1. Introduction

People often use verbal irony in their communications. Around 8% of turns in conversations between friends (Gibbs, 2000) and 7.4% of e-mails sent to friends contain irony (Whalen et al., 2009). However, one of irony's characteristics is that some people understand the irony (the so-called group of “wolves”, Gibbs and Izett, 2005), while other people fail to do so (the so-called group of “sheep”, Gibbs and Izett, 2005). The riskiness that irony goes undetected has led American authorities to declare American airports as “no-irony zones”, effectively prohibiting the use of irony when talking to airport officials (Phelan, 2009).

An important issue for ironic speakers is assessing the possibility that their ironic utterance is understood. Many experimental studies focus on processes that predict when and how irony is understood (e.g., Gibbs, 1986; Giora et al., 1998; Schwoebel et al., 2000 and many others). These studies have typically used so-called “textoids” (experimenter-generated texts) as their stimulus materials. Recently, many scholars have argued that these studies should be supplemented with studies on the effects of irony in real-life contexts (e.g., Katz, 2009; Kotthoff, 2003). We take up on that challenge and present two experiments on two different textual characteristics that may influence irony comprehension.

Ironic utterances have two types of textual characteristics: irony factors and irony markers (Attardo et al., 2003). Irony factors are elements that utterances need to have in order to qualify as ironic. If an irony factor is removed from an utterance, this utterance is no longer ironic (Attardo et al., 2003). In contrast, irony markers are meta-communicative clues that can “alert the reader to the fact that an utterance is ironic” (Attardo, 2000a:7). We focus on the effects of an irony factor (the type of evaluation of the ironic utterance, experiment 1) and of irony markers (experiment 2).

Many authors consider the fact that irony always includes an evaluation as a central aspect of irony (e.g., Attardo, 2000b; Kotthoff, 2003; Sperber and Wilson, 1995). Even though all ironic utterances are evaluative, this evaluation can come in
different types. In many cases, an ironic utterance can be solved by reversing an evaluative term in that utterance. If somebody for instance says “Great weather” during a downpour, an addressee can solve the irony by replacing the word “great” with its semantic opposite, which makes these examples explicitly evaluative. In other cases, however, irony is implicitly evaluative which means that an evaluative term needs to be inferred (cf. Wilson and Sperber’s 1992 example of “Oh, Tuscany in May”). The first experiment investigates whether explicitly evaluative ironic utterances (“Great weather”) are easier to understand than implicitly evaluative ironic utterances (“Oh, Tuscany in May”).

Additionally, irony markers such as quotation marks, hyperboles, or emoticons are often identified as important textual characteristics that help to predict irony comprehension (cf. Attardo, 2000a; Kreuz, 1996; Muecke, 1978; Seto, 1998). Experiment 2 investigates whether these irony markers indeed increase comprehension. Besides, this experiment also investigates if these irony markers can be stacked. Is an ironic utterance with three irony markers easier to understand than an ironic utterance with one irony marker?

Even when irony complexity can be reduced, the use of irony remains a risky strategy. Therefore, speakers employ irony because they expect to achieve communicative goals that would have been difficult to reach if they uttered the same remark literally. Irony’s communicative goals include evoking humor (e.g., Roberts and Kreuz, 1994), diminishing (e.g., Dews and Winner, 1995) or enhancing critique (e.g., Bowers and Katz, 2011), being polite (e.g., Slugoski and Turnbull, 1988), being rude (e.g., Colston, 2005) and evoking a feeling of social solidarity between sender and addressee (e.g., Van Mulken et al., 2011). Reaching these communicative goals includes changing respondents’ affective states which may lead to a change in attitudes. Irony can indeed be used as a persuasive strategy aiming to favorably change the addressee’s attitude towards a product, person or issue (cf. Gibbs and Izett, 2005; Lagerwerf, 2007). As such a communicative strategy, irony is sometimes successful and sometimes unsuccessful. We also investigate whether irony’s success or failure in positively changing attitudes depends on the way in which the irony is formulated.

1.1. Irony factors and markers

The definition of verbal irony is strongly debated in the irony literature (e.g., Clark and Gerrig, 1984; Giora, 1995; Wilson and Sperber, 1992). While authors disagree on various characteristics of ironic utterances, they do agree that a definition of irony should at least include a difference in evaluative valence between a literal and an intended meaning of the irony (see Burgers et al., 2011; Partington, 2007). If somebody for instance ironically exclaims “Great weather, eh?” during a downpour, this speaker actually aims to convey a contrary evaluation: the weather is not great at all.

Experimental evidence on irony comprehension is mixed. In some cases, irony is just as easy to understand as literal language (Ivanko and Pexman, 2003). In most cases, however, irony is more difficult to comprehend than literal language (see Giora, 2003; Schwoebel et al., 2000 and many others). In these experiments, scholars typically contrast an ironic with a non-ironic (literal) utterance. However, some ironic utterances may be more difficult to comprehend than other ironic utterances. In other words, ironic utterances may differ in complexity.

Studies on elements that influence irony comprehension typically focus on contextual factors. For instance, irony is more expected from men than from women (e.g., Colston and Lee, 2004; Katz et al., 2004) and less expected from people with non-serious jobs (e.g., comedians or cab drivers; cf. Katz et al., 2004). In an experiment, children were read a small story that ended in either an explicitly or implicitly evaluative ironic utterance. These children understood explicitly evaluative ironies better than implicitly evaluative ironies (Bosco and Bucciarelli, 2008). The question remains
whether these results can be generalized to adult readers. After all, children generally struggle to comprehend ironic utterances, while adults comprehend the same ironic utterances without any problems (e.g., Ackerman, 1983; Capelli et al., 1990; Filippova and Astington, 2008). To be able to support the claim that the explicitness of evaluation of an ironic utterance influences the complexity or comprehension of an ironic utterance, Bosco and Bucciarelli’s (2008) results need to be replicated with a sample of adult respondents. In line with Bosco and Bucciarelli’s (2008) results, we expect that

**H1. Explicitly evaluative ironic utterances are (a) perceived as less complex and (b) comprehended more easily than implicitly evaluative ironic utterances.**

1.2. The influence of irony on attitudes

Even though irony may be misunderstood, it may positively influence attitudes compared to the use of literal statements. For instance, various studies found that non-literal language in advertisements is better liked than literal language (e.g., Ang and Lim, 2006; McQuarrie and Mick, 2003a; Phillips and McQuarrie, 2009). However, most of these studies focus on forms of non-literal language different from irony (e.g., metaphors).

Most of these studies found an important caveat for the positive influence of non-literal language on attitudes: non-literal language is only appreciated when it is perceived as moderately complex. Addressees like the use of figurative language, but only when they do not have to make a big effort to solve the non-literal utterance (e.g., Philips, 2000; Van Enschot et al., 2008). In line with H1, we thus expect that

**H2. Explicitly evaluative ironic utterances lead to (a) more positive attitudes towards the utterance and (b) the text than implicitly evaluative ironic utterances.**

Valuable insights into the question how irony can influence changes in addressees’ attitudes are found in corpus-linguistic analyses of conversations that show how speakers co-construct and evaluate ironic utterances (e.g., Clift, 1999; Kotthoff, 2003). In order to make causal predictions about the effects of irony on attitudes, these studies should be supplemented with experimental studies that also look at written text genres (Lagerwerf, 2007). To the best of our knowledge, the only studies that experimentally investigated the effects of irony on attitudes are Lagerwerf (2007) and Van Mulken et al. (2011), who both found that irony was better appreciated than literal statements, but only when it was understood. These studies used correlations for their claims, which means that it is not possible to infer causality from these data. To increase the empirical validity of this claim, these data should be supplemented with a causal model. The third hypothesis is thus:

**H3. The effects of irony on the attitudes towards the utterance and the text depend on (a) irony’s perceived complexity and (b) irony comprehension.**

2. Experiment 1

Experiment 1 investigates the influence of explicitly and implicitly evaluative irony on comprehension of the utterance, perceived complexity of the utterance and text and attitudes towards the utterance and the text.

2.1. Method

2.1.1. Materials

Various scholars (e.g., Graesser et al., 1997; Katz, 2009) dispute the ecological validity of “textoids” as stimulus materials, because they are usually designed by the researchers themselves. Katz (2009) recommends that experimental research with textoids should be supplemented with experiments in which the stimuli are based on actual texts. We take up on Katz’ (2009) recommendation and used actual texts that were slightly edited so that they always ended in a stimulus sentence. The choice to slightly edit the existing text had the advantage of using stimuli with a higher ecological validity than text designed by experimenter (Katz, 2009; Kotthoff, 2003). At the same time, we could use the same stimulus text in all conditions, thus allowing the opportunity to control for the influence of the stimulus itself. After all, some texts can generally be liked better than others, with or without irony.

To allow for a multiple message design, we decided to use stimuli from the genre of letters to the editor, because these texts are usually relatively short. The LexisNexis database of Dutch newspapers was used to look for potential stimuli. All stimuli referred back to news events that belonged to the journalistic genre of “general news”, i.e., economic, social or cultural news that is not on the present public agenda (Lehman-Wilzig and Seletzky, 2010).

After an initial search on LexisNexis, 30 letters were considered as possible stimuli. The final sentence of these stimuli was manipulated for the presence of irony (irony vs. non-irony) and the type of evaluation (explicitly vs. implicitly evaluative).

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1 Even though the effects of irony on attitudes has received little empirical attention, many experimental studies have investigated speaker attitudes, i.e., the question how addressees assess the communicative goals of the ironic speaker (e.g., Averbeck and Hample, 2008; Bowes and Katz, 2011; Matthews et al., 2006). However, this paper takes a different perspective and investigates how irony may influence the attitude of an addressee towards a certain issue.
All other sentences in the stimuli were non-ironic. In a qualitative pre-test, seven expert respondents (all PhD students in the field of Communication Studies) judged the edited versions of the potential stimuli to analyze their representativeness for the genre of letters to the editor. Based on this pre-test, 24 stimuli were selected for the experiment.

The stimuli were originally published in Dutch national newspapers (Algemeen Dagblad, de Volkskrant, Het Financieele Dagblad or Metro) and discussed a wide variety of topics. For the purpose of the study, the original letters were slightly edited to be understood out of context. Besides, the stimuli were manipulated so that the final sentence was always the stimulus sentence. The letters were also made anonymous by changing the names of the original authors. In order to increase ecological validity, stimuli were presented as part of a “letter to the editor” section in a newspaper.

One translated stimulus can be found in Appendix A. The other stimuli can be found in the Supplementary Material in the electronic version of this paper.

2.1.2. Instrumentation

A questionnaire was used to measure respondents’ comprehension of the utterances, perceived complexity of the utterances and the texts and attitudes towards the utterances and the texts.

We measured comprehension by asking respondents to write down their interpretation of every stimulus sentence. This open question always had the same format; “Can you paraphrase into your own words what position [Name of author of specific letter] takes with regard to [subject of letter]?” Answers to this open question were coded into a binary variable, indicating whether respondents had understood the utterance or not. In 86.0% of cases (2064 utterances), respondents had understood the utterance and in 9.2% of cases (221 utterances), they had not understood the utterance. In 4.8% of cases, it was unclear whether a respondent had correctly understood the utterance. These respondents for instance listed a comment such as “ironic?”, thus indicating that they suspected the utterance to be ironic, but were not sure. This latter group was excluded from analyses that considered comprehension.

Perceived complexity can both refer to the perceived complexity of the stimulus sentence or perceived complexity of the text as a whole. To investigate whether the inclusion of an ironic utterance also influences the perception of the text as a whole, perceived complexity is both tapped at the level of the stimulus sentence and of the text as a whole. For perceived complexity of the utterance, participants had to assess if they found the stimulus sentence to be clear and easy to understand on seven-point Likert scales (Van Mulken et al., 2010). Reliability was high (r = .81, p < .001).

Since respondents already spent considerable time filling in the questionnaire, we decided to include one seven-point Likert scale question to measure perceived complexity of the text (e.g., Bergkvist and Rossiter, 2007): “I consider the text to be comprehensible”. All complexity items were reverse scored so that a high score represents a more complex utterance or text.

Two types of attitudes were measured: the attitude towards the stimulus sentence and the attitude towards the text as a whole. Attitudes towards the utterance were measured with two seven-point Likert scales in which participants indicated if the stimulus sentence succeeded well and was pleasant. Reliability was satisfactory (r = .64, p < .001). Attitudes towards the text were measured with a single-item, seven-point Likert scale: “I consider the text to be appealing” (Van Mulken et al., 2010).

Finally, respondents filled out demographic questions about their gender, age, major, nationality and native language.

2.1.3. Design

The experiment had a Latin-square 2 (irony vs. non-irony) × 2 (explicitly vs. implicitly evaluative utterance) mixed design. The qualitative pre-test mentioned earlier indicated that respondents considered the questionnaire with all stimuli to be much too long. Therefore, the stimulus set was divided into two sets of 12 stimuli. Every respondent saw all four conditions of the experiment three times but saw every individual stimulus in only one of the four conditions. In order to prevent respondents from guessing the topic under investigation, they also saw six filler stimuli in which the stimulus sentence contained either a scheme (e.g., rhyme) or a form of non-literal language different from irony (e.g., a pun). This meant the stimulus sentences in the fillers were different from the stimuli in both the ironic and non-ironic conditions. In the order of stimuli, care was taken that no respondent saw an ironic stimulus two times in a row. On average, it took respondents between 35 and 45 minutes to complete the questionnaire. All materials were administered in Dutch.

2.1.4. Respondents

A total of 200 respondents participated in the experiment. Participants were recruited at various locations on the campus of a Dutch university and received a compensation of €4,- (approx. 5.50 American dollars) for their participation. All respondents were students at a Dutch university. Most respondents were science (42.5%) or social science students (37.5%). 20% of respondents were enrolled in the Faculty of Humanities. A small majority of respondents was male (53.5%). Two respondents (1.0%) did not provide information about their gender. The average age of respondents was 20.4 years (SD = 2.53; range 17–31). Most respondents had the Dutch nationality (93%) and Dutch as their native language (90%). Nationality and native language had no impact on the results.

2.1.5. Data analysis

Since a counterbalanced design was used, between-subjects results are reported for the direct effects (Raaijmakers et al., 1999). This means that the direct effects were analyzed with a repeated measures ANOVA generalizing across participants. Nevertheless, various respondents saw different stimuli in different conditions. To account for the variation within stimuli, group mean centering was applied to the data (Field, 2009).
To test for indirect effects (i.e., the extent to which effects of irony on attitudes depend on comprehension or perceived complexity), multilevel suppression analyses were carried out (Bauer et al., 2006; Shrout and Bolger, 2002). In a suppression analysis, a suppressor $S$ (e.g., perceived complexity) diminishes the effect of a predictor $X$ (e.g., irony) on a dependent variable $Y$ (e.g., attitude towards the utterance). In reporting the suppression analyses, two points should be noted. Firstly, the design of the experiment calls for a multilevel mediation analysis (Bauer et al., 2006). Every respondent saw multiple instances of every condition. This means that various scores of every condition were provided by one individual (Level 1). These scores are then used to draw conclusions about this individual and to generalize to the population of individuals (Level 2). In other words, the analysis takes both the within and between effects of participants into account when computing the indirect effect. The SPSS script provided by Bauer et al. (2006) was used to impose this multilevel design upon the data and to compute the size of the indirect effect. We report the random indirect effect, i.e., the indirect effect at the between-participants level. Secondly, to account for the variation in stimuli, the group-mean-centered dataset was used for these multilevel analyses.

### Table 1

Average scores (and standard deviations) of the comprehension of the utterance (0: utterance not understood, 1: utterance understood), perceived complexity of the utterance and the text (1: low perceived complexity, 7: high perceived complexity), and the attitude towards the utterance and the text (1: very negative attitude, 7: very positive attitude), by condition.

<table>
<thead>
<tr>
<th></th>
<th>Irony</th>
<th>Non-irony</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Explicitly evaluative</td>
<td>Implicitly evaluative</td>
</tr>
<tr>
<td>Comprehension</td>
<td>.86 (.35)</td>
<td>.83 (.38)</td>
</tr>
<tr>
<td>Perceived complexity utterance</td>
<td>3.08 (1.42)</td>
<td>3.21 (1.53)</td>
</tr>
<tr>
<td>Perceived complexity text</td>
<td>2.95 (1.40)</td>
<td>3.07 (1.51)</td>
</tr>
<tr>
<td>Attitude towards the utterance</td>
<td>4.54 (.136)</td>
<td>4.42 (.141)</td>
</tr>
<tr>
<td>Attitude towards the text</td>
<td>4.73 (.138)</td>
<td>4.56 (.152)</td>
</tr>
</tbody>
</table>

### Results

Our first two hypotheses were concerned with the influence of the type of evaluation of irony on comprehension, perceived complexity of the utterance and text, and the attitudes towards the utterance and the text. Table 1 shows the average scores and standard deviations. While the ANOVAs are computed on the group-mean-centered dataset, for reader convenience, Table 1 gives the unadjusted means.

We conducted $2 \times 2$ repeated-measures ANOVAs to test Hypothesis 1 that explicitly evaluative ironic utterances were perceived as less complex and better understood than implicitly evaluative ironic utterances. We found that non-ironic utterances were better understood ($F(1,199) = 114.75, p < .001, \eta_p^2 = .37$) and perceived as easier than ironic utterances ($F(1,199) = 42.84, p < .001, \eta_p^2 = .18$). Furthermore, irony also increased the complexity of the text as a whole ($F(1,199) = 18.31, p < .001, \eta_p^2 = .08$). In contrast, the type of evaluation had no influence on comprehension ($F(1,199) = 2.11, p = .15$) and perceived complexity of the utterance ($F < 1$) and the text ($F < 1$).

More interesting for Hypothesis 1 was the interaction between irony and the type of evaluation. While no interaction effect on comprehension was found ($F(1,199) = 1.41, p = .24$), the interaction was significant for both the perceived complexity of the utterance ($F(1,199) = 10.69, p < .01, \eta_p^2 = .05$) and the text ($F(1,199) = 6.77, p < .05, \eta_p^2 = .03$). Pairwise comparisons showed that explicitly evaluative irony was considered to be less complex than implicitly evaluative irony ($\bar{P}_{\text{utterance}} < .05, \bar{P}_{\text{text}} = .052$). This pattern was reversed for non-irony; an implicitly evaluative, non-ironic utterance was perceived as less complex than an explicitly evaluative non-ironic utterance, although this latter effect was a trend for perceived complexity of the text ($\bar{P}_{\text{utterance}} < .05, \bar{P}_{\text{text}} = .098$).

To test Hypothesis 2 that explicitly evaluative ironic utterances positively influence attitudes towards the utterance and the text, we conducted a number of $2 \times 2$ repeated-measures ANOVAs. Results showed that irony positively influences attitudes towards the utterance ($F(1,199) = 13.02, p < .001, \eta_p^2 = .06$) and the text ($F(1,199) = 3.89, p = .05, \eta_p^2 = .02$). The type of evaluation did not influence the attitudes towards the utterance ($F < 1$) and text ($F(1,199) = 3.52, p = .06$). The interaction between irony and the type of evaluation had an impact on the attitude towards the utterance ($F(1,199) = 9.76, p < .01, \eta_p^2 = .05$), but no influence on the attitude towards the text ($F(1,199) = 2.68, p = .10$). Pairwise comparisons showed that explicitly evaluative irony was better appreciated than implicitly evaluative irony ($p = .055$). This pattern was reversed for non-irony; an implicitly evaluative non-ironic utterance was better liked than an explicitly evaluative non-ironic utterance ($p < .05$).

Hypothesis 3 stated that the influence of irony on attitudes depends on comprehension and perceived complexity. Suppression analyses demonstrate that both comprehension and perceived complexity suppress the influence of irony on the attitudes towards the utterance and the text. These suppression effects are significant on a 5% level (comprehension: attitude towards the utterance: random indirect effect estimate $= -.11, SE = .03, 95\% CI = -.17, -.05$; attitude towards the utterance: random indirect effect estimate $= -.17, SE = .09, 95\% CI = -.25, -.08$) and perceived complexity (attitude towards the utterance: random indirect effect estimate $= -.11, SE = .03, 95\% CI = -.17, -.05$; attitude towards the text: random indirect effect estimate $= -.17, SE = .09, 95\% CI = -.24, -.09$).

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2. This means that, without accounting for $S$, the effect of $X$ on $Y$ (the total effect $c$) is estimated too low. If $S$ is accounted for, the effect of $X$ on $Y$ (the total effect $c'$) should be higher than the effect $c$. This implies that the polarity of $ab$ (multiplied by $b$) is different from $c$. Therefore, for suppression to take place, three conditions should be satisfied: (1) $X$ should influence $S$ (effect $a$), (2) $S$ should influence $Y$ (effect $b$; see Preacher and Hayes, 2008) and (3) the polarity of $ab$ should be different from $c'$ (Shrout and Bolger, 2002). The latter condition means that if $ab$ yields a negative operator, $c'$ should yield a positive operator, and vice versa.
text: random indirect effect estimate = \(-.10\), SE = .04, 95% CI = \(-.18, -.02\); perceived complexity: attitude towards the utterance: random indirect effect estimate = \(-.18\), SE = .04, 95% CI = \(-.25, -.11\); attitude towards the text: random indirect effect estimate = \(-.13\), SE = .03, 95% CI = \(-.19, -.06\). This means that both an ironic utterance itself and a text with an ironic utterance are appreciated better when the ironic utterance is understood and perceived as relatively easy. Besides, an ironic utterance that is understood or perceived as relatively easy is liked better than a non-ironic utterance that is understood or perceived as relatively easy.

Fig. 1 shows the details for the suppression analysis in which comprehension suppresses the effect of irony on the attitude towards the utterance. Since the other three suppression analyses are similar in score, they can be found in the Supplementary Materials in the electronic version of this paper.

2.3. Conclusion and discussion: experiment 1

Experiment 1 investigates the effect of explicitly and implicitly evaluative ironic utterances on comprehension, perceived complexity of the utterance and the text, and attitudes towards the utterance and the text. Hypothesis 1 states that explicitly evaluative irony was (a) perceived as less complex and (b) better understood than implicitly evaluative irony. This hypothesis was partially supported: H1a is accepted, because implicitly evaluative irony was indeed found to be more complex than explicitly evaluative irony. H1b, however, is rejected, because no differences were found between explicitly and implicitly evaluative irony on comprehension.

Hypothesis 2 suggests that the attitudes towards (a) the utterance and (b) the text were more positive for explicitly evaluative than for implicitly evaluative irony. This hypothesis was also partially supported: H2a is accepted, because the attitude towards the utterance was indeed more positive for explicitly evaluative than for implicitly evaluative irony. H2b is rejected, because no differences were found between explicitly evaluative and implicitly evaluative irony.

The third hypothesis, then, claims that the effect of irony on the attitudes towards the utterance and text depends on perceived complexity and comprehension. Results show that both comprehension and perceived complexity suppress the effect of irony on the attitude towards the utterance and the text, which means that this hypothesis is completely accepted. These data thus demonstrate that irony can have attitudinal effects if it adheres to two conditions. First of all, readers should understand the irony; the effect of irony on attitudes increases if comprehension is taken into account. This implies that irony should be understood in order to have a positive influence on attitudes. Secondly, irony can positively influence attitudes if it is not perceived as too complex. To increase the empirical validity of this claim, these data should be replicated with a second dataset.

The results of experiment 1 have shown that a textual characteristic such as the type of ironic evaluation can influence perceived complexity, comprehension and attitudes. To expand upon the claim that textual features of irony can help to predict these variables and to replicate the results for H3, a second experiment was set up that looked at another textual characteristic of irony: irony markers. Irony markers are meta-communicative clues that can “alert the reader to the fact that a sentence is ironical” (Attardo, 2000a; 7). Examples of irony markers include hyperboles, interjections, quotation marks and exclamations (e.g., Attardo, 2000a; Kreuz, 1996; Muecke, 1978; Seto, 1998). Even though irony markers are claimed to reduce irony complexity and aid comprehension, this has not yet been experimentally verified. Some scholars investigated the effects of individual irony markers such as hyperbole (e.g., Kreuz and Roberts, 1995) and, in spoken discourse, the speaker’s tone of voice (e.g., Bryant and Fox Tree, 2005; Kreuz and Roberts, 1995; Woodland and Voyer, 2011). However, the effects of using multiple irony markers in one ironic utterance have not yet been experimentally investigated. In line with the definition of irony markers, we expect that

H4. The more irony markers an ironic utterance contains, (a) the easier it is perceived and (b) the better it is comprehended.

Experiment 1 supported the claim that relatively easy irony is better appreciated than relatively difficult irony. In line with H4, we expect that
H5. The more irony markers an ironic utterance contains, the more positive the attitudes towards (a) the utterance and (b) the text.

3. Experiment 2

Experiment 2 examines the effects of irony markers on comprehension, perceived complexity and attitudes. We investigate the general influence of irony markers by focusing on the stacking of irony markers in one utterance. Ironic utterances with, say, three irony markers might be easier to comprehend than ironic utterances with one irony marker. Irony with one marker may then be easier to comprehend than irony without markers.

3.1. Method

3.1.1. Materials

Twelve stimuli from experiment 1 were used as the basis of the stimuli in experiment 2. In this experiment, the independent variable of irony markers had three levels: no irony markers, one irony marker and three irony markers. This manipulation enabled us to account for the possible effects of stacking irony markers in one utterance. A stimulus example can be found in Appendix A. The other stimulus texts can be found in the Supplementary Material in the electronic version of this paper. Given the results of experiment 1, the influence of type of evaluation of the ironic utterance was controlled for, because all utterances were explicitly evaluative.

3.1.2. Design

The experiment had a Latin-square 2 (irony vs. non-irony) × 3 (no markers, 1 marker, 3 markers) mixed design. The order in which stimuli were presented was randomized and counterbalanced across participants. On average, it took respondents between 35 and 45 minutes to complete the questionnaire. The procedure and data analysis were identical to experiment 1.

3.1.3. Instrumentation

The same question items were used as in experiment 1. For the comprehension question, 3.1% of answers could not be classified or were missing. In total, 125 utterances were not understood and 1625 utterances were understood. Reliability of the questions measuring the perceived complexity of and attitude towards the utterance was at least satisfactory (perceived complexity: \( r = .86, p < .001 \); attitude towards the utterance: \( r = .64, p < .001 \)) and the items were taken together as “perceived complexity of the utterance” and “attitude towards the utterance”, respectively.

3.1.4. Respondents

A total of 151 respondents participated in experiment 2. Participants were recruited at various locations on the campus of a Dutch university and received a compensation of €4,- (approx. 5.50 American dollars) for their participation. Respondents were students at a Dutch university. Most came from the Faculty of Humanities (54.3%). Many respondents were also science (22.5%) or social science students (22.5%). One respondent (.7%) did not fill out in which program she was enrolled. A majority of respondents was female (73.5%). Two respondents (1.3%) did not provide information about their gender. The average age of respondents was 20.8 years (SD = 2.48; range 18–32). Most respondents had the Dutch nationality (96.7%) and Dutch as their native language (95.4%). Nationality and native language had no impact on results.

3.2. Results

Table 2 shows the average scores for the presence of irony and the presence of markers on comprehension, perceived complexity of the utterance and text and the attitude towards the utterance and the text. While the ANOVAs are computed on the group-mean-centered dataset, the unadjusted means are given in the text for reader convenience.

<table>
<thead>
<tr>
<th></th>
<th>Irony</th>
<th>Non-irony</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No markers</td>
<td>1 marker</td>
</tr>
<tr>
<td>Comprehension</td>
<td>.82 (.39)</td>
<td>.86 (.35)</td>
</tr>
<tr>
<td>Perceived complexity utterance</td>
<td>3.54 (1.66)</td>
<td>3.39 (1.72)</td>
</tr>
<tr>
<td>Perceived complexity text</td>
<td>3.30 (1.55)</td>
<td>3.13 (1.55)</td>
</tr>
<tr>
<td>Attitude towards the utterance</td>
<td>4.08 (1.48)</td>
<td>4.20 (1.52)</td>
</tr>
<tr>
<td>Attitude towards the text</td>
<td>4.65 (1.42)</td>
<td>4.64 (1.44)</td>
</tr>
</tbody>
</table>
To test Hypothesis 4 that irony markers decrease perceived complexity and increase comprehension of ironic utterances, we conducted a number of \(3 \times 3\) repeated-measures ANOVAs. These analyses showed that irony reduces comprehension (\(F(1,149) = 116.53, p < .001, \eta^2_p = .44\)) and increases perceived complexity of the utterance (\(F(1,150) = 110.14, p < .001, \eta^2_p = .42\)) and the text (\(F(1,150) = 51.78, p < .001, \eta^2_p = .26\)).

The number of markers influences comprehension (\(F(1,93,148) = 3.85, p < .05, \eta^2_p = .03\)) and perceived complexity of the utterance (\(F(2,149) = 9.47, p < .001, \eta^2_p = .11\)) and the text (\(F(2,149) = 5.42, p < .01, \eta^2_p = .07\)). Pairwise comparisons show that an utterance with three markers is better understood (\(p < .05\)) and perceived as less complex (\(p_{\text{text}} < .001, p_{\text{utterance}} < .01\)) than an utterance without markers. Furthermore, an utterance with three markers is perceived as less complex than an utterance with one marker (\(p < .01\)).

More interestingly for H4, an interaction was found between the presence of irony and the presence of markers for comprehension (\(F(2,149) = 9.03, p < .001, \eta^2_p = .11\)) and perceived complexity of the utterance (\(F(2,149) = 10.27, p < .001, \eta^2_p = .12\)) and text (\(F(2,149) = 3.84, p < .05, \eta^2_p = .05\)). Pairwise comparisons showed that an ironic utterance with three markers was better understood and perceived as less complex than an ironic utterance with one (\(p_{\text{comprehension}} < .05, p_{\text{complexity utterance}} < .001, p_{\text{complexity text}} < .01\)) or no markers (all three \(p < .001\)).

H5 suggests that irony markers increase the attitudes towards the utterance and the text. Analyses of \(2 \times 3\) repeated-measures ANOVAs showed that irony did not affect the attitudes towards the utterance (\(F < 1\)) or the text (\(F < 1\)). A main effect was found for the presence of markers on the attitude towards the utterance (\(F(2,149) = 19.55, p < .001, \eta^2_p = .21\)), but not for the attitude towards the text (\(F < 1\)). Pairwise comparisons showed that an utterance with three markers was better liked than an utterance with one or no markers (both \(p < .001\)).

More interestingly for H5, we found an interaction for the presence of irony and the presence of markers on the attitude towards the utterance (\(F(2,149) = 7.64, p < .01, \eta^2_p = .09\)), but not for the attitude towards the text (\(F < 1\)). Pairwise comparisons show that an ironic utterance with three markers was liked better than an ironic utterance with one or no markers (both \(p < .01\)). Besides, a non-ironic utterance with three markers was liked better than a non-ironic utterance without markers (\(p < .05\)).

In order to replicate the results for H3 the effects of irony on attitudes depend on comprehension and perceived complexity, multilevel suppression analyses were carried out. Three of the four analyses that were conducted replicate the effects found in the first experiment (perceived complexity: attitude towards the utterance: random indirect effect estimate \(-.42, SE = .05, 95\% CI = -.53, -.32\); attitude towards the text: random indirect effect estimate \(-.28, SE = .04, 95\% CI = -.36, -.20\); comprehension: attitude towards the utterance: random indirect effect estimate \(-.11, SE = .04, 95\% CI = -.19, -.03\). In contrast, comprehension does not suppress the attitude towards the text (random indirect effect estimate \(-.05, SE = .04, 95\% CI = -.13, -.04\)). This means that an ironic utterance itself is appreciated better when it is understood or perceived as relatively easy. The influence of irony on the attitude towards the text depends on perceived complexity, but not on comprehension of the utterance. Descriptive details of these suppression analyses can be found in the Supplementary Material in the electronic version of this paper.

### 3.3. Conclusion and discussion: experiment 2

Experiment 2 investigates the influence of irony and markers on comprehension, perceived complexity of the utterance and the text, and the attitudes towards the utterance and the text. Hypothesis 4, which argued that the more irony markers an ironic utterance contains, the easier it is perceived and the better it is understood, was accepted: (a text with) an ironic utterance with three markers is perceived as less complex than (a text with) an ironic utterance with one or no markers. Besides, an ironic utterance with three markers was better understood than an ironic utterance without markers. Hypothesis 5 claimed that the more irony markers an ironic utterance contains, the more positive the attitudes towards (a) the utterance and (b) the text. H5a is accepted, because an ironic utterance with three irony markers is liked better than an ironic utterance with one or no markers. However, H5b is rejected, because the interaction between irony and markers on the attitude towards the text is non-significant.

Finally, the results of this experiment replicate the results of experiment 1. This means that irony can positively influence attitudes if it is understood and not perceived as too complex (H3).

### 4. General conclusion and discussion

Our experiments investigate the effects of textual characteristics of irony on comprehension, perceived complexity and the attitudes towards the utterance and the text. The results of both experiments demonstrate that textual characteristics of irony such as the type of ironic evaluation (experiment 1) and the use of irony markers (experiment 2) are important aspects that help to predict whether an ironic utterance is (a) understood and (b) appreciated.

More specifically, we expand the notion of irony factors introduced by Attardo (2000a) and Attardo et al. (2003) by looking at the type of ironic evaluation. Like the valence of the irony (e.g., Gibbs, 1986; Kreuz and Link, 2002), this second irony factor has shown to influence comprehension and perceived complexity. Additionally, the type of ironic evaluation was related to irony’s attitudinal effects.

Experiment 2 provides empirical evidence for a claim that has often theoretically been made in the irony literature, but has hardly been investigated empirically: ironic markers decrease the perceived complexity of an ironic utterance. As such,
these results confirm and expand upon the limited empirical evidence related to textual characteristics of verbal irony (e.g., Bosco and Bucciarelli, 2008; Gibbs, 1986). These results thus suggest that studies that want to investigate the effects of using irony in communication should take the formulation of ironic utterances into account.

Furthermore, both experiments provide further empirical evidence that irony’s attitudinal effects depend on irony complexity and comprehension. While previous research (e.g., Lagerwerf, 2007; Van Mulken et al., 2011) provided correlational evidence, we provide the first causal models to support this hypothesis. The effects found in these causal models can be well explained by the theory of the inverted U-curve (e.g., McQuarrie and Mick, 2003b; Philips, 2000; Van Enschoot et al., 2008). This inverted U-curve models a text’s effectiveness and indicates that a text of moderate complexity is usually the most effective. If a text is too easy, readers do not remember it. If a text is too difficult, readers get frustrated and refuse to process it further (e.g., Chebat et al., 2003; Ketelaar and Van Gisbergen, 2006). Instead, a text should be moderately complex; it should be new or inviting enough to allow for processing while it ought to be easy enough to be solved relatively smoothly. The results from both experiments also demonstrate that an ironic utterance of moderate complexity is the most effective. After all, irony is both more complex and better liked than literal language. At the same time, relatively simple irony is more appreciated than relatively difficult irony; and irony that is understood is more appreciated than irony that is not understood. In other words, textual characteristics of irony such as the type of ironic evaluation and the use of markers may influence irony comprehension and perceived complexity, which, in turn, may influence the attitude towards the utterance and the text.

Some points should be noted about this paper. Firstly, a student population was used. Various studies show that the use and appreciation of irony may depend on various personal characteristics such as the gender (Colston and Lee, 2004) and occupation of the speaker (Katz and Pexman, 1997) as well as cultural factors such as the speaker’s country (Goddard, 2006) and even region of origin (Dress et al., 2008). This means that it may be worthwhile to replicate our results with respondents from different cultures. Secondly, our respondents were instructed to read the specific letters to the editor that were the stimuli of this research. This means that their reading strategy may have been different from a normal reading session in which they would have the possibility to skip certain letters to the editor which they did not want to read.

Another point to note is related to the specific textual characteristics we investigated. While the type of ironic evaluation and the use of irony markers influence comprehension, perceived complexity and attitudes, this does not mean that these are the only textual characteristics that may do so. Other textual characteristics that may be important in predicting irony’s persuasive effects are the valence and the frequency of ironic utterances. A variety of scholars have already shown that the valence of an ironic utterance can aid comprehension: ironic praise is easier to comprehend than ironic blame (e.g., Gibbs, 1986; Kreuz and Link, 2002). However, the effects of the valence of the ironic utterance on appreciation have received scant empirical attention. Future research may elaborate upon this claim and investigate whether valence is another textual characteristic of irony that can influence irony appreciation.

A second textual characteristic that may influence irony comprehension, complexity and appreciation is the use of multiple ironic utterances per text. It may be the case that, when an ironic utterance is preceded by other ironic utterances, readers find it easier to pick up on the irony than when an ironic utterance is not preceded by any ironic utterances. Scholars have found mixed results on this issue. Hodiamont et al. (2010) found that multiple ironic utterances per text may indeed reduce the complexity of ironic utterances, while Giora et al. (2007) found that multiple ironic utterances did not improve irony comprehension. Future research can focus on the influence of this textual characteristic on the effects of irony.

We used natural texts from the genre of letters to the editor that were slightly edited as experimental stimuli. Nevertheless, in real-life data, irony factors and markers may vary in subtle ways across ironic utterances. To gain more insight into these issues, it would be worthwhile to do a follow-up corpus analysis that investigates how irony factors such as type of evaluation and irony markers are used in various genres of written communication.

Results demonstrate that, on average, most participants in both experiments understood the stimulus sentences, which may indicate that these texts were overall relatively easy to understand. However, results for both experiments also show that, for relatively easy texts, the perceived complexity and comprehension of irony are important predictors of its appreciation. Future research that uses natural texts from genres that are generally more difficult may thus find an even more pronounced effect of irony’s perceived complexity and comprehension on its appreciation.

Finally, a comment should be made about the phenomenon of irony markers in relation to the stimuli of experiment 2. Markers could easily be added to both the ironic and the non-ironic statements. If a marker can just as easily be added to a non-ironic than to an ironic statement, what makes it an irony marker? Instead, markers may simply be used to mark a standpoint. This would imply that these markers should be referred to as stance markers (e.g., Houtlosser, 1995). In other words, a marker may not so much mark an irony as alert a reader to the fact that the author takes some kind of position. Since the author also made it apparent that he does not hold that position in earnest, it is up to the reader to decode that message. In other words, markers may not mark irony per se, but rather alert the reader to the evaluative position in the utterance.

We showed that textual characteristics of irony can help to predict its perceived complexity, comprehension and effects on attitudes. Of course, irony will remain a risky communicative strategy to use, and yes, it will divide its audience into wolves and sheep. However, our results may help irony users in assessing this risk and deciding whether they want to be understood – or not.
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Appendix A. Example of stimulus

**Chamber of Commerce**

Without your asking for it and without purchasing a specific service, an entrepreneur is obliged to pay quite an advance payment as contribution to the institution of the Chamber of Commerce (CoC) each year. In the past, I set up two foundations and two limited companies (Ltds). For both the foundations and the Ltds, I have to pay a steep amount to the CoC, while nothing is done in return. To put it even stronger, when, in an exceptional case, you need a certificate from the CoC's register, you even have to pay for it. STIMULUS SENTENCE.

A. Ketelaars, Reuver

**Stimulus sentences experiment 1:**

<table>
<thead>
<tr>
<th>Irony</th>
<th>Non-irony</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explicitly evaluative</td>
<td>Ah well, great that the CoC also works for the common guy.</td>
</tr>
<tr>
<td>Implicitly evaluative</td>
<td>Ah well, the CoC apparently works for the common guy.</td>
</tr>
</tbody>
</table>

**Stimulus sentences experiment 2:**

<table>
<thead>
<tr>
<th>Irony</th>
<th>Non-irony</th>
<th>Type of markers</th>
</tr>
</thead>
<tbody>
<tr>
<td>No markers</td>
<td>It is nice that the CoC also works for the common guy.</td>
<td>It is a shame that the CoC does not work for the common guy.</td>
</tr>
<tr>
<td>1 marker</td>
<td>How nice that the CoC also works for the common guy!</td>
<td>What a shame that the CoC does not work for the common guy!</td>
</tr>
<tr>
<td>3 markers</td>
<td>How nice after all, that the CoC works so obviously for the common guy!</td>
<td>What a shame after all, that the CoC so obviously does not work for the common guy!</td>
</tr>
</tbody>
</table>

Appendix B. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.pragma.2011.11.003.

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