportionate promises were as incredible as disproportionate threats.

![Graph](image)

Figure 2. Average strength of pragmatic conditionals. In Experiment 1 left, average credibility of promises and threats with proportionate and disproportionate consequences. In Experiment 2 right, average persuasiveness of advices and warnings with unilateral and bilateral consequences.

All rights reserved
The findings of this first experiment suggest that promises and threats have to be proportionate to be credible. Disproportionate promises are as incredible as disproportionate threats probably because their reward is as unbalanced to the action as their punishment to the offense. Analytically and empirically, just like the same algorithm’s cues apply to both promises and threats, the same model’s principles seem to apply to both their credibility.

2.3 Experiment 2: Advices and warnings

Experiment 2 was analogous to Experiment 1, except that credibility was replaced by persuasiveness in the instructions and items. There were also two conditions with the same instructions, that is, the Advice and Warning conditions. In both also, participants were asked to rate how persuasive two statements of a speaker are to a listener on a scale from 0 (totally unpersuasive) to 100 (totally persuasive).

In the Advice condition (n = 20), participants rated the same advice twice, once with a unilateral and another with a bilateral consequence, and with the order counterbalanced across participants. Specifically:

Imagine a researcher (speaker) advising another researcher (listener) as follows:
A. If you revise your paper, the editor will accept it.
B. If you revise your paper, the editor will accept it and reject mine.

In the Warning condition (n = 20), participants did the same with the inverse warning: ‘If you do not revise your paper, the editor will reject it’ versus ‘If you do not revise your paper, the editor will reject it and accept mine’.

2.3.1 Results and discussion

In Experiment 2, a repeated-measures ANOVA was performed with conditional (advice vs. warning) and laterality (unilateral vs. bilateral) as between-subjects and within-subjects factor, respectively. As illustrated in Figure 2, there was no main effect of conditional, $F(1, 38) = 0.61$, n.s., nor an interaction effect between conditional and laterality, $F(1, 38) = 0.45$, n.s.. That is, advices were equally persuasive as warnings. However, there was a main effect of laterality, namely, conditionals were less persuasive when bilateral than unilateral, $F(1, 38) = 21.49$, $p < .01$, partial $\eta^2 = 0.36$. These results show that advices were as persuasive as warnings, and that bilateral advices and warnings were less persuasive than unilateral advices and warnings.

The findings of this second experiment suggest that advices and warnings have to be unilateral to be persuasive. Bilateral advices and warnings are less persuasive probably because they are pragmatically ill-defined and thus equivocal. Bilateral
advices and warnings are ill-defined because advices and warnings are unilateral by definition, and are thus equivocal because ill-defined advices and warnings can be interpreted in different ways.

3. Follow-ups

We designed two follow-ups to replicate both experiments under more reliable and valid conditions. First, we doubled the number of participants to detect subtle effects. Second, we quadruplicated the number of items to draw stronger conclusions. Third, we embedded each conditional in context and intention to reflect pragmatic scenarios. Fourth, we measured both credibility and persuasiveness to determine rating differences. Fifth, we included seven levels of proportionality to detect strength limits for promises and threats. Sixth, we defined bilateral advices and warnings by context to preserve well-formed conditionals. And seventh, we distinguished two types of bilaterality to differentiate their impact.

Specifically, in the first follow-up we compared the credibility and also persuasiveness of proportionate versus six levels of contextually-embedded disproportionate promises and threats. For instance, a mother who is having her birthday promising her daughter that ‘If you behave today, I will grant you 1 Friday out’, or inversely threatening her with ‘If you misbehave today, I will ground you for 1 Friday’, versus 2, 5, 10, 20, 50, or 100 Fridays, respectively. In this sense, the proportionate and disproportionate promise or threat of the first experiment was each an end-point. Therefore, to confirm and extend the findings of the first experiment, promises should be as credible and persuasive as threats at all proportionality levels.

In the second follow-up, we compared the persuasiveness and also credibility of unilateral versus two types of well-formed, contextually-defined bilateral advices and warnings. For example, a researcher advising another researcher who is thinking of resubmitting that ‘If you revise your paper, the editor will accept it’, in a context where the paper is unrelated to the speaker’s research versus contexts where the paper credits the speaker’s research, and the paper discredits the speaker’s research, respectively. The first context corresponds here to a unilateral advice because the consequence is explicitly positive for the listener and implicitly neutral for the speaker. The second context corresponds here to a “bilateral positive” advice because the consequence is explicitly positive for the listener and implicitly positive for the speaker as well. And the third context corresponds here to a “bilateral negative” advice because the consequence is explicitly positive for the listener but implicitly negative for the speaker. The inverse warning ‘If you do not revise your paper, the editor will reject it’ is equally unilateral, bilateral posi-
tive, and bilateral negative in the first, second and third context. Pragmatically, if the listener acts upon the warning by revising the paper, the consequence remains implicitly neutral, positive and negative for the speaker in the above contexts. In this sense, the bilateral advice and warning of the second experiment were both bilateral negative. Thus, to confirm and extend the findings of the second experiment, bilateral advices and warnings should be less persuasive and credible than unilateral advices and warnings for both positive and negative types.

3.1 Method

One hundred and sixty adults (103 women and 57 men, $M_{age} = 30$) contacted by Bar Ilan University students in Israel volunteered for two follow-ups (80 for Follow-up 1, and 80 for Follow-up 2). A web-based survey contained the instructions and items in Hebrew. Each participant took part in only one condition, in one of the two follow-ups.

3.2 Follow-up 1: Promises and threats

The follow-ups’ design was similar to the respective experiments’ design. In Follow-up 1, there were two conditions with the same instructions, namely, the Promise and Threat conditions. In both, participants were asked to separately rate how credible and how persuasive seven statements of a speaker are to a listener on scales from 0 (totally incredible or unpersuasive) to 100 (totally credible or persuasive). Participants were told that a speaker’s statement is credible if the listener believes in it, and is persuasive if the listener acts upon it.

In the Promise condition ($n = 40$), participants rated the same promise seven times, namely, with a 1:1 proportionate and a 1:2, 1:5, 1:10, 1:20, 1:50, and 1:100 disproportionate consequence. There were four promises, and each was consecutively rated once on credibility and another on persuasiveness. Item, proportionality, and rating orders were randomized across participants. For instance (for all four promises, see Appendix):

Imagine a mother (speaker), who is having her birthday, promising her daughter (listener):

If you behave today, I will grant you 1 Friday out.
If you behave today, I will grant you 2 Fridays out.
If you behave today, I will grant you 5 Fridays out.
If you behave today, I will grant you 10 Fridays out.
If you behave today, I will grant you 20 Fridays out.
If you behave today, I will grant you 50 Fridays out.
If you behave today, I will grant you 100 Fridays out.

In the Threat condition \((n = 40)\), participants did the same with the inverse threat: 'If you misbehave today, I will ground you for 1 Friday night' versus 'If you misbehave today, I will ground you for 2 Friday nights', and also 5, 10, 20, 50, and 100 Friday nights.

### Results and discussion

Figure 3 shows the average strength of pragmatic conditionals in each follow-up. In Follow-up 1, a repeated-measures ANOVA was performed with conditional (promise vs. threat) as between-subjects factor, and proportionality (1:1 vs. 1:2, 1:5, 1:10, 1:20, 1:50, and 1:100) and rating (credibility vs. persuasiveness) as within-subjects factors. There was no main effect of rating, \(F(1, 78) = 0.12\), n.s. However, there were main effects of conditional, \(F(1, 78) = 27.75, p < .01\), partial \(\eta^2 = 0.26\), and proportionality, \(F(6, 73) = 39.77, p < .01\), partial \(\eta^2 = 0.77\). That is, promises were stronger than threats, and both were weaker when disproportionate than proportionate. There was no interaction effect between conditional and rating, \(F(1, 78) = 0.77\), n.s., nor triple interaction among conditional, proportionality, and rating, \(F(6, 73) = 1.89\), n.s. But there were interaction effects between conditional and proportionality, \(F(6, 73) = 8.19, p < .01\), partial \(\eta^2 = 0.40\), and proportionality and rating, \(F(6, 73) = 3.27, p < .01\), partial \(\eta^2 = 0.21\). That is, promises and threats were equally strong when proportionate but threats were weaker than promises when disproportionate. Moreover, credibility and persuasiveness were differently strong for proportionate than disproportionate conditionals.

Separate analyses on promises and threats shows that the above proportionality-rating interaction was driven by promises. For threats, there was only a main effect of proportionality, \(F(6, 34) = 44.89, p < .01\), partial \(\eta^2 = 0.89\). That is, disproportionate threats were weaker than proportionate threats. *Post hoc* Bonferroni tests \((p < .05)\) showed that 1:2 disproportionate threats were weaker than 1:1 proportionate threats, 1:5 weaker than 1:2, and so on until 1:50 which were as weak as 1:100 disproportionate threats, probably due to a floor effect. For promises, there was also a main effect of proportionality, \(F(6, 34) = 8.38, p < .01\), partial \(\eta^2 = 0.60\). That is, disproportionate promises were weaker than proportionate promises. However, *post hoc* Bonferroni tests \((p < .05)\) showed that 1:2 disproportionate promises were as strong as 1:1 proportionate promises, whereas 1:5 were weaker than 1:2, and so on until 1:100 disproportionate promises, without any floor effect. Moreover, there was an interaction effect of proportionality and rating, \(F(6, 34) = 2.67, p < .05\), partial \(\eta^2 = 0.32\). That is, promises were more credible than persuasive when proportionate but more persuasive than credible when disproportionate. Paired t-tests \((p < .05)\) showed that credibility was stronger than...
persuasiveness for 1:1 and 1:2 proportionate promises, equal to persuasiveness for 1:5, 1:10, and 1:20 promises, and weaker than persuasiveness for 1:50 and 1:100 disproportionate promises.

The findings of this first follow-up replicate the findings of the first experiment by showing that disproportionate promises and threats were less credible than proportionate promises and threats. However, these findings extend those findings by showing that threats were as credible as promises when proportionate but less credible when disproportionate. Moreover, the findings show that threats were as credible as persuasive, whereas promises were more credible than persuasive when proportionate but more persuasive than credible when disproportionate. Note also that promises and threats have different strength limits. That is, threats are already less credible at a 1:2 disproportion but still persuasive (strength > 50) at a 1:5 disproportion, whereas promises are equally credible at a 1:2 disproportion and still persuasive at a 1:10 disproportion.

3.3 Follow-up 2: Advices and warnings

Follow-up 2 was analogous to Follow-up 1 but designed to replicate and extend Experiment 2. There were also two conditions with the same instructions, that is, the Advice and Warning conditions. In both also, participants were asked to separately rate how credible and how persuasive three statements of a speaker are to a listener on scales from 0 (totally incredible or unpersuasive) to 100 (totally credible or persuasive). And participants were also told that a speaker’s statement is credible if the listener believes in it, and is persuasive if the listener acts upon it.
In the Advice condition \((n = 40)\), participants rated the same advice three times, namely, with a unilateral and a bilateral positive, and negative consequence. There were four advices, and each was consecutively rated once on credibility and another on persuasiveness. Item, proportionality, and rating orders were randomized across participants. For example (for all four advices, see Appendix):

Imagine a researcher (speaker) advising another researcher (listener), who is thinking of resubmitting:

If you revise your paper, the editor will accept it.
(note that the paper credits the speaker’s research)
If you revise your paper, the editor will accept it.
(note that the paper is unrelated to the speaker’s research)
If you revise your paper, the editor will accept it.
(note that the paper discredits the speaker’s research)

In the Warning condition \((n = 40)\), participants did the same with the inverse warning: ‘If you do not revise your paper, the editor will reject it’ (note that the paper is unrelated to the speaker’s research) versus ‘If you do not revise your paper, the editor will reject it’ (note that the paper credits the speaker’s research), and also (note that the paper discredits the speaker’s research).

3.3.1 Results and discussion

In Follow-up 2, a repeated-measures ANOVA was performed with conditional (advice vs. warning) as between-subjects factor, and laterality (unilateral vs. bilateral positive and negative) and rating (credibility vs. persuasiveness) as within-subjects factors. As illustrated in Figure 3, there were no main effects of conditional, \(F (1, 78) = 0.003, \text{n.s.}\), and rating, \(F (1, 78) = 0.29, \text{n.s.}\), nor any interaction effects among conditional, laterality, and rating, e.g., the triple interaction, \(F (2, 77) = 0.14, \text{n.s.}\). That is, advices were equally strong as warnings, and credibility was equally strong as persuasiveness. However, there was a main effect of laterality, namely, conditionals were weaker when bilateral than unilateral, \(F (2, 77) = 46.03, p < .01, \text{partial } \eta^2 = 0.55\). Post hoc Bonferroni tests \((p < .05)\) showed that bilateral negative conditionals were weaker than bilateral positive conditionals which were also weaker than unilateral conditionals.

The findings of this second follow-up replicate the findings of the second experiment by showing that bilateral negative advices and warnings were equally less persuasive than unilateral advices and warnings. However, these findings extend those findings by showing that also bilateral positive advices and warnings were equally less persuasive than unilateral advices and warnings. Moreover, the findings show that bilateral advices and warning were also equally less credible.
than unilateral advices and warnings. Note also that although less so, bilateral advices and warnings are still credible and persuasive (strength > 50).

4. Conclusion

In sum, the findings of the two experiments and their follow-ups provide evidence against both hypotheses of Amgoud et al. (2007), disconfirming their postulate about the credibility of disproportionate promises, and not backing up their intuition about the persuasiveness of bilateral advices and warnings. However, these findings also confirm some of their other model’s principles, namely, the credibility of proportionate promises and threats, the incredibility of disproportionate threats, and the persuasiveness of unilateral advices and warnings. Furthermore, these findings provide original evidence for the differences in credibility and persuasiveness of proportionate and disproportionate promises and threats, and of bilateral positive and negative advices and warnings.

Particularly, these findings indicate that both promises and threats have to be proportionate to be really credible. Disproportionate promises and threats are less credible because their reward and punishment are unbalanced to the action and offense, respectively. However, this balance varies because unlike threats promises are binding, which makes unbalanced promises more credible than unbalanced threats. For threats, a punishment equal to the offense is credible, a double punishment is less credible, and a tenfold punishment is incredible. For promises, a reward equal to the action is credible, a double reward is as credible, and only a twentyfold reward is incredible. Moreover, whereas threats are as un/persuasive as in/credible, balanced promises are more credible than persuasive and unbalanced promises are more persuasive than credible. Given that promises are expected to be kept, rewards are more likely to be acted upon when big even if not believable.

Furthermore, these findings indicate that both advices and warnings have to be unilateral to be really credible and persuasive. Bilateral advices and warnings are less credible and persuasive because their intention is equivocal. Pragmatically, bilateral negative advices and warnings seem insincere because the speaker loses if the listener follows them. And bilateral positive advices and warnings seem interested because the speaker gains if the listener follows them. Nonetheless, although less so, bilateral advices and warnings are still credible and persuasive.

In conclusion, the question was: When does a promise become incredible and a warning unpersuasive? And the answer is: A promise becomes incredible when the promised reward is too big compared to the rewarded action. For instance, a promise like ‘If you give me a horse, I will give you my kingdom.’ And a warning becomes unpersuasive when the speaker’s intention is interested or insincere.
Therefore, here is a persuasive warning for Obama, Piñera, and other politicians: ‘If you do not make voters credible promises, they will not vote for you.’

Acknowledgments

* We thank Maya Mayer for collecting the data of Experiments 1 and 2. We also thank the editor and two anonymous reviewers for suggesting the Follow-ups 1 and 2.

References


All rights reserved


Appendix

Follow-Up 1

Promises (from proportionate to disproportionate)

1. Imagine a mother (speaker), who is having her birthday, promising her daughter (listener):
   If you behave today, I will grant you 1 Friday out.
   If you behave today, I will grant you 2 Fridays out.
   If you behave today, I will grant you 5 Fridays out.
   If you behave today, I will grant you 10 Fridays out.
   If you behave today, I will grant you 20 Fridays out.
   If you behave today, I will grant you 50 Fridays out.
   If you behave today, I will grant you 100 Fridays out.

2. Imagine a father (speaker), who is repairing his house, promising his son (listener):
   If you help out this week, I will give you 1 extra allowance.
   …

3. Imagine a trainer (speaker), who is preparing the season, promising a player (listener):
   If you train hard this week, I will put you in 1 game.
   …

4. Imagine an employer (speaker), who is nearing a deadline, promising an employee (listener):
   If you leave late tonight, I will pay you 1 extra bonus.
Incredible promises and unpersuasive warnings

... Threats (from proportionate to disproportionate)

1. Imagine a mother (speaker), who is having her birthday, threatening her daughter (listener):
   If you misbehave today, I will ground you for 1 Friday.
   ...

2. Imagine a father (speaker), who is repairing his house, threatening his son (listener):
   If you bail out this week, I will keep your next 1 allowance.
   ...

3. Imagine a trainer (speaker), who is preparing the season, threatening a player (listener):
   If you train easy this week, I will let you out 1 game.
   ...

4. Imagine an employer (speaker), who is nearing a dateline, threatening an employee (listener):
   If you leave early tonight, I will retain your next 1 bonus.
   ...

Follow-Up 2

Advices (bilateral positive, unilateral, and bilateral negative)

1. Imagine a researcher (speaker) advising another researcher (listener), who is thinking if resubmitting:
   If you revise your paper, the editor will accept it.
   (note that the paper credits the speaker’s research)
   If you revise your paper, the editor will accept it.
   (note that the paper is unrelated to the speaker’s research)
   If you revise your paper, the editor will accept it.
   (note that the paper discredits the speaker’s research)

2. Imagine a sister (speaker), who is making plans for Friday, advising her brother (listener):
   If you behave today, our parents will grant you Friday out.
   (note that he knows she plans to stay home alone on Friday)
   ...
   (note that he knows this does not affect her Friday plans)
   ...
   (note that he knows she plans to stay home together on Friday)

3. Imagine a player (speaker) advising another player (listener), both playing a tennis tournament:
   If you train hard, you will play well on Saturday.
   (note that the speaker is his Saturday doubles match partner)
   ...
   (note that the speaker does not play the Saturday doubles match)
   ...
   (note that the speaker is his Saturday doubles match opponent)
4. Imagine a saleswoman (speaker) advising a salesman (listener), both working in the same company:
   If you close the sale, you will be promoted.
   (note that he knows she wants his current position)
   …
   (note that he knows she wants to keep her position)
   …
   (note that he knows she wants the same promotion)

Warnings (bilateral positive, unilateral, and bilateral negative)

1. Imagine a researcher (speaker) warning another researcher (listener), who is thinking of resubmitting:
   If you do not revise your paper, the editor will reject it.
   (note that the paper credits the speaker’s research)
   …
   (note that the paper is unrelated to the speaker’s research)
   …
   (note that the paper discredits the speaker’s research)

2. Imagine a sister (speaker), who is making plans for Friday, warning her brother (listener):
   If you misbehave today, our parents will ground you on Friday.
   (note that he knows she plans to stay home alone on Friday)
   …
   (note that he knows this does not affect her Friday plans)
   …
   (note that he knows she plans to stay home together on Friday)

3. Imagine a player (speaker) warning another player (listener), both playing a tennis tournament:
   If you train easy, you will play badly on Saturday.
   (note that the speaker is his Saturday doubles match partner)
   …
   (note that the speaker does not play the Saturday doubles match)
   …
   (note that the speaker is his Saturday doubles match opponent)

4. Imagine a saleswoman (speaker) warning a salesman (listener), both working in the same company:
   If you do not close the sale, you will not be promoted.
   (note that he knows she wants his current position)
   …
   (note that he knows she wants to keep her position)
   …
   (note that he knows she wants the same promotion)
Incredible promises and unpersuasive warnings

Authors' addresses

Alejandro López-Rousseau
Amor de Dios 4, 1-L
28014 Madrid
Spain
lopezrousseau@yahoo.com
sites.google.com/site/alejandrolopezrousseau

Gil Diesendruck
Department of Psychology
Bar-Ilan University
Ramat-Gan 52900
Israel
Gil.Diesendruck@biu.ac.il
www.biu.ac.il/faculty/gdiesendruck

Avi Benozio
Department of Psychology
Bar-Ilan University
Ramat-Gan 52900
Israel
Avi.Benozio@gmail.com

About the authors

Alejandro López-Rousseau is a Cognitive Science researcher and Information Technology consultant in Madrid, Spain. He received his PhD in Cognitive Psychology from the University of Michigan at Ann Arbor, USA. His experimental, developmental, and cultural research focused on inductive reasoning based on taxonomic categories. He continued his research at the Max Planck Institute in Munich, Germany, focusing then on decision making based on adaptive heuristics. He has published over 20 chapters and articles in journals such as Psychological Review, Psychological Science, and Cognitive Psychology, among others. His book Psicología de la comunicación focuses on the pragmatics of communication.

Gil Diesendruck is an Associate Professor at the Department of Psychology and the Director of the Language and Cognitive Development Laboratory at the Gonda Brain Research Center, both at Bar-Ilan University. He received his PhD in Developmental Psychology from the University of Michigan, was a post-doctoral research associate at the University of Arizona, and was a visiting professor at the Department of Psychology at Yale University. His work focuses on children’s development of social-pragmatic capacities, and on social categorization. He has published over 40 chapters and empirical articles in journals such as Child Development, Developmental Psychology, Cognition, Journal of Personality and Social Psychology, and Psychological Science, among others.

Avi Benozio is a PhD student at the Department of Psychology at Bar-Ilan University and holds a BA in Physics and Computer Science from the same university. His work derives from the field of moral psychology, and focuses on the factors that influence children’s decisions about how to distribute resources among individuals. In particular, he focuses on questions of ownership, group membership, and effort.

All rights reserved