STUDYING THE ONLINE COMPREHENSION OF WRITTEN

SARCASM: AN EYE-TRACKING INVESTIGATION

ALEXANDRA ȚURCAN, BSc, MSc.

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Abstract

Theories of sarcasm comprehension make different predictions regarding how various linguistic and contextual factors might affect the processing of written sarcasm. Modular theories predict a processing difficulty associated with sarcastic remarks (the standard pragmatic model), especially unfamiliar ones (the graded salience hypothesis) as compared to literal language, irrespective of contextual factors. Interactive theories however, predict that contextual factors can facilitate sarcasm processing, for example echoing an antecedent (the echoic mention theory), making the speaker's expectation explicit (the implicit display theory), or a variety of other factors (the constraint satisfaction model). The present research systematically manipulated utterance literality (Experiments 1-7), utterance familiarity (Experiments 2 and 6), echo (Experiments 1 and 2), speaker's expectation (Experiments 4 and 6), and speaker's communicative style (Experiment 7), and used eye-tracking while reading to investigate their effect on sarcasm processing. Results indicated that (1) sarcastic comments were not always more difficult to process than literal ones, (2) utterance familiarity, echoing a contextual antecedent, and knowing the speaker's communicative style, all aided sarcasm comprehension, while, (3) making the speaker's expectation explicit did not. Taken together, the present results are better accommodated by interactive theories of language processing, and more specifically by the constraint satisfaction model. However, the constraint satisfaction model is not a testable theory in its current formulation, hence suggestions are made for ways of better specifying it, in order to develop it into a testable and comprehensive theory of sarcasm processing.

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Declaration

I, Alexandra Țurcan, declare that this thesis and the work presented in it are the result of my own research. This work was wholly done while I was registered as a PhD student at the University of Nottingham.

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Chapter 1: Introduction

1.1 General introduction

Verbal irony and sarcasm are forms of non-literal language that are commonly used in our everyday interactions. Gibbs (2000) and Hancock (2004) both reported similar rates of ironic language use – about 8% of conversational turns include an ironic comment, be it between friends, or total strangers. However, psycholinguists have found it difficult to define these two forms of figurative language and conceptualise the mechanisms through which people manage to understand and make use of them in their everyday life (Bryant, 2012).

1.1.1 Operational definitions

Irony is defined as a form of indirect language, used when the speaker expresses one evaluative utterance but implies a different evaluative appraisal (Burgers, van Mulken, & Schellens, 2011). An ironic comment is used in Example 1 below, where the expressed evaluation is that the weather is "great" but the implied evaluation is that the weather is "terrible". Sarcasm is a specific form of irony, which is used when the target object of the comment is a person (Kreuz & Glucksberg, 1989; Leggitt & Gibbs, 2000; Wilson, 2013). A sarcastic comment is used in Example 2 below, where the expressed evaluation is that the colleague is early, but the implied evaluation is that they are late.

1: Non-sarcastic irony – *Uttering while standing outside in the pouring rain: "The weather is great today!"*

2: Sarcastic irony – *Uttering to a colleague who arrived at a meeting half an hour late: "You're early!"*

The studies reported in this thesis are concerned with the comprehension of sarcastic irony (one of the most commonly used forms of irony), that is, comments where the expressed evaluation is the direct opposite of the intended evaluation, and where the target is a person, as in Example 2 above.

1.2 Modular and interactive theories of sarcasm processing

One of the unresolved debates in the field of psycholinguistics is concerned with whether human language is a modular or an interactive system. Modular views (Fodor, 1983) on the one hand, propose that the initial stages of language comprehension are not affected by top-down knowledge. In the initial stages, linguistic processing takes place, and, only once this stage is completed, top-down information comes into play. Therefore, according to modular views, language comprehension is a serial process. Interactive views on the other hand, propose that top-down knowledge processing takes place in the initial stages of language comprehension, at the same time as linguistic processing. Therefore, different types of information are processed in parallel, and they interact with each other, during language comprehension. This debate has been addressed in many different sub-fields of psycholinguistics, in both oral and written language comprehension, and in language production (see Clifton, Meyer, Wurm, & Treiman, 2012 for a discussion), but it has remained unresolved.

It is of interest to study written non-literal language comprehension, and specifically sarcasm comprehension, because it could further inform the debate between modular and interactive views of language comprehension. Modular accounts claim that when a sarcastic remark is encountered,

processing takes place in a series of steps. Usually, the literal meaning of the sarcastic utterance is accessed first, then the reader realises that the literal meaning cannot be correct because it does not fit with the context, and hence they then reinterpret the comment as sarcastic. Therefore, modular accounts predict that literal comments should be processed faster than sarcastic ones because the processing of literal comments does not involve the extra steps required by sarcasm. Additionally, modular accounts also assign a very limited role to contextual factors – they claim that context cannot aid the initial processing of a sarcastic comment, and cannot override the initial activation of the literal meaning.

On the other hand, interactive accounts assign a very important role to contextual factors. Typically, an interactive account would predict that a sarcastic comment could be correctly interpreted as soon as it is encountered, if the context supports the sarcastic interpretation. There are a number of different interactive accounts, each making predictions about a specific set of contextual factors and how they can affect sarcasm processing, but generally speaking, a context is inviting of a sarcastic comment if it contains a discrepancy between an expectation and reality. Therefore, interactive accounts predict that sarcastic comments do not have to take longer to process than literal ones.

In this section, various theories of sarcasm comprehension will be described, and their predictions and limitations outlined.

1.2.1 Modular accounts

1.2.1.1 The standard pragmatic model

One example of a well-known modular account is the standard

pragmatic model (Grice, 1975). It starts from the assumption that when in

dialogue, people follow what Grice calls the "cooperative principle" (Grice,

1975). According to this principle, the participants in a dialogue assume that all

of their conversational contributions respect four maxims: (1) the maxim of

quantity – the contribution should be informative, (2) the maxim of quality –

the contribution should be true, (3) the maxim of relation – the contribution

should be relevant, and (4) the maxim of manner – concerned not with what

one says, but how they say it, for example, avoiding ambiguity, being brief etc.

(Grice, 1975).

The standard pragmatic model assumes that when a sarcastic utterance

is encountered, its literal meaning is processed first. Once the literal meaning is

processed, the reader will realise that it cannot be literally correct given the

context of the conversation. However, they will assume that the speaker is

following the cooperative principle with their comment. Therefore the literal

meaning will be discarded as incorrect (and violating the maxim of quality)

and the opposite meaning of the comment will be processed instead. According

to the standard pragmatic model, the opposite meaning of what is literally said

is the figurative meaning of the sarcastic comment (Kreuz & Glucksberg,

1989).

Therefore, the main prediction of the standard pragmatic model is that

sarcastic utterances will always take longer to process than the same utterances

used literally, because they will always require the extra step of processing and

then rejecting the literal meaning of the sarcastic utterance, irrespective of how supportive the context is (Gibbs, 1999). Once the literal meaning has been rejected, it will also be suppressed because it plays no further role in the interpretation process.

Criticism for the standard pragmatic model. One of the main limitations of the standard pragmatic model is that it cannot account for instances of sarcasm in which the figurative meaning is not the opposite of the literal meaning, and the maxim of quality is not violated, since what is said is in fact both literally true and sarcastic simultaneously (e.g. *"I love it when you're honest",* said to a friend who lied) (Kumon-Nakamura, Glucksberg, & Brown, 1995). Furthermore, the standard pragmatic model cannot distinguish between sarcasm and lies, since both forms of language violate the maxim of quality (Utsumi, 1996). It also cannot give an explanation for the very use of sarcasm – why would someone resort to sarcasm when they could say what they mean literally? (Kreuz & Glucksberg, 1989) According to Grice, the processing of sarcasm is more costly, but it comes at no extra benefit, which is an account unlikely to be correct (Wilson, 2013).

1.2.1.2 The graded salience hypothesis

A more recent modular account is the graded salience hypothesis (Giora, 1997, 2003), which introduces the concept of salience. A salient meaning is one that is stored in the mental lexicon due to its familiarity, conventionality, frequency, or prototypicality (Peleg, Giora, & Fein, 2001). According to the graded salience hypothesis, salient meanings are processed first, regardless of strength of context (Giora, 1997).

A familiar sarcastic remark (e.g. *"That's great!"*) is assumed to have two salient meanings: the sarcastic and the non-sarcastic, and they will both be activated in parallel. Therefore, the graded salience hypothesis predicts that familiar sarcastic remarks should have equal processing times to their literal counterparts. An unfamiliar sarcastic remark however (i.e. a novel sarcastic utterance, which people are not familiar with hearing sarcastically), has only one salient meaning, which is usually the literal one. In the case of unfamiliar sarcastic remarks, the graded salience hypothesis predicts a very similar comprehension process to the standard pragmatic model - unfamiliar sarcastic comments will take longer to process compared to literal counterparts, because the salient literal meaning will be activated first, followed by the non-salient sarcastic meaning (Giora, 1997, 2003). Diverging from the standard pragmatic model, however, the salience-based meaning will not be discarded, since it contributes to the interpretation process.

Criticism for the graded salience hypothesis. The graded salience hypothesis has been criticised on two main grounds. The first criticism is that it does not rigorously define the concept of saliency. Most studies to date equated saliency with familiarity for ease of experimental testing, even though the theory also lists other factors as contributing to a comment's saliency, such as conventionality and prototypicality. The second criticism is that it assigns a very limited role to the context in the processing of sarcastic comments (Utsumi, 1999), since some might argue that intuitively, contextual factors must play a role in sarcasm processing (Calmus & Caillies, 2014).

1.2.2 Interactive accounts

1.2.2.1 The direct access view

A classic example of an interactive account is the direct access view (Gibbs, 1986). According to this theory, when a sarcastic utterance is encountered, contextual information is processed very early on and interacts with lexical information. If the context is supportive of sarcasm (that is, it contains a discrepancy between expectation and the reality which does not fulfil the expectation), then a sarcastic comment can be interpreted correctly immediately, without it being necessary for its literal meaning to be processed first (Gibbs & Colston, 2012). Therefore the direct access view predicts that in supportive contexts, sarcastic comments would be processed as fast as their literal counterparts. Additionally, the sarcastic meaning would be the only one retained, because it would be the only one activated in the first place.

Criticism for the direct access view. One potential criticism for the direct access view is that it does not specify what factors contribute to making a context supportive of sarcasm. If the only factor is that the context contains a discrepancy between reality and expectation, then perhaps the theory could be more specific in explaining how this discrepancy could be achieved.

1.2.2.2 The echoic mention theory

Another classic example of an interactive account is the echoic mention theory (Sperber & Wilson, 1981). According to the echoic mention theory, the sarcastic interpretation of a comment is reached easily if that meaning is deemed relevant; the listener deems a sarcastic interpretation relevant if it echoes an earlier assertion or known norm (McDonald, 1999). The echo can be explicit if it refers back to a previous remark or event (see Example 3 below),

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or implicit if it refers to a social norm or expectation known to both the speaker and the listener (see Example 4 below) (Kreuz & Glucksberg, 1989). The proposition expressed by the sarcastic utterance does not have to be identical in content to the antecedent being echoed – it can be a paraphrase or summary of it (Wilson, 2013).

   3: Explicit echo – *Tom and Jenny went to play tennis together. Before the game, Tom said, "I am a fantastic tennis player and will surely win". In fact Tom played much worse than Jenny and lost. Jenny said, "You really are a great tennis player!"*

   4: Implicit echo – *Tom and Jenny were invited to a friend's elegant dinner party. When they arrived at the venue, Tom entered first, and didn't bother to hold the door open for Jenny. Jenny said, "What a gentleman you are!"*

   Therefore, one of the predictions of the echoic mention theory is that a sarcastic utterance that echoes a contextual antecedent will be processed faster than a sarcastic utterance that does not.

   Furthermore, according to the echoic mention theory, once the source of the echo has been identified, the listener also needs to recognise the speaker's attitude towards it (Kreuz & Glucksberg, 1989). Curcó (2000) draws attention to the fact that although the echoic mention theory predicts that an explicit antecedent should be advantageous for the interpretation of a sarcastic remark, it does not suggest that sarcasm can be comprehended in only one stage. Actually, in the case of a sarcastic utterance, the task of the hearer is to

reconstruct both the meaning of the sarcastic utterance, and the attitude of the speaker towards it (Curcó, 2000). Therefore, the echoic mention theory would predict that literal comments are processed faster than sarcastic ones.

It is worth noting here that one crucial conceptual difference between the echoic mention theory and the standard pragmatic model is that the echoic mention theory does not differentiate between the "literal meaning" and the "sarcastic meaning" of a sarcastic utterance. While the standard pragmatic model claims that when a sarcastic remark is encountered, its literal meaning is processed first and then replaced by its sarcastic meaning, the echoic mention theory relies on the assumption that there is only one meaning, and that is the intended one (i.e. sarcastic in the case of a sarcastic utterance) (for a discussion, see Bezuidenhout & Cutting, 2002).

Criticism for the echoic mention theory. Although it addresses some of the limitations of the standard pragmatic model (e.g. it gives a motivation for use of sarcasm instead of literal language – to communicate the speaker's attitude towards the discrepancy between expectation and reality), the echoic mention theory was still criticised for not being able to account for sarcastic comments when it is not clear what they might echo (e.g. questions like *"How old did you say you were?"* to an adult pouting like a child when they did not get something they wanted, Kumon-Nakamura et al., 1995). However, one might argue that even a question like this could be said to echo the social norm that adults should behave more maturely than children. Another limitation of the echoic mention theory would be that it is not clear how it differentiates between sarcasm and literal language, which could also be echoing an antecedent (Utsumi, 1996).

There are today many variants of the original echoic mention theory: the echoic reminder theory (this was proposed as a new name for Sperber & Wilson's original theory, in order to emphasize the sarcastic function of reminding the listener of an expectation or social norm, Kreuz & Glucksberg, 1989), the pretense theory (Clark & Gerrig, 1984), and the allusional pretense theory (Kumon-Nakamura, Glucksberg, & Brown, 1995).

1.2.2.3 The pretense theory and the allusional pretense theory

The pretense theory's central claim is that the speaker of a sarcastic utterance is pretending to be someone else who would perform that speech act, and the speaker expresses an attitude (usually hostile) towards the speech act itself or to anyone who would say that utterance or take it seriously (Wilson, 2013). However, the pretense theory does not necessarily require the sarcastic utterance to echo an antecedent, and because of that, it does not succeed in explaining why certain speech acts, which involve pretense, are not ironies (e.g. *while passing by a car with a window shattered: "Look, the car has all its windows intact"* – this utterance sounds confusing and is difficult to interpret ironically if there was no prior contextual expectation for the car window to be intact, Wilson, 2013).

In order to account for the types of sarcastic utterances that the echoic mention theory cannot explain (i.e. those that are not counterfactual, like offerings, over-polite requests etc.), the allusional pretense theory was proposed (Kumon-Nakamura et al., 1995). The allusional pretense theory is incorporating both elements of attribution and of pretense (Wilson, 2013), hence nicely merging the echoic mention theory and the pretense accounts. The main difference between the echoic mention theory and the allusional pretense

theory is that the latter replaces the concept of echo with the broader concept of allusion. In this framework, counterfactual sarcastic statements are direct allusions (as in Examples 3 and 4 above), while all other sarcastic statements for which the echoic mention theory cannot account for are indirect allusions – see Example 5 below (Kumon-Nakamura et al., 1995).

5: Indirect allusion – *While Jenny was working hard on her new book, Tom was goofing around, pulling faces at her and trying to distract her. Jenny said, "How old did you say you were?"*

Importantly, the allusional pretense theory stresses the idea that sarcasm always refers to a discrepancy between what is expected and what the reality actually is, and that this is ultimately the allusional function of sarcasm. Pragmatic insincerity is another key concept in the allusional pretense theory. Pragmatic insincerity is more than just breaking the maxim of quality – it also allows the speaker to be insincere by uttering a true statement. The claim is that all sarcastic utterances involve pragmatic insincerity (saying something that seems to be a compliment but it is not true, asking a question to which an answer is not expected etc.).

Since the allusional pretense theory only makes different predictions than the echoic mention theory for sarcastic utterances other than counterfactual statements (saying the opposite of what it is meant), and this thesis is principally concerned with the processing of counterfactual statements, only the echoic mention theory will be tested here.

1.2.2.4 The implicit display theory

The implicit display theory (Utsumi, 2000) expands on the direct access view's claim that context can aid sarcasm comprehension, but dissociates itself from the idea that only one factor (that is, discrepancy between expectation and reality) can influence sarcasm comprehension. The implicit display theory postulates that sarcasm requires an ironic environment, which is a property of the context. An ironic environment includes three components: (1) the speaker has to have an expectation (known to both interlocutors), (2) the expectation has to be unmet by the current situation, and (3) the speaker has to have a negative emotional attitude towards the incongruity between expectation and reality (Utsumi, 2000). According to the implicit display theory, sarcastic remarks implicitly display this ironic environment, and they can do so to different degrees.

The implicit display is a property of the ironic utterance; to achieve implicit display, this utterance should (1) allude to the speaker's expectation, (2) violate at least one of Grice's pragmatic principles, and (3) indirectly express the speaker's negative attitude (Utsumi, 2000). According to the implicit display theory, sarcasm comprehension is governed by the concept of prototypicality. A prototypical sarcastic utterance is one that satisfies all three conditions for implicit display. The claim is that prototypical sarcastic utterances that fully satisfy the three requirements of implicit display will have the highest degree of ironicalness (that is, they will be perceived as most ironic). Sarcasm that fails to satisfy one or more of the requirements will have a lower score of ironicalness (that is, they will be perceived as less ironic).

Utsumi gives a mathematical formula (see Equation 1 below) for degree of ironicalness:

$$d(U) = d_m * d_a + (1-d_m) * d_d + d_i + d_e$$

Equation 1. *The mathematical formula for degree of ironicalness according to the Implicit Display Theory (Utsumi, 2000).* $d(U)$ = degree of irony; d_m = degree of manifestness; d_a = degree of allusion; d_d = degree of polarity; d_i = degree of pragmatic insincerity; d_e = degree of indirect expression of negative attitude.

According to the implicit display theory, the larger the values of each individual component, the more prototypically ironic a comment is, and the more irony is perceived. For example, d_m (degree of manifestness) has a maximal value if the speaker's expectation is made explicit to the hearer, d_a (degree of allusion) if the sarcastic comment says the opposite of what the speaker meant, d_d (degree of polarity) if the sarcastic comment says something positive in order to express something negative (that is, it is a sarcastic criticism), d_i (degree of pragmatic insincerity) if the sarcastic comment is an obviously insincere statement, and d_e (degree of indirect expression of negative attitude) if it includes cues to sarcasm, like a hyperbole, certain punctuation marks etc.

One prediction of the implicit display theory is that more prototypical sarcastic utterances will be processed faster than or as fast as their literal counterparts. Less prototypical sarcastic remarks will be processed more slowly than literal equivalents. Utsumi (2000, p. 1802) makes these predictions

explicit with a reference to the example of degree of manifestness, by stating: "More prototypical ironies in the contexts in which the speaker's expectation is manifest would be processed faster than, or as fast as, literal language, and the less prototypical ironies in contexts in which the speaker's expectation is not manifest would be processed slower than literal language".

Criticism for the implicit display theory. The implicit display theory has not yet received a lot of attention in the literature, which is reflected in the very limited number of studies that have directly tested its predictions. Although the theory is unique in the sense that it provides a clear and testable equation of the factors that contribute to sarcasm processing, it could potentially also be limited by this equation in the sense that it is not flexible enough to allow for other factors to play a role other than the ones already included in the equation. Whether this is indeed a limitation or not might become clearer at the end of this thesis, which aims to directly test the implicit display theory along with other factors that are not covered by the theory.

1.2.2.5 The constraint satisfaction model

A more recent interactive account is the parallel constraint satisfaction model (Pexman, 2008). This is a more general model, that allows for many different and unspecified contextual factors to act as cues for sarcasm. These cues are processed fast and in parallel, so that if the sarcastic interpretation is the appropriate one, it will be activated immediately. In other words, sarcasm comprehension does not involve extra processing steps compared to literal language and therefore sarcastic comments can be understood as fast as literal ones.

Criticism for the constraint satisfaction model. Although this model is quite appealing in that it unifies all previous interactive accounts, and even allows for other potential factors to act as cues for sarcasm, it is not a testable theory. Since it does not have a specific set of factors for which it makes testable predictions, the constraint satisfaction model in its current formulation can be considered a framework theory.

1.3 Empirical evidence

The following three sub-sections will summarise and discuss the existing experimental evidence which relates to the three main research questions of this thesis, (1) whether there are any processing difficulties associated with sarcasm compared to literal language, (2) the role of utterance familiarity in sarcasm processing, and (3) the role of contextual factors in sarcasm processing.

1.3.1 Processing differences between literal and sarcastic utterances

The first question that will be addressed here is whether there are any processing differences between sarcastic utterances and literal ones. The standard pragmatic model and the echoic mention theory would predict that indeed sarcastic utterances should take longer to read than literal ones, under all circumstances. However, all other theories would qualify their answer, by including the possibility that sarcastic utterances could be processed in equal time to literal equivalents under certain circumstances: if the sarcastic utterances are familiar (the graded salience hypothesis), if the context contains a discrepancy between expectation and reality (the direct access view), if the sarcastic utterances are prototypical (the implicit display theory), or if a variety of cues are present (the constraint satisfaction model).

In a self-paced reading task, Gibbs (1986, Experiment 1) asked participants to press a button after they had read and comprehended a series of texts presented on the screen. The texts could either end with literal or sarcastic comments. Results showed that participants did not take longer to read sarcastic comments than literal ones. However, note that the comparison was made between a comment that was intended as sarcastic criticism, e.g. *"You're a big help!"* and another comment which was intended as a literal criticism, e.g. *"You're not helping me!"* therefore they were not the same comments. Nevertheless, these results seem to fail to support the predictions made by the standard pragmatic model and the echoic mention theory.

The experiment described above has been criticised by Giora (1995), who argued that Gibbs had a confounding variable that he did not control for, and that was text appropriateness (i.e. sarcastic comments were more informative in that they added information about the speaker's feelings towards the situation, whereas literal comments were redundant and stated the obvious). This variable became a confounding one because Gibbs compared reading times between a sarcastic (informative) remark (e.g. *"You're a big help!"* used sarcastically) and a literal (non-informative) remark (e.g. *"You're not helping me!"* used literally), which, according to Giora, explains the equal reading times. She reanalysed his data by comparing the sarcastic comments (*"You're a big help!"* used sarcastically) with their literal counterparts (*"You're a big help!"* used literally) and found that actually, sarcastic comments did take longer to read than the literal ones (see also Giora, Fein, & Schwartz, 1998, Experiment 1, and Spotorno & Noveck, 2014, Experiment 1 for similar experiments and results). These results were taken as supporting evidence for

the graded salience hypothesis even though there was no information about the saliency of the comments in Gibbs' experiment. These results are also in line with the predictions of the standard pragmatic model and echoic mention theory, so this particular design cannot distinguish between the three theories because it did not manipulate saliency.

A novel paradigm was employed by Kowatch, Whalen, and Pexman (2013) in order to test the literality effect – a visual world paradigm. Instead of the traditional reading measures from self-paced reading tasks, here the participants' eye gaze (i.e. looking behaviour) is used to make deductions about thinking processes. They presented their participants with two food items, and a puppet saying a statement about their love for that item. The task was to choose which food item the puppet really wanted. They compared ironic criticisms (e.g. *"I just love apples"*) with literal criticisms (e.g. *"I just hate apples"*) and literal praise (e.g. *"I just love oranges"*). In order to get early and late measures of the response time, they divided each response in three phases: (1) onset of the critical word in the statement until participants' first movement, (2) first movement until when the final object was touched, and (3) touch of the response object until placing it in the response box.

Results showed that the effect of literality was only observed for phase 1, with literal compliments being faster than both literal criticisms and ironic criticisms, with no difference between the final two. The lack of reaction time difference between literal and sarcastic criticisms seems to replicate Gibbs' results (1986, Experiment 1).

Filik and Moxey (2010) used yet another methodology to investigate sarcasm comprehension - eye-tracking while reading (Kowatch et al.'s, 2013

study is also classified as eye-tracking, but with aurally presented materials). They asked participants to read texts that could end in either a literal or a sarcastic comment. Results indicated that sarcasm took longer to read than literal comments, especially in the later reading measure of total time (see also Kaakinen, Olkoniemi, Kinnari, & Hyönä, 2014, Experiment 1, for a similar result but this time also on the early stages of processing – first-pass reading time). These results support the standard pragmatic model, the graded salience hypothesis, and the echoic mention theory.

The debate on the role of context in sarcasm comprehension has been furthered by two recent event-related brain potential (ERP) studies (Regel, Gunter, & Friederici, 2011, Regel, Meyer, & Gunter, 2014), which found support for both modular and interactive accounts. These studies have shown that reading sarcastic utterances is associated with a sustained LAN (left anterior negativity) as compared to literal utterances, which seems to suggest that the processes involved in the comprehension of the two types of language diverge as early as 250ms after stimulus onset, presumably because contextual factors are taken into consideration very early on. This finding is in favour of the interactive accounts. However the same two studies also found a P600 effect associated with sarcastic but not literal interpretations (see also Filik, Leuthold, Wallington, & Page, 2014, Experiment 2), which seems to suggest that although contextual factors are taken into consideration early on, in the later stages of processing there are still difficulties associated with sarcasm comprehension, which is more in line with modular accounts than interactive ones.

In summary, on the one hand, evidence from self-paced reading studies (e.g. Giora, 1995, Giora et al., 1998, Spotorno & Noveck, 2014), and eye-tracking while reading studies (e.g. Filik & Moxey, 2010, Kaakinen, et al., 2014) showing that sarcasm takes longer to process than literal language, has been taken to support the standard pragmatic model and the echoic mention theory. Other evidence showing that sarcasm can be comprehended as fast as literal language, again from self-paced reading (e.g. Gibbs, 1986), and additionally from visual-world paradigm studies (e.g. Kowatch et al., 2013), has been taken as support for more interactive accounts. ERP studies (Filik et al., 2014, Regel et al. 2011, Regel et al., 2014) offer mixed evidence for both the modular and interactive accounts.

1.3.2 The role of utterance familiarity

To refine the debate, the question of whether properties of the utterance (e.g. its salience) affect the time-course of sarcasm comprehension will now be addressed. Although "salience" is a concept loosely defined within the graded salience hypothesis, researchers have generally equated it with "familiarity", that is, if a sarcastic utterance is deemed "salient", that means that the utterance is familiar to readers in its sarcastic interpretation (e.g. *"Such a gentleman!"*).

Giora and Fein (1999, Experiment 1) conducted a probe word identification task in which participants were presented with scenarios ending in literal and (familiar and less familiar) sarcastic utterances. They pre-tested the target utterances for familiarity by presenting them to participants outside of context and asking them what was the first meaning that came to mind. Familiar sarcastic comments were the ones whose first meaning that came to mind was the sarcastic one. After reading each scenario, participants responded

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to probe words whose meanings could be related either to the literal or sarcastic meaning of the target comment, and which appeared either 150ms or 1000ms after the offset of the target comment.

For familiar sarcastic comments there were no significant main effects, which was taken as evidence supporting the graded salience hypothesis' prediction that for familiar sarcastic comments, both the sarcastic and literal meanings are activated in parallel regardless of contextual bias. However for non-familiar sarcastic utterances, participants responded faster to the literal-related test word at 150ms (irrespective of the literality of the comment), while at 1000ms they were equally fast at responding to both types of words in the sarcastic condition, and faster at responding to literal-related words in the literal condition (Giora & Fein, 1999). These results are also taken to support the graded salience hypothesis' prediction that in the early stages of processing only the salient, literal meaning of unfamiliar sarcastic comments is available, regardless of contextual bias. However in the later stages (after 1000ms), the non-salient context compatible meaning no longer lags behind the salient meaning and becomes available for processing.

Frisson and Pickering (1999; see also 2007) investigated the effect of utterance familiarity on its interpretation, not by using sarcasm, but metonymy. A metonymic expression is one where a certain word is not used in its literal sense, but it refers to something related in meaning. For example, in *"Shakespeare is on the top shelf"* (Frisson & Pickering, 1999, p. 1367), *"Shakespeare"* does not stand for the writer himself, but for one of his books.

Eye-tracking was used to compare the reading times for familiar and unfamiliar metonymies, and their literal counterparts. They found that familiar

metonymies (e.g. *A lot of Americans protested during Vietnam*) could be resolved rapidly, whereas unfamiliar ones (e.g. *A lot of Americans protested during Finland*) had longer reading times than their literal counterparts. These results were discussed in relation to the *underspecification model*. According to this model, both the literal and metonymic interpretations of a familiar utterance can be accessed in the early processing stage via a single underspecified meaning. However, the underspecification model might not extend to sarcasm processing, since one important difference between sarcasm and metonymy is that while for metonymies, the literal and non-literal interpretations are related, for sarcasm, the two interpretations are often opposites. Therefore, it is unclear whether the advantage observed for familiar metonymies would also be observed for familiar sarcastic utterances. Regardless, the results of this study can also be accommodated by the graded salience hypothesis, since the evidence suggests that utterance familiarity affected metonymic processing.

The role of familiarity has also been studied in other instances of figurative language besides sarcasm and metonymy. Bosco, Vallana and Bucciarelli (2012) presented participants (children between 7 and 11 years old) with familiar and unfamiliar metaphors, idioms, and similes, and asked them what each of them meant. Perhaps unsurprisingly, children were significantly more accurate in their answers for familiar expressions rather than unfamiliar ones. The authors propose that the reason why familiar expressions were easier than unfamiliar ones was due to the fact that the familiar ones required a shorter inferential chain for comprehension. However their study does not give any information about the time course of comprehension.

Briner and Virtue (2014) presented adult participants with short texts ending with familiar or unfamiliar idioms, or a literal, non-idiomatic sentence. After each text, a word (related to the meaning of the idiom, and not related to the meaning of the literal sentence) or non-word was presented either in the left or right visual field, and participants were asked to perform a lexical decision task. The reason why the target word was not related to the meaning of the literal sentences was because the authors wanted to obtain a baseline of the speed of processing of the target words in the two visual fields. They then calculated the facilitation effect by subtracting the response time to the non-idiomatic condition from the response time to the idiomatic condition. They found that the processing of idioms was significantly faster than that of literal language, but only when the target words were presented in the right visual field (processed by the left hemisphere). Interestingly this was the case for both familiar and unfamiliar idioms, which goes against the graded salience hypothesis' prediction that unfamiliar idioms should take longer to process than familiar ones.

Peleg, Giora and Fein (2008) presented participants with homonyms (words that have the same form but refer to different concepts) with salient and less salient meanings (e.g. the salient meaning for the word "bulb" is "light", whereas the less salient meaning is "flower"). The homonyms were presented in contexts that biased the reader towards the less salient meaning. Each text was followed by a probe word that was either salient but contextually incompatible, less salient but contextually compatible, or unrelated to the homonym, and participants were asked to make lexical decisions about them. Results showed that the salient meanings of the homonyms were still activated

even if contextually incompatible, which they took as support for the

prediction of the graded salience hypothesis that the activation of salient

meanings cannot be suppressed by context.

More recently, Filik et al. (2014, Experiment 1) conducted an eye-

tracking while reading experiment to test the predictions of the graded salience

hypothesis. They presented participants with stories that either ended in a

literal or a sarcastic utterance, and the utterance could either be familiar (e.g.

"You are so tactful") or unfamiliar (e.g. *"You are so meticulous"*). This was

pre-tested by presenting participants with the target utterances outside of

context and asking them to rate the comments for how familiar they were as

sarcastic remarks. The results of the eye-tracking experiment indicated that

familiar sarcastic comments were read in equal time to literal counterparts. In

contrast, unfamiliar sarcastic comments had longer reading times in both the

early processing stages (first-pass reading time on the disambiguating word),

and in the late processing stages (total reading time on the disambiguating

word, and in all reading measures on the post-critical region).

Overall, research seems to support the prediction of the graded salience

hypothesis that familiar sarcastic utterances are processed in equal time to

literal ones, but unfamiliar sarcastic utterances take longer to process than their

literal counterparts (e.g. probe word identification task, Giora & Fein, 1999,

Experiment 1, and eye-tracking, Filik et al., 2014, Experiment 1).

1.3.3 The role of context

In the literature presented above, contextual factors have not been

manipulated at all. However it seems intuitive to assume that contextual factors

must play a role in sarcasm comprehension along with properties of the

utterance itself, since an utterance can only be interpreted as sarcastic in context (Calmus & Caillies, 2014; however see Giora et al., 2013 for a different view). Thus, the question of whether contextual factors affect the time-course of sarcasm comprehension will now be addressed.

1.3.3.1 Contextual antecedence and echo

Jorgensen, Miller, and Sperber (1984) tested the different predictions of the standard pragmatic model and the echoic mention theory in relation to which conditions are sufficient for an utterance to be interpreted as sarcastic. The standard pragmatic model predicts that if the listener recognises that what is said is not what is meant, that is sufficient for the comment to be interpreted as sarcastic. The echoic mention theory however, predicts that besides the previously mentioned condition, there is another one that is required for sarcasm interpretation: the comment needs to echo a previous utterance, thought, or social norm. Participants were presented with short stories ending in a sarcastic comment, with or without an antecedent. The materials without an antecedent satisfied the sufficient condition according to the standard pragmatic model, whereas the materials with antecedents satisfied the sufficient condition for the echoic mention theory. Participants were then asked to say why they thought the sarcastic comment was uttered.

The results indicated that overall participants did not correctly interpret the comments as sarcastic unless they had an antecedent, however there were cases when a sarcastic interpretation was made even for the non-echoic texts. This does not fully support the echoic mention theory, since it seems that an echoic mention of an explicit antecedent in the context is not always necessary for a sarcastic interpretation. There are however a few limitations to this study:

(1) only six experimental items were used, out of which two did not show any effects, (2) the stories where the antecedent was simply deleted sounded very unnatural which might explain why participants did not know how to interpret them, and (3) priming from the antecedent condition (i.e. using similar words in the context as in the target utterance) might have helped participants answer the question, while the no-antecedent condition did not involve any priming.

Gibbs (1986, Experiment 2) tested the echoic mention theory's prediction that sarcastic comments that echo an explicit antecedent in the context are processed faster than sarcastic comments that do not echo such an antecedent. He ran an experiment in which participants read stories that ended with sarcastic comments that had or did not have an explicit antecedent in the context. Results showed that participants took less time to understand sarcastic comments with explicit antecedents as compared to sarcastic comments without explicit antecedents, as predicted by the echoic mention theory. However, he did not have a literal condition in order to test the other prediction made by the echoic mention theory, that is, that sarcastic comments should overall take more time to read than literal comments.

Spotorno and Noveck (2014, Experiment 3) conducted a self-paced reading experiment where participants read stories ending in either a literal or a sarcastic comment, which echoed an explicit contextual antecedent – they did not have a condition with no echo. They found that literal utterances were processed faster than sarcastic ones, even if they echoed an explicit antecedent. This result supports the prediction of the echoic mention theory, that literal utterances would be processed faster than sarcastic ones. Spotorno and Noveck were not able to compare between sarcastic utterances with and without

antecedents, therefore they could not either support or fail to support the echoic mention prediction that an explicit antecedent would aid sarcasm comprehension when compared to sarcastic utterances without an antecedent.

1.3.3.2 Ironic environment

Ivanko and Pexman (2003) tested the effect of context incongruity (one aspect of the ironic environment according to the implicit display theory) using a self-paced reading paradigm (where participants are presented with only one word at a time, and in their own time, they press a button to see the next word, and so on until the entire text has been read). Participants read scenarios that had strongly negative contexts (i.e. the outcome was very negative and very different from the expectation), weakly negative (i.e. the outcome was mildly negative and not extremely different from the expectation), or neutral. The scenarios ended in either literal or ironic/sarcastic comments.

Results showed that the final word in the target statement in strongly negative contexts had longer reading times for ironies than for literal comments, whereas for weakly negative contexts the pattern was reversed: ironies had shorter reading times than literal comments. On the wrap-up region (i.e. the sentence following the target statement), reading times were longer for ironies than literal utterances in strongly negative contexts, and equivalent in weakly negative contexts. Therefore, this study showed that the context does have an effect on irony perception and processing at a quite early stage, contrary to what the modular accounts would predict.

Utsumi (2005) further tested the predictions of the implicit display theory in relation to the effects of the context. He manipulated two aspects of the ironic environment: context incongruity (materials were either strongly

negative or weakly negative) and degree of manifestness (an unexpected negative event occurred, or a negative event that happened many times before, happened again). Utsumi assumes that when a negative event is unexpected (because it has not happened before), the expectation for a positive event is more manifest in the context and hence sarcasm more likely to be elicited when the negative event takes place. When a negative event happened regularly before, the expectation for a positive event is less manifest (presumably because in this case one would expect the negative event and be less surprised by a negative outcome), and sarcasm less likely to occur.

Participants were asked to rate the stories for how sarcastic they were. Results showed that sarcasm ratings were not influenced by either the context incongruity or the ordinariness of situation. However, when Utsumi divided the materials into two groups: explicit expectations (where the speaker revealed the expectation to the addressee), and implicit expectations (where the addressee was unaware of the speaker's expectation), results showed that in implicit contexts, the ratings for sarcasm increased when the context was weakly negative and the situation was unusual, whereas in the strongly negative contexts, sarcasm ratings increased for usual negative events. No differences in ratings were found for the explicit contexts, which is what the implicit display theory would predict (other factors in the context help only when the expectation is not made explicit).

Giora, Fein, Kaufman, Eisenberg, and Erez (2009) wanted to replicate Utsumi's findings and tested directly whether the expectation of the character in a context influences reading times for sarcastic comments. They presented participants with three types of texts: (1) failed expectation + sarcastic

comment, (2) realised expectation + sarcastic comment, and (3) no expectation + literal comment, and their reading times for the target comments were recorded. Results showed that reading times for sarcastic comments following a frustrated and realised expectation were the same, and they were both slower than for the literal comments following no expectation. These results were interpreted as evidence to support the graded salience hypothesis prediction that context does not aid sarcasm comprehension, and against the implicit display theory's prediction that setting up an ironic environment will facilitate sarcasm comprehension.

However, there is an important issue with the design of this experiment that renders the results difficult to interpret. There was no condition in which there was no expectation in the context followed by a sarcastic comment, or an expectation followed by a literal comment. The implicit display theory predicts that when an expectation is made manifest in the context, there is no processing cost associated with sarcasm compared to literal language, while when an expectation is absent a processing cost is present for sarcasm. Giora et al. (2009) compared a sarcastic comment with an expectation with a literal comment without an expectation, therefore not directly testing the predictions of the implicit display theory.

1.3.3.3 Characteristics of the speaker

Pexman, Ferretti, and Katz (2000) used a self-paced reading paradigm to test the role of the speaker's occupation in sarcasm processing. Participants read stories in which the speaker of the target utterance had an occupation rated as likely to use sarcasm (e.g. comedian, truck driver), or an occupation rated as likely to use metaphor (e.g. scientist, clergyman). All target utterances were

metaphors, but they were either used in a metaphoric sense, or a sarcastic sense. Results indicated that when the context mentioned that the speaker's occupation was one stereotypically associated with sarcasm use, a target sarcastic remark was initially read faster than a literal remark, and later read slower than it, presumably because the information about the speaker's occupation was integrated early with the rest of the information. Of course, using metaphors in a sarcastic sense is not the most typical way of being sarcastic.

Pexman and Olineck (2002) investigated the role of speaker's occupation further, except this time they used more typical sarcastic utterances (that say the opposite of what they mean), and they asked participants to rate them for how sarcastic they were. They found that sarcasm ratings were modulated by the speaker's occupation, with statements uttered by characters from a highly sarcastic occupation being rated as more sarcastic, and those uttered by characters from a less sarcastic occupation being rated as less sarcastic. This effect was only observed when the contexts did not contain any extra cues for sarcasm (e.g. context incongruity). These results were taken as evidence for the implicit display theory because presumably the information about the speaker's occupation contributed to the ironic environment by making the sarcastic statement more prototypical.

In Pexman et al.'s (2000, 2002) studies, a character was known to be sarcastic because of their occupation. Giora et al. (2007) tested the effect of introducing a character that was known to be sarcastic due to uttering a sarcastic comment before the final target comment. Results indicated that although the sarcastic ending was the expected one (as per their pre-test),

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sarcastic final remarks were still read more slowly than literal remarks, which was considered evidence for the graded salience hypothesis' claim that even with a biasing context, the salient literal meaning cannot be bypassed.

In order to replicate these findings, Fein, Yeari, and Giora (2015) conducted a probe word identification task, also using materials where one character uttered a sarcastic comment before the target one, but this time including an indication that a sarcastic comment will ensue the first time a sarcastic comment was made in the context. This was done by adding a word like *"derisively"* after the character's name, before their first sarcastic comment, which constituted an extra contextual constraint (see Example 6 below):

6: *Barak: I finish work early today.*

Sagit: So, do you want to go to the movies?

Barak: I don't really feel like seeing a movie.

Sagit: So maybe we could go dancing?

Barak: No, at the end of the night my feet will hurt and I'll be tired.

Sagit (derisively): You're a really active guy…

Barak: Sorry, but I had a rough week.

Sagit: So what are you going to do tonight?

Barak: I think I'll stay home, read a magazine, and go to bed early.

Sagit: Sounds like you are going to have a really interesting evening.

Barak: So we'll talk sometime this week.

The probe words that participants had to respond to were either related to the salience-based interpretation of the target utterance (i.e. the literal meaning), the sarcastic interpretation, or a word unrelated to any of the two interpretations. Results indicated that the response to the salience-based word was always faster, irrespective of contextual constraints, which was considered evidence for the graded salience hypothesis and against interactive accounts.

To further the investigation of the role of speaker characteristics on sarcasm comprehension, Regel, Coulson, and Gunter (2010) conducted an ERP study. Their experiment had two phases. In the first phase, participants read scenarios where two particular characters interacted with other interlocutors – one character was frequently replying with a sarcastic comment, whereas the other character was frequently literal. In the second phase, participants read scenarios involving the same two characters from phase 1, but this time they were both using sarcastic and literal remarks equally frequently (so it was no longer the case that one character was more sarcastic than the other).

The aim of this study was to verify (1) whether information about the communicative style of a character can be implicitly acquired (through reading, in phase 1), whether it affects how people process the character's sarcastic remarks, and (2) whether the knowledge acquired in phase 1 will affect the processing of sarcastic remarks in phase 2, when the communicative styles of the speakers have changed. EEG data was recorded on the final word of the target remarks (the word that disambiguated them as literal or sarcastic), in both phases of the experiment.

ERPs typically observed in language processing studies, and relevant to figurative language as well, include the N400 and the P600. The N400 is a

negative-going ERP with a peak around 400ms after stimulus presentation. It was first observed for literal sentences that contained unexpected words, and it is typically related to semantic processing (Kutas & Hillyard, 1980). Although this ERP has been found in relation to the processing of a variety of non-literal language (e.g. metaphors, jokes etc.), there is mixed evidence for its presence during sarcasm processing (see Filik et al., 2014 for a discussion). The P600 is a late positivity with a peak around 600ms after stimulus onset, and although the mechanisms that underlie it are still debatable (again see Filik et al., 2014), one that is relevant for sarcasm processing is that it seems to be related to on-going linguistic analyses following conflict.

Results from phase 1 showed that as early as 200ms after target onset (P200), an interaction was observed between the character's communicative style and the literality of their utterance, suggesting that sarcastic sentences were processed differently depending on who uttered them. The amplitude of the P600 was larger for sarcastic utterances than literal ones, but only when uttered by the highly literal character. No N400 effect was observed, suggesting that semantic processing was not affected by the speaker's communicative style. These results suggest that participants spontaneously learnt to associate a certain communicative style with a certain character, and also provide evidence that information about the speaker's communicative style affects sarcasm processing.

Results from phase 2 indicated that a larger P200 was observed when the speaker's communicative style from phase 1 matched the interpretation of the comment. The P200 is known to be larger for expected words (see Federmeier, Mai & Kutas, 2005), for example in this case, when the sarcastic

character from phase 1 uttered a sarcastic remark, and when the literal

character uttered a literal remark. So the learnt communicative style from

phase 1 affected the initial stages of sarcasm processing even when the

communicative style changed. Furthermore, the N400 amplitude was larger for

literal statements than for sarcastic ones uttered by the sarcastic speaker.

Finally, the P600 amplitude was larger for sarcastic than literal remarks uttered

by the sarcastic character.

This study provides evidence in favour of the constraint satisfaction

model, or the implicit display theory even, but does not support the modular

accounts of sarcasm processing, since it showed that context can and does

affect both the early and late processing stages of sarcasm comprehension.

1.3.3.4 Speaker-target relationship

Pexman, Whalen, and Green (2010) used a self-paced reading paradigm

to test the effect of speaker-target relationship on the processing of direct and

indirect sarcasm. They found that when the speaker and the target had a close

relationship, reading times for a direct sarcastic comment were quicker than for

indirect statements, and the opposite was true for distant relationships between

speaker and target. Although in this experiment the processing of a sarcastic

utterance was not compared to that of a literal one, it still provides evidence

that readers do take into consideration contextual factors and the suitability of

the target comment in the context affects how quickly it is read.

In conclusion, there are studies suggesting that a variety of contextual

factors can affect sarcasm processing: contextual antecedence (e.g. Jorgensen

et al, 1984, self-paced reading tasks: Gibbs, 1986, Spotorno & Noveck, 2014),

context incongruity (e.g. self-paced reading paradigm: Ivanko & Pexman,

2003, rating study: Utsumi, 2005), characteristics of the speaker (e.g. self-paced reading paradigm: Pexman et al., 2000, rating study: Pexman & Olineck, 2002, ERP: Regel et al., 2010), and speaker-target relationship (e.g. self-paced reading paradigm: Pexman et al., 2010). These studies support interactive accounts of sarcasm comprehension by showing that context can indeed affect the time-course of sarcasm processing (see also Campbell & Katz, 2012). On the other hand, there are studies showing that the time-course of sarcasm comprehension is not affected by having an expectation made explicit in the context (e.g. self-paced reading: Giora et al., 2009), or by having a character that is known to be sarcastic in the context (e.g. self-paced reading: Giora et al., 2007, probe word identification task: Fein et al., 2015). These studies support the modular accounts.

This thesis aims to contribute to the debate between modular and interactive views of language processing, with evidence from sarcasm comprehension. The method of eye-tracking will be employed in order to test the predictions of modular and interactive accounts of sarcasm comprehension, in relation to the factors that might affect initial processing. The factors that will be investigated are the literality of the comment, the familiarity of the comment, and a number of contextual factors, specifically, echoing a contextual antecedent (Experiments 1 and 2), the explicitness of the speaker's expectation (Experiments 4 and 6), and the speaker's communicative style (Experiment 7). As has been explained before, if contextual factors are found to affect initial sarcasm processing, that would constitute evidence for the interactive view of language comprehension. If however contextual factors do

not affect initial sarcasm processing, but comment literality and familiarity do,

that would constitute evidence for the modular view of language

comprehension. In the following chapter, the choice of methodology (i.e. eye-

tracking) and data analysis (i.e. linear mixed effect modelling) will be

motivated, in relation to other potential research methods and statistical tests.

Chapter 2: Methodology and data analysis

2.1 Methodology

Sarcasm comprehension has been investigated with a variety of research methods, from simple rating studies, to probe word identification tasks, the visual world paradigm, self-paced reading studies, eye-tracking, fMRI, and ERP. Most studies reported in this thesis involve eye-tracking while reading as the method of investigation, therefore this section discusses the advantages and disadvantages of the different methodologies used so far in the literature. The goal is to provide a strong motivation for the choice of eye-tracking as the main methodology in this thesis.

Simple rating studies can give us some preliminary information about how readers perceive a comment (usually participants are asked how sarcastic a comment is), and which factors affect this rating. Studies that involved this methodology were some of the first to show that contextual factors can affect the perception of a sarcastic message (e.g. Pexman & Olineck, 2002, Utsumi, 2005). However, rating studies can only reflect the outcome of the process of comprehension, but not the mechanisms involved in the process itself. For this reason, rating studies can be considered a good starting point in sarcasm research, but in order to investigate the steps involved in the process of sarcasm comprehension, researchers need to resort to methods that can track its time-course.

In probe word identification tasks, participants first read a scenario that contains the remark of interest (e.g. a sarcastic one), and then they are presented with a letter string and they have to decide as quickly and as accurately as possible whether the letter string constitutes a word or not. This

methodology has been used before to assess which meaning of a sarcastic utterance is and remains active at certain time points during the comprehension process (e.g. Fein et al., 2015, Giora & Fein, 1999). As explained before, different theories make different predictions in this respect (for example the standard pragmatic model predicts that in the early processing stages only the literal meaning is activated, while in the later stages only the sarcastic meaning is activated, as opposed to the graded salience hypothesis which predicts that although in the early stages only the literal meaning is activated, in the later stages both the literal and the sarcastic meanings are activated). The results of studies using the probe word identification task have shed some light on this debate, but this task cannot be used to answer questions related to the time-course of sarcasm compared to literal language comprehension. That is because of the procedure employed in the probe word identification experiments discussed here: participants are asked to perform the task of interest (decide if the letter string is a word or not) after they have first read an entire scenario containing the target remark. Participants have most likely already engaged in the initial processing of the target remark, before they are asked to make the lexical judgement. In consequence, the lexical judgement itself can only reflect the outcome of the comprehension process, but not its time-course.

The visual world paradigm involves an aurally presented stimulus accompanied by a visual scene – eye movements are tracked, and looking behaviour is taken to reflect thought processes (Allopenna, Magnuson, & Tanenhaus, 1998). In a typical experiment investigating specifically sarcasm comprehension, participants would hear an experimental stimulus, which could be literal or sarcastic, and they would have in front of them an experimental

display that would contain objects related to both the literal and the sarcastic interpretations of the stimulus. The assumption is that people will look at the object that reflects the interpretation that is in the focus of their attention at that time (see Huettig, Rommers, & Meyer, 2011 for a discussion). Therefore looking behaviour can inform the researcher about which interpretation was considered first, and hence contribute to the debate between modular and interactive accounts of language comprehension. This task is ecologically valid, but it is only suitable if the experimental materials are presented aurally. In this thesis, written sarcasm was investigated, mainly because the predictions of the theories reviewed in Chapter 1 can be more easily tested in writing, where confounding variables like tone of voice can be controlled better. Therefore the choice was made to employ a research method suited for visual stimulus presentation.

In reading studies using self-paced paradigms, participants are presented with the experimental stimulus one word at a time (e.g. Ivanko & Pexman, 2003, Pexman et al., 2000) or one sentence at a time (e.g. Giora et al., 2007, Spotorno & Noveck, 2014), and they are required to press a button when they are ready to read the next word or sentence. These studies can give information about early and late processing stages, since reading times can be reported on the target comment or word itself, and also on subsequent regions of text. Therefore these reading studies have a good temporal acuity. However, since these experiments only present participants with one word, or one line of text at a time, and require them to press a button in order to progress to the next section of text, it can be argued that this stimulus presentation does not reflect natural reading. Participants are not able to look back at the text they have

already read, which is not how people read in real life (see Kaakinen et al., 2014 for a brief discussion). Typically, looking back behaviour is intrinsic to reading, particularly when people experience difficulty; therefore the self-paced method does not necessarily reflect how reading takes place naturally.

In a typical fMRI (functional magnetic resonance imaging) study in language comprehension, participants will be reading experimental materials while lying in a scanner. Images of the brain are recorded every 1-3s, and changes in the blood oxygen concentration in certain brain areas are taken to reflect increased brain activity in that location. The aim is to pinpoint which brain areas or networks were activated when certain stimuli of interest were presented to the participant. fMRI studies of sarcasm comprehension have mostly addressed the question of whether the speaker's attitude needs to be processed in order to accurately comprehend a sarcastic remark. This is a prediction made by the echoic mention theory, as discussed in Chapter 1, that has not been tested using eye-tracking methods yet. However, a few fMRI studies aimed to answer the question by looking at the neural correlates of sarcasm comprehension. The argument is that if the speaker's attitude needs to be processed for sarcasm comprehension, then the mentalising network should be activated preferentially for sarcastic texts, rather than literal ones, and that is indeed what these studies have found (e.g. Eviatar & Just, 2006, Rapp et al., 2010, Shibata, Toyomura, Itoh, & Abe, 2010). Since fMRI methodologies do not have a very good temporal acuity however, these studies have not been able to answer questions related to the time-course of sarcasm comprehension.

ERP (event-related potentials) studies have the advantage of giving an excellent temporal acuity. They measure electrophysiological brain responses

locked to the time of presentation of a particular stimulus. Two of the ERP components typically observed in irony and sarcasm comprehension are the N400 and the P600. As the name suggests, the N400 is a negative ERP component present 400ms after stimulus presentation. It is believed to reflect semantic integration processes for unpredictable words (Kutas & Federmeier, 2011). The P600 is a positive component present 600ms after stimulus presentation. Originally, it was believed to be elicited by syntactic anomalies (Osterhout & Holcomb, 1992), however it is now believed to reflect on-going processing following linguistic conflict (Kuperberg, 2007; see also Filik et al., 2014 for a discussion). However, ERP studies are also not particularly ecologically valid when concerned with presentation of written material. That is, they usually involve a word-by-word presentation (rapid serial visual presentation) in which participants cannot control for how long a certain word is presented on the screen. This method of presentation is used because the researchers need to know which word the participant was reading at each time point, in order to time-lock that with the presence of certain ERP components. Therefore ERP studies have the same drawbacks as the self-paced reading studies discussed above.

A more recent methodology is eye-tracking-ERP co-registration (see Henderson, Luke, Schmidt, & Richards, 2013). Using this method, ERP components can be time-locked not to the stimulus presentation, but to the beginning of a fixation on a certain stimulus. What this means is that reading can be natural, hence bypassing the issue of stimulus presentation in ERP studies. Therefore, this methodology is suitable for using the strengths of ERPs to investigate neural correlates of language processing during natural reading.

However, before addressing the question of the neural correlates of sarcasm processing, a solid background of eye-tracking data needs to exist in order to guide the future co-registration studies. As explained in Chapter 1, sarcasm comprehension has not been commonly investigated using eye-tracking (in fact no studies to date have used eye-tracking to investigate how contextual factors affect sarcasm comprehension), therefore this thesis was designed to fill that gap in the literature. Eye-tracking-ERP co-registration would be the next natural step to take in future studies.

In eye-tracking while reading studies, participants are presented with texts to read, while their eye movements are tracked with a specialised camera. One advantage of eye-tracking studies is that texts are presented as a whole on the screen, therefore the method of stimulus presentation is much more ecologically valid than in self-paced reading studies or ERP studies. One consequence of presenting entire texts on the screen at one time is that participants are allowed to read naturally, including looking back at previously-read text regions, and they are not required to press a button after every word/sentence they read. A second consequence of the stimulus presentation in eye-tracking studies is that although the materials are divided into analysis regions (or regions of interest), the participants are not aware of that, since they can only see the entire text, un-segmented.

A second major advantage of eye-tracking is that it can have millisecond temporal acuity (e.g. the eye-tracker employed for the studies in this thesis, the SR Research Eyelink 1000, has millisecond temporal acuity). The implication of this is that a variety of reading measures can be devised to reflect both early and late processes that take place during natural reading. For

example, eye-tracking reading measures are well suited to investigate how people read texts that pose some comprehension difficulties. When people experience some difficulty while reading a text they can respond to this difficulty in a variety of ways, including pausing on certain words, or looking back and re-reading parts of the text. Eye-tracking reading measures are designed to capture these different behaviours, so that researchers can get a full picture of the time-course of text processing.

In this thesis, three reading measures are reported: first-pass reading time, regression path reading time, and total reading time. These three particular measures give a comprehensive overview of the reading process. First-pass reading time (abbrev. fp) is defined as the sum of all fixations in a region from first entering it until leaving it either via its left or right boundary, also known as gaze duration when the region comprises a single word. Regression path reading time (or go-past reading time; abbrev. rp) is the sum of all fixations on a region and on preceding regions from first entering the region to first going past it, i.e. leaving it via its right boundary. First-pass and regression path reading times are considered to reflect early processing stages (that is, before the reader moved on in the text past the region of interest). Total reading time (abbrev. tt), is the sum of all fixations in a region, including fixations made when re-reading the region. Therefore, this measure reflects late comprehension processes, because it includes the time spent re-reading the region of interest, after it had been previously exited via its right boundary and then returned to.

In conclusion, eye-tracking provides an ecologically valid methodology, with excellent temporal acuity, and represents a useful tool to

investigate the processing of written sarcasm comprehension. Therefore, eye-tracking seems to be the most appropriate method to employ in order to address the research questions raised in this thesis. In the next section, the topic of data analysis will be discussed, and the choice of statistical testing used in this thesis will be motivated.

2.2 Data analysis

Traditionally, data from psycholinguistic experiments have been analysed with by-subjects and by-items analyses of variance – F1 and respectively F2 ANOVAs (Raaijmakers, 2003). Using this statistical method means that when conducting the F1 ANOVA, the data are averaged across experimental items, and when conducting the F2 ANOVA, the data are averaged across participants. Of course this means that the analysis never takes all the data into consideration, and cannot simultaneously account for both intra-subjects and intra-items variability. Also, in order to report an effect as significant and be able to generalise the result to other samples of participants and items, it would be necessary that the effect is significant in both F1 and F2 tests, which is often not the case. When F1 and F2 analyses do not tell the same story, the results become very difficult to report and interpret confidently.

Linear mixed effects modelling on the other hand is a more powerful and flexible approach to the analysis of psycholinguistic data (Locker, Hoffman, & Bovaird, 2007), and it has the added advantages of being able to analyse incomplete data sets and being robust against violations of homoscedasticity and sphericity (Quené & van den Bergh, 2004). Instead of performing two separate F1 and F2 analyses, linear mixed effects modelling allows the introduction of random intercepts and slopes for subjects and items;

in other words, a mixed effects model takes all the data into consideration and does not require prior averaging (Baayen, Davidson, & Bates, 2008). Also, the introduction of random intercepts and slopes for subjects and items means that the analysis now accounts for intrinsic differences between participants and between the experimental items, which were not manipulated experimentally (for example, some participants might be intrinsically faster readers, or differently sensitive to a certain manipulation).

Thus, the eye-tracking data in this thesis will be analysed using linear mixed effects modelling in R, since this is arguably a more powerful and flexible approach to data analysis than the traditional ANOVA.

2.3 Data transformation and outlier removal

Eye-tracking reading measures, similarly to reaction times, are typically positively skewed; hence data transformations (like logarithmic transformations) are sometimes applied before statistical analysis is conducted (Baayen & Milin, 2010). However, it is perhaps not very clear in which situations such a transformation is warranted or required. For example, none of the eye tracking studies reviewed in the introduction of this thesis transformed their data before statistical analysis (Filik & Moxey, 2010, Filik et al., 2014, Frisson & Pickering, 1999, and Kaakinen et al., 2014).

In the case of linear mixed effects modelling, data is typically analysed in its raw form (untransformed) and then the residual plots are inspected for deviations from normality, linearity, and homoscedasticity. If the requirements are broken, then a re-analysis of the log-transformed data is recommended (Winter, 2013). The residual plots of each of the experiments in this thesis have indeed been inspected, and the conclusion was that none of them violated the

assumptions of the linear mixed effects analysis. Therefore, similarly to the general practice in the literature, no transformations were applied to the eye tracking data in this thesis.

Whether outliers should be removed or not is another controversial issue for eye tracking data. Some researchers remove all data points that fall beyond a certain arbitrary cut-off point. However, if that cut-off had been employed in the experiments in this thesis (e.g. the popular 2.5SD from the mean), a significant percentage of the data would have been removed (sometimes more than 10%). For this reason, and based on the guidelines proposed by Baayen and Milin (2010) to trim as little as possible from the data set, I have decided to only remove a data point if it would have been physically impossible to be a real data point (e.g. a fixation duration of negative value). On that basis, no data was removed from the experiments in this thesis, since no fixation durations could safely and objectively be categorised as outliers.

2.4 Overview of thesis

This thesis aims to investigate how sarcasm comprehension unfolds in comparison to literal language comprehension, and which factors, if any, affect the comprehension process. By systematically manipulating a series of lexical and contextual factors, we hope that evidence from this thesis can contribute to the wider debate between modular and interactive views of language comprehension.

Chapter 3 will report two eye-tracking studies that compared and tested the predictions of three of the theories discussed in Chapter 1: the standard pragmatic model, the graded salience hypothesis, and the echoic mention theory. Specifically, these studies investigated the effects of echoing a

contextual antecedent, and of utterance familiarity, on the comprehension of written sarcasm. If echoing a contextual antecedent is found to facilitate the initial stages of sarcasm comprehension as compared to cases where a contextual antecedent was not echoed, then that would constitute evidence for the echoic mention theory, and more broadly for interactive views of language comprehension. If sarcasm is found to be more difficult to process than literal language, then that would constitute evidence for both the standard pragmatic model and the echoic mention theory. If utterance familiarity affects initial processing stages such that only unfamiliar sarcastic remarks are more difficult than literal ones, then that would constitute evidence for the graded salience hypothesis. The two latter outcomes would constitute evidence for the broader modular views of language comprehension.

Chapter 4 will report two eye-tracking studies and two rating studies. The eye-tracking studies compared and tested between the predictions of the standard pragmatic model, the graded salience hypothesis, and the implicit display theory. Specifically, alongside the lexical factor of familiarity, the speaker's expectation was either made explicit or implicit in the context. As in Chapter 3, if contextual effects are present in the initial stages of sarcasm comprehension, that would constitute evidence for the implicit display theory, and for interactive views more broadly; otherwise, modular views would be supported. The two rating studies in this chapter were designed to test an offline prediction of the implicit display theory, that readers have a higher expectation for sarcasm to occur in a context where the speaker's expectation was made explicit and then broken.

Chapter 5 will report a final eye-tracking study where a character was either known to be sarcastic in the context or not. This experiment was meant to compare more broadly between modular and interactive accounts, and not between specific theories. If early contextual factors are observed, then that would be evidence in favour of the interactive views; conversely, modular views would be supported.

Finally, Chapter 6 will conclude the thesis, by discussing the findings from Chapters 3-5, and their implications for the theories of sarcasm comprehension outlined in Chapter 1. Additionally, implications for the wider modular vs. interactive debate will be addressed, and future directions suggested.

Chapter 3: The roles of echoic mention and utterance familiarity

3.1 Introduction

The first two theories whose predictions will be experimentally tested here are the standard pragmatic model and the echoic mention theory. As detailed in Chapter 1, the standard pragmatic model (Grice, 1975) is a modular account according to which sarcastic remarks always take longer to be processed than literal ones, because their literal meaning has to be processed first, then rejected and replaced by the sarcastic meaning. The standard pragmatic model does not allow for contextual factors to interfere with the process by which sarcastic remarks are processed.

The echoic mention theory (Sperber & Wilson, 1981) proposes that a sarcastic remark echoes a previous thought, utterance, or social norm, and its function is to communicate the speaker's attitude towards this echoed antecedent. One prediction made by the echoic mention theory is that sarcastic comments that echo an explicit antecedent in the context are faster to process than sarcastic comments that do not have an explicit antecedent in the context (a prediction supported by Gibbs, 1986, but not further explored since).

As it has been explained in Chapter 1, the echoic mention theory does not however predict that sarcasm should be as easy to understand as literal language. In fact it predicts that sarcasm should normally take longer than literal language to be processed (irrespective of the explicitness of the antecedent), because of the added task of recognising the speaker's attitude towards the utterance, but not because the literal meaning needs to be discarded and replaced as predicted by the standard pragmatic model.

In the first eye-tracking experiment of this chapter, materials were developed that either contained an explicit antecedent or did not. The final utterance was either literal or sarcastic, and in the case where an explicit antecedent was present in the context, the target utterance echoed that antecedent. The echoic mention theory would predict that (1) sarcastic utterances that have an explicit antecedent should be processed faster than sarcastic utterances without an antecedent, and (2) sarcastic utterances should be processed slower than literal equivalents, irrespective of contextual factors. The standard pragmatic model would also predict that sarcastic utterances would be processed slower than literal ones, but it would not predict that context could confer a processing advantage to sarcastic remarks.

The second experiment in this chapter aimed to replicate and extend on the first one, by adding the factor of comment familiarity to the design, and hence bringing the graded salience hypothesis (Giora, 1997) into discussion. The graded salience hypothesis would predict that (1) context cannot confer an advantage to sarcastic utterances, and (2) familiarity would modulate processing time for sarcasm in such a way that familiar sarcastic remarks will be processed in equal time to literal counterparts, whereas unfamiliar sarcastic remarks will be processed slower than literal ones. On the other hand, the echoic mention theory would predict as before that (1) sarcastic utterances that echo an explicit contextual antecedent would be processed faster than a sarcastic utterance that did not echo an antecedent and (2) that sarcastic utterances would be processed slower than literal ones. The standard pragmatic model would predict a processing difficulty associated with sarcastic comments as compared to literal ones, irrespective of context and familiarity.

3.2 Experiment 1: Method

3.2.1 Participants

Twenty-four students from the University of Nottingham participated (M_{age} = 20 years and 3 months, SD = 10 months, 21 females and 3 males). All participants were native English speakers, not diagnosed with any reading disorders, and had normal or corrected-to-normal vision. They received course credit for their participation.

3.2.2 Materials and design

Twenty-four experimental materials were constructed (see Table 1 for an example and Appendix A for the full list). Each scenario was made up of five sentences, describing an interaction between two characters, and ending with a comment that one character made towards the other one. The first sentence of the context simply introduced the two characters and the situation they were in (e.g. *Lauren asked Dan to sing with her at the pub karaoke night.*). The second sentence had two versions, which differed between the antecedent and no antecedent conditions. In the antecedent condition, the second sentence contained an explicit utterance regarding the beliefs of one of the characters, which would then later be echoed with the target comment (e.g. *Dan said, "OK, I'm a good singer."*). In the no antecedent condition, the second sentence contained no such belief or any elements that could be echoed with the subsequent target comment (e.g. *Dan said, "I wonder if they have my favourite Beatles song."*). The third sentence contained the outcome of the second character's behaviour and it had two versions, which differed between the literal and sarcastic conditions. In the literal condition, the outcome was a positive one (e.g. *Later Dan sang beautifully on the karaoke.*). In the sarcastic

condition, the outcome was a negative one (e.g. *Later Dan sang awfully on the karaoke.*).

The target comment was contained in the fourth sentence (e.g. *"Your singing is amazing!" said Lauren*) – this utterance was designed to echo the contextual antecedent in the explicit antecedent condition. In the literal condition the speaker meant what they literally said through the final comment, which had a positive meaning, whereas in the sarcastic conditions, the speaker said the opposite of what they meant, that is, they said something positive in order to convey a negative meaning. The fifth sentence was a wrap-up sentence that concluded the scenario (e.g. *They stayed until the end of the party.*).

Thus the experiment consisted of a 2 literality (literal vs. sarcastic) x 2 antecedence (with antecedent vs. without antecedent) design, with both factors being within-subjects and within-items.

Twenty-four filler materials accompanied the 24 experimental materials, and they had a similar structure to the experimental items, except they all contained literal positive utterances (see the full list of filler items in Appendix B). The filler items were included in order to distract the participants from the sarcastic scenarios, so that they were less likely to guess the true purpose of the experiment.

The software used to display the texts (Eye Track - http://blogs.umass.edu/eyelab/software/) ensured the randomisation and counterbalancing of the scenarios. There were four stimulus presentation files, each containing only one version of each scenario, and a total of six experimental items for each condition. Each participant was presented with one stimulus file, so that in the end data were collected from six participants for

each stimulus file. The order in which the scenarios were presented within each stimulus file was randomised for each participant.

Literal	With antecedent	Lauren asked Dan to sing with her at the pub karaoke night. Dan said, "OK, I'm a good singer." Later Dan sang beautifully on the karaoke. "Your/ singing is pre-critical region/ amazing!" critical region/ said Lauren. post-critical region/ They stayed until the end of the party.
	Without antecedent	Lauren asked Dan to sing with her at the pub karaoke night. Dan said, "I wonder if they have my favourite Beatles song." Later Dan sang beautifully on the karaoke. "Your/ singing is pre-critical region/ amazing!" critical region/ said Lauren. post-critical region/ They stayed until the end of the party.
Sarcastic	With antecedent	Lauren asked Dan to sing with her at the pub karaoke night. Dan said, "OK, I'm a good singer." Later Dan sang awfully on the karaoke. "Your/ singing is pre-critical region/ amazing!" critical region/ said Lauren. post-critical region/ They stayed until the end of the party.
	Without antecedent	Lauren asked Dan to sing with her at the pub karaoke night. Dan said, "I wonder if they have my favourite Beatles song." Later Dan sang awfully on the karaoke. "Your/ singing is pre-

		_{critical region}/ amazing!" _{critical region}/ said Lauren. _{post-critical region}/ They stayed until the end of the party.

Table 1. Example material (Experiment 1)

3.2.3 Procedure

Eye movements were recorded via an SR Research Eyelink 1000 eye-tracker that sampled eye position every millisecond. Viewing was binocular, but only one eye was recorded for each participant. Materials were displayed on a computer screen approximately 56cm from participants' eyes. Before the start of the experiment, the procedure was explained to the participants. They were instructed to read as they would normally, taking as much time as they needed in order to understand the texts. Participants were then seated at the eye-tracker and placed on a chin- and forehead-rest to minimise head movements. They then completed a calibration procedure. Before each trial, a fixation box appeared in the top left quadrant of the screen. Once the participant fixated this box, the texts would be presented. If the participants' apparent point of fixation did not match with the fixation box, the experimenter re-calibrated the eye tracker. Each trial consisted of one scenario, presented as four lines of text, with two blank lines between each line of text. Once the participants finished reading it, they looked away from the text and towards a post-it note affixed to the bottom right hand edge of the monitor, and then pressed the right-shoulder button on the console to progress to the next trial.

After 25% of the trials, a yes/no comprehension question was asked to ensure that the participant actually read and comprehended the text. The comprehension question related solely to the context of the scenario, and it was

not a test of sarcasm comprehension (e.g. for the example scenario in Table 1, the question would be, *"Did Dan sing at the karaoke?"*). The average correct response rate of 93.5% indicated that participants were reading for comprehension.

3.3 Experiment 1: Results and discussion

The scenarios in this experiment had three analysis regions. The critical region was the word that disambiguated the target utterance as being either sarcastic or literal. The pre-critical region was the two words that preceded the disambiguating word, while the post-critical region was the region that followed the disambiguating word and completed the target utterance (see Table 1). Three measures of reading behaviour are reported: first-pass reading time, regression path reading time, and total reading time. These measures have been defined in Chapter 2, but the definitions will be briefly re-iterated here. First-pass reading time is the sum of all fixations in a region from first entering it until leaving it either via its left or right boundary. Regression path reading time is the sum of all fixations on a region and on preceding regions from first entering the region to first going past it, i.e. leaving it via its right boundary. Finally the total reading time is the sum of all fixations in a region, including fixations made when re-reading the region.

Prior to the statistical analysis, the data were pre-processed using the EyeDoctor software (http://www.psych.umass.edu/eyelab). For each participant, the blinks were removed, and also the fixations were aligned on the vertical plane. The EyeDry software was then used to create the files needed for data analysis. Trials that had zero first-pass reading times for two consecutive regions (where regions are defined as a whole sentence in the

context, and then the pre-critical, critical and post-critical regions) have been eliminated because it typically means that in those trials either the participant did not properly read the text, or there was a significant amount of track loss. This way, 0.35% of the data was removed.

As it has been argued in Chapter 2, linear mixed effects modelling is preferable to traditional F1 and F2 ANOVAs due to its increased ability to model both fixed and random effects, to generalise findings to the entire population of both subjects and items based on a single analysis, as well as its increased power, etc. (Locker et al., 2007). Therefore the data analysis for the eye-tracking experiments in this thesis was done in R (version 3.2.0) using linear mixed effects modelling (*lme4* package version 1.1-7). Potential interactions were decomposed in R using the function *testInteractions* from the *phia* package, where the chi-square is the default test; all reported *p*-values are Bonferroni-corrected (Martínez, 2015).

The first step was to discard from the analysis the missing data[1]. The second step was to establish the appropriate random effects structure for each analysis. The procedure used followed the one recommended by Barr, Levy, Scheepers, and Tily (2013). First the full model was fitted to the data. The random effects structure of the full model was: (1 + literality*antecedence|subject) + (1 + literality*antecedence|item). The reason why literality and antecedence were introduced as random slopes for both subjects and items is because both factors were within-subjects, and within-items respectively. However, when the maximal model failed to converge (after 10,000 iterations), the random effects structure had to be simplified in order to obtain convergence. This was done by progressively removing one

random slope at a time – the one that explained the least amount of variance in the previous non-converging model. The reason for progressively simplifying the random structure rather than reverting to intercept-only random structures was because of Barr et al.'s (2013) finding that keeping the random structure as rich as possible is the best way to avoid anti-conservative results.

Once the random effects structure had been established, the next step was to perform a series of likelihood-ratio tests comparing the fit of models with different fixed effects structures in order to reach the best model fit for the data. The procedure used was to compare the model with the two factors in interaction with progressively simpler fixed effects structures (that is, two main effects but no interaction, only one main effect, or no main effects or interaction). See Table 2 below for the models that had the best fit for the data and the values of their fixed-effects parameters. Furthermore, see Appendix C for the *t*-values associated with the fixed factors that did not have significant effects (i.e. were not included in the best fitting models), and the series of likelihood-ratio tests performed in order to reach the best models.

Analysis region	Reading measure	Model		Coefficient	SE	t
pre-critical	fp	~ 1 + (1 + antecedence|subject) + (1 + literality*antecedence|item)	(Intercept)	252.5	14.1	17.9
	rp	~ 1 + (1|subject) + (1 + literality*antecedence|item)	(Intercept)	305.3	17.3	17.6
	tt	~ 1 + (1 + literality*antecedence|subject) + (1 + literality*antecedence|item)	(Intercept)	324.7	22.1	14.7
critical	fp	~ 1 + (1 + literality*antecedence|subject) + (1 +	(Intercept)	233.7	9.5	24.6

		literality*antecedence|item)				
	rp	~ 1 + (1 + antecedence|subject) + (1|item)	(Intercept)	323.1	20.9	15.5
	tt	~ antecedence + (1 + literality*antecedence|subject) + (1 + literality*antecedence|item)	(Intercept) antecedence	256.3 28.7	11.2 14.3	22.9 2
post-critical	fp	~ 1 + (1 + literality*antecedence|subject) + (1 + literality*antecedence|item)	(Intercept)	366.9	23.2	15.8
	rp	~ antecedence + (1 + literality*antecedence|subject) + (1 +	(Intercept) antecedence	403.3 74.1	31 31.2	13 2.4

		literality*antecedence|item)				
	tt	~ antecedence + (1 + literality*antecedence|subject) + (1 + literality*antecedence|item)	(Intercept) antecedence	401.9 57.5	26.7 19.6	15.1 2.9

Table 2. Best fitting models and fixed-effects parameters (Experiment 1)

The pre-critical region. There were no effects on any of the reading time measures in this region - see Figure 1a-c.

The critical region. During the initial processing of the target comment (first-pass and regression path reading times), there were no main effects or interactions - see Figure 2a-b. In the later stages of processing (total reading time), there was a marginal main effect of antecedence. The disambiguating word of comments that echoed an explicit antecedent was read faster ($M_{\text{withantecedent}}$ = 260ms, *SEM* = 9ms) than that of comments without an antecedent ($M_{\text{withoutantecedent}}$ = 289ms, *SEM* = 9ms;) - see Figure 2c. This effect suggests that the disambiguating word was re-read more when it did not echo a contextual antecedent.

The post-critical region. First-pass reading times revealed no main effects or interactions on the region following the disambiguating word - see Figure 3a. However, regression path and total reading times were shorter when the target utterance echoed an antecedent ($M_{\text{rp-withantecedent}}$ = 409ms, *SEM* = 16ms; $M_{\text{tt-withantecedent}}$ = 400ms, *SEM* = 13ms) than when no such antecedent was present in the context ($M_{\text{rp-withoutantecedent}}$ = 482ms, *SEM* = 24ms; $M_{\text{tt-withoutantecedent}}$ = 455ms, *SEM* = 18ms) - see Figure 3b-c.

Figure 1a: fp - pre-critical region

Figure 1b: rp - pre-critical region

Figure 1c: tt - pre-critical region
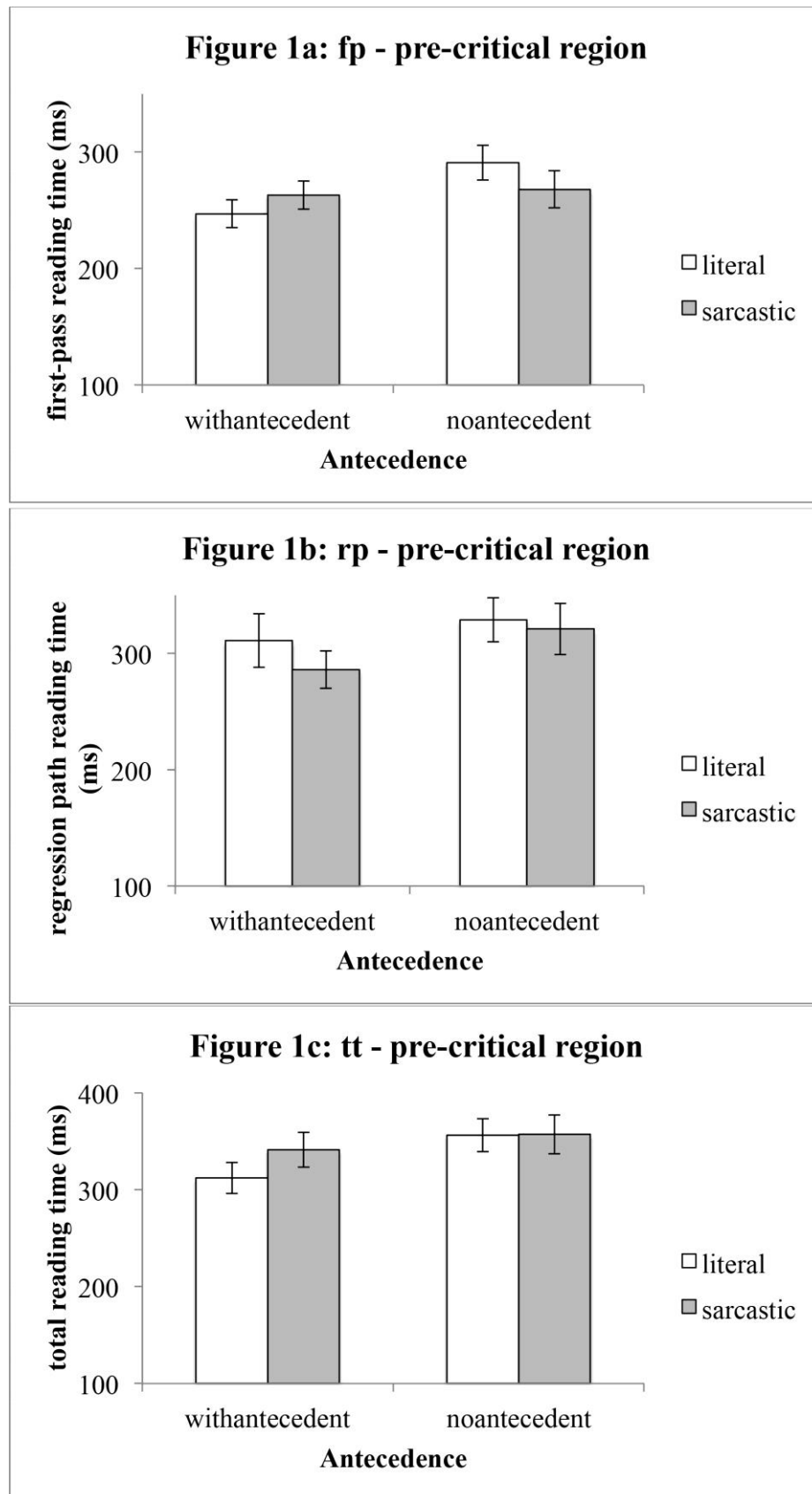
Figure 1. Mean reading times on the pre-critical region (Experiment 1). Error

bars represent ±1*SEM*.
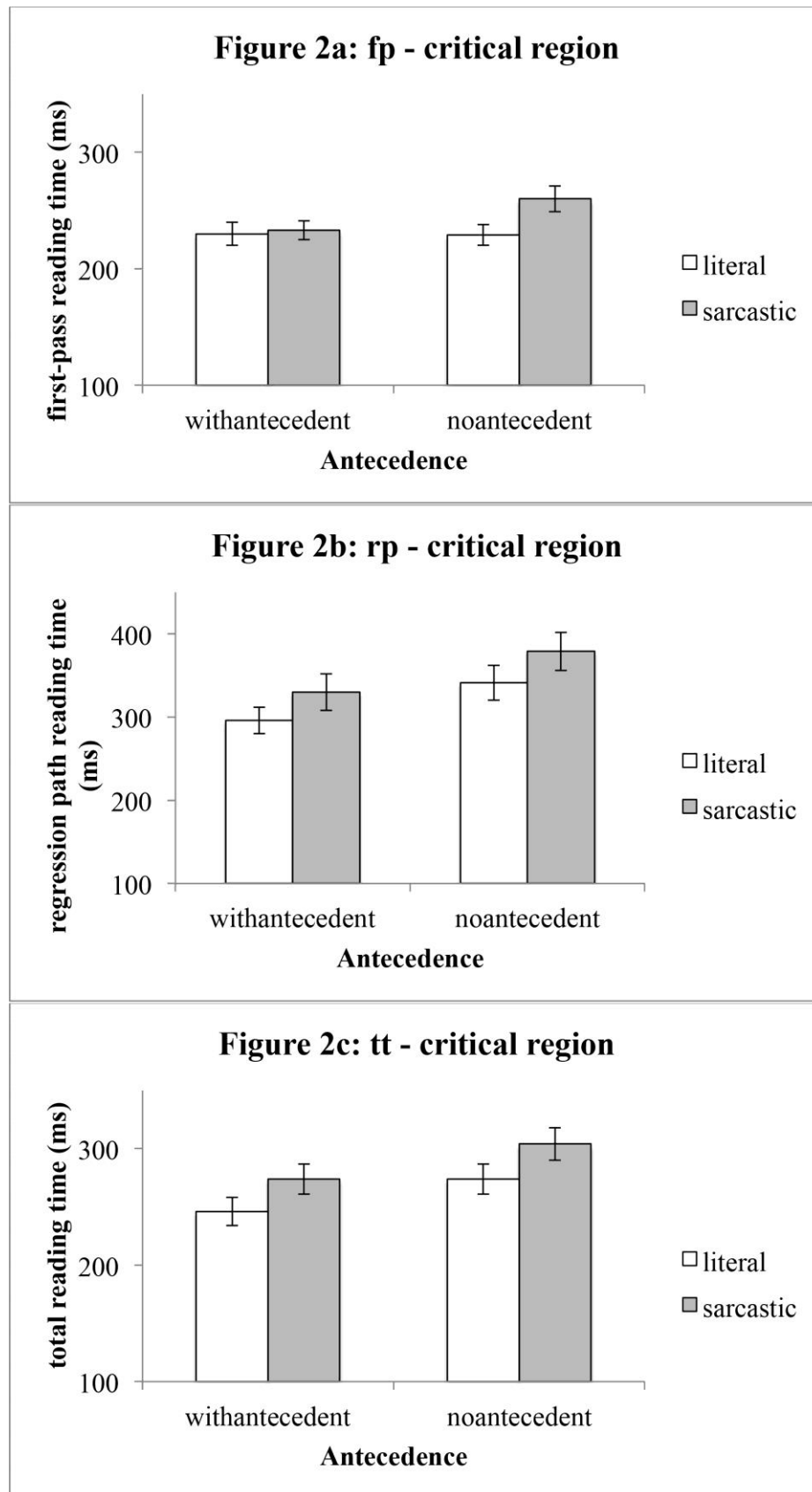
Figure 2. Mean reading times on the critical region (Experiment 1). Error bars
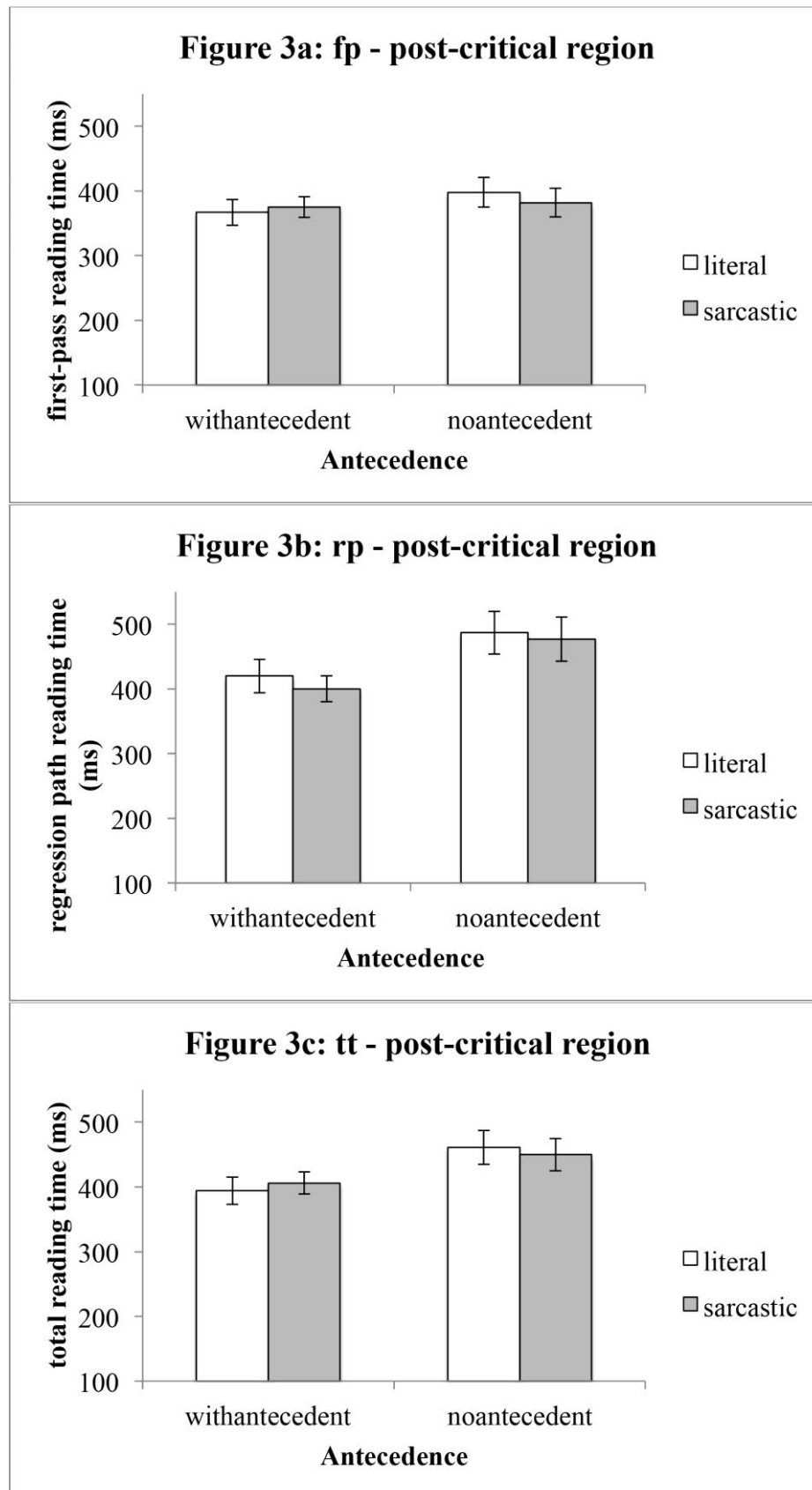
represent ±1*SEM*.

Figure 3. Mean reading times on the post-critical region (Experiment 1). Error bars represent ±1*SEM*.

The main effect of antecedence (in total reading time on the critical region and regression path and total reading time on the post-critical region) suggests that regardless of whether the final comment was literal or sarcastic, if a comment alluded to an utterance from the context, its reading was facilitated, but only during the later processing stages. This seems to constitute evidence for the echoic mention theory, because it is showing that the reading of sarcastic comments that echo an explicit antecedent is facilitated in comparison to sarcastic comments without an explicit antecedent. The same pattern was found for the literal comments, but the echoic mention theory does not make any predictions for literal language processing. However, no evidence was found in support of the prediction that sarcastic comments take longer to read than literal ones, since sarcastic comments were processed in equal time to their literal counterparts; therefore the echoic mention theory was only partially supported, while there was no evidence in support of the standard pragmatic model.

The current study had a number of limitations that might have influenced the results, rendering them difficult to interpret. Firstly, in this design, the possibility of effects being related to priming was not controlled for. Specifically, in the antecedent conditions it was often the case that the target word of the final comment was a repetition of the same word used in the contextual antecedent (e.g. in the context: *I haven't packed yet but it won't take long, I'm a light traveller"*, and in the final comment: *"You really pack light!"*). This lexical repetition did not occur in the conditions without an antecedent, therefore, the possibility that priming might have contributed to the

finding that comments with an antecedent were read faster than comments without an antecedent cannot be ruled out.

Secondly, the familiarity of the target comments was not controlled for. A prediction of the graded salience hypothesis is that familiar sarcastic utterances should be processed in equal time to the literal equivalents, whereas unfamiliar ones should take longer to be processed. This effect has been previously observed in the literature (e.g. probe word identification task, Giora & Fein, 1999, eye-tracking, Filik, Leuthold, Wallington, & Page, 2014, Experiment 1). Hence, if many of the current target utterances were familiar, then a literality effect would not be expected at all, according to the graded salience hypothesis. Indeed, a post-test was conducted in which six native English speakers were presented with the target utterances in isolation (i.e. outside of their contexts). Participants were asked to rate the comments for how familiar they were with their sarcastic meaning, on a scale from 1 (unfamiliar) to 8 (familiar). The results indicated that the perception of familiarity ranged from a minimum of 1 to a maximum of 6, therefore the mix of familiar and unfamiliar items might have been a confound in this design, attenuating or masking the literality effect.

Finally, the current experimental materials were not pre-tested to ensure that the antecedent manipulation was indeed effective. In order to be more confident in the interpretation of the results, it would be necessary to ensure that participants did indeed perceive the target utterances in the antecedent conditions as echoes of the contextual utterances which they were designed to echo, and also that they did not perceive an echo in what was intended as the no antecedent condition.

To address these potential limitations, the second eye-tracking experiment is a replication of the first one, with three key modifications: (1) priming was controlled for by ensuring that lexical repetition of the target word existed not only in the antecedent conditions but also in the conditions without an antecedent, (2) a familiarity factor was added, so that processing times between familiar and unfamiliar literal and sarcastic utterances could be compared and the previous potential confound removed, and (3) the materials were pre-tested to ensure the effectiveness of the antecedent manipulation. The prediction of the standard pragmatic model does not change in the second experiment – literal comments should be processed faster than sarcastic ones, irrespective of context and familiarity. Similarly, the predictions of the echoic mention theory do not change either – literal comments should still be processed faster than sarcastic ones irrespective of familiarity, but sarcastic comments with an antecedent should be processed faster than sarcastic comments without an antecedent. The graded salience hypothesis would predict that familiar sarcastic comments are processed in equal time to the literal ones, but unfamiliar sarcastic comments take longer than their literal equivalents, irrespective of contextual factors.

3.4 Experiment 2: Method

3.4.1 Participants

Sixty-four students from the University of Nottingham participated ($M_{\text{age}} = 21$ years, $SD = 3$ years and 9 months, 42 females and 22 males). All participants were native English speakers, not diagnosed with any reading disorders, had normal or corrected-to-normal vision, and none of them took

part in the previous experiment. They received course credit or £5 for their participation.

3.4.2 Materials and design

Forty-eight experimental materials were constructed (see Table 3 for an example and Appendix D for the full list). Each scenario was made up of six sentences, describing an interaction between two characters, and ending with a comment that one character made towards the other one. The first two sentences of the context simply introduced the two characters and the situation they were in (e.g. *Will and Dave wanted to go surfing on Friday; Dave was going to rent a car for the trip. Afterwards, they were going to Dave's sister's birthday party.*). The third sentence had two versions, which differed between the antecedent and no antecedent conditions. In the antecedent condition, the second sentence contained an explicit belief of one of the characters, which would then be echoed with the target comment (e.g. *Dave said, "I have a brilliant idea for which car I should rent; it'll be great."*). In the no antecedent condition, the second sentence contained no such belief or any elements that could be echoed with the target comment (e.g. *Dave said, "I need a brilliant idea for my sister's birthday present; I don't have any great ones yet."*). The fourth sentence contained a description of the outcome of the second character's behaviour and it had two versions, which differed between the literal and sarcastic conditions. In the literal condition, the outcome was a positive one (e.g. *Before the surf trip, Dave showed up with a mini van big enough to carry all their equipment.*). In the sarcastic condition, the outcome was a negative one (e.g. *Before the surf trip, Dave showed up with a Mini Cooper in which they couldn't fit their equipment.*).

The target comment was contained in the fourth sentence, and it could either have been a familiar comment (e.g. *"This is brilliant!" Will said to Dave*.), or unfamiliar (e.g. *"This car is great!" Will said to Dave.*). In the literal condition the speaker meant what they literally said through the final comment, which had a positive meaning, whereas in the sarcastic conditions, the speaker said the opposite of what they meant, that is, they said something positive in order to convey a negative meaning. The fifth sentence was a wrap-up sentence that concluded the scenario (e.g. *They drove off*.).

Thus the experiment consisted of a 2 literality (literal vs. sarcastic) x 2 antecedence (antecedent vs. no antecedent) x 2 familiarity (familiar vs. unfamiliar) design, with all factors being within-subjects, literality and antecedence being within-items, and familiarity being between-items.

Importantly, the potential priming effect was controlled for, since in each scenario it was ensured that the disambiguating words of the target utterances were repeated in the context in both the antecedent and no antecedent conditions. In the example in Table 3, the critical words in the target utterances (*"brilliant"* in the familiar, and *"great"* in the unfamiliar condition) were present in both the antecedent and no antecedent contexts; the only difference between the two conditions was that in the antecedent one, the target remark referred to the contextual utterance containing the repeated word, whereas in the no antecedent condition, it did not (this was tested in a pre-test – see Pre-test 2 below).

Forty-eight filler materials accompanied the 48 experimental materials. Twenty-four of them followed the structure of the experimental materials except they ended in a literal negative comment. Although the filler items in

Experiment 1 ended in literal positive comments to distract the participants from the purpose of the study, the fillers were modified in Experiment 2. The inclusion of the literal negative fillers was so that participants did not anticipate that every time they read a negative scenario, a sarcastic criticism would ensue, thus sometimes negative scenarios were followed by literal criticisms (also see Spotorno & Noveck, 2014 for a discussion on the advantage of keeping sarcastic comments unpredictable). The other 24 filler items did not contain any comments at all, and they were simple narratives (see the full list in Appendix E).

The display and randomisation of the stimuli was carried out in the same way as in the previous experiment.

Literal	Antecedent	Will and Dave wanted to go surfing on Friday; Dave was going to rent a car for the trip. Afterwards, they were going to Dave's sister's birthday party. Dave said, "I have a brilliant idea for which car I should rent; it'll be great." Before the surf trip, Dave showed up with a mini van big enough to carry all their equipment. Familiar: /"This is $_{\text{pre-critical region}}$/ brilliant!" $_{\text{critical region}}$/ Will said to Dave. $_{\text{post-critical region}}$/ They drove off. Unfamiliar: "This/ car is $_{\text{pre-critical region}}$/ great!" $_{\text{critical region}}$/ Will said to Dave. $_{\text{post-critical region}}$/ They drove off.

	No antecedent	Will and Dave wanted to go surfing on Friday; Dave was going to rent a car for the trip. Afterwards, they were going to Dave's sister's birthday party. Dave said, "I need a brilliant idea for my sister's birthday present; I don't have any great ones yet." Before the surf trip, Dave showed up with a mini van big enough to carry all their equipment. Familiar: /"This is $_{\text{pre-critical region}}$/ brilliant!" $_{\text{critical region}}$/ Will said to Dave. $_{\text{post-critical region}}$/ They drove off. Unfamiliar: "This/ car is $_{\text{pre-critical region}}$/ great!" $_{\text{critical region}}$/ Will said to Dave. $_{\text{post-critical region}}$/ They drove off.
Sarcastic	Antecedent	Will and Dave wanted to go surfing on Friday; Dave was going to rent a car for the trip. Afterwards, they were going to Dave's sister's birthday party. Dave said, "I have a brilliant idea for which car I should rent; it'll be great." Before the surf trip, Dave showed up with a Mini Cooper in which they couldn't fit their equipment. Familiar: /"This is $_{\text{pre-critical region}}$/ brilliant!" $_{\text{critical region}}$/ Will said to Dave. $_{\text{post-critical region}}$/ They drove off.

		Unfamiliar: "This/ car is pre-critical region/ great!" critical region/ Will said to Dave. post-critical region/ They drove off.
	No antecedent	Will and Dave wanted to go surfing on Friday; Dave was going to rent a car for the trip. Afterwards, they were going to Dave's sister's birthday party. Dave said, "I need a brilliant idea for my sister's birthday present; I don't have any great ones yet." Before the surf trip, Dave showed up with a Mini Cooper in which they couldn't fit their equipment. Familiar: /"This is pre-critical region/ brilliant!" critical region/ Will said to Dave. post-critical region/ They drove off. Unfamiliar: "This/ car is pre-critical region/ great!" critical region/ Will said to Dave. post-critical region/ They drove off.

Table 3. Example material (Experiment 2)

Pre-test 1: Familiarity. The purpose of this pre-test was to ensure that the familiarity manipulation was effective. A questionnaire, which contained 147 target utterances in isolation, was given to nine native English speakers (M_{age} = 26 years 10 months, SD = 8 years and 1 month, 5 females and 4 males). Their task was to rate on a scale from 1 (unfamiliar) to 8 (familiar) how familiar they were with the sarcastic meaning of each phrase. The 48 most familiar utterances and the 48 least familiar utterances were chosen for the

experiment. The chosen familiar utterances had a mean of 6.3 (*SEM* = 0.13,

min = 4.5, *max* = 7.9), while the unfamiliar utterances had a mean of 2.3 (*SEM*

= 0.12, *min* = 1, *max* = 4.3), and the difference between the two categories of

utterances was statistically significant: $t(47) = 22.79$, $p < .001$.

Pre-test 2: Echo. The materials were then tested to ensure that the echo

manipulation did indeed function as intended. Twenty-four native English

speakers (M_{age} = 18 years and 4 months, *SD* = 6 months, 21 females and 3

males) were presented with the 48 experimental materials and they were asked

to rate for each scenario to what extent they thought that the target utterance

made a reference to the contextual utterance which either contained or did not

contain an antecedent, on a scale from 1 (no reference) to 8 (strong reference).

The materials were divided into eight questionnaires, so that each participant

only saw one version of each scenario. For example, for the literal – unfamiliar

– no antecedent condition of the scenario in Table 3, participants saw the

scenario in the following format:

> "Will and Dave wanted to go surfing on Friday; Dave was going to rent
>
> a car for the trip. Afterwards, they were both going to Dave's sister's
>
> birthday party. Dave said, "I have a brilliant idea for which car I should
>
> rent; it'll be great." On Friday before the surf trip, Dave showed up
>
> with a mini van big enough to carry all their equipment. "**This car is**
>
> **great!**" Will said to Dave. They drove off."

Participants were asked to rate to what extent they thought the phrase in bold

made a reference back to the underlined phrase.

A paired-samples t-test revealed that in the antecedent condition,

participants perceived a reference significantly more strongly (*M* = 6.32, *SEM*

= 0.07, *min* = 5, *max* = 7.8) than in the no antecedent condition (*M* = 1.96, *SEM* = 0.07, *min* = 1, *max* = 3.7), $t(575) = 43.66$, $p < .001$.

3.4.3 Procedure

The procedure was exactly the same as in the previous experiment. As before, yes/no comprehension questions were asked after 25% of the trials, relating to the contexts of the scenarios and not designed to test sarcasm comprehension (e.g. for the scenario in Table 3, the question was, *"Did Will and Dave want to go sky-diving?"*). The average correct response rate to the comprehension questions was 94.5%, indicating that participants read for comprehension.

3.5 Experiment 2: Results and discussion

The analysis regions were the same as in the previous experiment, with the critical region containing the disambiguating word of the target utterance, the pre-critical region being the two words preceding the critical region, and the post-critical region being the region that followed the disambiguating word and completed the target utterance (see Table 3). The same three measures of reading time are reported: first-pass reading time, regression path reading time, and total reading time.

Data were pre-processed and analysed following the same steps as described in the previous experiment[1]. Trials that had zero first-pass reading times for two consecutive regions were removed, and that amounted to 2.53% of the data. See Table 4 below for the models that had the best fit for the data and the values of their fixed-effects parameters. Furthermore, see Appendix F for the *t*-values associated with the fixed factors that did not have significant

effects, and the series of likelihood-ratio tests performed in order to reach the best models.

Analysis region	Reading measure	Model		Coefficient	SE	t
pre-critical	fp	~ 1 + (1|subject) + (1 + literality|item)	(Intercept)	250.8	7.8	32.2
	rp	~ antecedence + (1 + antecedence|subject) + (1 + literality|item)	(Intercept)	317	15	21.1
			antecedence	24.9	11.6	2.1
	tt	~ literality + familiarity + (1 + antecedence*familiarity|subject) + (1 + literality*antecedence|item)	(Intercept)	304.1	13	23.4
			literality	16.3	7.2	2.3
			familiarity	17.3	7.9	2.2
critical	fp	~ familiarity*antecedence + (1 + familiarity|subject) + (1 + literality*antecedence|item)	(Intercept)	210.8	7.3	28.7
			familiarity	18.3	5.6	3.2
			antecedence	12.6	6	2.1
			familiarity * antecedence	-16.9	7.7	-2.2

	rp	~ familiarity + antecedence + (1 + familiarity|subject) + (1|item)	(Intercept)	311.7	17.1	18.2
			familiarity	42.2	15.5	2.7
			antecedence	25.4	11.9	2.1
	tt	~ literality*antecedence+familiarity + (1 + literality|subject) + (1|item)	(Intercept)	239.4	9.6	24.9
			literality	-1.8	8.5	-0.2
			antecedence	0.7	7.4	0.1
			familiarity	26.9	5.2	5.2
			literality * antecedence	20.9	10.4	2
post-critical	fp	~ literality + familiarity + (1 + familiarity|subject) + (1|item)	(Intercept)	419.8	17.6	23.9
			literality	18.3	6.4	2.9
			familiarity	-22.2	6.8	-3.2

	rp	~ literality + antecedence + (1 + familiarity|subject) + (1|item)	(Intercept)	452.2	21.6	21
			literality	36.8	12.3	3
			antecedence	26.8	12.3	2.2
	tt	~ literality+familiarity+antecedence + (1 + literality|subject) + (1|item)	(Intercept)	473.7	20.9	22.7
			literality	32.8	8.3	4
-3			familiarity	-24.5	8.3	-3
			antecedence	22	8.3	2.7

Table 4. Best fitting models and fixed-effects parameters (Experiment 2)

The pre-critical region. There were no effects on first-pass reading time - see Figure 4a. In regression path reading time, the pre-critical region was read faster if the context contained an echoed antecedent ($M_{withantecedent}$ = 321ms, SEM = 7ms) than if it did not ($M_{withoutantecedent}$ = 343ms, SEM = 10ms) - see Figure 4b. This result seems to suggest that participants re-read the context more when it did not contain an explicit antecedent, even before they knew whether the scenario was going to be sarcastic or literal.

In total reading time, the pre-critical region was read faster if it was part of a literal comment ($M_{literal}$ = 317ms, SEM = 5ms) rather than sarcastic ($M_{sarcastic}$ = 334ms, SEM = 5ms), and part of a familiar comment ($M_{familiar}$ = 317ms, SEM = 5ms) rather than unfamiliar ($M_{unfamiliar}$ = 334ms, SEM = 5ms) - see Figure 4c. However, main effects of familiarity cannot be meaningfully interpreted because they are comparing between different words (e.g. for the example in Table 3, *"this is"* in the familiar condition, and *"car is"* in the unfamiliar condition). The literality main effect observed on total reading time suggests that participants re-read the pre-critical region more in sarcastic scenarios than in literal ones.

The critical region. In first-pass reading time there was an interaction between familiarity and antecedence (see Appendix F for the p-value of the comparison between the model with and without the interaction). Familiar comments were processed marginally faster when they echoed an antecedent than when they did not ($M_{fp\text{-}familiar\text{-}withantecedent}$ = 215ms, SEM = 4ms, $M_{fp\text{-}familiar\text{-}withoutantecedent}$ = 228ms, SEM = 5ms, χ^2(1, N=64) = 4.5, p = .069), whereas unfamiliar comments with and without an antecedent were processed in equal time ($M_{fp\text{-}unfamiliar\text{-}withantecedent}$ = 234ms, SEM = 5ms, $M_{fp\text{-}unfamiliar\text{-}withoutantecedent}$ =

227ms, $SEM = 5$ms, $\chi^2(1, N=64) = 0.5$, $p = .9$) - see Figure 5a. Therefore it

seems that echoing a contextual antecedent had a slight impact on the

processing of familiar utterances, but not unfamiliar ones.

However, literality did not play a part in this effect, therefore it might

be that when the disambiguating word was first encountered, it did not matter

yet if it was literal or sarcastic, rather its processing depended on whether the

reader was familiar or unfamiliar with the comment's sarcastic meaning and

whether it echoed an antecedent or not. There was no evidence that sarcastic

comments take longer to read than literal equivalents.

In regression path reading time, the interaction between familiarity and

antecedence disappeared, but the two main effects of familiarity and

antecedence remained - see Figure 5b. The disambiguating words of familiar

comments were processed faster ($M_{familiar} = 326$ms, $SEM = 9$ms) than those of

unfamiliar ones ($M_{unfamiliar} = 371$ms, $SEM = 10$ms), and the disambiguating

words of comments that echoed an antecedent were processed faster

($M_{withantecedent} = 338$ms, $SEM = 8$ms) than those of comments that did not

($M_{withoutantecedent} = 362$ms, $SEM = 10$ms).

Again, the lack of a literality main effect suggests that the results failed

to support the standard pragmatic model and the echoic mention theory in this

respect. However, the finding that comments with an antecedent were

processed faster than those without does seem to support the echoic mention

theory's prediction regarding the effect of context, even though the prediction

was not only true for sarcastic comments, but also for literal ones. The graded

salience hypothesis is also not supported by this result, because an interaction

between literality and familiarity was not observed.

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In total reading time there was a main effect of familiarity (which was in the direction one would expect with familiar comments read faster, but for reasons outlined before, this effect cannot be meaningfully interpreted) and an interaction between literality and antecedence (see Appendix F for the p-value of the comparison between the model with and without the interaction) - see Figures 5c and d. Firstly, as the echoic mention theory would predict, sarcastic comments that echoed an antecedent were processed faster than those that did not ($M_{withantecedent} = 255$ms, $SEM = 6$ms, $M_{withoutantecedent} = 277$ms, $SEM = 6$ms, $\chi^2(1, N=64) = 8.8$, $p = .006$), whereas this difference was not significant for literal comments ($M_{withantecedent} = 257$ms, $SEM = 6$ms, $M_{withoutantecedent} = 258$ms, $SEM = 5$ms, $\chi^2(1, N=64) = .008$, $p = 1$). Secondly, literal comments were processed faster than sarcastic ones when they did not have an antecedent ($M_{literal} = 258$ms, $SEM = 5$ms, $M_{sarcastic} = 277$ms, $SEM = 6$ms, $\chi^2(1, N=64) = 5$, $p = .049$), but they were processed in equal time when they echoed an antecedent ($M_{literal} = 257$ms, $SEM = 6$ms, $M_{sarcastic} = 255$ms, $SEM = 6$ms, $\chi^2(1, N=64) = 0.05$, $p = 1$).

This result suggests that although the literality of the comment did not affect reading times in the early stages of processing, in the later stages the reading pattern predicted by the echoic mention theory was observed, with sarcastic comments that echoed an antecedent being processed faster than those that did not. Furthermore, the finding that literal and sarcastic comments were processed in equal time when an antecedent was echoed by the target utterance was not predicted by any of the three theories under investigation here.

The post-critical region. There was a consistent main effect of literality in all reading time measures on the post-critical region - see Figure 6a-c. The region following a literal comment was read faster ($M_{\text{fp-literal}} = 408$ms, $SEM = 6$ms; $M_{\text{rp-literal}} = 464$ms, $SEM = 10$ms; $M_{\text{tt-literal}} = 471$ms, $SEM = 7$ms) than that following a sarcastic comment ($M_{\text{fp-sarcastic}} = 427$ms, $SEM = 6$ms; $M_{\text{rp-sarcastic}} = 502$ms, $SEM = 9$ms; $M_{\text{tt-sarcastic}} = 505$ms, $SEM = 7$ms). This suggests that in the late reading stages, both the predictions of the standard pragmatic model and the echoic mention theory that there will be a processing difficulty associated with sarcasm as compared to literal language were supported.

Besides the main effect of literality, there was also a main effect of familiarity in first-pass and total reading time, such that the region following a familiar comment had longer reading times ($M_{\text{fp-familiar}} = 429$ms, $SEM = 6$ms; $M_{\text{tt-familiar}} = 501$ms, $SEM = 7$ms) than the region following an unfamiliar comment ($M_{\text{fp-unfamiliar}} = 406$ms, $SEM = 5$ms; $M_{\text{tt-unfamiliar}} = 475$ms, $SEM = 7$ms). This effect is in the opposite direction compared to the familiarity main effect on the critical region, but the comparison between familiar and unfamiliar conditions on the post-critical region is between the exactly same words, whereas that is not true for the pre-critical and critical regions. This suggests that the post-critical region was returned to and re-read more if it followed a familiar utterance rather than an unfamiliar one.

Finally, there was a main effect of antecedence in regression path and total reading time, such that when comments echoed an antecedent, the post-critical region was read faster ($M_{\text{rp - withantecedent}} = 471$ms, $SEM = 9$ms; $M_{\text{tt - withantecedent}} = 478$ms, $SEM = 7$ms) than when it did not ($M_{\text{rp - withoutantecedent}} = 495$ms, $SEM = 10$ms; $M_{\text{tt - withoutantecedent}} = 498$ms, $SEM = 7$ms).

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Figure 4a: fp - pre-critical region

Figure 4b: rp - pre-critical region

Figure 4c: tt - pre-critical region
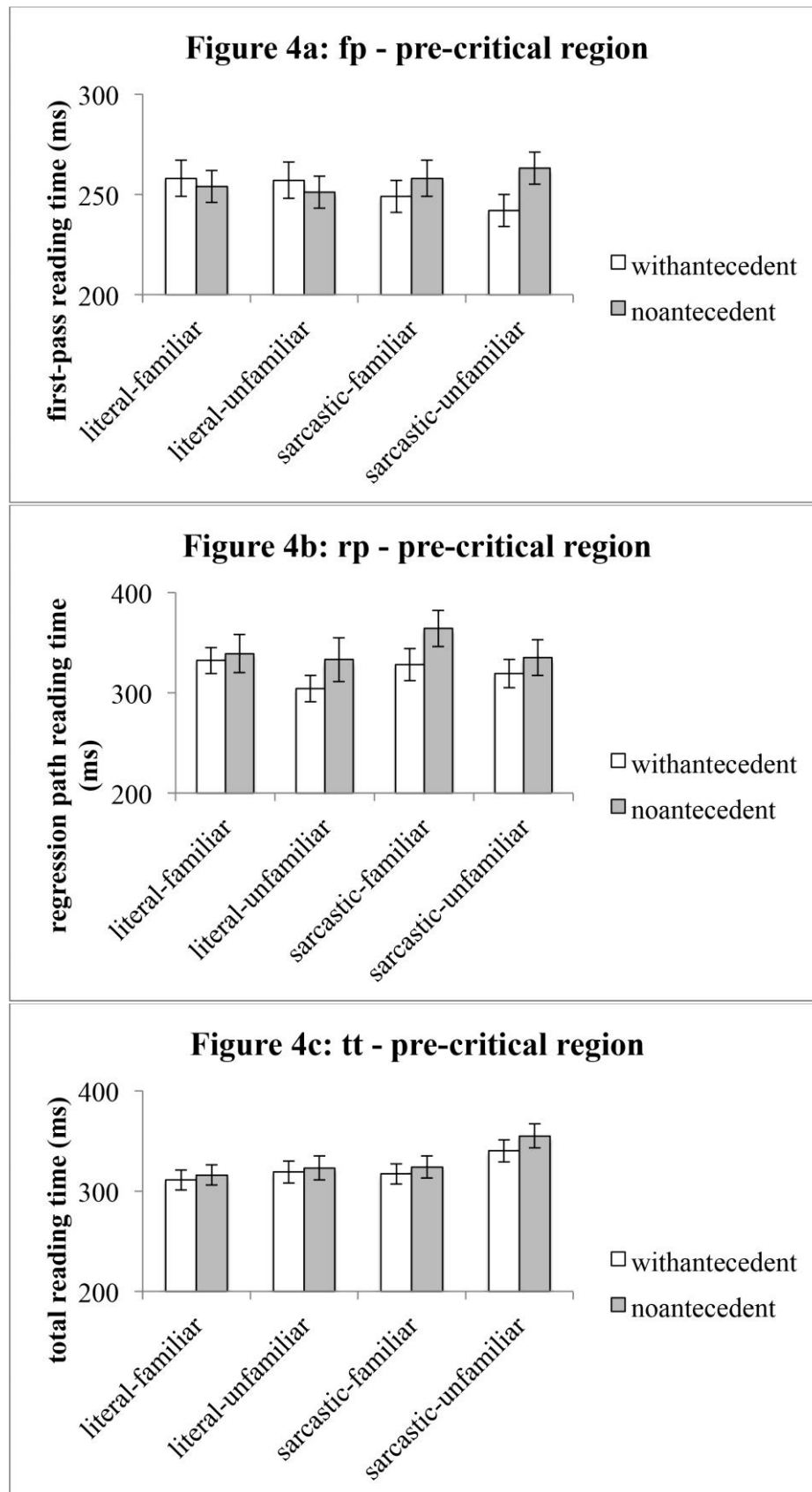
Figure 4. Mean reading times on the pre-critical region (Experiment 2). Error

bars represent ±1*SEM*.

Figure 5a: fp - critical region
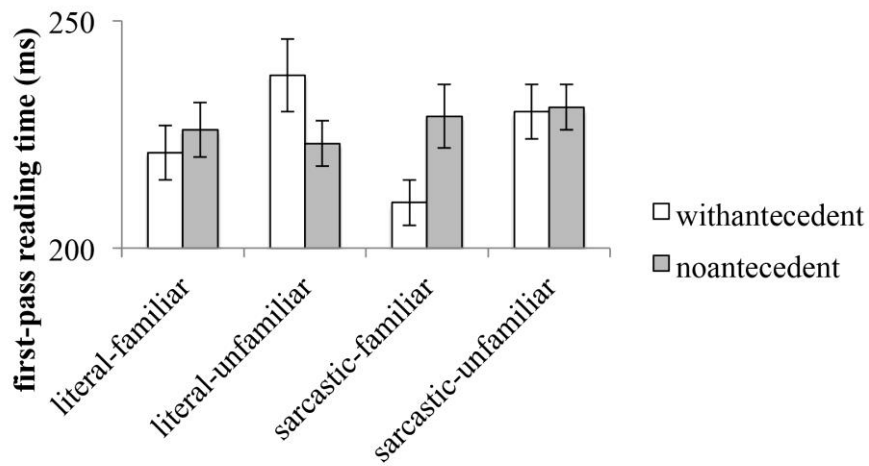
Figure 5b: rp - critical region
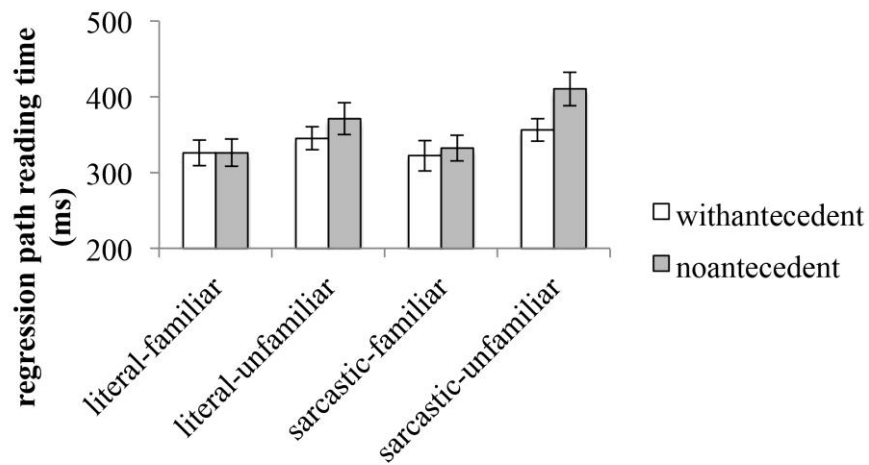
Figure 5c: tt - critical region

Figure 5d: tt - critical region (literality * antecedence)
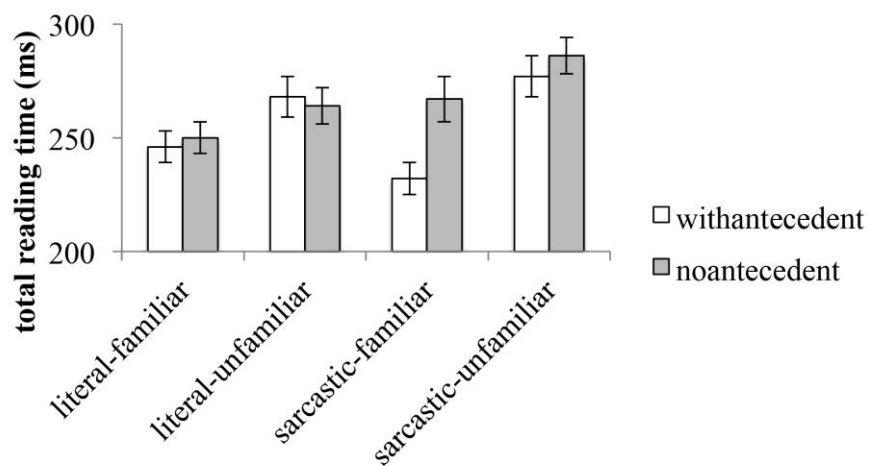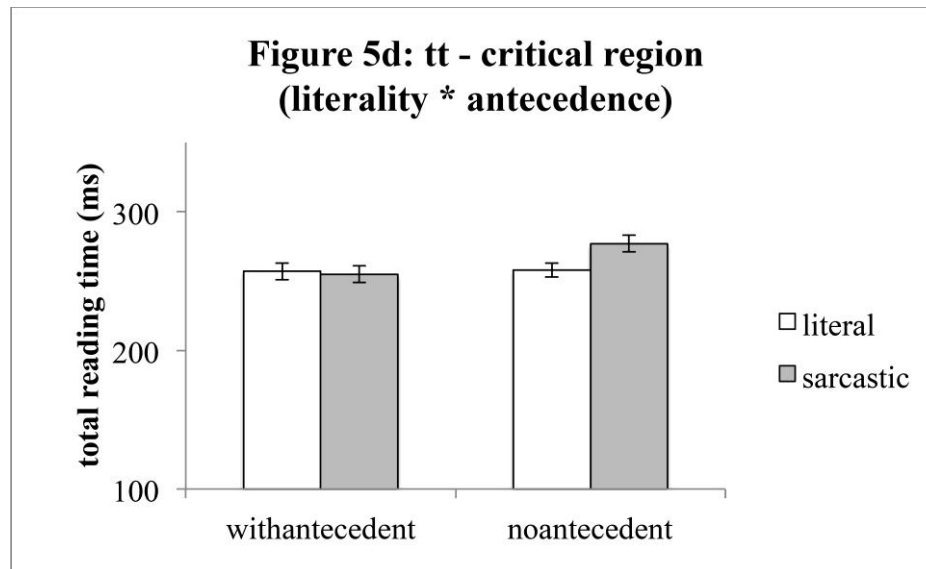
Figure 5. Mean reading times on the critical region (Experiment 2). Error bars represent ±1*SEM*.
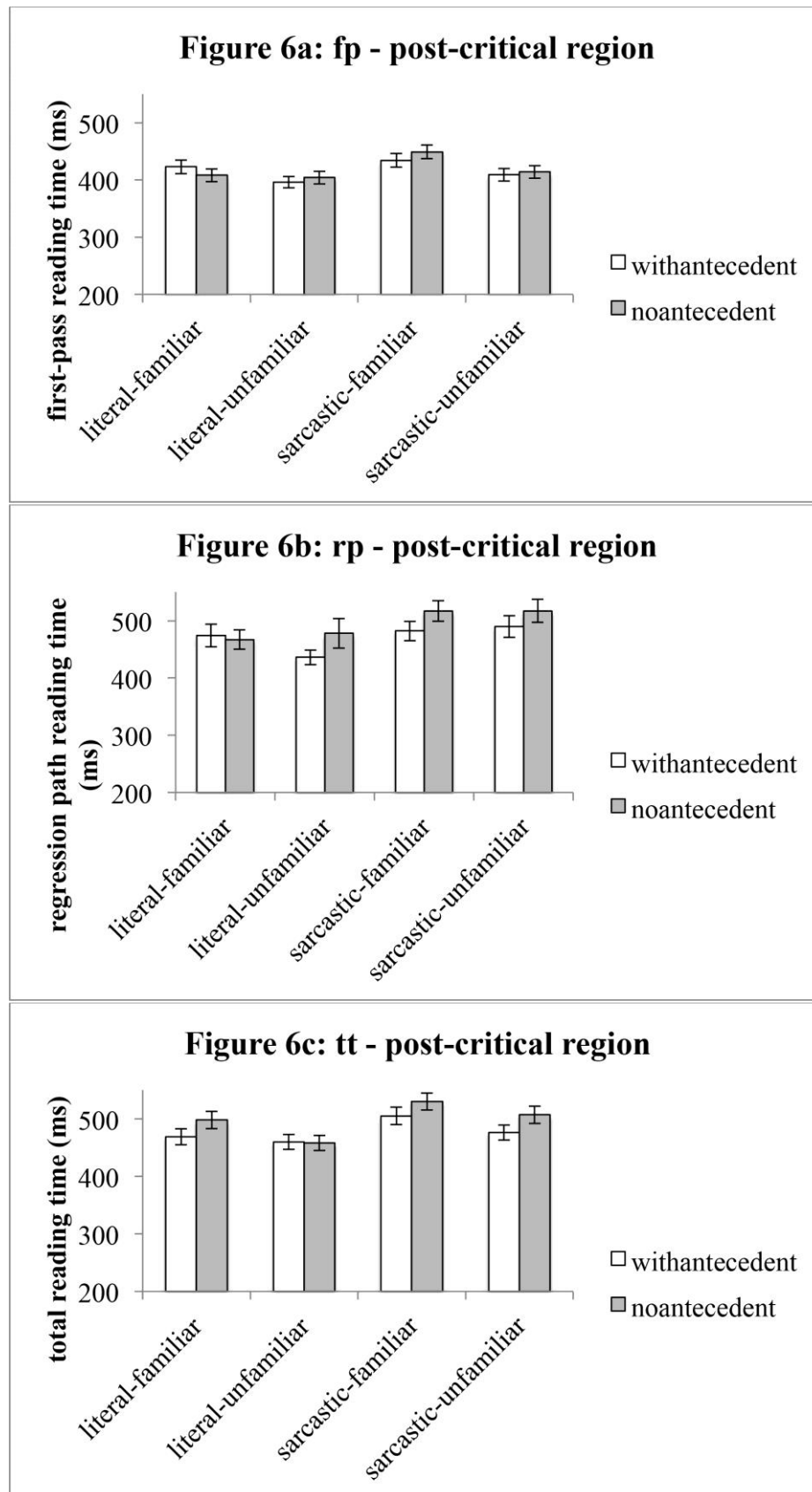
Figure 6. Mean reading times on the post-critical region (Experiment 2). Error bars represent ±1*SEM*.

3.6 Conclusion

The two experiments described in this chapter tested the predictions of three theories of sarcasm processing: (1) the standard pragmatic model, which predicts that literal comments should always be processed faster than sarcastic ones, (2) the echoic mention theory, which also predicts that literal comments should be processed faster than sarcastic equivalents, and additionally predicts a processing advantage for sarcastic utterances that echo an antecedent in the context compared to sarcastic utterances that do not, and finally (3) the graded salience hypothesis, which predicts that literal utterances should only be processed faster than sarcastic ones if they are unfamiliar, but they should be processed in equivalent time if they are familiar; however context should not be able to affect initial sarcasm processing. As explained in Chapter 2, these experiments investigated the time-course of sarcasm comprehension, and by using eye-tracking methodology both early and late stages of comprehension can be accurately described. For this reason, the findings for the early stages of processing are discussed first, followed by the later stages.

3.6.1 The early stages of sarcasm processing

Initial processing was considered to be reflected in the reading time measures reported for the critical word before participants moved on to the next text region (that is, first-pass and regression path reading times for the disambiguating word).

No evidence was found for the prediction that literal comments are processed faster than sarcastic ones, since no literality effect was observed in the early stages of processing in either Experiment 1 or 2. This result does not support the predictions of the standard pragmatic model or the echoic mention

theory, and in fact seems to suggest that in the early stages of processing there is no processing cost associated with sarcasm as compared to literal language. This conclusion is in opposition to previous results in the literature, which report a literality effect (e.g. Filik et al., 2014 for unfamiliar ironies; Filik & Moxey, 2010; Giora et al., 1995, 1998, 2007; Kaakinen et al., 2014).

There was no evidence that literal comments take longer to read than sarcastic ones when they are unfamiliar, as the graded salience hypothesis would predict; however there was some evidence that context affected the reading times of familiar and unfamiliar comments differently, irrespective of their literality. In first-pass reading time (Experiment 2), familiar comments that echoed a contextual antecedent were processed faster than familiar comments without such an antecedent, whereas unfamiliar comments were processed in equal time, irrespective of their antecedent. An argument could be made that since according to the graded salience hypothesis, unfamiliar comments have only one encoded meaning (the literal one) and the familiar ones have two encoded meanings (literal and sarcastic), context seems to have only aided the processing of the comments with two encoded meanings. This might be because the unfamiliar comments were already processed very fast (since they do not have two encoded meanings) and could not further benefit from an explicit antecedent in the context. However, the literality of the remark did not interact with its familiarity, therefore this result does not support the graded salience hypothesis. Similarly, this result cannot be taken as evidence for the echoic mention theory, since literality did not play a part in the effect of context.

A main effect of antecedence was observed on regression-path reading time (Experiment 2), in the direction predicted by the echoic mention theory, and in support for the results of Gibbs (1986) – comments that echoed an explicit antecedent were read faster than those that did not echo an antecedent. It is worth noting however, that the echoic mention theory only predicts a facilitating effect of context for sarcastic comments, but does not have a prediction for literal comments, whereas in this study a facilitating effect of context was found for both literal and sarcastic utterances.

3.6.2 The late stages of sarcasm processing

Later stages of processing are reflected in measures of reading time after the participants have moved on to the text regions following the critical word (that is, in the total reading times for the critical word, total reading time on the pre-critical region, and all reading time measures for the post-critical region).

Although in the early processing stages an effect of literality was not found, in the later stages a literality main effect was observed such that literal comments were processed faster than sarcastic ones (Experiment 2, total reading time on the pre-critical region and all reading time measures on the post-critical region). These results partially support the standard pragmatic model and the echoic mention theory.

An interesting finding in Experiment 2 was that literal comments were only processed faster than sarcastic ones if they did not echo an explicit antecedent in the context. If they did echo an antecedent, then literal and sarcastic comments were processed in equivalent time. This result cannot be explained in any of the frameworks provided by the three theories under

consideration here, since it suggests that having a supportive context does not only offer a processing advantage to sarcastic utterances compared to other sarcastic utterances in implicit contexts (as the echoic mention theory predicts), but that indeed a supportive context can aid sarcasm comprehension when compared to literal equivalents. However, it is worth noting that this facilitating effect of context was observed on only one reading measure and region of text (total reading time on the critical region, Experiment 2).

The effect of antecedence was also found in the later stages of processing in the direction predicted by the echoic mention theory. On total reading time on the post-critical region (Experiment 2), sarcastic comments with an antecedent were read faster than those without, whereas antecedence did not affect the reading of literal comments. Additionally, there were main effects of antecedence in the same direction, in both Experiment 1 (total reading time on the critical region, and regression path and total reading time on the post-critical region) and Experiment 2 (regression path and total reading time on the post-critical region). This consistent advantage for comments that echoed an explicit antecedent is clear evidence in support of the echoic mention theory.

In conclusion, the prediction that received primary support from the two experiments reported here was the echoic mention theory's prediction that sarcastic comments should be processed faster if they echo an explicit antecedent than if they do not. Evidence was found that this was true in both early and late reading measures. The processing advantage of literal comments postulated by the standard pragmatic model and the echoic mention theory, received minimum support, and only in the later stages of processing. Finally,

the results failed to support the graded salience hypothesis, since there was no processing cost associated with unfamiliar sarcastic comments in comparison to literal ones. Furthermore, sarcasm processing was affected by the contextual factor under investigation here, more specifically sarcasm became more difficult to process than literal equivalents, only when it did not echo a contextual antecedent (albeit only in total reading times on the critical region of Experiment 2).

The finding that sarcasm was processed in equal time to literal language when it echoed a contextual antecedent cannot be explained within any of the three frameworks that were tested in this chapter. However, this result could potentially be explained within the constraint satisfaction framework (Pexman, 2008). As explained in Chapter 1, according to this framework, different unspecified contextual factors could aid sarcasm comprehension, making it as easy to process as literal language. The results of the experiments reported in this chapter seem to indicate that echoing an explicit contextual antecedent could be one of the factors that aid sarcasm comprehension, making it as easy to process as a literal equivalent.

The next two eye-tracking and two rating experiments will be testing the predictions of another influential theory, the implicit display theory (Utsumi, 2000). In contrast to the echoic mention theory, which predicts that an explicit echo can facilitate sarcasm comprehension as compared to the comprehension of another sarcastic comment without an explicit echo, but not in comparison to a literal comment, the implicit display theory predicts that making a speaker's expectation explicit in the context should facilitate the reading of a sarcastic utterance, making it as easy to read as a literal one.

Chapter 4: The role of speaker's expectation and utterance familiarity

4.1 Introduction

The two eye-tracking experiments reported in this chapter aim to contrast the predictions of the standard pragmatic model, the graded salience hypothesis, and the implicit display theory. Hence, the contextual factor investigated here is the explicitness of the speaker's expectation. In the experimental materials in this chapter, the speaker's expectation for how the other character should behave was either made explicit in the context, or it remained implicit. The predictions of the three theories are most clearly distinct for unfamiliar sarcastic utterances; therefore the first eye-tracking experiment of this chapter only included unfamiliar remarks. The standard pragmatic model and the graded salience hypothesis would make the same prediction, that literal comments should be processed faster than sarcastic ones, irrespective of contextual factors.

The implicit display theory (Utsumi, 2000), however, predicts that a variety of contextual factors could aid sarcasm comprehension (see Equation 1 in Chapter 1). In the series of experiments presented in this chapter, d_m (the degree of manifestness) was the only factor from the formula that was manipulated. All other factors have been kept constant and at their maximal values (d_a: all sarcastic comments said the opposite of what the speaker meant, d_d: polarity of the comments was always positive, that is, only sarcastic criticisms were employed, d_i: the maxim of quality was the only maxim violated, and d_e: the same sarcastic cues were used across comments, that is, an exclamation mark at the end), so that the ironic environment and implicit display were prototypical and could only vary with degree of manifestness.

The implicit display theory would then predict that when the speaker's expectation is made explicit in the context and then that expectation is broken, readers expect a sarcastic comment to follow more than when the expectation is implicit. Consequently, the implicit display theory would also predict that sarcastic utterances made in contexts in which the speaker's expectation is made explicit will be processed as fast as their literal counterparts, whereas when the speaker's expectation is implicit, sarcastic utterances will be processed more slowly than literal equivalents. The former prediction was tested in two rating studies, one for each set of materials used in the two eye-tracking studies that tested the latter prediction.

In sum, Experiment 3 reported in this chapter will be a rating study that tested the offline prediction made by the implicit display theory regarding the expectancy for a sarcastic remark. Experiment 4 will use the materials from Experiment 3 and employ eye-tracking to test the prediction of the implicit display theory regarding processing differences between sarcasm and literal language. Subsequently, a new set of experimental materials will be devised, with an added manipulation of utterance familiarity. Experiment 5 will be a rating study where this new set of materials are used to test the offline prediction of the implicit display theory. Experiment 6 will be an eye-tracking study that aimed to replicate and extend Experiment 4, by introducing the factor of familiarity to the design, and therefore more fully testing the graded salience hypothesis. It will employ the experimental materials tested in Experiment 5. The prediction of the standard pragmatic model would not change in Experiment 6 – literal comments should still be processed faster than sarcastic ones, irrespective of utterance familiarity or context. The graded

salience hypothesis however would now predict that when the sarcastic utterances are familiar, they should be processed as fast as their literal equivalents, whereas when they are unfamiliar, they should be processed slower, irrespective of the explicitness of the speaker's expectation. The implicit display theory would make the same prediction as for Experiment 4, specifically, that sarcastic remarks embedded in contexts where the speaker's expectation was made explicit would be processed in equal time to literal equivalents, but slower than literal ones if the speaker's expectation was implicit. The implicit display theory would not predict that comment familiarity would affect sarcasm comprehension.

4.2 Experiment 3: Method

4.2.1 Participants

Twenty-four participants took part in this rating experiment ($M_{age} = 25$ years and 6 months, $SD = 10$ years and 6 months, 17 females and 7 males). All participants were native English speakers, and they completed the study online. By participating, they entered a prize draw to win one of three £20 Amazon vouchers.

4.2.2 Materials and design

Twenty-four experimental materials were constructed (see Table 5 below for an example). Each scenario consisted of three sentences and described an interaction between two characters. The first sentence introduced the characters and the situation they were in (e.g. *Dean and Chloe were on holiday in Valencia for a week.*). The second sentence had two versions, and differed between the explicit and implicit expectation conditions. When the speaker's expectation was made explicit, the second sentence contained this

expectation for how the other character should behave (e.g. *The end of the trip was approaching so Dean asked Chloe to think of something thrilling to do on their last day.*). When the speaker's expectation remained implicit, the second sentence did not make any reference to how the other character should behave (e.g. *Their trip was quickly coming to an end, and they weren't sure what to do on their final day.*). The third and final sentence contained the outcome of the behaviour of the second character, and this could have either been a positive one (e.g. *Chloe suggested they go and watch the Formula 1 race, which was Dean's favourite sport.*) or a negative one (e.g. *Chloe suggested they stay in the hotel and watch TV, which was quite boring.*). When the outcome was positive, it fulfilled the expectation of the speaker in the explicit condition, while when it was negative, it broke the speaker's expectation, again only in the explicit condition. In the implicit condition, the outcome was not related to the speaker's expectation in any way.

The implicit display theory would then predict that when the speaker's expectation was made explicit and then broken, a sarcastic utterances is expected to follow more than when the expectation remained implicit and was followed by a negative outcome. Thus, the design of the experiment was 2 outcome (positive vs. negative) x 2 speaker's expectation (explicit vs. implicit), with both factors being within-items and within-subjects.

Literal	Explicit	Dean and Chloe were on holiday in Valencia for a week. The end of the trip was approaching so Dean asked Chloe to think of something thrilling to do on their last day. Chloe suggested they go and watch the Formula 1 race, which was Dean's favourite sport.

	Implicit	Dean and Chloe were on holiday in Valencia for a week. Their trip was quickly coming to an end, and they weren't sure what to do on their final day. Chloe suggested they go and watch the Formula 1 race, which was Dean's favourite sport.
Sarcastic	Explicit	Dean and Chloe were on holiday in Valencia for a week. The end of the trip was approaching so Dean asked Chloe to think of something thrilling to do on their last day. Chloe suggested they stay in the hotel and watch TV, which was quite boring.
	Implicit	Dean and Chloe were on holiday in Valencia for a week. Their trip was quickly coming to an end, and they weren't sure what to do on their final day. Chloe suggested they stay in the hotel and watch TV, which was quite boring.

Table 5. Example material (Experiment 3)

4.2.3 Procedure

The scenarios were randomised and divided into four questionnaires, so that each participant only saw each scenario in one condition. The questionnaires were written in Qualtrics.com, which was also used to distribute them to the participants. The task of the participants was to read each scenario, and rate on a scale from 1 (sarcasm very unlikely) to 8 (sarcasm very likely) how likely they think it was that one character will say something sarcastic to the other character (e.g. for the example in Table 5, *"Do you expect that Dean will now say something sarcastic to Chloe?"*).

4.3 Experiment 3: Results and discussion

The data were analysed with a linear mixed effects model (*lme4* package in R), and the results suggested that there was a significant interaction between outcome and explicitness. Sarcasm was expected significantly more when the outcome was negative than positive, in both explicit ($M_{negative}$ = 5.99, *SEM* = 0.16, $M_{positive}$ = 2.15, *SEM* = 0.14, χ^2(1, *N*=24) = 143.4, *p* < .001) and

implicit contexts ($M_{negative}$ = 5.45, *SEM* = 0.17, $M_{positive}$ = 2.37, *SEM* = 0.16, χ

^{2}(1, *N*=24) = 57.2, *p* < .001). However, sarcasm was expected more in explicit scenarios than in implicit ones, only if the expectation in the context was broken ($M_{explicit}$ = 5.99, *SEM* = 0.16, $M_{implicit}$ = 5.45, *SEM* = 0.17, χ^2(1, *N*=24) = 5.5, *p* = .038), but equally expected if it was met ($M_{explicit}$ = 2.15, *SEM* = 0.14, $M_{implicit}$ = 2.37, *SEM* = 0.16, χ^2(1, *N*=24) = 0.6, *p* = .9).

These results suggest that as the implicit display theory predicts, when an expectation is made explicit in the context and then broken, readers expect a sarcastic remark to follow more than when the expectation in the context is implicit. This also suggests that these materials are suitable to test the online prediction of the implicit display theory, which is what the next experiment aims to do.

4.4 Experiment 4: Method

4.4.1 Participants

Thirty-two students from the University of Nottingham participated in the experiment (M_{age} = 18 years and 4 months, *SD* = 6 months, 31 female and 1 male). All participants were native English speakers, not diagnosed with any

reading disorders, had normal or corrected-to-normal vision, and none of them participated in the previous experiments. They received course credit in return for their participation.

4.4.2 Materials and design

The twenty-four experimental materials tested in Experiment 3 were further developed for this experiment (see Table 6 for an example and Appendix G for the full list). Each scenario was now made up of five sentences. The first three sentences were identical to the ones tested in Experiment 3. Sentence four contained the target remark made by the speaker to the other character (e.g. *"Your suggestion is stirring!" Dean said to her.*). In the literal conditions, the speaker meant what they literally said through the final comment, which had a positive meaning, whereas in the sarcastic conditions, the speaker said the opposite of what they meant, that is, they said something positive in order to convey a negative meaning. All final sarcastic comments were nonconventional, meaning they were not familiar to the readers (as shown by a familiarity pre-test; see below). The fifth sentence was a wrap-up sentence that concluded the scenario (e.g. *They went out.*). Thus the experiment consisted of a 2 literality (literal vs. sarcastic) x 2 speaker's expectation (explicit vs. implicit) design, with both factors being within-subjects and within-items.

Literal	Explicit	Dean and Chloe were on holiday in Valencia for a week. The end of the trip was approaching so Dean asked Chloe to think of something thrilling to do on their last day. Chloe suggested they go and watch the Formula 1 race, which was Dean's favourite sport.

		"Your/ suggestion is _{pre-critical region} / stirring!" _{critical region} / Dean said to her. _{post-critical region} / They went out.
	Implicit	Dean and Chloe were on holiday in Valencia for a week. Their trip was quickly coming to an end, and they weren't sure what to do on their final day. Chloe suggested they go and watch the Formula 1 race, which was Dean's favourite sport. "Your/ suggestion is _{pre-critical region} / stirring!" _{critical region} / Dean said to her. _{post-critical region} / They went out.
Sarcastic	Explicit	Dean and Chloe were on holiday in Valencia for a week. The end of the trip was approaching so Dean asked Chloe to think of something thrilling to do on their last day. Chloe suggested they stay in the hotel and watch TV, which was quite boring. "Your/ suggestion is _{pre-critical region} / stirring!" _{critical region} / Dean said to her. _{post-critical region} / They went out.
	Implicit	Dean and Chloe were on holiday in Valencia for a week. Their trip was quickly coming to an end, and they weren't sure what to do on their final day. Chloe suggested they stay in the hotel and watch TV, which was quite boring. "Your/ suggestion is _{pre-critical region} / stirring!" _{critical region} / Dean said to her. _{post-critical region} / They went out.

Table 6. Example material (Experiment 4)

Thirty-six filler materials accompanied the 24 experimental materials. A third of the filler items also contained two characters but ended in a literal negative utterance, another third did not have any characters and were informative texts, whereas the final third contained two characters and ended in a literal positive utterance (see the full list in Appendix H).

The display and randomisation of the stimuli was carried out in the same way as in the previous eye-tracking experiments.

Pre-test 1: Familiarity. The purpose of this pre-test was to ensure that all of the target utterances used in this experiment were unfamiliar. A familiarity questionnaire was devised, which contained 178 utterances, presented out of context. Thirteen volunteers were recruited (M_{age} = 28 years and 1 month, SD = 6 years and 1 month, 7 females and 6 males) and asked to rate how familiar they were with each utterance used sarcastically, on a scale from 1 (unfamiliar) to 8 (familiar). The 24 unfamiliar utterances for this experiment were then selected from the lowest rated ones and they had a mean of 2.6 (SD = 0.5, *min* = 1.38, *max* = 3.62).

Pre-test 2: Explicitness manipulation. The purpose of this pre-test was to verify whether there was a clear perceived difference between the explicit and implicit expectation conditions. Fifty-six potential materials were divided into two questionnaires, so that each participant saw only one version of each scenario, either the explicit or the implicit one. Materials were not presented in their entirety, but only up to the second sentence, which either contained or did not contain the expectation. Each scenario was followed by a question, for example for the scenario in Table 6: *"Based only on what you've read, does Dean have an expectation for Chloe to suggest an exciting activity for them to*

do on their final day in Valencia?" Nineteen volunteers were recruited (M_{age} = 26 years and 4 months, SD = 5 years and 10 months, 9 females and 10 males) and asked to answer the question by rating each scenario on a scale from 1 (no such expectation) to 8 (clear expectation). Twenty-four scenarios were then selected, that had the most extreme difference score between the explicit and the implicit conditions, and a paired-samples t-test was conducted: the explicit expectation condition had significantly higher ratings (M = 7.17, SD = 0.56, *min* = 6.1, *max* = 8) than the implicit expectation condition (M = 1.95, SD = 0.52, *min* = 1, *max* = 3.3), $t(21)$ = 29.82, $p < .001$.

4.2.3 Procedure

The procedure was exactly the same as in the previous eye-tracking experiments. Yes/no comprehension questions were asked after 25% of the trials (e.g. for the example scenario in Table 6, the question was, *"Were Dean and Chloe on holiday in Valencia?"*). The average correct response rate to the comprehension questions was 94.7%, indicating that participants read for comprehension.

4.5 Experiment 4: Results and discussion

The analysis regions were the same as in the previous experiments, with the critical region containing the disambiguating word of the target utterance, the pre-critical region being the two words preceding the critical region, and the post-critical region being the region that followed the disambiguating word and completed the target utterance (see Table 6). The same three measures of reading time are reported: first-pass reading time, regression path reading time, and total reading time.

Data were pre-processed and analysed following the same steps as described in the previous experiments[1]. Trials that had zero first-pass reading times on two consecutive regions were removed, and that amounted to 2.63% of the data. See Table 7 below for the models that had the best fit for our data and the values of their fixed-effects parameters. Furthermore, see Appendix I for the t-values associated with the fixed factors that did not have significant effects (i.e. were not included in the best models), and the series of likelihood-ratio tests performed in order to reach the best models.

Analysis region	Reading measure	Model		Coefficient	SE	t
pre-critical	fp	~ 1 + (1 + explicitness|subject) + (1 + explicitness|item)	(Intercept)	252.5	10	25
	rp	~ explicitness + (1|subject) + (1|item)	(Intercept)	307.9	21	14.6
			explicitness	54.4	22.3	2.4
	tt	~ 1 + (1 + literality*explicitness|subject) + (1 + literality*explicitness|item)	(Intercept)	383.4	23.4	16.4
critical	fp	~ 1 + (1 + literality*explicitness|subject) + (1 +	(Intercept)	276.2	16.6	16.6

		literality*explicitness|item)				
	rp	~ literality + (1|subject) + (1 + explicitness|item)	(Intercept)	424	45.4	9.3
			literality	92	25.7	3.6
	tt	~ literality + (1 + literality|subject) + (1 + literality*explicitness|item)	(Intercept)	343.5	32.2	10.7
			literality	87.9	23	3.8
post-critical	fp	~ literality*explicitness + (1 + literality*explicitness|subject) + (1 + literality*explicitness|item)	(Intercept)	394.3	21.5	18.4
			literality	66.1	26.7	2.5
			explicitness	78.5	27.8	2.8
			literality * explicitness	-87.3	35.5	-2.5
	rp	~ literality + (1 +	(Intercept)	530.2	35.3	15.02

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		literality*explicitness|subject) + (1 + literality*explicitness|item)	literality	80.5	30	2.7
	tt	~ literality + (1 + literality*explicitness|subject) + (1 + literality*explicitness|item)	(Intercept)	518.3	33	15.7
			literality	66.1	23.3	2.8

Table 7. Best fitting models and fixed-effects parameters (Experiment 4)

The pre-critical region. No effects were observed in first-pass or total reading times – see Figures 7a and 7c. However, regression path reading time was shorter following explicit contexts ($M_{rp\text{-}explicit}$ = 309ms, SEM = 11ms) than implicit ones ($M_{rp\text{-}implicit}$ = 362ms, SEM = 20ms) - see Figure 7b. This suggests that even before reading the disambiguating word, participants re-read the context in the implicit condition more than in the explicit one.

The critical region. There was a main effect of literality on all reading measures (marginal for first-pass reading time). Literal utterances were read faster ($M_{fp\text{-}literal}$ = 275ms, SEM = 11ms; $M_{rp\text{-}literal}$ = 441ms, SEM = 22ms; $M_{tt\text{-}literal}$ = 355ms, SEM = 15ms) than sarcastic ones ($M_{fp\text{-}sarcastic}$ = 299ms, SEM = 10ms; $M_{rp\text{-}sarcastic}$ = 527ms, SEM = 23ms; $M_{tt\text{-}sarcastic}$ = 446ms, SEM = 15ms) - see Figure 8a-c below.

It seems that when the disambiguating word is encountered in the text, readers take longer to read it if it points towards a sarcastic interpretation of the comment, than if the intended meaning of the comment is literal. These results clearly support the predictions made by the modular accounts of sarcasm interpretation (the standard pragmatic model and the graded salience hypothesis), but offer no support for the implicit display theory's prediction that sarcastic utterances in contexts containing an explicit expectation will be read as fast as literal utterances. In other words, it seems that the results failed to support the prediction that increasing the degree of manifestness of the speaker's expectation in the context offers an initial processing advantage for sarcastic utterances. These results are in line with those of previous studies of irony processing that report a literality effect (e.g. Filik et al., 2014 for

unfamiliar ironies; Filik & Moxey, 2010; Giora et al., 1995, 1998, 2007; Kaakinen et al., 2014).

The post-critical region. An interaction between literality and explicitness was observed in first-pass reading time (see Appendix I for the p-value of the comparison between the model with and without the interaction) - see Figure 9a. Post-hoc comparisons showed that (1) the region of text following a literal comment was read faster when the context was explicit ($M_{\text{fp-literal-explicit}}$ = 396ms, *SEM* = 15ms) than when it was implicit ($M_{\text{fp-literal-implicit}}$ = 471ms, *SEM* = 18ms): $\chi^2(1, N=32) = 8$, *p* = .009, and (2) the region following a comment presented in an explicit context was read faster when the comment was literal ($M_{\text{fp-literal-explicit}}$ = 396ms, *SEM* = 15ms) than when it was sarcastic ($M_{\text{fp-sarcastic-explicit}}$ = 456ms, *SEM* = 18ms): $\chi^2(1, N=32) = 6.1$, *p* = .027.

Interestingly, this pattern of results was not due to sarcastic utterances becoming more difficult in implicit contexts, but due to literal utterances becoming more difficult in implicit contexts. It can then be concluded that the contextual manipulation seems to have an effect on the later stages of literal language processing, but not on the later stages of sarcasm processing.

Regression path and total reading times only reflected a main effect of literality - see Figure 9b-c. The region following a literal utterance was read faster ($M_{\text{rp-literal}}$ = 522ms, *SEM* = 18ms; $M_{\text{tt-literal}}$ = 531ms, *SEM* = 15ms) than following a sarcastic one ($M_{\text{rp-sarcastic}}$= 607ms, *SEM* = 23ms; $M_{\text{tt-sarcastic}}$ = 605ms, *SEM* = 17ms). This pattern of results was also observed in Filik and Moxey's (2010) study, and was taken to reflect difficulty in integrating the comment with the context when the comment is sarcastic. This difficulty in contextual

integration seems to be independent of the explicitness of the speaker's expectation in the context. Rather, as suggested by Filik and Moxey (2010), these results provide some evidence that after a sarcastic utterance is encountered, more re-inspection of the text is required before the reader can comprehend the material, as compared to when a literal utterance is encountered, which is in line with the modular accounts of sarcasm comprehension (both the standard pragmatic model and the graded salience hypothesis), however it fails to support the implicit display theory.

Figure 7a: fp - pre-critical region

Figure 7b: rp - pre-critical region

Figure 7c: tt - pre-critical region
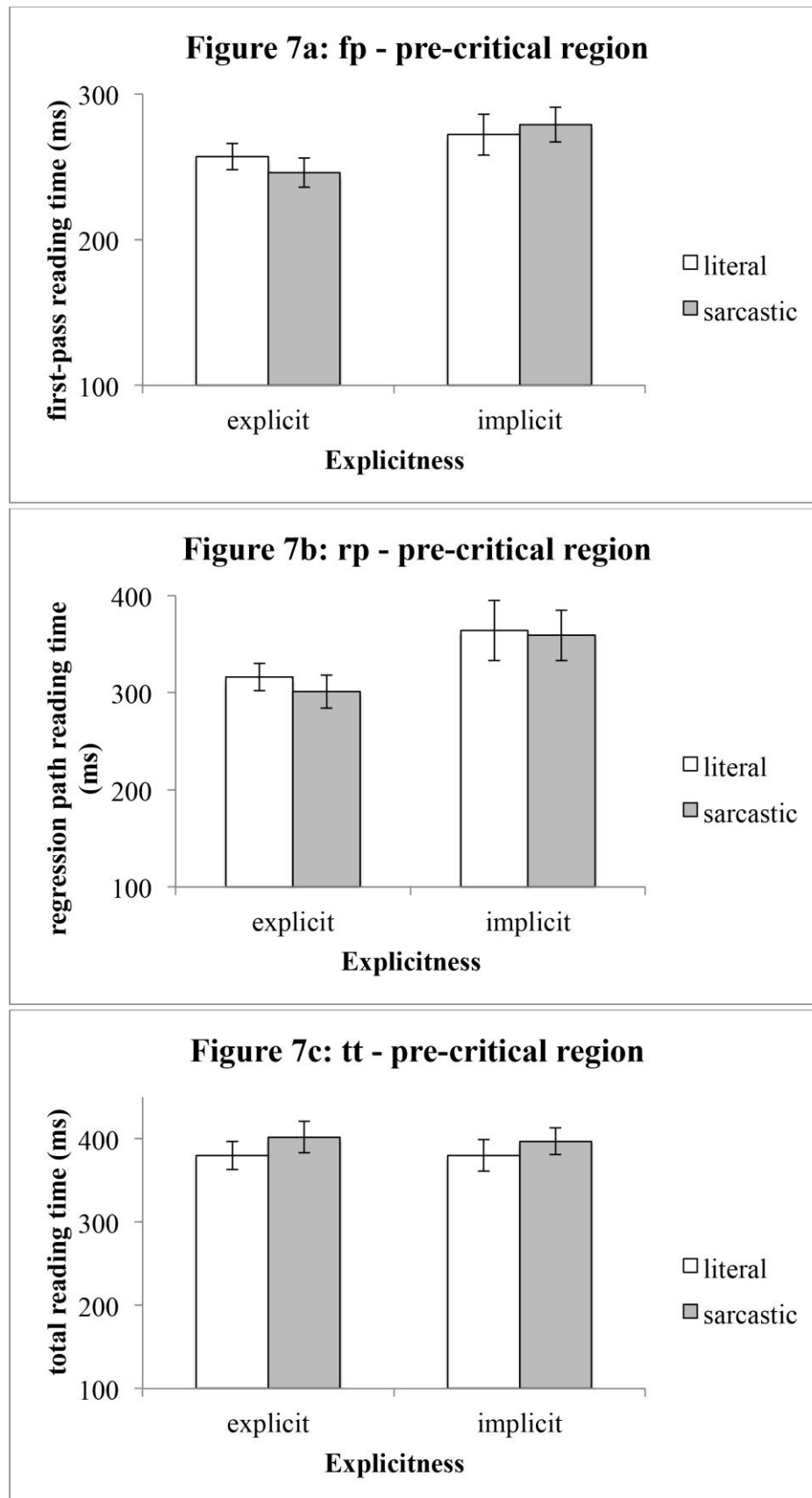
Figure 7. Mean reading times on the pre-critical region (Experiment 4). Error

bars represent ±1*SEM*.

Figure 8a: fp - critical region

Figure 8b: rp - critical region

Figure 8c: tt - critical region
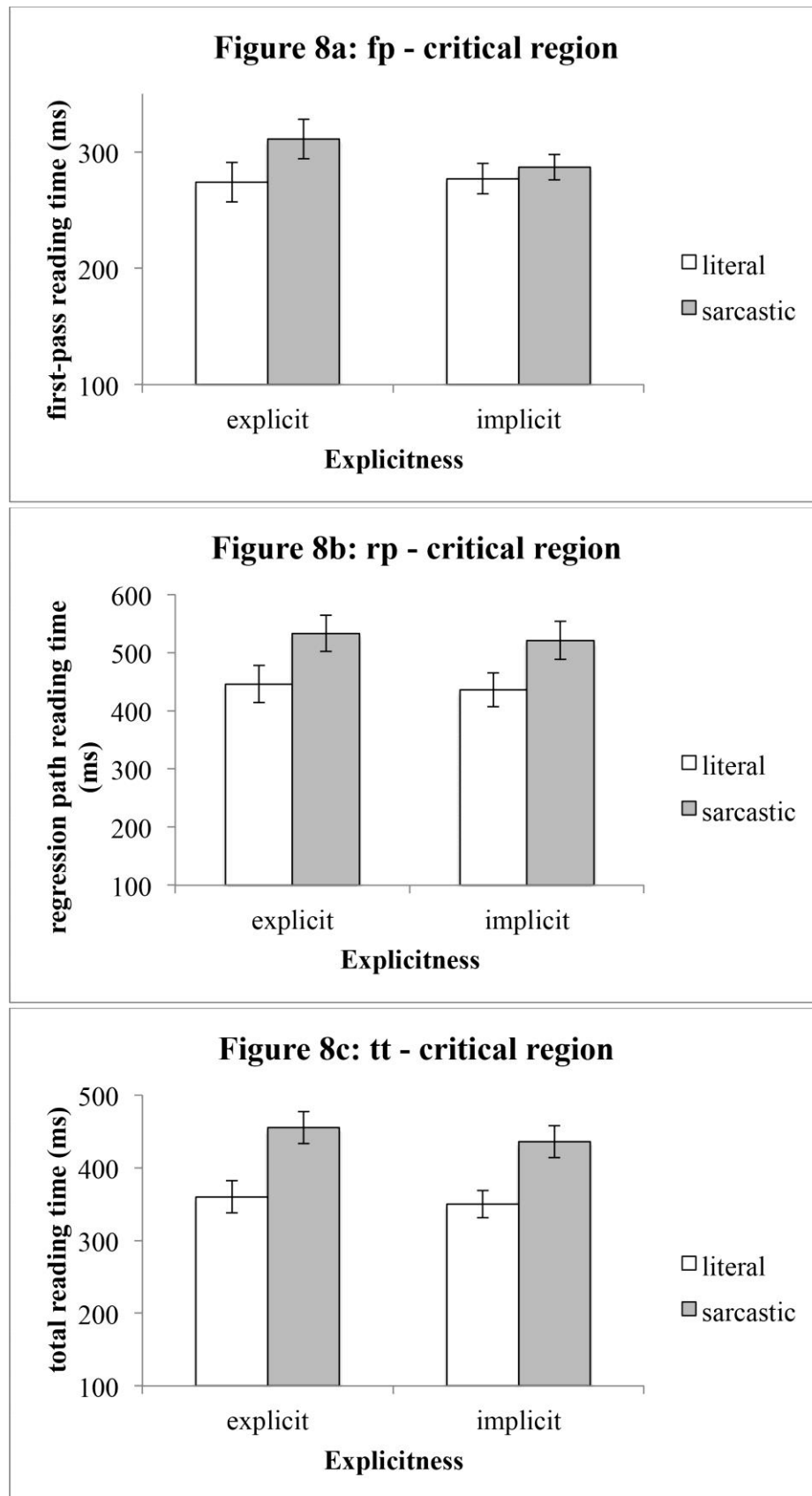
Figure 8. Mean reading times on the critical region (Experiment 4). Error bars

represent ±1*SEM.*

Figure 9a: fp - post-critical region

Figure 9b: rp - post-critical region

Figure 9c: tt - post-critical region
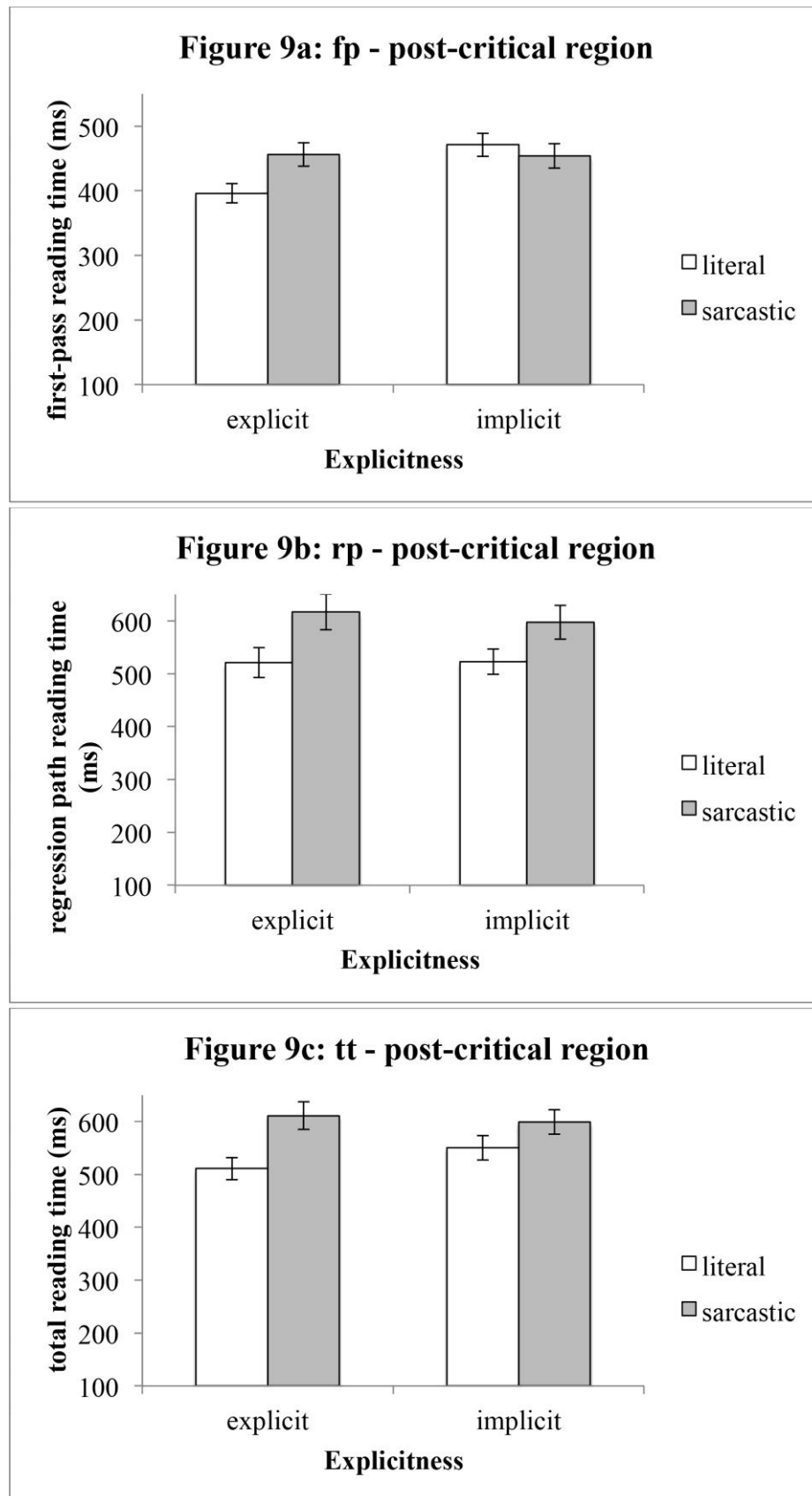
Figure 9. Mean reading times on the post-critical region (Experiment 4). Error

bars represent ±1*SEM*.

In conclusion, the results from Experiment 4 did not provide any support for the implicit display theory's predictions that explicitness of the speaker's expectation in the context would affect reading times for sarcastic utterances, by making them as easy to read as literal utterances when the expectation is explicit. This interpretation is further supported by the fact that Experiment 3 showed that the materials were optimised to find a processing difference. However, results from Experiment 4 did provide support for both modular accounts' predictions (the standard pragmatic model and the graded salience hypothesis), by showing that unfamiliar sarcastic utterances took longer to read than literal counterparts. The next eye-tracking experiment was designed to replicate the current results and additionally address the question of what role the properties of the utterance play in sarcasm comprehension. Since a new factor was added to the design, a new set of materials was created, this time forty-eight instead of twenty-four. Therefore, Experiment 5 was a rating study similar to Experiment 3, testing this new set of materials, while Experiment 6 investigated the online reading patterns of both familiar and unfamiliar sarcastic utterances presented in explicit and implicit contexts.

4.6 Experiment 5: Method

4.6.1 Participants

Twenty-four participants completed this rating study and none of them participated in any of the previous experiments (M_{age} = 27 years and 1 month, SD = 8 years, 15 females and 9 males). All participants were native English speakers, and they completed the study online. By participating, they entered a prize draw to win one of three £20 Amazon vouchers.

4.6.2 Materials and design

The experimental materials consisted of 48 short texts, with the same structure as the materials in Experiment 3. Thus the experiment consisted of a 2 outcome (positive vs. negative) x 2 speaker's expectation (explicit vs. implicit) design, with both factors as within-subjects and within-items factors.

4.6.3 Procedure

The procedure was exactly the same as in Experiment 3.

4.7 Experiment 5: Results and discussion

The data were analysed in R (*lme4* package), and the results suggested that there was a significant interaction between outcome and explicitness on the expectation for sarcasm ratings. Post-hoc tests showed that sarcasm was expected significantly more when the outcome was negative than when it was positive, in both explicit ($M_{negative} = 5.59$, *SEM* = 0.12, $M_{positive} = 2.17$, *SEM* = 0.09, $\chi^2(1, N=24) = 119.1$, $p < .001$) and implicit contexts ($M_{negative} = 5.12$,

SEM = 0.12, $M_{positive} = 2.46$, *SEM* = 0.11, $\chi^2(1, N=24) = 94.9$, $p < .001$).

However, sarcasm was expected more in explicit scenarios than in implicit ones, only if the expectation from the context was broken ($M_{explicit} = 5.59$, *SEM* = 0.12, $M_{implicit} = 5.12$, *SEM* = 0.12, $\chi^2(1, N=24) = 10.2$, $p = .002$), but equally expected if it was met ($M_{explicit} = 2.17$, *SEM* = 0.09, $M_{implicit} = 2.46$, *SEM* = 0.11, $\chi^2(1, N=24) = 3.6$, $p = .1$).

These results support the implicit display theory's prediction, as in Experiment 3, that when an expectation is made explicit in the context and then broken, readers expect a sarcastic remark to follow more than when the

expectation in the context is implicit. This also suggests that these materials are suitable to test the online predictions of the implicit display theory, which is what Experiment 6 was designed to do.

4.8 Experiment 6: Method

4.8.1 Participants

Sixty-four students from the University of Nottingham participated (M_{age} = 22 years and 6 months, SD = 7 months, 42 females and 22 males). None of them had taken part in any of the previous experiments. All participants were native English speakers, not diagnosed with any reading disorders, and had normal or corrected-to-normal vision. They either received a £4 inconvenience allowance for taking part, or course credit.

4.8.2 Materials and design

The experimental materials were the ones tested in Experiment 5 (see Appendix J for the full list). As in Experiment 4, two more sentences were added to the scenarios created for the rating study. The fourth sentence contained the target remark, which in this experiment could have either been a familiar one (i.e. participants were used to hearing it uttered sarcastically, e.g. *"So excited!" Dean said to her.*), or unfamiliar (i.e. participants were not used to hearing it uttered sarcastically, e.g. *"Your suggestion is stirring!" Dean said to her.*). The fifth and final sentence was, as in Experiment 4, a wrap-up sentence (e.g. *They went out.*). There were also 48 filler items, following a similar structure as in Experiment 4: half of the materials contained two characters but ended in a literal negative utterance, and the other half did not have any characters and were informative texts (see Appendix K for the full

list). The display and randomisation of the stimuli was carried out in the same way as in the previous eye-tracking experiments.

Pre-test 1: Familiarity. The 48 sarcastic utterances were selected from the 178 possible utterances in the familiarity questionnaire mentioned in Experiment 4. A paired-samples t-test comparing the ratings of the familiar and unfamiliar utterances showed that the familiar utterances were rated as significantly more familiar ($M_{familiar} = 6.24$, $SD = 0.86$, $min = 4.4$, $max = 7.8$) than the unfamiliar ones ($M_{unfamiliar} = 2.81$, $SD = 0.83$, $min = 1.4$, $max = 5.1$), $t(47) = 21.12$, $p < .001$.

Pre-test 2: Explicitness manipulation. The data from the pre-test from Experiment 4 were also used to select the materials for Experiment 6. The 48 contexts were chosen from the 56 possible contexts in the expectation questionnaire, by selecting the ones that had the largest difference in ratings between the explicit and the implicit conditions. A paired-samples t-test was then conducted in order to compare between the ratings for the explicit and the implicit expectation conditions. The explicit expectations condition had significantly higher ratings ($M_{explicit} = 7.02$, $SD = 0.74$, $min = 6.1$, $max = 8$) than the implicit expectations condition ($M_{implicit} = 3.08$, $SD = 1.41$, $min = 1$, $max = 3.3$), $t(47) = 16.7$, $p < .001$.

4.8.3 Procedure

The procedure was exactly the same as in the previous eye-tracking experiments. In terms of the comprehension questions, the average correct response rate was 93.9%, indicating again that participants read and correctly comprehended the scenarios.

4.9 Experiment 6: Results and discussion

The analysis regions were the same as in the previous experiments, with the critical region containing the disambiguating word of the target utterance, the pre-critical region being the two words preceding the critical region, and the post-critical region being the region that followed the disambiguating word and completed the target utterance. The same three measures of reading time are reported: first-pass reading time, regression path reading time, and total reading time.

A traditional F1 and F2 ANOVA was also conducted in this experiment and as expected, its results were more difficult to interpret than those of the linear mixed effects analysis. This was because often the effect for a certain reading measure and region of interest was significant in the by-subjects analysis but not in the by-items analysis, or vice versa. When the linear mixed effects analysis was conducted, the results were largely similar, but a lot more interpretable since there was no more need to refer to two different sets of results (one significant, one not significant) for each fixed effect. This finding is further supporting the view expressed in this thesis (see section 2.2) that replacing the traditional ANOVA tests with linear mixed effects analyses would indeed be advantageous.

Data were pre-processed and analysed following the same steps as described in the previous experiments[1]. Trials that had zero first-pass reading times on two consecutive regions were removed, and that amounted to 3.47% of the data. See Table 8 below for the models that had the best fit for the data and the values of their fixed-effects parameters. Furthermore, see Appendix L for the *t*-values associated with the fixed factors that did not have significant

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effects (i.e. were not included in the best models), and the series of likelihood-ratio tests performed in order to reach the best models.

Analysis region	Reading measure	Model		Coefficient	SE	t
pre-critical	fp	~ familiarity*explicitness + (1 + literality|subject) + (1|item)	(Intercept)	257.9	9.6	26.9
			familiarity	-3.3	8	-0.4
			explicitness	20.3	7.9	2.6
			familiarity * explicitness	-29.6	11.2	-2.6
	rp	~ familiarity + (1 + literality|subject) + (1|item)	(Intercept)	375.9	17	22.2
			familiarity	-42.1	13.3	-3.2
	tt	~ literality + familiarity + (1 + literality*explicitness|subject) + (1|item)	(Intercept)	328.5	15.9	20.7
			literality	37.9	9	4.2
			familiarity	23	8	2.9

critical	fp	~ literality + familiarity + (1 + explicitness|subject) + (1 + literality|item)	(Intercept)	212.2	8	26.5
			literality	10.3	4.9	2.1
			familiarity	38.9	4.6	8.5
	rp	~ literality * familiarity + (1 + explicitness|subject) + (1 + literality|item)	(Intercept)	307.3	20.8	14.7
			literality	17.6	20.2	0.9
			familiarity	92.4	19	4.9
			literality * familiarity	57.9	26.8	2.2
	tt	~ literality * familiarity + (1 + literality*familiarity|subject) + (1|item)	(Intercept)	258.7	13.2	19.6
			literality	26.5	10.9	2.4
			familiarity	59.3	10.6	5.6
			literality * familiarity	29.1	14.6	2

post-critical	fp	~ literality + (1 + literality*explicitness|subject) + (1|item)	(Intercept)	408.9	17.2	23.8
			literality	42.5	7.8	5.5
	rp	~ literality + familiarity + (1 + literality* familiarity |subject) + (1|item)	(Intercept)	470.7	23.9	19.7
			literality	90.4	22.5	4
			familiarity	46.7	17.7	2.6
	tt	~ literality + familiarity + (1 + literality*explicitness|subject) + (1 + literality|item)	(Intercept)	490.6	25.4	19.3
			literality	74.2	18.6	4
			familiarity	31.6	10.5	3

Table 8. Best fitting models and fixed-effects parameters (Experiment 6)

The pre-critical region. In first-pass reading time there was a familiarity-explicitness interaction (see Appendix L for the p-value of the comparison between the model with and without the interaction) - see Figures 10a and d. Post-hoc tests indicated that (1) the pre-critical region of familiar comments was read faster if the context was explicit rather than implicit, ($M_{\text{fp-familiar-explicit}}$ = 262ms, SEM = 6ms, $M_{\text{fp-familiar-implicit}}$ = 283ms, SEM = 6ms, $\chi^2(1, N=64)$ = 6.6, p = .02), but (2) the pre-critical region of unfamiliar comments were read in equal times in explicit and implicit contexts, ($M_{\text{fp-unfamiliar-explicit}}$ = 258ms, SEM = 6ms, $M_{\text{fp-unfamiliar-implicit}}$ = 248ms, SEM = 6ms, $\chi^2(1, N=64)$ = 1.4, p = .5). This indicates that even before the readers knew whether the comment was going to be literal or sarcastic, the context had an impact on the reading times of familiar comments, but not on the unfamiliar ones.

In regression path reading time, the familiarity effect indicated that the pre-critical region of familiar utterances had longer reading times than that of unfamiliar ones - see Figure 10b. However since this specific comparison is between reading times on different words, any simple main effects of familiarity are very difficult to interpret meaningfully.

In total reading times, the literality main effect indicated that the pre-critical region of literal comments was read faster ($M_{\text{tt-literal}}$ = 343ms, SEM = 6ms) than that of sarcastic comments ($M_{\text{tt-sarcastic}}$ = 378ms, SEM = 7ms) – see Figure 10c. The most likely interpretation of the literality main effect is that the pre-critical region has been re-read more in sarcastic scenarios than in literal ones, which might suggest a difficulty in the interpretation of the sarcastic materials as predicted by the standard pragmatic model. The familiarity main

effect indicated that the pre-critical region was read faster in familiar than unfamiliar utterances, but as explained above, the familiarity main effect alone cannot be interpreted meaningfully.

The critical region. In first-pass reading time, there were two main effects - see Figure 11a. The critical word of familiar utterances was read faster ($M_{\text{fp-familiar}}$ = 223ms, *SEM* = 3ms) than the critical word of unfamiliar utterances ($M_{\text{fp-unfamiliar}}$ = 260ms, *SEM* = 4ms). Again, although this result is in the direction that one might expect, it should be interpreted with caution, since this specific comparison is between reading times on different words (e.g. *excited* in the familiar condition vs. *stirring* in the unfamiliar condition). The literality main effect indicated that the critical word of a literal comment was read faster ($M_{\text{fp-literal}}$ = 237ms, *SEM* = 3ms) than that of a sarcastic comment ($M_{\text{fp-sarcastic}}$ = 248ms, *SEM* = 4ms), as predicted by the standard pragmatic model.

In regression path reading time, an interaction was observed between literality and familiarity (see Appendix L for the p-value of the comparison between the model with and without the interaction) - see Figures 11b and d. Post-hoc comparisons showed that (1) unfamiliar utterances had longer reading times in the sarcastic condition than in the literal condition ($M_{\text{rp-unfamiliar-literal}}$ = 402ms, *SEM* = 14ms, $M_{\text{rp-unfamiliar-sarcastic}}$ = 477ms, *SEM* = 17ms): χ^2(1, *N*=64) = 15.7, *p* < .001, and (2) familiar utterances were read equally fast irrespective of whether they were sarcastic or literal ($M_{\text{rp-familiar-literal}}$ = 311ms, *SEM* = 12ms, $M_{\text{rp-familiar-sarcastic}}$ = 333ms, *SEM* = 12ms): χ^2(1, *N*=64) = 0.8, *p* = .8. This pattern of results fully supports the graded salience hypothesis, but offers no support

for the standard pragmatic model or the implicit display theory. Sarcastic

utterances do not always take longer to read than literal ones (as the standard

pragmatic model would predict), and there is currently no evidence that they

are influenced by the strength of contextual information (as the implicit display

theory would predict). However, when they are familiar, sarcastic utterances

are read as fast as literal utterances, as predicted by the graded salience

hypothesis.

Finally in total reading time, an interaction between literality and

familiarity was observed again (see Appendix L for the p-value of the

comparison between the model with and without the interaction) - see Figures

11c and e. However this time, literal comments were read faster than sarcastic

ones in both familiar ($M_{tt\text{-}familiar\text{-}literal}$ = 264ms, SEM = 6ms, $M_{tt\text{-}familiar\text{-}sarcastic}$ =

293ms, SEM = 8ms, $\chi^2(1, N=64)$ = 5.9, p = .03) and unfamiliar conditions ($M_{tt\text{-}}$

$_{unfamiliar\text{-}literal}$ = 321ms, SEM = 8ms, $M_{tt\text{-}unfamiliar\text{-}sarcastic}$ = 377ms, SEM = 10ms, χ

$^2(1, N=64)$ = 22.3, $p < .001$). In line with the findings from Experiment 4, these

results fail to support the implicit display theory, since the explicitness of the

speaker's expectation did not facilitate sarcasm processing in any of the

conditions.

The post-critical region. In first-pass reading time, a main effect of

literality was observed - see Figure 12a. The region of text following a literal

utterance had shorter first-pass reading times ($M_{fp\text{-}literal}$ = 411ms, SEM = 6ms)

than the region following a sarcastic utterance ($M_{fp\text{-}sarcastic}$ = 453ms, SEM =

7ms). In regression path reading times and total reading times, two main

effects of literality and familiarity were observed - see Figure 12b-c. The

region of text following a literal utterance was read faster ($M_{\text{rp-literal}}$ = 499ms,

SEM = 11ms; $M_{\text{tt-literal}}$ = 510ms, SEM = 8ms) than the region following a

sarcastic utterance ($M_{\text{rp - sarcastic}}$ = 590ms, SEM = 14ms; $M_{\text{tt - sarcastic}}$ = 584ms,

SEM = 10ms). Also the region following a familiar utterance was read faster

($M_{\text{rp - familiar}}$ = 524ms, SEM = 12ms; $M_{\text{tt - familiar}}$ = 533ms, SEM = 9ms) than the

region following an unfamiliar utterance ($M_{\text{rp - unfamiliar}}$ = 565ms, SEM = 13ms;

$M_{\text{tt - unfamiliar}}$ = 561ms, SEM = 9ms). These results seem to support the findings

from Experiment 4 and those observed in Filik and Moxey's (2010) study,

which showed that the region of text following sarcastic utterances is read

more slowly than the text following literal utterances.

The current experiment showed that although familiarity offers an

advantage for the processing of familiar sarcastic utterances when they are

initially encountered (as evidenced in regression path reading times on the

disambiguating word), this advantage is lost in the later stages of processing

(as illustrated by the lack of an interaction between literality and familiarity on

the post-critical region).

Figure 10a: fp - pre-critical region
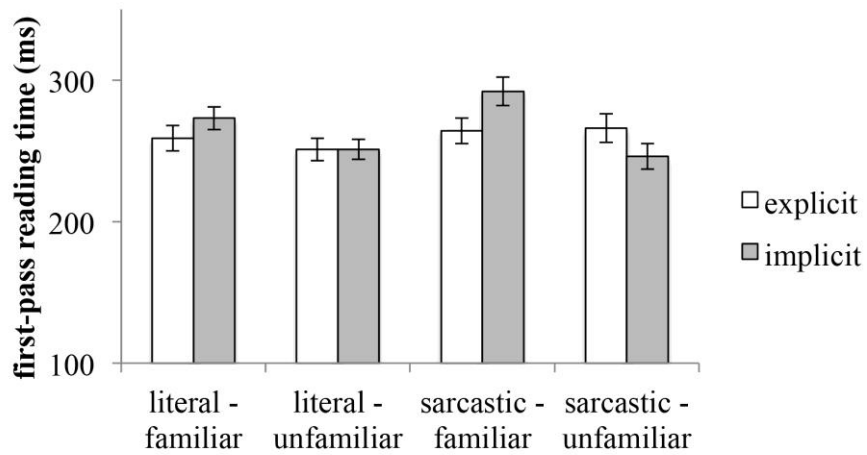
Figure 10b: rp - pre-critical region
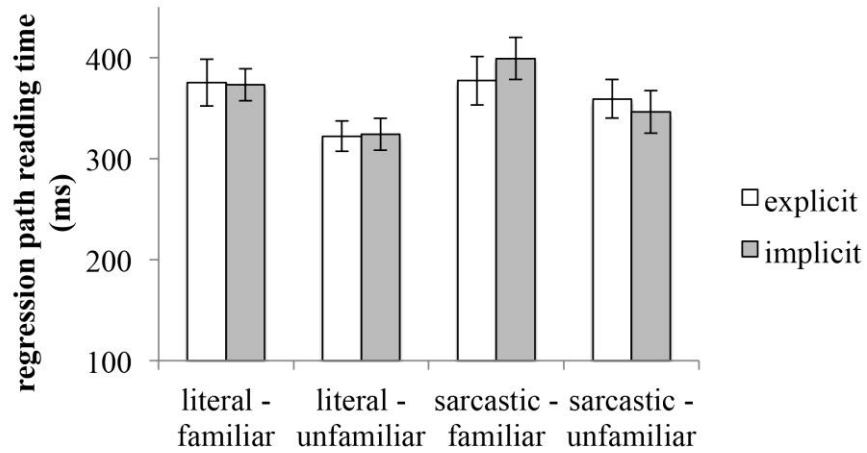
Figure 10c: tt - pre-critical region
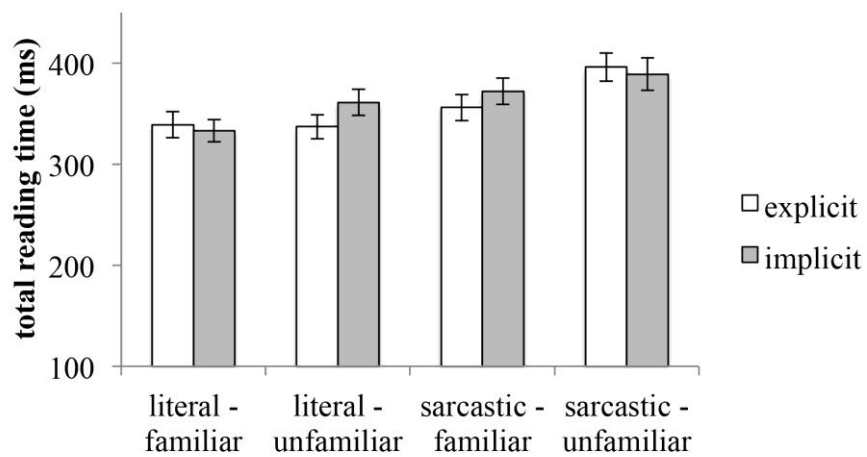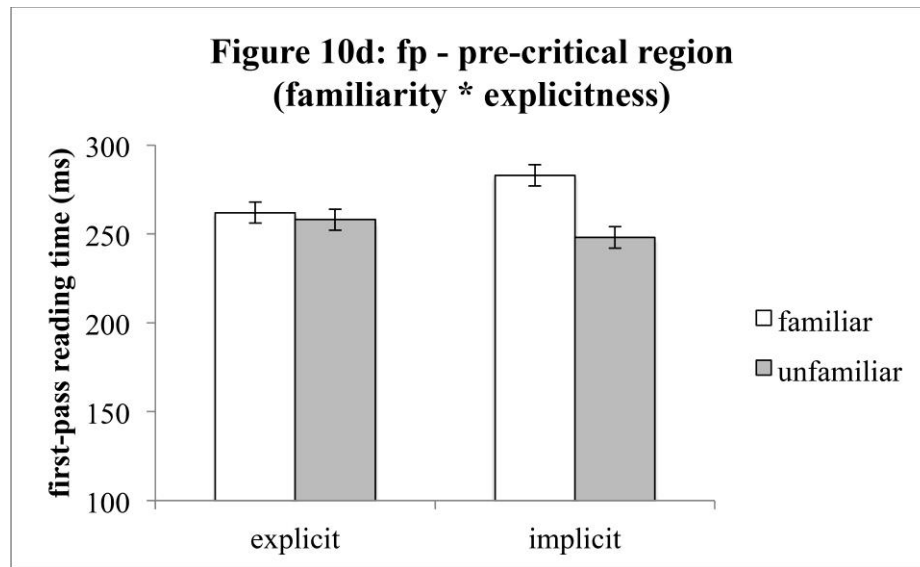
Figure 10. Mean reading times on the pre-critical region (Experiment 6). Error bars represent ±1*SEM*.

Figure 11a: fp - critical region

Figure 11b: rp - critical region

Figure 11c: tt - critical region

Figure 11d: rp - critical region (literality * familiarity)

Figure 11e: tt - critical region (literality * familiarity)
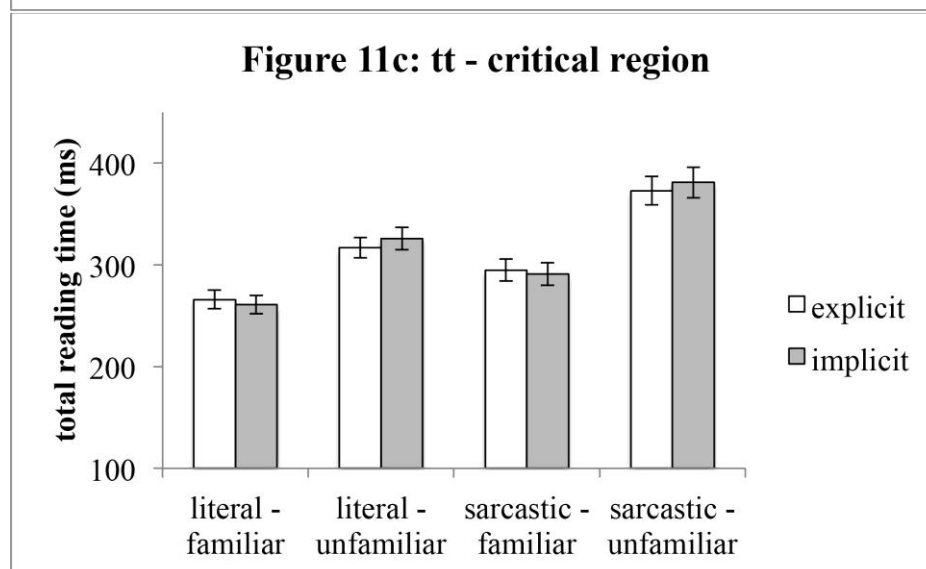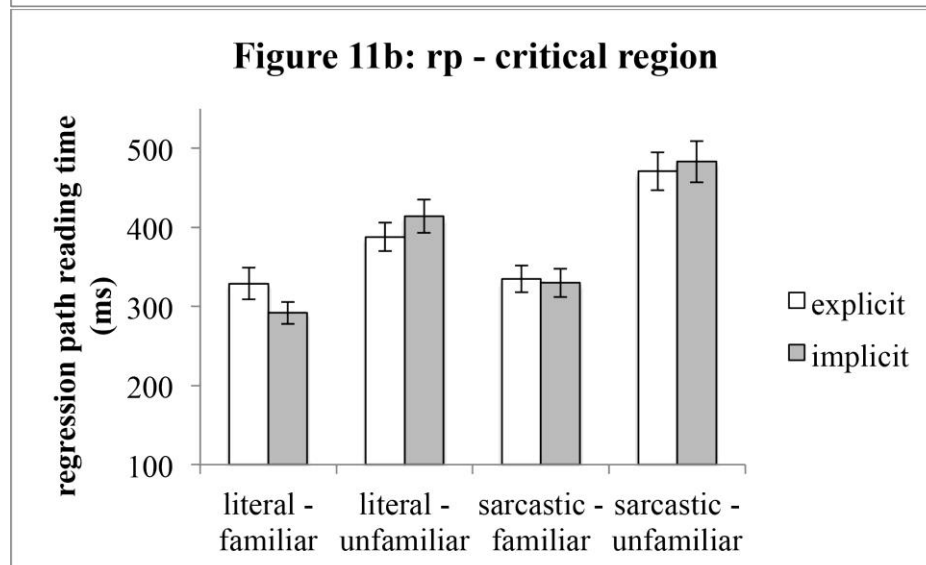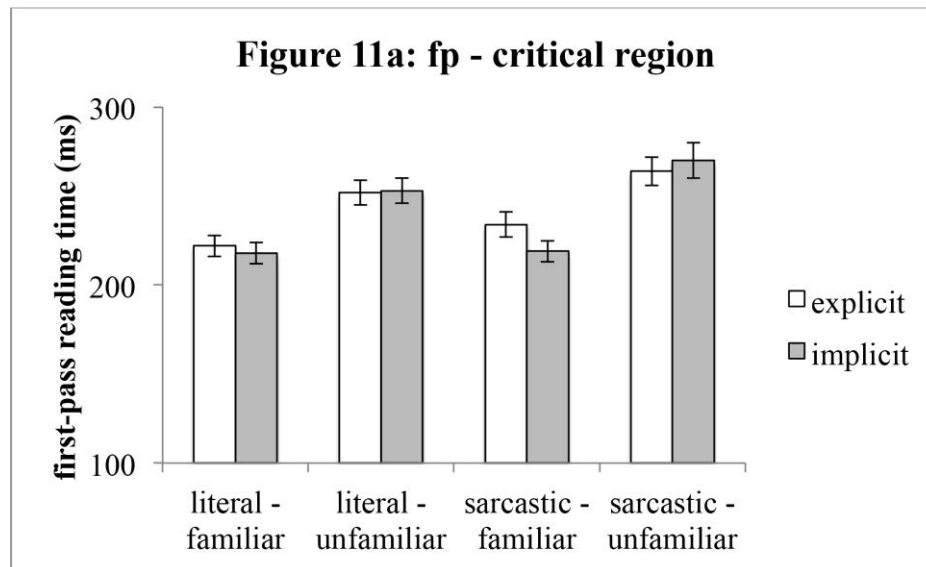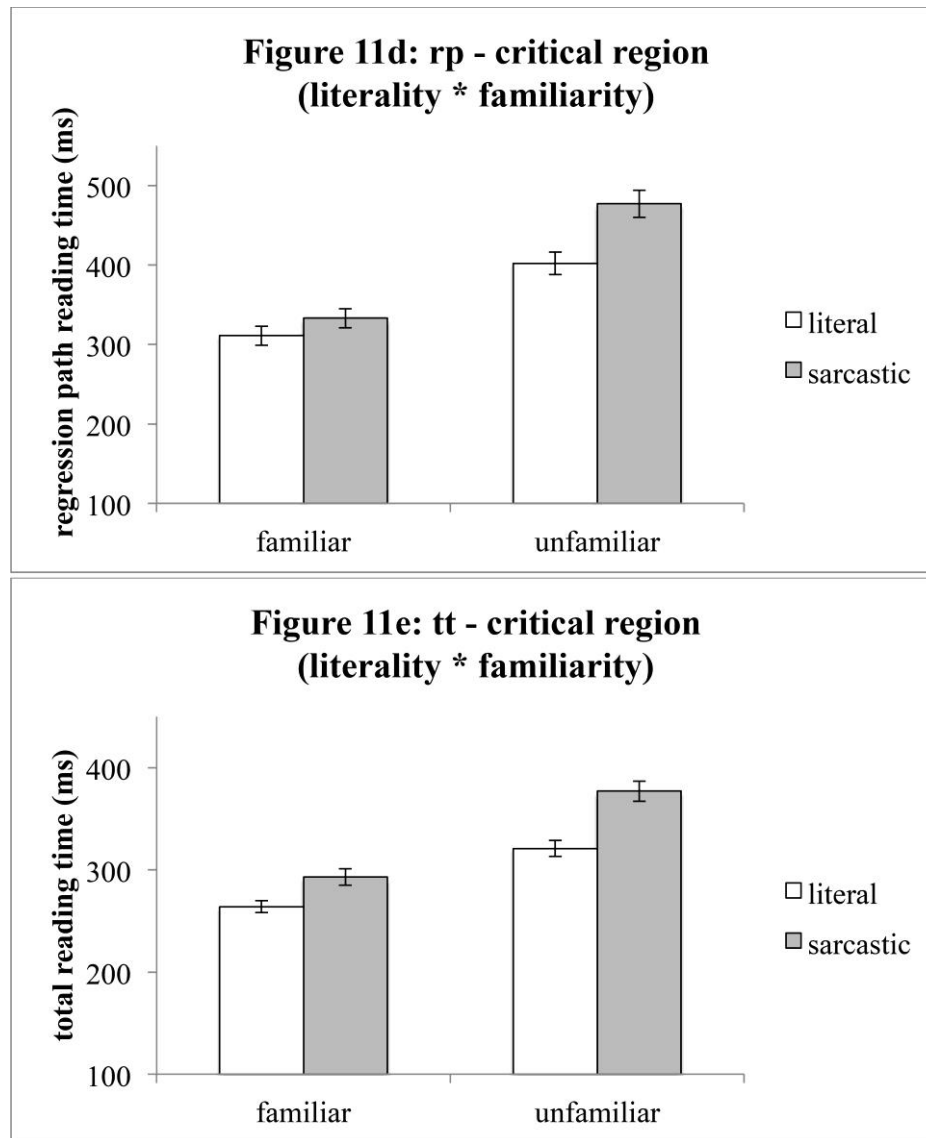
Figure 11. Mean reading times on the critical region (Experiment 6). Error bars represent ±1*SEM*.

Figure 12a: fp - post-critical region

Figure 12b: rp - post-critical region

Figure 12c: tt - post-critical region
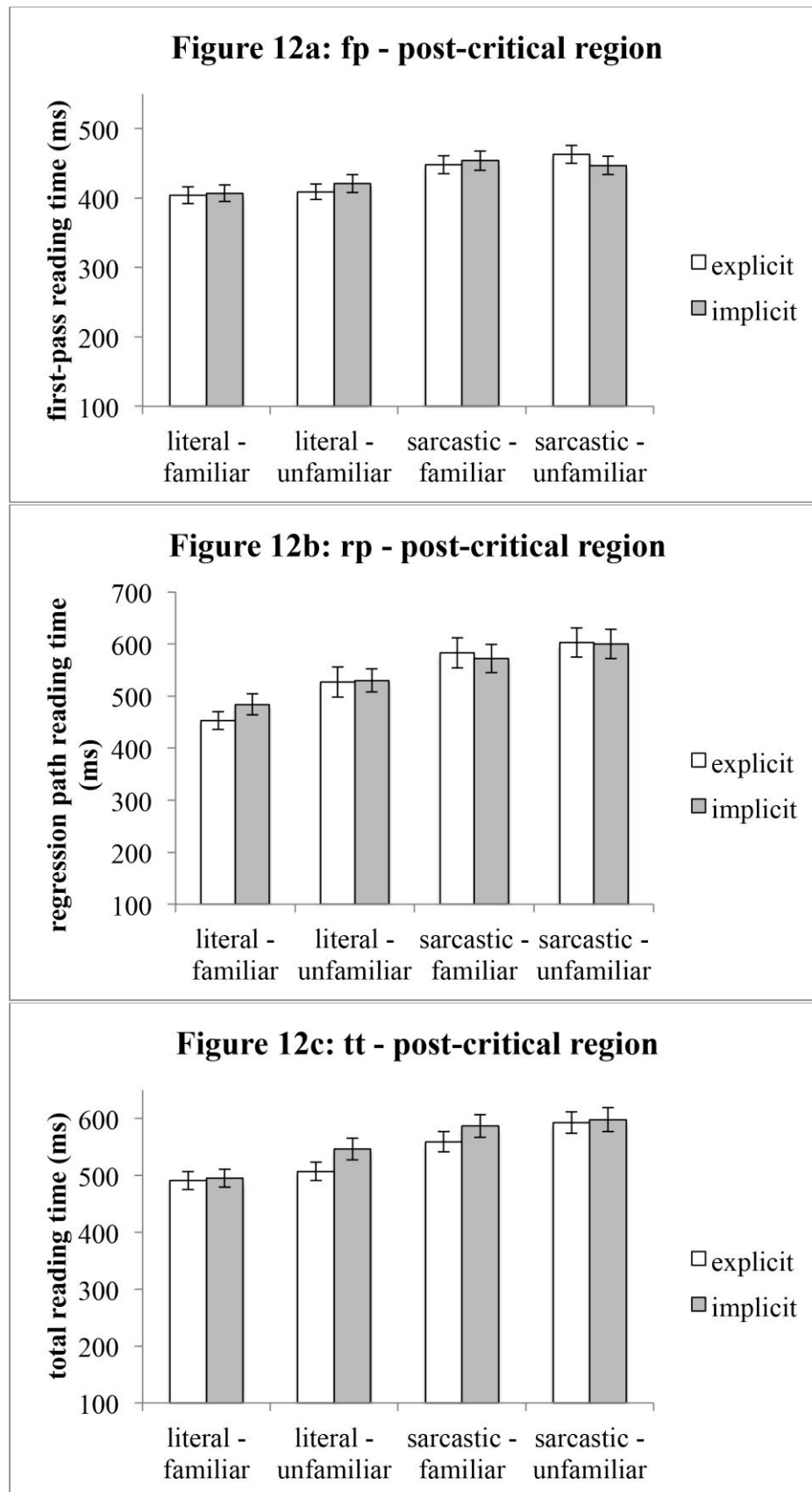
Figure 12. Mean reading times on the post-critical region (Experiment 6). Error

bars represent ±1*SEM*.

4.10 Conclusion

In the two eye-tracking experiments reported in this chapter, participants read short scenarios while their eye movements were recorded. In Experiment 4, the contexts of these scenarios either included an explicit expectation of the speaker, or an implicit expectation, and they ended in either a literal comment or an unfamiliar sarcastic one. This design was used in order to test the conditions under which the predictions of the modular accounts and the implicit display theory differ the most. In Experiment 6 the familiarity of the sarcastic comment was manipulated, in addition to the explicitness of the speaker's expectation, in order to also assess the role of certain properties of the utterance itself in sarcasm comprehension. Rating experiments 3 and 5 were conducted in order to test the implicit display theory's offline prediction that when the speaker's expectation is made explicit and then broken, a sarcastic remark is more expected by the reader; this way, it was ensured that the experimental materials were optimised to detect processing differences caused by the contextual factor. As in Chapter 3, the results of the experiments will be categorised into early and late processing stages, and discussed separately.

4.10.1 The early stages of sarcasm processing

As before, initial processing was considered to be reflected in the reading times of the critical word before participants moved on to the next text region (that is, first-pass and regression path reading times on the disambiguating word). For this critical disambiguating region, it was found that unfamiliar sarcastic utterances took longer to read than literal utterances

(Experiments 4 and 6), but familiar sarcastic utterances were read as quickly as literal ones (regression path reading times in Experiment 6).

The results of both experiments are most in line with the predictions made by the graded salience hypothesis, and less so with those of the standard pragmatic model or the implicit display theory. The familiarity of the target comments (rather than context or their literality) seems to have an influence on the initial processing of sarcasm comprehension, in the direction predicted by the graded salience hypothesis. In the early stages of processing, when sarcastic utterances were familiar, they were read as fast as literal utterances, whilst unfamiliar sarcastic utterances were read more slowly than their literal counterparts. These results are in line with those of Giora and her colleagues (1995, 1998, 2007), Filik and Moxey (2010), Filik et al. (2014, Experiment 1), and Frisson and Pickering (1999).

Furthermore, they are also in line with those of Filik et al.'s (2014) ERP study of irony processing. Filik et al. found that in the N400 time range, the ERP amplitudes were modulated by the literality and familiarity of the comment, in that unfamiliar ironies had more negative-going amplitudes compared to literal items, whereas an amplitude difference was not observed between familiar sarcastic and literal utterances. This pattern of results nicely mirrors the present eye-tracking results for regression path reading times on the critical region (Experiment 6), and stands to show that when readers encounter the disambiguating word of an unfamiliar irony, they take longer to read it, which seems to be because of semantic difficulties associated with processing its meaning (as reflected in the ERP). However, this semantic integration difficulty is not observed for the disambiguating word of familiar ironies.

There were no main effects of the explicitness of the speaker's expectation, nor interactions of this factor with literality or familiarity in the critical region (Experiments 4 and 6). These results do not support the prediction of the implicit display theory that when the degree of manifestness of an expectation in the context is high, sarcastic utterances would be read as fast as literal ones, even though there was offline evidence that a sarcastic utterance was expected more when the context explicitly mentioned the speaker's expectation. The two eye-tracking experiments reported in this chapter seem to suggest that making a speaker's expectation explicit in the context did not facilitate comprehension of sarcasm.

4.10.2 The late stages of sarcasm processing

The later stages of processing were reflected in measures of reading time after the participants have first processed the critical region (that is, in the total reading times on the pre-critical and critical region, and all reading measures on the post-critical region).

Even though, as noted before, an interaction between literality and familiarity was observed in the early reading measures on the critical region in Experiment 6, this interaction was no longer observed in the later reading stages, that is, familiar sarcastic utterances lost their advantage and became more difficult to process than literal ones. This reading pattern suggests that although familiar sarcastic utterances have an initial advantage, they still give rise to processing difficulties after the first reading, when participants re-read the disambiguating word. Therefore, in the later stages of processing, sarcasm comprehension seems to have an additional processing cost compared to literal language comprehension.

The finding that familiarity effects disappear in the later stages of sarcasm comprehension is in line with the results of Filik et al.'s (2014) ERP experiment. They found that in the P600 time range, the ERP amplitudes were only modulated by literality (and not familiarity), with ironies showing more positive-going amplitudes than literal utterances. De Grauwe, Swain, Holcomb, Ditman, and Kuperberg's (2010) ERP study of metaphor also points towards this conclusion. Their study involved participants reading sentences that contained either a familiar metaphor, or was simply a literal clause. The results showed a P600 effect for metaphors as compared to literal sentences, which was interpreted as a reflection of the difficulties associated with the integration of figurative utterances with the context.

An explanation provided for their result is that in the later stages of comprehension, both the literal and figurative meanings are activated. For sarcasm, it would mean that in the later stages of processing there is an on-going conflict between the literal and ironic meanings of the sarcastic utterances, which is not affected by the familiarity of the utterance. This conclusion is supported by the indirect negation view proposed by Giora (1995), which predicts that both the literal and ironic meanings of a sarcastic utterance are retained in the later stages of processing in order for the difference between them to be computed.

With regards to the late effects of the contextual manipulation, there was no evidence that making the speaker's expectation explicit in the context facilitates sarcasm comprehension. However, there was some evidence that the contextual manipulation affected the reading time of literal utterances, which became more difficult to process in implicit contexts (see first-pass reading

times on the post-critical region, Experiment 4). Therefore it is not the case that the contextual manipulation did not have any effects, it is only the case that it did not affect sarcasm processing in the way predicted by the implicit display theory.

The finding that sarcasm comprehension is overall more difficult than literal language comprehension in the later stages of processing could potentially be compatible with the predictions of the standard pragmatic model, since according to this theory, readers or listeners need to re-analyse the sarcastic materials before making a correct interpretation, which would result in a processing cost. However, the standard pragmatic model cannot explain the early processing advantage of familiar sarcastic utterances as compared to literal ones. On the other hand, the graded salience hypothesis predicts the early ease of processing of sarcastic utterances that was observed, and can also explain the findings for the later stages of processing in terms of a conflict between the two meanings of a sarcastic utterance (as explained above). Therefore, it seems that out of the two modular accounts discussed in this chapter, the results are more compatible with the graded salience hypothesis than the standard pragmatic model.

The present results could also potentially be explained by the constraint satisfaction model (Pexman, 2008). As described in Chapter 1, this framework theory allows for many unspecified factors to affect sarcasm comprehension, and thus does not make clear predictions about any specific factors. However, the constraint satisfaction model could be used to frame the results, and it could now be potentially specified that one factor that affects sarcasm

comprehension is the comment's familiarity, but that there is no evidence yet that the speaker's expectation is also a factor.

In sum, the results from the two eye-tracking experiments reported in this chapter offer more support for the graded salience hypothesis than the standard pragmatic model or the implicit display theory. The familiarity of the meaning of a sarcastic utterance seems to influence its processing time, making it as easy to read as literal utterances in the early stages of processing. However, this beneficial effect does not seem to carry over to later stages of processing, when sarcastic utterances take longer to process than literal utterances, irrespective of degree of familiarity. These results are best explained by the graded salience hypothesis and the indirect negation view, since they seem to suggest that the familiarity of a comment is an important factor in sarcasm processing, and that both the literal and sarcastic meanings of a sarcastic comment may be retained for further processing in the later stages of comprehension. There was no support for the prediction of the implicit display theory that making the speaker's expectation explicit in the context would provide support for sarcasm comprehension (see also Giora et al., 2009). However, just because this specific factor did not have a visible functional effect on processing, does not mean that other factors could not have one. To this end, Experiment 7 was designed to test whether knowing that a character has been sarcastic before aids the comprehension of another sarcastic comment made by that character.

Chapter 5: The effect of introducing a sarcastic story character

5.1 Introduction

The purpose of this experiment was to investigate whether knowing that a character in a story tends to be sarcastic, or not, can affect sarcasm comprehension. This factor has been investigated before in the literature, in a self-paced reading study (Giora et al., 2007), a probe word identification task (Fein et al., 2015), and an ERP study (Regel et al., 2010), but not in an eye-tracking study.

Using self-paced reading, Giora et al. (2007) presented their participants with dialogues between two characters; one of the characters uttered a sarcastic remark midway-through the dialogue, followed by another remark, which could then be literal or sarcastic. They found that even when a sarcastic character was introduced in the story, a subsequent sarcastic remark uttered by that character was still read more slowly than a literal remark. Later, in a probe word identification task, Fein et al. (2015) attempted to replicate Giora et al.'s (2007) findings, this time slightly altering the materials to ensure that participants clearly observed that the mid-context utterance was sarcastic. They did that by including a cue in the dialogue (e.g. *Sagit (derisively): You're a really active guy*). They found that even when a sarcastic character was introduced in the story, participants were still faster to respond to words related to the literal meaning of the sarcastic target utterance. The conclusion from these two studies was that even when the context creates an expectation for sarcasm by introducing a sarcastic character, the activation of the literal meaning cannot be overridden, and hence the processing of a sarcastic remark

is still more difficult than that of a literal remark. These findings were taken as evidence for the modular accounts of sarcasm comprehension.

In the ERP study conducted by Regel et al. (2010), described in more detail in Chapter 1, participants read scenarios in order to get used to the communicative style of the characters – some used sarcasm frequently, some were mostly literal. Results showed that knowing that a character was sarcastic modulated the amplitudes of both P200 and P600 brain responses to subsequent sarcastic remarks, such that the amplitudes were larger for sarcastic comments made by non-sarcastic speakers, but equal in amplitude for literal and sarcastic comments made by sarcastic speakers. These findings were considered evidence that the processing of a sarcastic remark uttered by a literal character was more effortful in both early and late processing stages, but not more effortful than literal processing when a character was known to be sarcastic. Therefore this finding was taken as evidence for the interactive accounts of sarcasm comprehension.

The choice of methodology might explain the opposing results observed in the literature described above. It has been argued that self-paced reading studies might lack ecological validity because they do not allow participants to read naturally; in fact they typically read the texts sentence by sentence, pressing a button to progress through the text, and not having the opportunity to return to what they have read already. Therefore these types of studies are not able to observe any effects involving re-reading of certain text regions, because re-reading previous sentences is not possible in these paradigms (for a discussion see section 2.1). However it is possible that certain contextual effects (like having a sarcastic character) might be observed in the

re-reading behaviour rather than as soon as the target word was encountered. Probe word identification tasks (like Fein et al., 2015) involved the same stimulus presentation, and furthermore, cannot provide as much information about the time-course of sarcasm comprehension as eye-tracking tasks. The ERP study (Regel et al., 2010) is better suited to detect time-course differences between sarcastic and literal utterances, but stimulus presentation is not significantly improved in comparison to self-paced reading studies or probe word identification tasks. In the ERP study, the context sentences were all presented at the same time on the screen, but the target utterance was presented word by word, upon the participants' button press.

Therefore, the current study was designed in order to help clarify if and how introducing a sarcastic character affects the comprehension of a subsequent sarcastic remark, by employing the method of eye-tracking. This way stimulus presentation will be natural, with one entire experimental scenario being presented at once on the screen, allowing participants to read and re-read as they would normally. Besides employing an ecologically valid stimulus presentation, eye-tracking also has a high temporal acuity, which means that this methodology is well suited to investigate whether knowing that a character has a sarcastic communicative style affects the processing of subsequent sarcastic remarks. Only unfamiliar sarcastic remarks were employed, because the predictions of the modular and interactive accounts differ most for this type of utterances.

Specifically, modular accounts (both the standard pragmatic model and the graded salience hypothesis) would predict that the comprehension of sarcasm should not be facilitated even when the reader knows that the speaker

has been sarcastic before in the context of the story. However, interactive accounts (and more specifically the constraint satisfaction model) would predict that knowing the communicative style of a character (in this case, knowing that they tend to be sarcastic) should aid sarcasm comprehension. The constraint satisfaction model does not make direct predictions about reading times, but it could be inferred that if this contextual cue aids sarcasm comprehension, then no reading difference should be observed between a literal and a sarcastic remark when the character is known to be sarcastic, but a longer reading time for sarcasm might be expected when the character is known to be literal. The other interactive accounts do not make direct predictions about the role of this particular contextual factor.

5.2 Experiment 7: Method

5.2.1 Participants

Thirty-two native English speakers from the University of Nottingham took part in this study (M_{age} = 22 years and 11 months, SD = 6 years and 11 months, 27 females and 5 males). None of them had participated in any of the previous studies. They were not diagnosed with any reading difficulties, had normal or corrected-to-normal vision, and received course credit for their participation.

5.2.2 Materials and design

Thirty-two experimental materials were created, each of them containing eight sentences describing a conversation between two characters (see Table 9 for an example, and Appendix M for the full list). The first two sentences described the context in which the scenario was set (e.g. *Laura and Henry had been living together for over a year now. Laura asked Henry to*

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clean the kitchen whilst she was at work.). After the context, the remaining scenario was presented as a dialogue between the two characters rather than as a narrative. The third sentence was a line uttered by one of the characters, and it was the same across all conditions (e.g. *Laura: Did you clean the kitchen like I asked?*).

The fourth sentence was different depending on whether one of the characters was introduced as literal or as sarcastic. For the example in Table 9, in the condition where Laura was introduced as a literal character, the fourth sentence was: "*Henry: I cleaned the living room and dining room first, and was just about to start on the kitchen*", to which Laura's response (fifth sentence) was a literal one, *"Laura: Well that was nice of you!"*. In the condition where Laura was introduced as a sarcastic character, the fourth sentence was: *"Henry: Not quite. I put out the cleaning spray and some cloths, and was about to start."*, to which Laura's response was a sarcastic one: *"Laura said sarcastically: Well that was nice of you!"*. In that case, a further contextual cue was added, *"said sarcastically"*, as in Fein et al.'s (2015) study, to ensure that the contextual manipulation was effective.

The sixth sentence differed between the literal and sarcastic target conditions. When the sixth sentence was: *"Henry: I'll clean the kitchen now whilst you have a bath."*, the target utterance was designed to be interpreted literally, *"Laura: I knew you were gallant!"*. On the other hand, when the sixth utterance was: *"Henry: Anyway, you can do it now that you're back."*, the target utterance was designed to be interpreted sarcastically. Finally, the eighth sentence wrapped up the scenario (e.g. *"Henry: Do you want to order in a takeaway tonight?"*).

Thus the experiment consisted of a 2 literality (literal target remark vs. sarcastic target remark) x 2 context (literal character vs. sarcastic character) design, with both factors being within-subjects and within-items.

Thirty-five filler items accompanied the experimental materials – they had the same structure as the experimental ones, but only contained literal utterances (see Appendix N for the full list). The filler items were included as before, in order to distract the participants from the sarcastic scenarios, so that they were less likely to guess the true aim of the experiment.

The display and randomisation of the stimuli was carried out in the same way as in the previous experiments.

| Literal target remark | Literal character | Laura and Henry had been living together for over a year now. Laura asked Henry to clean the kitchen whilst she was at work.

Laura: Did you clean the kitchen like I asked?

Henry: I cleaned the living room and dining room first, and was just about to start on the kitchen.

Laura: Well that was nice of you!

Henry: I'll clean the kitchen now whilst you have a bath.

Laura: I knew/ you were pre-critical region/ gallant! critical region/

Henry: Do you post-critical region/ want to order in a takeaway tonight? |
| | Sarcastic character | Laura and Henry had been living together for over a year now. Laura asked Henry to clean the kitchen whilst she was at work. |

		Laura: Did you clean the kitchen like I asked?
		Henry: Not quite. I put out the cleaning spray and some cloths, and was about to start.
		Laura said sarcastically: Well that was nice of you!
		Henry: I'll clean the kitchen now whilst you have a bath.
		Laura: I knew/ you were ~pre-critical region~/ gallant! ~critical region~/
		Henry: Do you ~post-critical region~/ want to order in a takeaway tonight?
Sarcastic target remark	Literal character	Laura and Henry had been living together for over a year now. Laura asked Henry to clean the kitchen whilst she was at work.
		Laura: Did you clean the kitchen like I asked?
		Henry: I cleaned the living room and dining room first, and was just about to start on the kitchen.
		Laura: Well that was nice of you!
		Henry: Anyway, you can do it now that you're back.
		Laura: I knew/ you were ~pre-critical region~/ gallant! ~critical region~/
		Henry: Do you ~post-critical region~/ want to order in a takeaway tonight?
	Sarcastic character	Laura and Henry had been living together for over a year now. Laura asked Henry to clean the kitchen whilst she was at work.
		Laura: Did you clean the kitchen like I asked?
		Henry: Not quite. I put out the cleaning spray and some cloths, and was about to start.

		Laura said sarcastically: Well that was nice of you!
		Henry: Anyway, you can do it now that you're back.
		Laura: I knew/ you were _{pre-critical region}/ gallant! _{critical region}/
		Henry: Do you _{post-critical region}/ want to order in a takeaway tonight?

Table 9. Example material (Experiment 7)

Familiarity pre-test. The target utterances in this study were selected from the pool of utterances pre-tested in Experiment 2. Thirty-two remarks with the lowest familiarity scores were selected, such that the materials used in this study had a mean familiarity score of 2.8 (on a scale from 1 - unfamiliar to 8 - familiar), $SEM = 0.12$, $min = 1.4$, $max = 5.1$.

5.2.3 Procedure

The procedure was exactly the same as in the previous eye-tracking experiments. As before, after 25% of the trials, a yes/no comprehension question was asked (e.g. for the example scenario in Table 9, the question would be, *"Did Henry offer to clean the kitchen for Laura whilst she was at work?"*). The average correct response rate of 89.3% indicated that participants were reading for comprehension.

5.3 Experiment 7: Results and discussion

The scenarios had three analysis regions, as in the previous experiments. The critical region was the word that disambiguated the target utterance as being either sarcastic or literal. The pre-critical region was the two words that preceded the disambiguating word, while the post-critical region was the three words that followed the disambiguating word (see Table 9). Three measures of reading behaviour are reported, as in the previous four

experiments: first-pass reading time, regression path reading time, and total reading time.

Data were pre-processed and analysed following the same steps described in the previous experiments[1]. Trials that had zero first-pass reading times for two consecutive regions were removed, and that amounted to 5.4% of the entire data set.

See Table 10 below for the models that had the best fit for the data and the values of their fixed-effects parameters. Furthermore, see Appendix O for the *t*-values associated with the fixed factors that did not have significant effects (i.e. were not included in the best models), and the series of likelihood-ratio tests performed in order to reach the best models.

Analysis region	Reading measure	Model		Coefficient	SE	t
pre-critical	fp	~ 1 + (1|subject) + (1|item)	(Intercept)	268.3	10.7	25.1
	rp	~ 1 + (1 + context*literality|subject) + (1|item)	(Intercept)	411.6	24.5	16.8
	tt	~ 1 + (1 + literality|subject) + (1 + literality|item)	(Intercept)	434.6	20.4	21.3
critical	fp	~ 1 + (1 + context*literality|subject) + (1 + context*literality|item)	(Intercept)	257	11.9	21.7
	rp	~ context*literality + (1 +	(Intercept)	528.6	48.8	10.8

		context*literality|subject) + (1 + context*literality|item)	context	70.2	41.3	1.7
			literality	118	42.6	2.8
			context * literality	-197.1	59.6	-3.3
	tt	~ context*literality + (1 + literality|subject) + (1 + literality|item)	(Intercept)	334.1	27.7	12.1
			context	14.4	24.4	0.6
			literality	62.9	27.1	2.3
			context * literality	-80.4	34.5	-2.3
post-critical	fp	~ 1 + (1|subject) + (1 + context*literality|item)	(Intercept)	301.7	20.6	14.7
	rp	~ 1 + (1 + context*literality|subject) + (1 + context|item)	(Intercept)	381.9	34.3	11.1

	tt	~ 1 + (1 + context*literality|subject) + (1 + context*literality|item)	(Intercept)	455.4	31.1	14.6

Table 10. Best fitting models and fixed-effects parameters (Experiment 7)

The pre-critical region. There were no effects in any of the reading time measures in this region – see Figure 13 a-c.

The critical region. There were no effects in first-pass reading time on the critical region – see Figure 14a. However an interaction was observed between the literality of the target comment and whether the character was known to be literal or sarcastic in the context, in both regression path and total reading times (see Appendix O for the p-value of the comparison between the model with and without the interaction) – see Figure 14 b-c. When a character had previously been literal in the context, a literal target utterance was read faster than a sarcastic utterance (rp: $\chi^2(1, N{=}32) = 7.7$, $p = .01$; tt: $\chi^2(1, N{=}32) = 5.4$, $p = .04$). However, when a character had previously been sarcastic, a sarcastic target utterance was read in equal time to a literal one (rp: $\chi^2(1, N{=}32) = 3.3$, $p = .1$; tt: $\chi^2(1, N{=}32) = 3.3$, $p = .1$). This suggests that when the context provided a cue for sarcasm (i.e. knowing that a character is sarcastic), this cue facilitated the comprehension of subsequent sarcastic remarks, making their reading as easy as that of literal remarks.

Furthermore, a literal target utterance was read in equal time both when the speaker was known to be literal and when they were known to be sarcastic (rp: $\chi^2(1, N{=}32) = 2.9$, $p = .2$; tt: $\chi^2(1, N{=}32) = 0.3$, $p = 1$), while a sarcastic target utterance was read faster if it was uttered by a character known to be sarcastic than one known to be literal (rp: $\chi^2(1, N{=}32) = 9.2$, $p = .004$; tt: $\chi^2(1, N{=}32) = 7.3$, $p = .01$). These results taken together indicate that context can aid sarcasm comprehension in both early (as soon as the critical word was

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encountered) and late processing stages (after the critical word was encountered and some re-reading has taken place), which is not a prediction of the modular accounts, but could be accommodated by the constraint satisfaction model.

The post-critical region. There were no effects on any of the reading time measures in this region – see Figure 15 a-c.
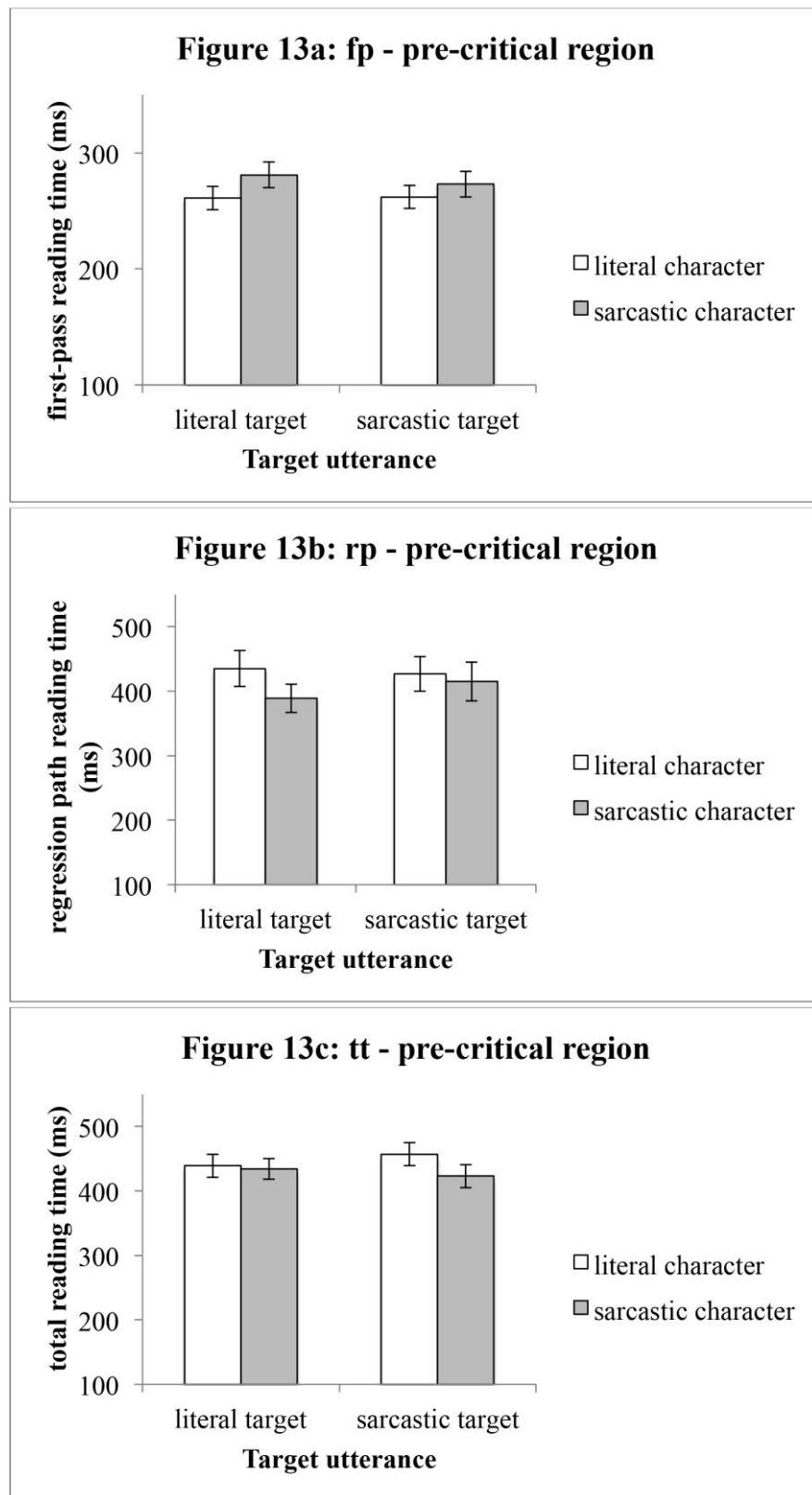
Figure 13. Mean reading times on the pre-critical region (Experiment 7). Error bars represent ±1*SEM*.

Figure 14a: fp - critical region

Figure 14b: rp - critical region

Figure 14c: tt - critical region
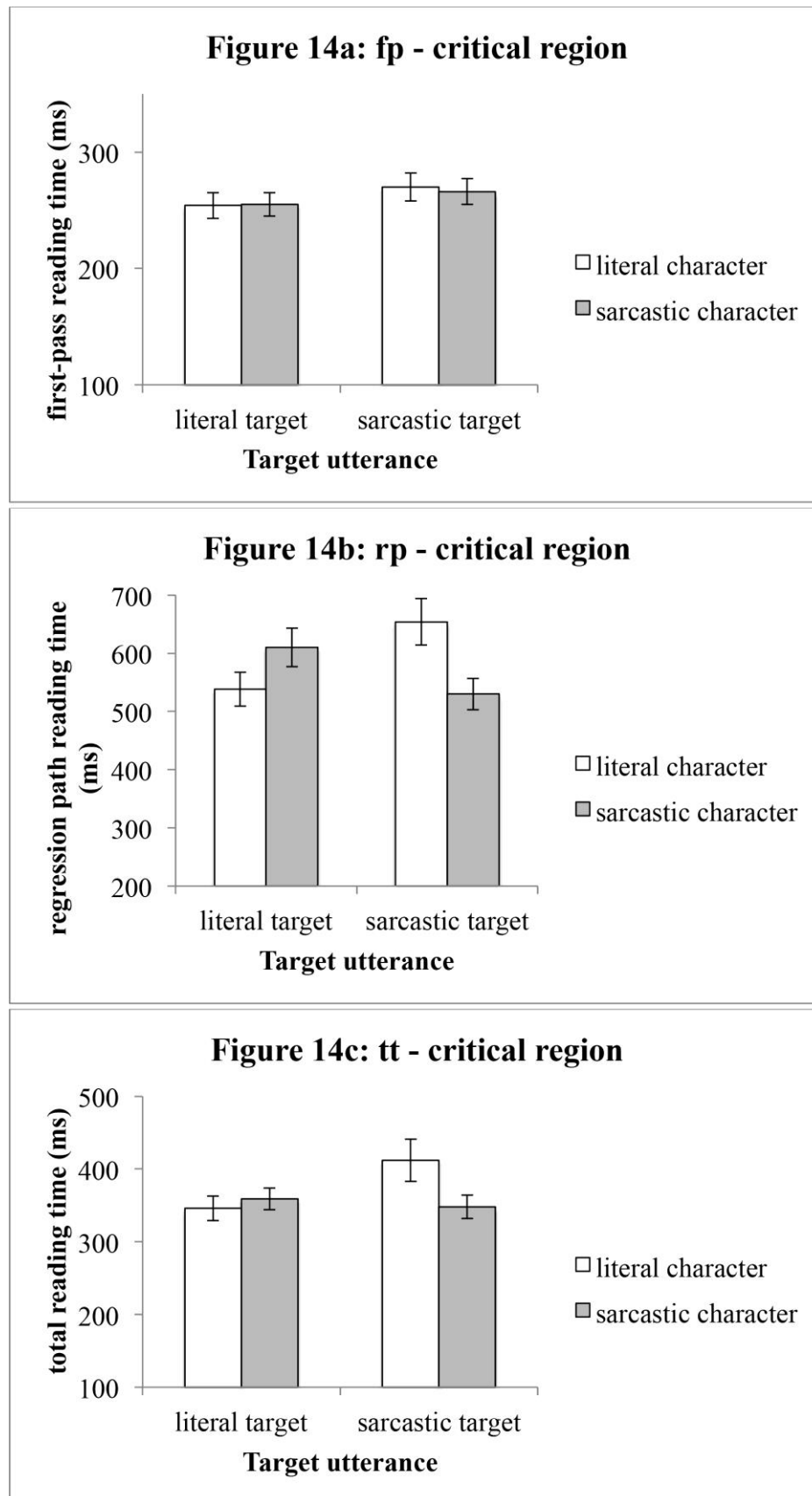
Figure 14. Mean reading times on the critical region (Experiment 7). Error bars

represent ±1*SEM*.

Figure 15a: fp - post-critical region

Figure 15b: rp - post-critical region

Figure 15c: tt - post-critical region
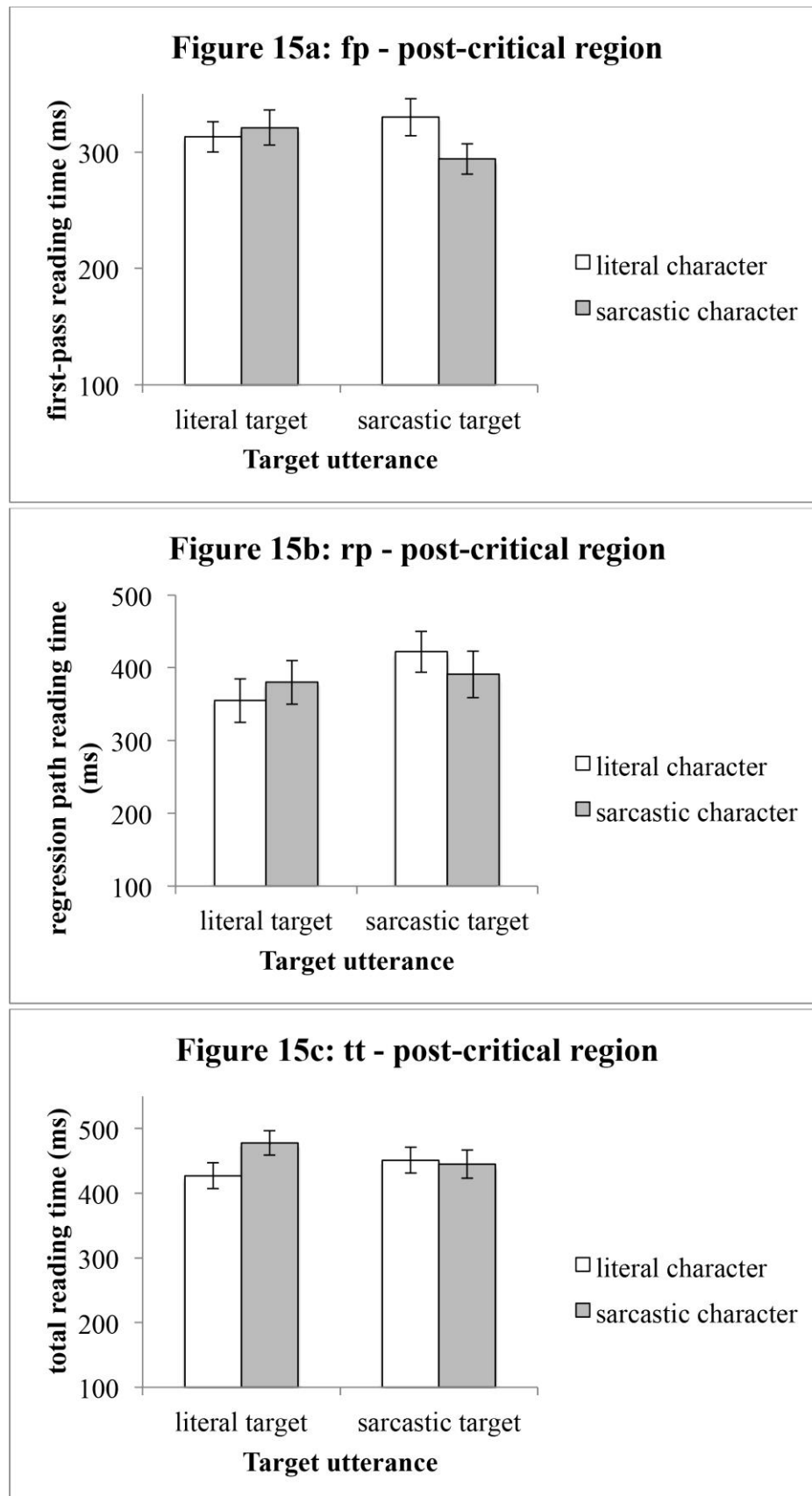
Figure 15. Mean reading times on the post-critical region (Experiment 7). Error

bars represent ±1*SEM*.

5.4 Conclusion

The experiment described in this chapter tested the predictions of the modular accounts of sarcasm comprehension (i.e. that contextual factors such as knowing that a character has been sarcastic before cannot aid the comprehension of subsequent sarcastic remarks), and of the constraint satisfaction model (i.e. that knowing that a character has been sarcastic before can aid sarcasm comprehension).

5.4.1 The early stages of sarcasm processing

As explained before, the early stages of sarcasm processing are reflected in first-pass and regression path reading times on the critical region. Although no effects were observed in first-pass reading time, in regression path reading time an interaction was observed between literality and context. This interaction showed that when a character has been sarcastic before, a subsequent sarcastic remark by that character is read faster than a literal remark. When a character was not sarcastic before, reading difficulty is observed for a subsequent sarcastic remark compared to a literal one. This pattern of results can be accommodated by the constraint satisfaction model, but not by the modular accounts. The conclusion might be that having some information about the communicative style of the speaker (in this case, that they have been sarcastic before) can indeed aid the comprehension of subsequent sarcastic remarks uttered by that speaker, in the early processing stages.

The reason why the current results are different from those of Giora et al.'s (2007) and Fein et al.'s (2015) might come down to choice of experimental methodology. In this eye-tracking experiment the effect of

context was not observed in first-pass reading time, but only in regression path reading time (which includes re-reading of previous text regions). This offers some evidence that indeed paradigms like the self-paced reading task and the probe word identification task are not sensitive enough to detect contextual effects on sarcasm comprehension because, as explained before, they do not allow re-reading of previous text regions, which means that they miss potential effects in those stages. However, the present findings are in line with those of Regel et al.'s (2010) ERP study, which might be due to the ERP methodology being particularly good for investigating the time-course of text processing. Besides replicating Regel et al.'s (2010) findings that knowing the speaker's communicative style can affect the early stage of sarcasm processing, this eye-tracking experiment has also showed that it is enough for one single sarcastic remark to be made mid-context by one of the characters in order to observe a facilitation in the processing of a subsequent sarcastic remark. That is, it is not necessary for a speaker to be consistently sarcastic across a majority of the experimental materials (as it was the case in Regel et al., 2010) for this effect to be observed.

5.4.2 The late stages of sarcasm processing

The interaction described above was also observed in the total reading time on the critical region, but no other effects were observed on any of the other late reading measures. This indicates that the facilitating contextual effect observed in the early stages of sarcasm processing was still present in the late stages, which is also in line with the results of Regel et al.'s (2010) ERP study. Additionally, on no reading measure or analysis region was a simple literality main effect found (i.e. literal comments were not processed faster than

sarcastic comments regardless of the contextual factor); therefore these results provide support for the constraint satisfaction model, but not for the modular accounts.

In conclusion, the constraint satisfaction model received most support from the current experiment. Results indicated that introducing a sarcastic character in the story aids the comprehension of subsequent sarcastic remarks. Modular accounts were not supported, because results did not indicate that literal comments are overall easier to process than unfamiliar sarcastic ones. Therefore, introducing a sarcastic character can be said to be one of the 'unspecified' factors that can aid sarcasm comprehension, together with echoing an explicit contextual antecedent (Experiments 1 and 2), and utterance familiarity (Experiment 6).

Chapter 6: General discussion

6.1 Summary of findings

This thesis aims to contribute to the debate between modular and interactive accounts of language comprehension by investigating written sarcastic language comprehension in adults. The predictions of the modular accounts of sarcasm processing (the standard pragmatic model and the graded salience hypothesis), and the interactive ones (the echoic mention theory, the implicit display theory, and the constraint satisfaction model) were tested in a series of five eye-tracking while reading experiments. A further two rating experiments tested specifically an offline prediction of the implicit display theory.

The experiments presented in Chapter 3 (Experiments 1 and 2) tested the predictions of the standard pragmatic model, the graded salience hypothesis, and the echoic mention theory. The factors manipulated in Experiments 1 and 2 were utterance literality (literal vs. sarcastic), contextual antecedent (present or absent), and additionally in Experiment 2, utterance familiarity (familiar vs. unfamiliar). The main results of these two experiments were that (1) literal utterances were processed in equal times to sarcastic ones in the initial processing stages, but they were processed faster in the late stages, (2) utterances that echoed a contextual antecedent were read faster than those that did not echo one, and this was true for both literal and sarcastic utterances in the initial stages of processing, but only for the sarcastic utterances in the later stages, and (3) sarcastic utterances were read as fast as their literal counterparts when they echoed a contextual antecedent, in the late processing stages.

The experiments presented in Chapter 4 (Experiments 3-6) tested the predictions of the standard pragmatic model, the graded salience hypothesis, and the implicit display theory. The factors manipulated in Experiments 4 and 6 were utterance literality (literal vs. sarcastic), explicitness of speaker's expectation (explicit vs. implicit), and additionally in Experiment 6, utterance familiarity (familiar vs. unfamiliar). Experiments 3 and 5 were rating studies that tested the implicit display theory's offline prediction that when the speaker's expectation is made explicit in the context and then broken, the reader expects a sarcastic remark to follow more than if the speaker's expectation was implicit in the context.

The results of the two rating studies provided solid evidence in support for the offline prediction of the implicit display theory, and showed that indeed sarcasm is expected to follow more when the speaker's expectation was made explicit in the context and then broken. The main results of the eye-tracking studies however were that (1) utterance familiarity interacted with utterance literality in such a way that only unfamiliar sarcastic remarks were read slower than their literal counterparts in the initial stages of processing, with no reading time difference between sarcastic and literal remarks when they were familiar, (2) literal comments were read faster than sarcastic counterparts in the late stages of processing, with no facilitating effect of utterance familiarity, and (3) sarcasm processing was not facilitated by making the speaker's expectation explicit in the context.

The experiment presented in Chapter 5 (Experiment 7) tested whether introducing a sarcastic character in the story affects the processing of a subsequent sarcastic remark made by that character. This study did not test the

predictions of any specific theories, but it was designed to discriminate between modular and interactive accounts more generally. The main result of this experiment was that literal comments were processed faster than sarcastic ones only when the character in the story had been literal before, but when the character had been sarcastic before, no reading time difference was observed between a subsequent literal and sarcastic remark. This contextual effect was observed both in the early and late stages of processing.

In the following three sections, the discussion will be addressing the three research questions posed in section 1.3 of Chapter 1, with regards to: (1) the processing difference between sarcastic and literal language, (2) the role of utterance familiarity, and (3) the role of contextual factors.

6.2 Is there a processing difficulty associated with sarcasm processing?

Modular accounts like the standard pragmatic model and the graded salience hypothesis predict that there should be a processing difficulty associated with sarcastic language as compared to literal language. The graded salience hypothesis qualifies that prediction by specifying that it is only true for sarcastic remarks that are unfamiliar (i.e. people are not familiar with hearing them used sarcastically). According to these theories, processing written unfamiliar sarcasm is more difficult than processing literal language due to the serial activation of the meanings of the sarcastic remark when it is first encountered – first, the literal meaning is activated, and then only when the incongruency with the context is noticed, the sarcastic meaning is activated too.

On the other hand, interactive accounts (e.g. the echoic mention theory, the implicit display theory) predict that a difficulty associated with sarcasm

processing should not be observed if contextual factors are present to facilitate the sarcastic interpretation. This is because according to these theories, contextual factors affect the early processing of sarcasm, in such a way that the sarcastic meaning can be activated as soon as the sarcastic remark is encountered.

The results from the eye-tracking experiments reported in this thesis showed that a processing difficulty associated with sarcasm is not observed in all situations, and factors like utterance familiarity and certain contextual factors can facilitate sarcasm comprehension (see Table 11 below for a summary of the eye-tracking results from this thesis).

In the initial stages of processing, Experiments 4 and 6 are the only ones that found that unfamiliar sarcastic remarks take longer to process than literal equivalents, and this effect was not modulated by the contextual manipulation of making the speaker's expectation explicit in the context. In contrast, Experiments 1 and 2 did not find a processing difficulty associated with sarcasm at all, while Experiment 7 found that knowing the speaker's communicative style modulates the literality effect, such that unfamiliar sarcastic remarks were only processed slower than literal counterparts when the speaker was known to be literal, but when they were known to be sarcastic, unfamiliar sarcastic remarks were read in equal time to literal ones. The interim conclusion might then be that the processing difficulty predicted for sarcasm comprehension by modular accounts is not always found, and it is sometimes modulated by contextual factors. Modular accounts would not be able to accommodate these results. Interactive accounts on the other hand, do indeed predict that a general difficulty for sarcasm should not be observed, and instead

its processing should depend on the presence of other discourse factors. Therefore, these results would be better accommodated by an interactive account.

In the late stages of processing, Experiments 4 and 6 are again the only ones that found that sarcastic remarks are processed slower than literal ones, irrespective of other factors. Experiment 1 found no difficulty for sarcasm in the later stages, while Experiments 2 and 7 found that contextual factors (echoing contextual antecedent, and knowing the speaker's communicative style respectively) modulate the difficulty for sarcasm in the late processing stages. As for the initial processing stage, then, the interim conclusion here is also that unfamiliar sarcastic comments are not always more difficult to process than literal ones in the late stages of processing, but contextual factors can remove the difficulty.

Experiment	Initial stages		Late stages	
	fp critical region	**rp critical region**	**tt critical region**	**post-critical region**
1	literal = sarcastic		literal = sarcastic antecedent < no antecedent	
2	literal = sarcastic		antecedent: literal = sarcastic no antecedent: literal < sarcastic literal: antecedent = no antecedent sarcastic: antecedent < no antecedent	literal < sarcastic antecedent < no antecedent
		antecedent < no antecedent		
4	literal < sarcastic		literal < sarcastic	
				literal explicit < literal implicit

				literal explicit < sarcastic explicit
6	literal < sarcastic	familiar: literal = sarcastic unfamiliar: literal < sarcastic	literal < sarcastic	
7	literal = sarcastic	literal character: literal < sarcastic sarcastic character: literal = sarcastic	literal character: literal < sarcastic sarcastic character: literal = sarcastic	literal = sarcastic

Table 11. Summary of eye-tracking results

The prediction made by modular accounts with regards to the processing difficulty associated with sarcasm has been supported by studies employing a variety of methodologies, most notably self-paced reading (e.g. Giora et al., 1995, 1998, Spotorno & Noveck, 2014) and eye-tracking while reading (e.g. Au-Yeung, Kaakinen, Liversedge, & Benson, 2015, Filik & Moxey, 2010, Filik et al. 2014 Experiment 1, Kaakinen et al., 2014), but there is some evidence against it as well, from self-paced reading (e.g. Gibbs, 1986, although this study has been previously criticised, e.g. Giora, 1995) and visual-world paradigm studies (e.g. Kowatch et al., 2013). It is worth noting here that the eye-tracking experiments reported in this thesis are more similar in design to the studies that found the predicted difficulty for sarcasm, in that they compared between sarcastic criticism and literal praise, and used reading as the task of choice. The studies that did not find the processing difficulty for sarcasm, instead compared between sarcastic criticism and literal criticism (Gibbs, 1986, Kowatch et al., 2013), or presented the stimuli aurally (Kowatch et al., 2013). Therefore, the results from this thesis are perhaps more easily comparable to the former group of reading studies.

All five eye-tracking experiments reported in this thesis employed very similarly structured experimental materials, procedures and manipulations, the contextual manipulation being the only one that differed considerably between experiments. One might expect that if modular accounts are correct, a slower initial processing of sarcastic remarks compared to literal ones should have been found across all five experiments, irrespective of the contextual manipulation. Instead, this thesis provides evidence that this predicted effect of

utterance literality is not robust, and is affected by other variables, like utterance familiarity and contextual cues.

6.2.1 Comments on methodology

The aim of this section is to address a few criticisms that have been levelled at studies that employ reading paradigms to investigate sarcasm processing. All eye-tracking experiments reported in this thesis compared between sarcastic criticism and literal compliments, and employed reading as the task of choice, with the stimuli presented on the screen whole rather than one word/sentence at a time. Kowatch et al. (2013) pointed out a few of what the authors considered to be the limitations of reading studies (such as the ones employed here); therefore their criticism will now be outlined and discussed.

Firstly, they argue that materials should be aurally presented because that would be more ecologically valid. Specifically, they argue that sarcasm is more often employed in spoken language than in writing, hence studying sarcasm processing in writing is not how sarcasm would typically be employed. However, there is evidence that irony and sarcasm naturally occur in around 7.4% of cases when participants are simply asked to send an email to a friend (e.g. Whalen, Pexman, & Gill, 2009). Therefore, the rates of irony and sarcasm use are very similar in writing and in spoken conversation (where Gibbs, 2000, reported irony occurring in 8% of the cases). These similar rates of natural use of sarcasm in both writing and oral media would suggest that reading studies examining written sarcasm processing are equally important and ecologically valid to those of spoken sarcasm.

Secondly, they hypothesise that the reason why reading studies find processing differences between sarcastic and literal remarks could be due to the

confounding factor of prosody. Specifically, Kowatch et al. (2013) hypothesise that since sarcasm is known to have an associated prosody, which differs from that of literal language (e.g. Anolli, Ciceri, & Infantino, 2000; Bryant, 2011), reading studies cannot be certain that any reading differences between sarcasm and literal language are not due to the participants silently simulating the prosody associated with each type of language. Their argument is based on previous evidence that when reading silently, participants do simulate the associated prosody (e.g. Breen & Clifton, 2011, 2013).

To address this second point, if it was the case that sarcasm took longer to read due to the associated prosody, then we would expect to observe that sarcastic remarks always take longer to read than literal ones. However that is not the case, as the results from Experiments 1, 2, and 7 indicate, where sarcasm was read as quickly as literal language. Furthermore, if prosody explained the reading difficulty associated with sarcasm, then we would not expect to find that utterance familiarity could have a facilitating effect, removing the processing difficulty for familiar sarcastic remarks. Finally, Kowatch et al.'s (2013) hypothesis cannot explain why reading sarcastic remarks leads to more time spent re-reading the context in which they were embedded (which is evident in regression path measures for example). In sum, the potential effects of prosody in experiments that involve silently reading sarcastic remarks could not explain many of the reading patterns observed in these studies.

Thirdly, they comment that most reading studies so far (other than Gibbs, 1986, Experiment 1) have compared a literal praising comment with a sarcastic criticising comment, which they argue could be a problem since there

is research to suggest that stimuli with negative meanings tend to be processed slower (e.g. Estes & Adelman, 2008). In other words they argue that when comparing a sarcastic criticism (which has a negative meaning) with a literal compliment (which has a positive meaning), a difficulty for sarcasm might in fact reflect a difficulty for the negativity of the comment. To address this final point, it is important to remember that a comparison between sarcastic criticism and literal criticism, as they suggest would be better, would in fact mean a comparison between different words. On the other hand, when comparing between sarcastic criticism and literal praise the comparison is between the same words, which avoids problems to do with confounding factors like word length, frequency, etc. In sum, it could be argued that the eye-tracking methodology and the experimental designs employed in this thesis do not seem to suffer from the limitations listed by Kowatch et al. (2013).

A further potential methodological issue with studies like the ones reported in this thesis is related to the creation of the experimental stimuli. Although all experimental stimuli have been pre-tested to ensure that they do not differ on certain critical dimensions (like familiarity, echo, explicitness), they might still vary on other dimensions (like focus shift, or naturalness).

For example, some of the experimental materials might not sound as natural as others. More specifically, it is possible that the sarcastic scenarios did not always sound as natural as the literal scenarios. However this is perhaps unsurprising and unavoidable, seeing how sarcasm is encountered in writing less frequently than literal language, and therefore it is conceivable that overall, people find literal scenarios more natural than sarcastic ones. Another example is that some materials might involve sentences that are all on a single topic, in

all conditions, whereas in other examples the topic changes between two sentences in one condition but not in another, which might also contribute to a sense that some materials are less natural sounding.

A final example might be that in most experiments reported in this thesis the disambiguating word was presented in the middle of a line, whereas in Experiment 7 the word was in a final position. Word position is important because it has been shown that it can lead to longer reading measures when situated at the end of a sentence and line of text (e.g. Kuperman, Dambacher, Nuthmann, & Kliegl, 2010). This was unavoidable in Experiment 7 since the experimental stimuli were created as dialogues and not narratives, hence the disambiguating word had to be the last one on a line. However, this is worth noting, and perhaps improving on in future studies.

Finally, it can sometimes be difficult to identify whether a certain effect was driven by the character or the utterance. This is an issue specifically for Experiment 7, where the introduction of a sarcastic character meant that the exact same character was sarcastic throughout the text. Therefore it is unclear whether the same effect would be observed even if one character said something sarcastic in the context and another character uttered the target sarcastic comment (in which case the effect would be driven by the utterance) or if the effect would only be present if the same character uttered both sarcastic comments (in which case the effect would be driven by the character). This is again a matter to be addressed in future studies.

6.3 What is the role of utterance familiarity?

The graded salience hypothesis predicts that the only factor that can affect the initial stage of sarcasm processing is utterance familiarity. Practically

speaking, in order to support this prediction, an interaction between utterance literality and familiarity should be observed as soon as a sarcastic remark is encountered.

This thesis contains two eye-tracking experiments that fully tested this prediction of the graded salience hypothesis (Experiments 2 and 6), and the expected interaction was only observed in one of them (Experiment 6). There, the regression path reading time on the disambiguating word of the target utterance was affected by utterance familiarity as predicted by the graded salience hypothesis. Familiar sarcastic remarks were processed in equal times to their literal counterparts, while unfamiliar ones took longer than the literal ones.

These results are in agreement with previous ones from eye-tracking studies like those of Frisson and Pickering (1999) and Filik et al. (2014, Experiment 1). The facilitating effect of familiarity in Filik et al. (2014, Experiment 1) was not only observed in the initial processing stage, but also in the late stages. In contrast, in Experiment 6 of this thesis, the facilitating effect of familiarity disappeared in the late processing stages, where it was replaced by a general difficulty associated with sarcastic utterances. This result is in fact more in line with that of Filik et al.'s ERP study (2014, Experiment 2), where they found that although the N400 amplitude was modulated by both the literality and the familiarity of the remark, the P600 amplitude was not modulated by utterance familiarity, and only by literality.

One explanation for these results would be that in the early stage of sarcasm processing, the sarcastic meaning is accessed immediately for familiar remarks, alongside the literal one, since for them, the sarcastic and literal

meanings are already encoded in the mental lexicon, as the graded salience hypothesis predicts. However, in the late processing stages, both the literal and sarcastic meanings remain activated for both the familiar and unfamiliar remarks. In these later stages, utterance familiarity does not play a facilitating role anymore, and instead the competition between the two activated meanings leads to the observed difficulty for sarcasm.

A theoretical framework that could support this explanation would be Giora's (1995) indirect negation view. According to this view, both the literal and the sarcastic (or negated) meanings of a sarcastic remark need to remain activated in the late processing stages in order for the reader to compute the difference between them. Hence, the literal meaning will not be replaced with the sarcastic one at any point during the interpretation process. This explanation comes in opposition to the standard pragmatic model, which predicted that once the literal meaning has been deemed inappropriate given the context, the reader discards this meaning and replaces it with the sarcastic one. If this was correct, sarcasm comprehension should have been as easy as literal language comprehension in the late processing stages. That is not always the case, as found in Experiments 2, 4, and 6 from this thesis.

In Experiment 2 however, familiarity did not aid sarcasm processing in the early stages as predicted by the graded salience hypothesis. This is even though the materials used in Experiments 2 and 6 were very similar in structure, the procedures and methods used in the two experiments were identical, and two of the manipulated factors (literality and familiarity) were the same across the two experiments. The difference between Experiments 2 and 6 was that Experiment 2 manipulated the echo of a contextual antecedent,

while Experiment 6 manipulated the explicitness of the speaker's expectation. In Experiment 2, it was the contextual manipulation that had an effect on reading times, such that remarks that echoed a contextual antecedent were read faster than remarks that did not echo a contextual antecedent, regardless of the remark's literality. Experiment 6 on the other hand, did not find any effect of context on reading time of sarcasm, but did find the predicted facilitating effect of utterance familiarity. One potential explanation for the lack of a familiarity effect in Experiment 2 would be the observation that sarcastic comments were read as fast as literal ones; therefore it is possible that sarcastic comments were already easy enough to comprehend, and hence not requiring further facilitation from utterance familiarity. However, it is difficult to say with certainty why a familiarity effect was observed in Experiment 6 and not in Experiment 2 without further investigation, therefore this matter remains open for future studies.

6.4 Can contextual factors facilitate sarcasm processing?

6.4.1 Echoing a contextual antecedent

The echoic mention theory predicts that if a sarcastic comment echoes a contextual antecedent, then it should be easier to process than another sarcastic comment that does not echo an antecedent. However, according to this theory, even sarcastic comments that do echo an antecedent should still be processed slower than literal equivalents, presumably due to the need to compute the speaker's attitude in the case of a sarcastic remark, but not a literal one.

Experiments 1 and 2 tested the predictions of this theory and found that, (1) remarks that echoed an antecedent were processed faster than those that did not in both early (Experiment 2) and late (Experiments 1 and 2) processing

stages, (2) sarcastic comments specifically, and not literal ones, were processed faster when echoing an antecedent than when not echoing one (total reading time on the critical word, Experiment 2), and (3) sarcastic comments were processed as fast as their literal counterparts when they echoed an antecedent, while when they did not, sarcastic comments took longer to read than the literal ones (total reading time on the critical word, Experiment 2).

The first and second findings are predicted by the echoic mention theory, and have been previously observed in Gibbs (1986, Experiment 2). The third finding however is novel. A previous study by Spotorno and Noveck (2014, Experiment 3) found the opposite, that even when a contextual antecedent was echoed, literal comments were still processed faster than sarcastic ones. The echoic mention theory would predict Spotorno and Noveck's finding because it assumes that in order for sarcasm to be correctly interpreted, the attitude of the speaker needs to be processed. The results from Experiment 2 however, seem to contradict this prediction, and instead suggest that an echoed contextual antecedent can facilitate sarcasm comprehension and make it as easy to process as literal language.

This does not, however, constitute evidence that the speaker's attitude does not need to be processed. Filik, Țurcan, Ralph-Nearman, and Pitiot (manuscript in preparation) conducted an fMRI study that did investigate specifically whether the speaker's attitude is computed when reading a sarcastic remark. Participants read stories ending with a literal, a non-sarcastic ironic remark, or a sarcastic remark, while their brain activity was recorded. The difference between the non-sarcastic ironic and sarcastic remarks was that the sarcastic ones were addressed at a person's actions and was criticising

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them, whereas the ironic ones were not addressed at a person, but rather at a situation not under any particular person's control (e.g. the weather). The first two sentences of the stories were the same across conditions and introduced the two characters in the scenario (e.g., "Bernice and Caitlin were both applying for a Psychology course at a university in the USA. They went to print out their applications together."). The third sentence differed between conditions (sarcastic irony, non-sarcastic irony, and literal). In the sarcastic irony condition the third sentence set up a situation (e.g., "Caitlin chose to print hers on pink paper.") designed to lead to the final comment ("Very formal!") being interpreted as a criticism directed at one of the characters (in this case, Caitlin). In contrast, in the non-sarcastic irony condition the second sentence set up a situation (e.g., "The printer only had pink paper available.") designed to lead to the final comment being interpreted as an ironic criticism of the situation, and not the character. In the literal condition, the third sentence (e.g., "Caitlin chose to print hers on letter headed paper.") set up a situation designed to lead to the final comment being interpreted literally (and not as criticism).

The hypothesis was that if the echoic mention theory is correct in predicting that the speaker's attitude needs to be processed for a correct irony/sarcasm interpretation, an increased activation in the brain areas responsible for mentalising activities should be observed for irony and sarcasm specifically. Results indicated that indeed the mentalising network was activated for ironic and sarcastic remarks suggesting that it is possible that the speaker's attitude is computed when irony/sarcasm is encountered.

Although there is evidence that sarcasm comprehension involves computing the speaker's attitude, the two eye-tracking experiments in this

thesis that tested the echoic mention theory suggest that echoing a contextual antecedent can result in sarcasm being processed as fast as literal language. Perhaps then, echoing a contextual antecedent can facilitate the computation of the speaker's attitude, leading to equivalent reading times between sarcastic and literal language processing.

6.4.2 Making the speaker's expectation explicit

The implicit display theory predicts that when the speaker's expectation is made explicit in the context, the ironic environment is more prototypical and hence a sarcastic remark is more likely to follow and just as easy to process as a literal remark. This prediction was first tested in two offline rating studies (Experiments 3 and 5) and then in two eye-tracking studies (Experiments 4 and 6).

The offline prediction of the theory was confirmed in the rating studies: participants thought it was significantly more likely for a sarcastic remark to follow a scenario where the speaker's expectation was made explicit and then broken, than a scenario in which the speaker's expectation was not made explicit (and therefore unknown to the reader) and then broken. Having established this, the materials were then used in two eye-tracking studies that tested the prediction that this increased expectation for sarcasm would also lead to a processing facilitation, making it as easy to comprehend as a literal remark. This prediction has not however been supported in the two experiments that tested it in this thesis. There was no effect of the context on sarcasm comprehension, neither in early nor late processing stages, and neither in Experiment 4 nor 6. There was some evidence that the contextual manipulation affected literal language processing (first-pass reading times on

the post-critical region, Experiment 4), such that literal remarks became more difficult to process when the speaker's expectation remained implicit in the context than when it was made explicit.

Therefore even though the experimental materials employed were suitable and optimised to detect the predicted contextual effects, these effects were not observed for online sarcasm processing. There have been only a few studies that investigated this prediction previously, some showing support for the predicted contextual effect (Utsumi's, 2005 rating study), and another not finding any supporting evidence (Giora et al.'s, 2009 self-paced reading study). The two experiments reported in this thesis are the first ones to employ eye-tracking in order to test this prediction of the implicit display theory, and they have not found any supporting evidence for it. The lack of a contextual effect on the online processing of sarcasm was evident despite the evidence from the two rating studies that the contextual manipulation affected the reader's expectation for sarcasm. A possibility might be that although it was ensured that the difference between the explicit and implicit conditions was statistically significant and it affected reader's ratings for their expectation for a sarcastic remark to ensue, it is difficult to say just how explicit the speaker's expectation needs to be in order for a functional effect to be observed online. This research question could be addressed in future research.

6.4.3 Knowing the speaker's communicative style

The effect of knowing the speaker's communicative style has been previously investigated using self-paced reading paradigms (e.g. Pexman et al., 2000) and rating studies (e.g. Pexman & Olineck, 2002). In these studies, the speaker's communicative style was determined by the occupation of the

speaker, which could be one in which people are stereotypically more likely to use sarcasm, like comedian, or literal, like scientist. In theses studies, it was found that sarcastic remarks uttered by more stereotypically sarcastic people are rated as more sarcastic, and are read faster.

The communicative style of the speaker can also be manipulated by introducing a sarcastic character in the story. That is, the experimental materials used in reading studies can introduce a character that utters sarcastic remarks mid-story, before the target remark. The specific role of introducing a sarcastic character in a story has been investigated using self-paced reading tasks (e.g. Giora et al., 2007) and probe word identification tasks (e.g. Fein et al., 2015), as well as ERPs (e.g. Regel et al., 2010), and the results were mixed. The self-paced and probe word identification tasks showed that introducing a sarcastic character cannot affect the processing of subsequent sarcastic remarks - sarcasm would still be more difficult to process than literal language. In contrast, the ERP study showed that knowing that a character tends to be sarcastic could aid the interpretation of subsequent sarcastic remarks as soon as they are encountered.

Experiment 7 in this thesis is the first eye-tracking investigation of this particular contextual effect on sarcasm comprehension. It was found that when a character was known to be literal, a subsequent sarcastic remark took longer to be processed than a literal one, but when a character was known to be sarcastic, a subsequent sarcastic remark was processed in equal time to a literal one. This effect was observed in both early and late reading measures, which is a result in line with the ERP study results of Regel et al. (2010).

The materials designed for Experiment 7 were in fact based on the ones used in Fein et al.'s (2015) study, and they followed a very similar structure. However, the eye-tracking results were in opposition to the results from Fein et al.'s study. This might have been due to the different methodologies employed in this thesis and in Fein et al.'s study. Fein et al.'s experiment is a probe word identification task, in which participants had to respond to words that were presented after the entire experimental material was read, and decide whether they were real words or not. These probe words could either be related to the literal or the sarcastic meaning of the target remark, and their results showed that response times to the words related to the literal meaning were always shorter than to those related to the sarcastic meaning. Importantly, these lexical decisions were made after the target remark and subsequent remaining text that followed it was read, which means that the remarks had already been processed before the participant had to respond to the probe word. Therefore this experiment could not detect the processes involved in sarcasm comprehension as soon as it was encountered. By using eye-tracking, the time-course of these processes could be more accurately mapped.

6.5 Implications for theory

Taken together, the results from the eye-tracking experiments reported in this thesis cannot be easily accommodated within any of the theoretical frameworks that were directly tested, that is, the standard pragmatic model, the graded salience hypothesis, the echoic mention theory, or the implicit display theory. The results are also not consistent with the predictions of the direct access view (because there have been situations where a difficulty for sarcasm was observed), however this theory was not directly tested in this thesis. The

interactive theories tested in this thesis were those that have received little previous attention in the literature and have not been previously investigated using eye-tracking methodology.

The standard pragmatic model predicts that sarcastic remarks always take longer to process than literal equivalents and the early stage of this process cannot be affected by contextual factors. However, the results from this thesis showed that sarcastic comments can be processed as fast as literal ones (Experiments 1, 2, and 7) and that contextual factors (more specifically, knowing the speaker's communicative style) can affect the early processing stage (Experiment 7), making sarcasm as easy to process as literal language.

The graded salience hypothesis predicts that unfamiliar sarcastic remarks should always be processed slower than literal counterparts, while there should be no processing difference between familiar sarcastic and literal remarks. It also predicts, similarly to the standard pragmatic model, that contextual factors cannot facilitate the initial processing of sarcastic comments. The results from this thesis showed that even unfamiliar sarcastic remarks were sometimes processed as fast as literal ones (Experiments 1, 2, and 7), but other times the interaction between familiarity and utterance literality was indeed observed (Experiment 6). Again, Experiment 7 showed that knowing the speaker's communicative style could facilitate the early stage of sarcasm processing, which the graded salience hypothesis cannot accommodate.

The echoic mention theory predicts that sarcastic comments should always take longer to process than literal ones, but sarcastic comments that echo a contextual antecedent should be processed faster than sarcastic comments without such an antecedent. Although these predictions were

partially supported in Experiment 2, the theory cannot accommodate the findings that sarcasm is not always more difficult to process than literal language (Experiments 1, 2, and 7).

The implicit display theory defines degree of ironicalness with a very specific equation that has a limited number of elements (or factors that can affect sarcasm processing). One of them is the explicitness of the speaker's expectation, and Experiments 4 and 6 found that contrary to the theory's predictions, sarcasm processing is not facilitated when the speaker's expectation is made explicit in the context and then broken. This was even after it was ensured that the materials were optimised to detect such an effect – readers expected sarcasm to follow more following a scenario where the speaker's expectation was made explicit in the context and then broken (Experiments 3 and 5). The implicit display theory does not have a term in its equation that accounts for the speaker's communicative style, but one might argue that having a speaker that had previously uttered sarcastic remarks would contribute to the prototypicality of the ironic environment. Therefore, the implicit display theory would be able to accommodate the results of Experiment 7 if it included such a term in the equation. Perhaps similarly, the implicit display theory could have a term for echoing a contextual antecedent, since Experiment 2 showed that sarcastic remarks that echo an antecedent are processed as fast as literal ones, whereas those that do not echo an antecedent are processed slower than literal ones. In sum, it could be argued that the implicit display theory's equation does not contain enough of the factors that experimental work has shown can affect the online processing of sarcasm.

The constraint satisfaction model was not directly tested in this thesis, because this framework theory does not make clear testable predictions. It hypothesises that many different factors might be able to facilitate sarcasm comprehension, but it does not specify what these factors are. This framework could certainly accommodate the results from this thesis, but it could do so for any set of results.

Although the constraint satisfaction model for figurative language has not been detailed enough yet to include testable predictions, this kind of model has been previously applied to other linguistic processes and specified in a lot more detail. The interactive activation model (McClelland & Rumelhart, 1981) is a classic example of how the constraint satisfaction model has been applied to word recognition. According to this model, a variety of constraints interact in a parallel process and affect word recognition. The model has been fully described and specified, in terms of the nodes it contains (e.g. word level, letter level, feature level), and in terms of the relationships between them (e.g. parallel activation, mutual inhibition, mutual strengthening) (McClelland & Rumelhart, 1981). The constraint satisfaction model has also been described in detail and thoroughly tested empirically in language parsing (see Trueswell & Tanenhaus, 1994). The model predicts that resolving a parsing ambiguity is a continuous and interactive process, and it depends on the relevance of various syntactic and semantic constraints. Looking at how the constraint satisfaction model has been applied to other language processes indicates that its current formulation for figurative language comprehension is still in its infancy because it lacks the specificity and detailed description required for empirical testing.

Therefore, some of the theories proposed so far for figurative language are too specific and hence not able to accommodate all results, while others are too broad, and hence able to accommodate any result, while lacking testability. I believe that the theoretical contribution of the experimental work from this thesis is that it suggests a good way of merging these two categories of theories, with a view to formulate a comprehensive and testable theory of sarcasm processing. This could be done by reformulating the constraint satisfaction model and explicitly specifying which factors could and which could not affect sarcasm processing. As explained above, the constraint satisfaction model claims that a variety of "unspecified" factors could affect sarcasm processing. This lack of specificity makes its predictions untestable. A specified version of the constraint satisfaction model would be better able to accommodate the existing results, and it would be testable.

Based on the results from this thesis, the new version of the constraint satisfaction model might now specify at least three factors that could facilitate sarcasm processing: echoing a contextual antecedent, knowing the speaker's communicative style, and the familiarity of the sarcastic remark itself. Since there is currently no evidence that making the speaker's expectation explicit in the context facilitates sarcasm comprehension, this factor would not be included in the new version of the constraint satisfaction model.

Besides implications for the theories of sarcasm processing specifically, the experimental work in this thesis has implications for the modular vs. interactive debate more generally. Contextual factors were found to affect both the early and late stages of sarcasm processing, which could not be accommodated by modular accounts of language comprehension. It seems that

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indeed top-down knowledge (e.g. the speaker's communicative style) can and does interact early on with bottom-up linguistic processes, resulting in a facilitating effect on language when embedded in supportive contexts.

6.6 Comments on regression path reading measure

The regression path reading measure is defined as the sum of all fixations on a region and on preceding regions from first entering the region to first going past it, i.e. leaving it via its right boundary (see section 2.1).

As can be seen from the definition, the regression path measure encapsulates both early and slightly later reading components, which might lead to the conclusion that this reading measure could be classified as "intermediate". However, the theories that have been under investigation in this thesis only discuss early and late processes, but not intermediate ones, hence the need to classify regression path as a measure of either early or late processes.

Whether regression path should be categorised as an early or late reading measure is a debatable issue: <<The go-past […] measure is sometimes considered "early", sometimes "late">> (Clifton Jr., Staub, & Rayner, 2007, p. 13). An argument in favour of the interpretation of regression path as an early measure is the fact that it reflects the difficulty associated with integrating a word as soon as it was fixated, which is arguably an early process (Clifton et al., 2007). Additionally, regression path is sometimes explicitly <<considered to index first-pass processing>> (Warren, 2011, p. 912). Therefore, in this thesis, regression path was categorised as an early reading measure. However it is true that regression path also reflects the reading pattern that the participants engage in in order to overcome the difficulty of

word integration, which is arguably a later processing stage (Clifton et al., 2007).

Even though regression path is affected by re-reading processes, some researchers do indeed prefer to report it as reflective of early integration difficulties, sometimes even instead of reporting the first-pass reading measure (see Warren, 2011 for a discussion). The logic behind this decision is that in first-pass, a reading difficulty can sometimes be represented by a longer reading time (when it was followed by a progressive saccade) and other times by a shorter reading time (when it was followed by a regressive saccade). This is because there is evidence that the duration of the first-pass measure depends on whether it was followed by a progressive or a regressive saccade (e.g. Rayner, Juhasz, Ashby, & Clifton, 2003). Regression path reading time does not suffer from this disadvantage; therefore it can be more straightforward to interpret (see Warren, 2011 for a discussion).

In sum, although the interpretation of the regression path reading measure is often under debate, in this thesis it has been interpreted as reflective of early reading processes because of the arguments presented above, with the acknowledgment that it is indeed not a pure measure of early processes, since it encompasses some re-reading of preceding context.

6.7 Conclusions and future directions

Based on the findings from the experimental work in this thesis, potential directions for future investigations will now be considered. Sarcasm here was defined as an utterance that says the opposite of what is meant and has the intention to criticise the recipient. However, a sarcastic remark can also be made by uttering something that is also literally true (e.g. *I love it when*

you're listening to me.), or by using other types of language like understatements (e.g. *I'm only a tiny bit upset with you.*). Also, sarcasm can be used to praise someone (e.g. *To someone who predicted they would lose a tennis match but ended up winning the tournament, "You really are a terrible tennis player!"*). Future research is encouraged to verify whether the results obtained in this thesis would also apply to these other various types of sarcasm, by also systematically manipulating the factors of interest, and using a method with a high temporal acuity (e.g. eye-tracking).

Future research could also manipulate additional factors that might potentially facilitate sarcasm processing, and if any are found, they could be added as new factors in the new testable version of the constraint satisfaction model. One example of such a factor would be the presence of textual cues (e.g. exclamation mark, ellipsis, emoticons). In this thesis, all remarks were accompanied by an exclamation mark; therefore the effect of textual devices on sarcasm processing could not be tested. However in future experiments, the accompanying textual devices could be manipulated in order to test whether as the implicit display theory would predict, the more cues are present, the easier and faster sarcasm would be processed. The prediction that accompanying textual devices might affect written sarcasm interpretation has been tested already using a rating task (Filik, Țurcan, Thompson, Harvey, Davies, & Turner, 2015), which showed that indeed when written sarcasm was accompanied by certain emoticons, participants perceived that message as more sarcastic. However, this study did not test whether sarcasm processing is also affected by the presence of textual devices.

The experiments in this thesis failed to support the implicit display theory's prediction that making the speaker's expectation explicit in the context aids sarcasm processing. However, one possibility that remains open for future studies is that if the discrepancy between the explicit and implicit conditions is made even more extreme, then perhaps a functional effect might be observed.

Although eye-tracking has proved to be an appropriate methodology to test questions relating to the time-course of sarcasm processing, future studies might employ the method of EEG-eye-tracking co-registration. This methodology would capitalise on the strengths of both EEG and eye-tracking methods, hence it would constitute a step forward in the investigation of online sarcasm processing. Using eye-tracking, it was possible to map out the time-course of sarcasm processing and specify which factors affect it at various time points. If besides reading patterns, one could also simultaneously describe the ERP waves present at each time point, then we would obtain further insight into the reasons why certain reading difficulties are observed (e.g. semantic integration difficulty if an N400 component is present, or conflict between different meanings if the P600 component is present).

In conclusion, by employing a sensitive and ecologically valid online methodology and by systematically manipulating a variety of linguistic and contextual factors, the results from the studies reported in this thesis pose challenges to all the theories that were tested here and cannot be easily accommodated by any of them. However, the experimental work from this

thesis could constitute a good starting point on the path towards specifying a

more comprehensive and testable model of sarcasm processing.

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Footnotes

[1]See in the tables below the percentage of data removed due to it being missing (typically due to participants skipping over the respective region).

Summary of missing data removal (Experiment 1)		
Analysis region	Reading measure	% of missing data
pre-critical	fp	9
	rp	9
	tt	4
critical	fp	14.3
	rp	14.3
	tt	12.5
post-critical	fp	1.4
	rp	1.4
	tt	0.4

Summary of missing data removal (Experiment 2)		
Analysis region	Reading measure	% of missing data
pre-critical	fp	20.1
	rp	20.1
	tt	10.2
critical	fp	19.5
	rp	19.5
	tt	17.4
post-critical	fp	1.2

	rp	1.1
	tt	0.8

Summary of missing data removal (Experiment 4)

Analysis region	Reading measure	% of missing data
pre-critical	fp	17.4
	rp	17.4
	tt	7.2
critical	fp	11.6
	rp	11.6
	tt	8.4
post-critical	fp	0.5
	rp	0.5
	tt	0.1

Summary of missing data removal (Experiment 6)

Analysis region	Reading measure	% of missing data
pre-critical	fp	17.1
	rp	17.1
	tt	8.2
critical	fp	17
	rp	17
	tt	14
post-critical	fp	1.9

	rp	1.9
	tt	1

Summary of missing data removal (Experiment 7)		
Analysis region	Reading measure	% of missing data
pre-critical	fp	20.5
	rp	20.5
	tt	3
critical	fp	10.6
	rp	10.4
	tt	9.2
post-critical	fp	21.2
	rp	21.2
	tt	6.9

Appendix A: Full list of experimental materials (Experiment 1)

1.			
Literal	With antecedent		Jude and Mike were planning a trip. Mike said, "I'll drive, I'm very good." On leaving, Mike skilfully reversed out of the tight parking spot. "Your driving is fantastic!" Jude said. They arrived on schedule.
	Without antecedent		Jude and Mike were planning a trip. Mike said, "We should be ready to leave soon." On leaving, Mike skilfully reversed the car out of the tight parking spot. "Your driving is fantastic!" Jude said. They arrived on schedule.
Sarcastic	With antecedent		Jude and Mike were planning a trip. Mike said, "I'll drive, I'm very good." On leaving, Mike reversed the car into a post. "Your driving is fantastic!" Jude said. They arrived on schedule.
	Without antecedent		Jude and Mike were planning a trip. Mike said, "We should be ready to leave shortly." On leaving, Mike reversed the car into a post. "Your driving is fantastic!" Jude said. They arrived on schedule.

2.

Literal	With antecedent	Jason agreed to tidy the garden for some pocket money. "I'm good at gardening anyway", he told his mum. Jason made perfect stripes in the grass with the lawnmower. "Your gardening is brilliant!" remarked his mum. She made them lemonade.
	Without antecedent	Jason agreed to tidy the garden for some pocket money. "I'll do it this afternoon", he told his mum. Jason made perfect stripes in the grass with the lawnmower. "Your gardening is brilliant!" remarked his mum. She made them lemonade.
Sarcastic	With antecedent	Jason agreed to tidy the garden for some pocket money. "I'm good at gardening anyway", he told his mum. Jason accidentally put bald patches in the grass with the lawnmower. "Your gardening is brilliant!" remarked his mum. She made them lemonade.
	Without antecedent	Jason agreed to tidy the garden for some pocket money. "I'll do it this afternoon", he told his mum. Jason accidentally put bald patches in the grass with the lawnmower. "Your gardening is brilliant!" remarked his mum. She made them lemonade.

3.		
Literal	With antecedent	Charlie and his friends decided to split the bill for their meal evenly. "I'll work out how much we each owe, I'm good at maths", said Charlie. He worked it out quickly in his head. "Your maths is brilliant!" said his friend. The restaurant was quiet that night.
	Without antecedent	Charlie and his friends decided to split the bill for their meal evenly. "I'll work out how much we each owe", said Charlie. He worked it out quickly in his head. "Your maths is brilliant, Charlie!" said his friend. The restaurant was quiet that night.
Sarcastic	With antecedent	Charlie and his friends decided to split the bill for their meal evenly. "I'll work out how much we each owe, I'm good at maths", said Charlie. However his maths didn't add up and they had to use a calculator. "Your maths is brilliant!" said his friend. The restaurant was quiet that night.
	Without antecedent	Charlie and his friends decided to split the bill for their meal evenly. "I'll work out how much we each owe", said Charlie. However his maths didn't add up and they had to use a calculator. "Your maths is brilliant!" said his friend. The restaurant was quiet that night.

4.		
Literal	With antecedent	Alex was visiting Callum, who owned a boxer dog. "You can pet him, he doesn't bite", said Callum. Alex reached down to pet the dog who wagged his tail. "He's really friendly!" remarked Alex. The dog was given his food.
	Without antecedent	Alex was visiting Callum who owned a boxer dog. "Let me just feed him", said Callum. Alex reached down to pet the dog who wagged his tail. "He's really friendly!" remarked Alex. The dog was given his food.
Sarcastic	With antecedent	Alex was visiting Callum, who owned a boxer dog. "You can pet him, he doesn't bite", said Callum. Alex reached down and the dog growled back. "He's really friendly!" remarked Alex. The dog was given his food.
	Without antecedent	Alex was visiting Callum, who owned a boxer dog. "Let me just feed him", said Callum. Alex reached down to pet the dog who growled back. "He's really friendly!" remarked Alex. The dog was given his food.

5.		
Literal	With antecedent	Lauren asked Dan to sing with her at the pub karaoke night. Dan said, "OK, I'm a good singer." Later Dan sang beautifully on the karaoke. "Your singing is amazing!" said Lauren. They stayed until the end of the party.
	Without antecedent	Lauren asked Dan to sing with her at the pub karaoke night. Dan said, "I wonder if they have my favourite Beatles song." Later Dan sang beautifully on the karaoke. "Your singing is amazing!" said Lauren. They stayed until the end of the party.
Sarcastic	With antecedent	Lauren asked Dan to sing with her at the pub karaoke night. Dan said, "OK, I'm a good singer." Later Dan sang awfully on the karaoke. "Your singing is amazing!" said Lauren. They stayed until the end of the party.
	Without antecedent	Lauren asked Dan to sing with her at the pub karaoke night. Dan said, "I wonder if they have my favourite Beatles song." Later Dan sang awfully on the karaoke. "Your singing is amazing!" said Lauren. They stayed until the end of the party.

6.		
Literal	With antecedent	A group of boys were playing football on a field. Joe said, "I'll be goalie, I'm brilliant." Joe saved all the goals and his team won. "You are good!" said one of the boys. They all went home for dinner.
	Without antecedent	A group of boys were playing football on a field. Joe said, "I've not brought my shin pads so I'll be goalie." Joe saved all the goals and his team won. "You are good!" said one of the boys. They all went home for dinner.
Sarcastic	With antecedent	A group of boys were playing football on a field. Joe said, "I'll be goalie, I'm brilliant." Joe didn't save one goal throughout the match. "You are good!" said one of the boys. They all went home for dinner.
	Without antecedent	A group of boys were playing football on a field. Joe said, "I've not brought my shin pads so I'll be goalie." Joe didn't save one goal throughout the match. "You are good!" said one of the boys. They all went home for dinner.

7.	

Literal	With antecedent	Jane was cooking a meal for her date and said, "You'll like this, I'm a very good cook." Subsequently the meal was delicious. "Your cooking is brilliant!" replied her date. They drank some wine together.
	Without antecedent	Jane was cooking a meal for her date and said, "I'll get a bottle of wine and then we can sit down and eat." Subsequently the meal was delicious. "Your cooking is brilliant!" replied her date. They drank some wine together.
Sarcastic	With antecedent	Jane was cooking a meal for her date and said, "You'll like this, I'm a very good cook." Unfortunately, the food was burnt. "Your cooking is brilliant!" replied her date. They drank some wine together.
	Without antecedent	Jane was cooking a meal for her date and said, "I'll get a bottle of wine and then we can sit down and eat." Unfortunately, the food was burnt. "Your cooking is brilliant!" replied her date. They drank some wine together.

8.		
Literal	With antecedent	Sarah was helping Megan move into her new house when Sarah said, "Don't worry, I'm strongest, I'll

		get that heavy box." Sarah effortlessly picked up the next box and took it up the stairs. "You're so strong!" Megan said. They still had many more boxes to unpack.
	Without antecedent	Sarah was helping Megan move into her new house when Sarah said, "We're making good time moving all these boxes." Sarah effortlessly picked up the next box and took it up the stairs. "You're so strong!" Megan said. They still had many more boxes to unpack.
Sarcastic	With antecedent	Sarah was helping Megan move into her new house when Sarah said, "Don't worry, I'm strongest, I'll get that heavy box." However, Sarah couldn't manage to lift the box past her ankles. "You're so strong!" Megan said. They still had many more boxes to unpack.
	Without antecedent	Sarah was helping Megan move into her new house when Sarah said, "We're making good time moving all these boxes." However, Sarah couldn't manage to lift the next box past her ankles. "You're so strong!" Megan said. They still had many more boxes to unpack.

9.

Literal	With antecedent	Sam was building a wall around his garden. "I'm coming to help in 5 minutes", said Matt. Matt came and helped, so the wall was built quickly. "Your help was great!" said Sam. They went to the pub.
	Without antecedent	Sam was building a wall around his garden. "You should put a flower bed in when you finish the wall", said Matt. Matt came and helped, so the wall was built quickly, "Your help was great!" said Sam. They went to the pub.
Sarcastic	With antecedent	Sam was building a wall around his garden. "I'm coming to help in 5 minutes", said Matt. Matt arrived late when the wall was already built. "Your help was great!" said Sam. They went to the pub.
	Without antecedent	Sam was building a wall around his garden. "You should put a flower bed in when you finish the wall", said Matt. Matt was supposed to help but arrived late when the wall was already built. "Your help was great!" said Sam. They went to the pub.

10.		
Literal	With antecedent	Dan and Mandy had a dinner reservation and they were running late. Mandy was still getting ready.

		"I'll be 2 minutes", said Mandy. Less than 2 minutes later Mandy was ready to leave, "You got ready quickly!" said Dan. They took a taxi to the restaurant.
	Without antecedent	Dan and Mandy had a dinner reservation and they were running late. Mandy was still getting ready. "I think I'll wear my new dress tonight", said Mandy. Less than 2 minutes later Mandy was ready to leave, "You got ready quickly!" said Dan. They took a taxi to the restaurant.
Sarcastic	With antecedent	Dan and Mandy had a dinner reservation and they were running late. Mandy was still getting ready. "I'll be 2 minutes", said Mandy. An hour later Mandy was ready to leave. "You got ready quickly!" said Dan. They took a taxi to the restaurant.
	Without antecedent	Dan and Mandy had a dinner reservation and they were running late. Mandy was still getting ready. "I think I'll wear my new dress tonight", said Mandy. An hour later Mandy was ready to leave, "You got ready quickly!" said Dan. They took a taxi to the restaurant.

11.

Literal	With antecedent	Chris needed a haircut so Charlotte offered to cut it for him. "I'm good at trimming hair", said Charlotte. When she had finished, Chris' hair looked lovely. "Your hairdressing skills are wonderful!" remarked Chris. He styled his hair with gel.
	Without antecedent	Chris needed a haircut so Charlotte offered to cut it for him. "Come and sit here while I get some scissors", said Charlotte. When she had finished, Chris' hair looked lovely. "Your hairdressing skills are wonderful!" remarked Chris. He styled his hair with gel.
Sarcastic	With antecedent	Chris needed a haircut so Charlotte offered to cut it for him. "I'm good at trimming hair", said Charlotte. When she had finished, the front of Chris' hair was very uneven, "Your hairdressing skills are wonderful!" remarked Chris. He styled his hair with gel.
	Without antecedent	Chris needed a haircut so Charlotte offered to cut it for him. "Come and sit here while I get some scissors", said Charlotte. When she had finished, the front of Chris' hair was very uneven. "Your hairdressing skills are wonderful!" remarked Chris. He styled his hair with gel.

12.		
Literal	With antecedent	Rachel went into her kitchen to find a huge spider on the ceiling. "Don't worry, I'll move that spider", said Ben. He caught the spider quickly. "You're so brave!" said Rachel. They then cooked dinner together.
	Without antecedent	Rachel went into her kitchen to find a huge spider on the ceiling. "They like to come in the house when it's cold outside", said Ben. He caught the spider quickly. "You're so brave!" said Rachel. They then cooked dinner together.
Sarcastic	With antecedent	Rachel went into her kitchen to find a huge spider on the ceiling. "Don't worry, I'll move that spider", said Ben. As he reached up, the spider moved and Ben screamed. "You're so brave!" said Rachel. They then cooked dinner together.
	Without antecedent	Rachel went into her kitchen to find a huge spider on the ceiling. "They like to come in the house when it's cold outside", said Ben. Ben reached up, the spider moved and Ben screamed. "You're so brave!" said Rachel. They then cooked dinner together.

13.		
Literal	With antecedent	Lauren was getting ready to leave the house. "Don't worry, I'll get something nice for dinner", she said to her mum. She returned with some fresh bread and lots of other treats from the deli. "That looks tasty!" said her mum. They went into the kitchen together.
	Without antecedent	Lauren was getting ready to leave the house. "Don't worry, I'll be back from the shops soon", she said to her mum. She returned with some fresh bread and lots of other treats from the deli. "That looks tasty!" said her mum. They went into the kitchen together.
Sarcastic	With antecedent	Lauren was getting ready to leave the house. "Don't worry, I'll get something nice for dinner", she said to her mum. She returned with some rather tired looking vegetables and not much else. "That looks tasty!" said her mum. They went into the kitchen together.
	Without antecedent	Lauren was getting ready to leave the house. "Don't worry, I'll be back from the shops soon", she said to her mum." She returned with some rather tired looking vegetables and not much else. "That looks tasty!" said her mum. They went into the kitchen together.

14.			
Literal	With antecedent	Tom and Jamie were going to a club. "Just wait until you see my moves on the dance floor", said Jamie. When they got in, Jamie immediately embarked on an impressive dance routine. "Your moves are great!" remarked Tom. They went to the bar and ordered drinks.
	Without antecedent	Tom and Jamie were going to a club. "I think I'll wear my new t-shirt tonight", said Jamie. When they got in, Jamie immediately embarked on an impressive dance routine. "Your moves are great!" remarked Tom. They went to the bar and ordered drinks.
Sarcastic	With antecedent	Tom and Jamie were going to a club. "Just wait until you see my moves on the dance floor", said Jamie. When they got in, Jamie immediately started jumping around in an uncoordinated manner. "Your moves are great!" remarked Tom. They went to the bar and ordered drinks.
	Without antecedent	Tom and Jamie were going to a club. "I think I'll wear my new t-shirt tonight", said Jamie. When they got in, Jamie immediately started jumping around on the dance floor in an uncoordinated manner. "Your moves are great!" remarked Tom. They went to the bar and ordered drinks.

15.		
Literal	With antecedent	Nick and Henry had a test at school. "I'm going to do really badly, I know it", said Nick. At the end their tests were marked and Nick got all the questions wrong. "You did awfully!" said Henry. They had one more class to attend.
	Without antecedent	Nick and Henry had a test at school. "This teacher always gives us tests", said Nick. At the end their tests were marked and Nick got all the questions wrong. "You did awfully!" said Henry. They had one more class to attend.
Sarcastic	With antecedent	Nick and Henry had a test at school. "I'm going to do really badly, I know it", said Nick. At the end their tests were marked and Nick got full marks. "You did awfully!" said Henry. They had one more class to attend.
	Without antecedent	Nick and Henry had a test at school. "This teacher always gives us tests", said Nick. At the end their tests were marked and Nick got full marks. "You did awfully!" said Henry. They had one more class to attend.

16.		
Literal	With antecedent	Jess thought she might tidy her bedroom while her mum went shopping. "I'll tidy up properly", promised Jess. She tidied and cleaned all afternoon. "Your bedroom is immaculate!" said her mum when she arrived home. It had been a long day at work.
	Without antecedent	Jess thought she might tidy her bedroom while her mum went shopping. "I'll see you later", said Jess. She tidied and cleaned all afternoon. "Your bedroom is immaculate!" said her mum when she arrived home. It had been a long day at work.
Sarcastic	With antecedent	Jess thought she might tidy her bedroom while her mum went shopping. "I'll tidy up properly", promised Jess. Instead she watched T.V all afternoon. "Your bedroom is immaculate!" said her mum when she arrived home. It had been a long day at work.
	Without antecedent	Jess thought she might tidy her bedroom while her mum went shopping. "I'll see you later", said Jess. Instead she watched T.V all afternoon. "Your bedroom is immaculate!" said her mum when she arrived home. It had been a long day at work.

17.		
Literal	With antecedent	Anthony was having trouble using his new washing machine. "Let me take a look, I always do the washing at home", said Dave. He pressed the button and the machine started up. "Your technical skills are impressive!" said Anthony. They did the rest of the jobs together.
	Without antecedent	Anthony was having trouble using his new washing machine. "Let's see if we can find the instructions", said Dave. He pressed the button and the machine started up. "Your technical skills are impressive!" said Anthony. They did the rest of the jobs together.
Sarcastic	With antecedent	Anthony was having trouble using his new washing machine. "Let me take a look, I always do the washing at home", said Dave. Thirty minutes later the machine was still not working. "Your technical skills are impressive!" said Anthony. They did the rest of the jobs together.
	Without antecedent	Anthony was having trouble using his new washing machine. "Let's see if we can find the instructions", said Dave. Thirty minutes later the machine was still not working. "Your technical skills are impressive!" said Anthony. They did the rest of the jobs together.

18.		
Literal	With antecedent	Louis and Gareth were taking a weekend trip. "I haven't packed yet but it won't take long I'm a light traveller", said Louis. At the airport Louis arrived with a small backpack. "You really pack light!" said Gareth. They checked in their bags at the desk.
	Without antecedent	Louis and Gareth were taking a weekend trip. "I'll meet you at the airport tomorrow", said Louis. At the airport Louis arrived with a small backpack. "You really pack light!" said Gareth. They checked in their bags at the desk.
Sarcastic	With antecedent	Louis and Gareth were taking a weekend trip. "I haven't packed yet but it won't take long I'm a light traveller", said Louis. At the airport Louis arrived with a huge suitcase. "You really pack light!" said Gareth. They checked in their bags at the desk.
	Without antecedent	Louis and Gareth were taking a weekend trip. "I'll meet you at the airport tomorrow", said Louis. At the airport Louis arrived with a huge suitcase. "You really pack light!" said Gareth. They checked in their bags at the desk.

19.		
Literal	With antecedent	Hayley and Holly were making plans for a friend's birthday surprise. "I'll make a cake, I'm good at baking", said Hayley. The cake was beautifully decorated. "Your baking looks tasty!" said Holly. Banners and balloons decorated the house.
	Without antecedent	Hayley and Holly were making plans for a friend's birthday surprise. "I'll make a cake and you decorate the house", said Hayley. The cake was beautifully decorated. "Your baking looks tasty!" said Holly. Banners and balloons decorated the house.
Sarcastic	With antecedent	Hayley and Holly were making plans for a friend's birthday surprise. "I'll make a cake, I'm good at baking", said Hayley. Unfortunately she forgot to add the flour and the cakes didn't rise. "Your baking looks tasty!" said Holly. Banners and balloons decorated the house.
	Without antecedent	Hayley and Holly were making plans for a friend's birthday surprise. "I'll make the cake and you decorate the house", said Hayley. Unfortunately she forgot to add the flour and the cakes didn't rise. "Your baking looks tasty!" said Holly. Banners and balloons decorated the house.

20.		
Literal	With antecedent	Ellen and Grace were going to the shopping centre. "I'll pick your outfit, I have very good taste", said Ellen. When they entered the first shop, she picked up a very classy black dress. "Your taste is excellent!" said Grace. They stopped for lunch on the way home.
	Without antecedent	Ellen and Grace were going to the shopping centre. "Remind me to pick up some candles", said Ellen. When they entered the first shop, Ellen picked up a very classy black dress. "Your taste is excellent!" said Grace. They stopped for lunch on the way home.
Sarcastic	With antecedent	Ellen and Grace were going to the shopping centre. "I'll pick your outfit, I have very good taste", said Ellen. When they entered the first shop, she picked up a hideous lime green number. "Your taste is excellent!" said Grace. They stopped for lunch on the way home.
	Without antecedent	Ellen and Grace were going to the shopping centre. "Remind me to pick up some candles", said Ellen. When they entered the first shop, Ellen picked up a hideous lime green dress. "Your taste is excellent!" said Grace. They stopped for lunch on the way home.

21.		
Literal	With antecedent	Lauren's dad decided to do a firework display in the back garden. "The fireworks will be good, I chose them myself", he said. The fireworks were indeed spectacular and everyone enjoyed them. "Well those fireworks were brilliant!" said Lauren. They stood round the bonfire.
	Without antecedent	Lauren's dad decided to do a fireworks display in the back garden. "Wrap up, it's cold out", he said. The fireworks were spectacular and everyone enjoyed them. "Well those fireworks were brilliant!" said Lauren. They stood round the bonfire.
Sarcastic	With antecedent	Lauren's dad decided to do a firework display in the back garden. "The fireworks will be good, I chose them myself", he said. Unfortunately, the fireworks turned out to be not at all impressive. "Well those fireworks were brilliant!" said Lauren. They stood round the bonfire.
	Without antecedent	Lauren's dad decided to do a firework display in the back garden. "Wrap up, it's cold out", he said. Unfortunately, the fireworks turned out to be not at all impressive. "Well those fireworks were brilliant!" said Lauren. They stood round the bonfire.

22.		
Literal	With antecedent	Ella asked James to help move the living furniture around. "Don't worry, I'll move that heavy armchair", said James. He moved the chair with ease to the other side of the room. "Your lifting skills are impressive!" replied Ella. They moved the coffee table together.
	Without antecedent	Ella asked James to help move the living furniture around. "I think this chair should go over there", said James. He moved the chair with ease to the other side of the room. "Your lifting skills are impressive!" replied Ella. They moved the coffee table together.
Sarcastic	With antecedent	Ella asked James to help move the living furniture around. "Don't worry, I'll move that heavy armchair", said James. He heaved with all his strength but the chair didn't move. "Your lifting skills are impressive!" replied Ella. They moved the coffee table together.
	Without antecedent	Ella asked James to help move the living furniture around. "I think this chair should go over there", said James. He heaved with all his strength but the heavy chair didn't move. "Your lifting skills are impressive!" replied Ella. They moved the coffee table together.

23.		
Literal	With antecedent	Josh agreed to clean the windows for some pocket money. "I'm good at window cleaning anyway", he told his mum. Josh cleaned the windows perfectly, leaving no streaks. "Your cleaning is brilliant!" remarked his mum. He put the ladders away.
	Without antecedent	Josh agreed to clean the windows for some pocket money. "I'll do it this afternoon", he told his mum. Josh cleaned the windows perfectly, leaving no streaks. "Your cleaning is brilliant!" remarked his mum. He put the ladders away.
Sarcastic	With antecedent	Josh agreed to clean the windows for some pocket money. "I'm good at window cleaning anyway", he told his mum. Josh cleaned the windows but left fingerprints all over the glass. "Your cleaning is brilliant!" remarked his mum. He put the ladders away.
	Without antecedent	Josh agreed to clean the windows for some pocket money. "I'll do it this afternoon", he told his mum. Josh cleaned the windows but left fingerprints all over the glass. "Your cleaning is brilliant!" remarked his mum. He put the ladders away.

24.		
Literal	With antecedent	Catherine was cooking a meal for her family. "This is a new recipe, it will be nice", she said. She served up the food and they all enjoyed it. "That recipe is delicious!" replied her son. They each had a large dessert.
	Without antecedent	Catherine was cooking a meal for her family. "I've spent all afternoon cooking", she said. She served up the food and they all enjoyed it. "That recipe is delicious!" replied her son. They each had a large dessert.
Sarcastic	With antecedent	Catherine was cooking a meal for her family. "This is a new recipe, it will be nice", she said. Unfortunately, the food was tasteless. "That recipe is delicious!" replied her son. They each had a large dessert.
	Without antecedent	Catherine was cooking a meal for her family. "I've spent all afternoon cooking", she said. Unfortunately, the food was tasteless. "That recipe is delicious!" replied her son. They each had a large dessert.

Appendix B: Full list of filler items (Experiment 1)

1	Danny and Marcus were going on a shopping trip. "I'd like to see if I can get those football boots in my size", said Danny. "Hopefully they'll be in stock", replied Marcus. They parked in the town centre.
2	Sophie was cooking dinner for her friends. "It won't be long I'll just set the table", she told them. They sat down to eat and the food was lovely.
3	Lauren went to a football game with her dad. "It should be a good game", said Lauren. Unfortunately, the team they supported lost and their captain was sent off. "There's always next time", said her dad. They bought chips from the burger van.
4	Tom was thinking of present ideas for his girlfriend's birthday. "What do you think about a silver necklace?" he asked his mum, "That sounds nice", she replied. They browsed the jewellers online.
5	Lucy was watching a T.V series with her mum. "Would you like anything from the kitchen mum?" said Lucy, "No, thank you darling", she replied. They enjoyed the rest of the programme.
6	Hannah was doing the washing up. "Would you like some help with that?" asked Nick, "I'll wash and you dry", she replied handing him a

	tea towel. They had the washing up done in no time.
7	Georgia and Kirsty had just received their exam results. They had both worked hard and done well. "I'm so proud of us", said Kirsty. They went out for dinner to celebrate.
8	Katy had got lost looking for the library on campus. She stopped to asked for directions. Unfortunately the boy she asked had headphones in and didn't hear her question. She found a map.
9	Lydia was going for a meal with her housemates. "I'd like to try that new Thai restaurant", she told them. They all liked Thai food and agreed to go there. The restaurant was beautifully decorated inside.
10	Jo and Demi were going to the beach. "Don't forget the towels", said Demi, "Already packed them", replied Jo. They stayed at the beach until the tide came in.
11	Alex was cooking a meal for his date. Unfortunately, he over cooked the chicken and it was very dry. "Never mind, lets open the wine", he said. They shared the bottle.
12	Richard and Sam were about to drive home. "I'm a good driver", said Richard, "Better to be safe than sorry", replied Sam putting on his seatbelt. They hit traffic on the main road.

13	Andy and John were discussing plans for the holidays. "I'll be visiting family a lot", said Andy, "I don't get to see them often." "I think I'll do the same", replied John. The conversation turned to football.
14	Emily had promised her friend that they would go to the gym in the evening. "I think I'm too tired", said Emily, luckily her friend agreed. They stayed in and watched a film.
15	Caroline agreed to do some spring-cleaning for her mum. "I'll do it this afternoon", she promised. The house was very tidy when her mum arrived home. "You are a good girl", said her mum. Caroline had worked hard.
16	Mike and Larissa were at their work Christmas party. "Let's have a dance", said Mike "I hope you're a good dancer!" replied Larissa. Luckily Mike had taken lessons.
17	Holly was at a family meal for her cousin's birthday. "I've forgotten the candles for the cake", said Holly. "Don't worry I've got spares", replied her aunt. They all sang happy birthday.
18	Natalie and Jack were putting the washing on the line outside. Unfortunately it began to rain. "Quick we better get the clothes back inside", said Natalie. They worked together to unpeg all the items.
19	It was a sunny day after a week of rain. "Would you like to come for a walk?" Gemma asked her husband. "Alright, let me just put my

	shoes on," he replied. They took their dog with them.
20	Kat was running late for her shift at the pub where she worked. "Sorry I lost track of time", she told her boss. "Don't worry it's been quiet tonight", he replied. She hung up her coat quickly.
21	Ali and Matt were going out. "I hope the music is good tonight", said Ali. "I think it will be. Our favourite DJ is there", replied Matt. The club was busy and they had a good time.
22	Kara was watching the football game on T.V with her dad. "I'll put the kettle on at half time", she said. "Good idea," her dad replied. Their team won the match.
23	Ellie and Nikki had an exam coming up. "Let's revise together", said Ellie. "That's a good idea we can test each other", replied Nikki. They bought new pens and paper.
24	Laura went to the library to take out some books. She asked the librarian for help finding a text but unfortunately they were all already out. "Thank you for your help", she said. She caught the bus home.

Appendix C: *t*-values of non-significant fixed effects and *p*-values of

likelihood-ratio tests (Experiment 1)

Analysis region	Reading measure	Fixed effects (from full model)	*t*
Table for the t-values of the non-significant fixed effects (Experiment 1). As a rule of thumb, only effects with |t| > 2 are likely to be significant (Baayen, Davidson & Bates, 2008).			
pre-critical	fp	literality	0.9
		antecedence	1.9
		literality * antecedence	-1.4
	rp	literality	-0.9
		antecedence	0.4
		literality * antecedence	0.5
	tt	literality	1.2
		antecedence	1.8
		literality * antecedence	-0.7
critical	fp	literality	0.3
		antecedence	0.1
		literality * antecedence	1.2
	rp	literality	1.3
		antecedence	1.4
		literality * antecedence	0.04

	tt	literality	1.2
		literality * antecedence	-0.1
post-critical	fp	literality	0.4
		antecedence	1.3
		literality * antecedence	-0.7
	rp	literality	-0.5
		literality * antecedence	0.06
	tt	literality	0.4
		literality * antecedence	-0.5

*Series of likelihood-ratio tests, their AIC, and p-values (Experiment 1)**			
	Fixed effects structure	AIC	*p*-value (vs. model #)
fp – pre-critical			
1	literality * antecedence	6619	n/a
2	literality + antecedence	6619	0.2 (vs. 1)
3	literality	6619	0.2 (vs. 2)
4	antecedence	6617	0.9 (vs. 2)
5	**Intercept**	**6617**	**0.9 (vs. 3)** **0.2 (vs. 4)**
rp – pre-critical			
1	literality * antecedence	7052	n/a
2	literality + antecedence	7050	0.7 (vs. 1)
3	literality	7050	0.2 (vs. 2)
4	antecedence	7049	0.4 (vs. 2)

5	**Intercept**	**7049**	**0.4 (vs. 3)**
			0.2 (vs. 4)

tt – pre-critical			
1	literality * antecedence	7293	n/a
2	literality + antecedence	7292	0.5 (vs. 1)
3	literality	7293	0.079 (vs. 2)
4	antecedence	7291	0.3 (vs. 2)
5	**Intercept**	**7291**	**0.4 (vs. 3)**
			0.093 (vs. 4)

fp - critical			
1	literality * antecedence	5915	n/a
2	literality + antecedence	5915	0.2 (vs. 1)
3	literality	5914	0.3 (vs. 2)
4	antecedence	5913	0.4 (vs. 2)
5	**Intercept**	**5912**	**0.5 (vs. 3)**
			0.4 (vs. 4)

rp - critical			
1	literality * antecedence	6610	n/a
2	literality + antecedence	6608	0.9 (vs. 1)
3	literality	6608	0.09 (vs. 2)
4	antecedence	6609	0.073 (vs. 2)
5	**Intercept**	**6610**	**0.073 (vs. 3)**
			0.089 (vs. 4)

tt - critical			

1	literality * antecedence	6322	n/a
2	literality + antecedence	6320	0.9 (vs. 1)
3	literality	6322	0.051 (vs. 2)
4	**antecedence**	**6320**	**0.2 (vs. 2)**
5	Intercept	6321	0.063 (vs. 4)

fp – post-critical

1	literality * antecedence	7623	n/a
2	literality + antecedence	7621	0.5 (vs. 1)
3	literality	7620	0.3 (vs. 2)
4	antecedence	7619	0.9 (vs. 2)
5	**Intercept**	**7618**	**0.9 (vs. 3)** **0.3 (vs. 4)**

rp – post-critical

1	literality * antecedence	8011	n/a
2	literality + antecedence	8009	0.9 (vs. 1)
3	literality	8012	0.02 (vs. 2)
4	**antecedence**	**8007**	**0.7 (vs. 2)**
5	Intercept	8011	0.02 (vs. 4)

tt – post-critical

1	literality * antecedence	7804	n/a
2	literality + antecedence	7803	0.6 (vs. 1)
3	literality	7808	< 0.01 (vs. 2)
4	**antecedence**	**7801**	**0.9 (vs. 2)**
5	Intercept	7807	< 0.01 (vs. 4)

*In this table (and all other similar tables in Appendices F, I, L, and O), the fixed effects structure gets progressively simpler at every step; a *p*-value < 0.05 suggests that the better model fit is the one with the more complex fixed-effects structure out of the two models being compared; similarly, a *p*-value > 0.05 suggests that it is the simpler fixed-effects structure that best describes the data. The fixed-effects structure of the best model fit is in **bold**. AIC = Akaike's Information Criterion (the smaller the AIC, the better the model fit, Wagenmakers & Farrell, 2004).

Appendix D: Full list of experimental materials (Experiment 2)

1.		
Literal	With antecedence	Bob had books lying around all over his house; he planned to rearrange his bookcase with Molly a week before their French exam. They were then going to study together. Molly said, "My organisation skills can be helpful, so we have to do this in a systematic way." Molly made a quick inventory of Bob's books and arranged them on shelves alphabetically. Familiar: "So helpful!" he said to her. They had tea. Unfamiliar: "That was systematic!" he said to her. They had tea.
	Without antecedent	Bob had books lying around all over his house; he planned to rearrange his bookcase with Molly a week before their French exam. They were then going to study together. Molly said, "Your sister organised a systematic study group for our French exam; it'll be helpful." Molly made a quick inventory of Bob's books and arranged them on shelves alphabetically.

		Familiar: "So helpful!" he said to her. They had tea.
		Unfamiliar: "That was systematic!" he said to her. They had tea.
Sarcastic	With antecedence	Bob had books lying around all over his house; he planned to rearrange his bookcase with Molly a week before their French exam. They were then going to study together. Molly said, "My organisation skills can be helpful, so we have to do this in a systematic way." Molly picked up all his books and threw them in the bookcase in no particular order. Familiar: "So helpful!" he said to her. They had tea. Unfamiliar: "That was systematic!" he said to her. They had tea.
	Without antecedent	Bob had books lying around all over his house; he planned to rearrange his bookcase with Molly a week before their French exam. They were then going to study together. Molly said, "Your sister organised a systematic study group for our French exam; it'll be helpful." Molly picked up all his books and threw them in the bookcase in no particular order. Familiar: "So helpful!" he said to her. They had tea.

		Unfamiliar: "That was systematic!" he said to her. They had tea.	

2.			
Literal	With antecedence	Rose and Nell were taking part in a debating competition together. Rose had to give the closing statement in the final the next day; on the previous evening, the girls went out for a drink. Rose said, "This will go well because I'll give a very interesting speech." The next day, Rose was very confident and gave a very persuasive speech. Familiar: "Well that went well!" Nell said to her. They left. Unfamiliar: "Your speech was so interesting!" Nell said to her. They left.
	Without antecedent	Rose and Nell were taking part in a debating competition together. Rose had to give the closing statement in the final the next day; on the previous evening, the girls went out for a drink. Rose said, "You're so well dressed! I like the interesting pattern on your top." The next day, Rose was very confident and gave a very persuasive speech.

		Familiar: "Well that went well!" Nell said to her. They left. Unfamiliar: "Your speech was so interesting!" Nell said to her. They left.
Sarcastic	With antecedence	Rose and Nell were taking part in a debating competition together. Rose had to give the closing statement in the final the next day; on the previous evening, the girls went out for a drink. Rose said, "This will go well because I'll give a very interesting speech." The next day, Rose gave a long and utterly boring speech. Familiar: "Well that went well!" Nell said to her. They left. Unfamiliar: "Your speech was so interesting!" Nell said to her. They left.
	Without antecedent	Rose and Nell were taking part in a debating competition together. Rose had to give the closing statement in the final the next day; on the previous evening, the girls went out for a drink. Rose said, "You're so well dressed! I like the interesting pattern on your top." The next day, Rose gave a long and utterly boring speech. Familiar: "Well that went well!" Nell said to her. They left. Unfamiliar: "Your speech was so interesting!" Nell said to her. They left.

3.		
Literal	With antecedence	Ross was watching TV when his housemate Kerry came to say that there's a big spider in her room. Spiders usually never bothered Ross, so Kerry was sure he could help her. Ross said, "I'll catch it, I want to be helpful and am not at all afraid of spiders." Ross caught the spider quickly and threw it out of the house. Familiar: "That was really helpful!" she said to him. He went to his room. Unfamiliar: "You're really not afraid!" she said to him. He went to his room.
	Without antecedent	Ross was watching TV when his housemate Kerry came to say that there's a big spider in her room. Spiders usually never bothered Ross, so Kerry was sure he could help her. Ross said, "I'm afraid I'll miss the end of this show I'm watching about helpful inventions." Ross caught the spider quickly and threw it out of the house. Familiar: "That was really helpful!" she said to him. He went to his room. Unfamiliar: "You're really not afraid!" she said to him. He went to his room.
Sarcastic	With antecedence	Ross was watching TV when his housemate Kerry came to say that there's a big spider in her room. Spiders

		usually never bothered Ross, so Kerry was sure he could help her. Ross said, "I'll catch it, I want to be helpful and am not at all afraid of spiders." When Ross saw the spider he was repelled by it and ran away. Familiar: "That was really helpful!" she said to him. He went to his room. Unfamiliar: "You're really not afraid!" she said to him. He went to his room.
	Without antecedent	Ross was watching TV when his housemate Kerry came to say that there's a big spider in her room. Spiders usually never bothered Ross, so Kerry was sure he could help her. Ross said, "I'm afraid I'll miss the end of this show I'm watching about helpful inventions." When Ross saw the spider he was repelled by it and ran away. Familiar: "That was really helpful!" she said to him. He went to his room. Unfamiliar: "You're really not afraid!" she said to him. He went to his room.

4.		
Literal	With antecedence	Will and Dave wanted to go surfing on Friday; Dave was going to rent a car for the trip. Afterwards, they

		were going to Dave's sister's birthday party. Dave said, "I have a brilliant idea for which car I should rent; it'll be great." Before the surf trip, Dave showed up with a mini van big enough to carry all their equipment. Familiar: "This is brilliant!" Will said to Dave. They drove off. Unfamiliar: "This car is great!" Will said to Dave. They drove off.
	Without antecedent	Will and Dave wanted to go surfing on Friday; Dave was going to rent a car for the trip. Afterwards, they were going to Dave's sister's birthday party. Dave said, "I need a brilliant idea for my sister's present; I don't have any great ones yet." Before the surf trip, Dave showed up with a mini van big enough to carry all their equipment. Familiar: "This is brilliant!" Will said to Dave. They drove off. Unfamiliar: "This car is great!" Will said to Dave. They drove off.
Sarcastic	With antecedence	Will and Dave wanted to go surfing on Friday; Dave was going to rent a car for the trip. Afterwards, they were going to Dave's sister's birthday party. Dave said, "I have a brilliant idea for which car I should rent; it'll be great." Before the surf trip, Dave showed up with a Mini Cooper in which they couldn't fit their

		equipment.
		Familiar: "This is brilliant!" Will said to Dave. They drove off.
		Unfamiliar: "This car is great!" Will said to Dave. They drove off.
	Without antecedent	Will and Dave wanted to go surfing on Friday; Dave was going to rent a car for the trip. Afterwards, they were going to Dave's sister's birthday party. Dave said, "I need a brilliant idea for my sister's present; I don't have any great ones yet." Before the surf trip, Dave showed up with a Mini Cooper in which they couldn't fit their equipment. Familiar: "This is brilliant!" Will said to Dave. They drove off. Unfamiliar: "This car is great!" Will said to Dave. They drove off.

5.		
Literal	With antecedence	Peter and Becca were trying to solve a brainteaser online and they only had one more attempt left. Becca was in a hurry to go and buy a new phone. Peter said, "I've always been the smart one; I think I have an

		ingenious idea!" He punched in a new answer for the brainteaser, and it turned out to be the correct one. Familiar: "That was smart!" Becca said to him. She went to town. Unfamiliar: "Your solution was ingenious!" Becca said to him. She went to town.
	Without antecedent	Peter and Becca were trying to solve a brainteaser online and they only had one more attempt left. Becca was in a hurry to go and buy a new phone. Peter said, "I recently saw an ad for a very ingenious smart phone; it'll be released on the market soon." He punched in a new answer for the brainteaser, and it turned out to be the correct one. Familiar: "That was smart!" Becca said to him. She went to town. Unfamiliar: "Your solution was ingenious!" Becca said to him. She went to town.
Sarcastic	With antecedence	Peter and Becca were trying to solve a brainteaser online and they only had one more attempt left. Becca was in a hurry to go and buy a new phone. Peter said, "I've always been the smart one; I think I have an ingenious idea!" He punched in a new answer for the brainteaser, and it turned out to be the wrong one. Familiar: "That was smart!" Becca said to him. She went to town.

		Unfamiliar: "Your solution was ingenious!" Becca said to him. She went to town.
	Without antecedent	Peter and Becca were trying to solve a brainteaser online and they only had one more attempt left. Becca was in a hurry to go and buy a new phone. Peter said, "I recently saw an ad for a very ingenious smart phone; it'll be released on the market soon." He punched in a new answer for the brainteaser, and it turned out to be the wrong one.

Familiar: "That was smart!" Becca said to him. She went to town.

Unfamiliar: "Your solution was ingenious!" Becca said to him. She went to town. |

6.		
Literal	With antecedence	Pablo and Alan were about to watch "Inception" for the first time, a difficult movie to understand. Before the movie, they ordered some food and had a chat. Alan said, "I'm super attentive so I'm sure I will be well able to follow the plot." During the movie, Alan knew exactly what the plot was about at all times and understood everything.

		Familiar: "You're so attentive!" Pablo said to him. They took a break. Unfamiliar: "You follow so well!" Pablo said to him. They took a break.
	Without antecedent	Pablo and Alan were about to watch "Inception" for the first time, a difficult movie to understand. Before the movie, they ordered some food and had a chat. Alan said, "That new girl in our class is always so attentive! I bet she'll do well in the exams." During the movie, Alan knew exactly what the plot was about at all times and understood everything. Familiar: "You're so attentive!" Pablo said to him. They took a break. Unfamiliar: "You follow so well!" Pablo said to him. They took a break.
Sarcastic	With antecedence	Pablo and Alan were about to watch "Inception" for the first time, a difficult movie to understand. Before the movie, they ordered some food and had a chat. Alan said, "I'm super attentive so I'm sure I will be well able to follow the plot." During the movie, Alan looked up at the TV screen and asked what had just happened. Familiar: "You're so attentive!" Pablo said to him. They took a break.

		Unfamiliar: "You follow so well!" Pablo said to him. They took a break.
	Without antecedent	Pablo and Alan were about to watch "Inception" for the first time, a difficult movie to understand. Before the movie, they ordered some food and had a chat. Alan said, "That new girl in our class is always so attentive! I bet she'll do well in the exams." During the movie, Alan looked up at the TV screen and asked what had just happened. Familiar: "You're so attentive!" Pablo said to him. They took a break. Unfamiliar: "You follow so well!" Pablo said to him. They took a break.

7.		
Literal	With antecedence	Ivy was going to cook a new recipe for her sister Jade. Jade came to Ivy's house straight after gym. Ivy said, "It is very important for me that the environment in which I am cooking is perfectly healthy." While Ivy was cooking, Jade noticed that the kitchen had been cleaned to perfection. Familiar: "This is so healthy!" Jade said to her. They had some wine.

		Unfamiliar: "Your kitchen is so healthy!" Jade said to her. They had some wine.
	Without antecedent	Ivy was going to cook a new recipe for her sister Jade. Jade came to Ivy's house straight after gym. Ivy said, "It's so healthy that you go to the gym so often. Good for you!" While Ivy was cooking, Jade noticed that the kitchen had been cleaned to perfection. Familiar: "This is so healthy!" Jade said to her. They had some wine. Unfamiliar: "Your kitchen is so healthy!" Jade said to her. They had some wine.
Sarcastic	With antecedence	Ivy was going to cook a new recipe for her sister Jade. Jade came to Ivy's house straight after gym. Ivy said, "It is very important for me that the environment in which I am cooking is perfectly healthy." While Ivy was cooking, Jade noticed that her cats were climbing all over the work surfaces. Familiar: "This is so healthy!" Jade said to her. They had some wine. Unfamiliar: "Your kitchen is so healthy!" Jade said to her. They had some wine.
	Without antecedent	Ivy was going to cook a new recipe for her sister Jade. Jade came to Ivy's house straight after gym. Ivy said, "It's so healthy that you go to the gym so often. Good for you!" While Ivy was cooking, Jade noticed that

		her cats were climbing all over the work surfaces.
		Familiar: "This is so healthy!" Jade said to her. They had some wine.
		Unfamiliar: "Your kitchen is so healthy!" Jade said to her. They had some wine.

8.

Literal	With antecedence	Lucy had to write an essay on the Cold War and Bria had sent her a documentary on it. The next day, they both went to a career event organised by their university. Bria said, "The video I sent you is very informative, I'm sure it'll be useful." After watching the video that Bria had sent, Lucy had learned all she needed to know. Familiar: "How informative!" she said to Bria. She started writing. Unfamiliar: "Your clip was useful!" she said to Bria. She started writing.
	Without antecedent	Lucy had to write an essay on the Cold War and Bria had sent her a documentary on it. The next day, they both went to a career event organised by their university. Bria said, "This event is very informative and

		useful for us." After watching the video that Bria had sent, Lucy had learned all she needed to know.
		Familiar: "How informative!" she said to Bria. She started writing.
		Unfamiliar: "Your clip was useful!" she said to Bria. She started writing.
Sarcastic	With antecedence	Lucy had to write an essay on the Cold War and Bria had sent her a documentary on it. The next day, they both went to a career event organised by their university. Bria said, "The video I sent you is very informative, I'm sure it'll be useful." In the evening, after watching the video that Bria had sent, Lucy hadn't learned anything new.
		Familiar: "How informative!" she said to Bria. She started writing.
		Unfamiliar: "Your clip was useful!" she said to Bria. She started writing.
	Without antecedent	Lucy had to write an essay on the Cold War and Bria had sent her a documentary on it. The next day, they both went to a career event organised by their university. Bria said, "This event is very informative and useful for us." In the evening, after watching the video that Bria had sent, Lucy hadn't learned anything new.

		Familiar: "How informative!" she said to Bria. She started writing.
		Unfamiliar: "Your clip was useful!" she said to Bria. She started writing.

9.		
Literal	With antecedence	Jack went to the morning meeting where Fiona was going to pitch her new idea to the group. On the way there, they walked together, having a chat. Fiona said, "I am confident that I can give a very clear presentation to the group today." During the meeting, she gave a very efficient and eloquent speech. Familiar: "That was clear!" Jack said to her. He went for lunch. Unfamiliar: "Your pitch was so clear!" Jack said to her. He went for lunch.
	Without antecedent	Jack went to the morning meeting where Fiona was going to pitch her new idea to the group. On the way there, they walked together, having a chat. Fiona said, "I was asked to clear Pam's cupboard if I want to use it now that she's left, but that's surely not my job." During the meeting, she gave a very efficient and eloquent speech.

		Familiar: "That was clear!" Jack said to her. He went for lunch. Unfamiliar: "Your pitch was so clear!" Jack said to her. He went for lunch.
Sarcastic	With antecedence	Jack went to the morning meeting where Fiona was going to pitch her new idea to the group. On the way there, they walked together, having a chat. Fiona said, "I am confident that I can give a very clear presentation to the group today." During the meeting, she tried and failed to describe her idea to the group. Familiar: "That was clear!" Jack said to her. He went for lunch. Unfamiliar: "Your pitch was so clear!" Jack said to her. He went for lunch.
	Without antecedent	Jack went to the morning meeting where Fiona was going to pitch her new idea to the group. On the way there, they walked together, having a chat. Fiona said, "I was asked to clear Pam's cupboard if I want to use it now that she's left, but that's surely not my job." During the meeting, she tried and failed to describe her idea to the group. Familiar: "That was clear!" Jack said to her. He went for lunch. Unfamiliar: "Your pitch was so clear!" Jack said to her. He went for lunch.

10.		
Literal	With antecedence	Nora and Mary were going to start their exam period soon and were now studying all day. They had about two weeks left before their first exam. Mary said, "I'm very fast these days and revising very well." When Nora entered Mary's room, she was at the last chapter. Familiar: "I see your revision is going well!" she said to Mary. Nora left. Unfamiliar: "Your work is progressing fast!" she said to Mary. Nora left.
	Without antecedent	Nora and Mary were going to start their exam period soon and were now studying all day. They had about two weeks left before their first exam. Mary said, "Exams will come fast but we'll surely do well after all this revising." When Nora entered Mary's room, she was at the last chapter. Familiar: "I see your revision is going well!" she said to Mary. Nora left. Unfamiliar: "Your work is progressing fast!" she said to Mary. Nora left.
Sarcastic	With antecedence	Nora and Mary were going to start their exam period soon and were now studying all day. They had about two weeks left before their first exam. Mary said, "I'm very fast these days and revising very well." When

		Nora entered Mary's room, she was chatting on Facebook. Familiar: "I see your revision is going well!" she said to Mary. Nora left. Unfamiliar: "Your work is progressing fast!" she said to Mary. Nora left.
	Without antecedent	Nora and Mary were going to start their exam period soon and were now studying all day. They had about two weeks left before their first exam. Mary said, "Exams will come fast but we'll surely do well after all this revising." When Nora entered Mary's room, she was chatting on Facebook. Familiar: "I see your revision is going well!" she said to Mary. Nora left. Unfamiliar: "Your work is progressing fast!" she said to Mary. Nora left.

11.		
Literal	With antecedence	Owen and Maya were painting their room, and there were buckets of paint lying all over the floor. They didn't hire any help, and wanted to do the painting themselves. Maya said, "Don't worry, I'm good at this, I'll be careful when I walk around!" When Maya came into the room, she skilfully avoided stepping in a

		bucket.
		Familiar: "So careful!" Owen said to her. They kept on painting.
		Unfamiliar: "You are good!" Owen said to her. They kept on painting.
	Without antecedent	Owen and Maya were painting their room, and there were buckets of paint lying all over the floor. They didn't hire any help, and wanted to do the painting themselves. Maya said, "We have to do a good job and be careful not to end up with unevenly painted walls." When Maya came into the room, she skilfully avoided stepping in a bucket. Familiar: "So careful!" Owen said to her. They kept on painting. Unfamiliar: "You are good!" Owen said to her. They kept on painting.
Sarcastic	With antecedence	Owen and Maya were painting their room, and there were buckets of paint lying all over the floor. They didn't hire any help, and wanted to do the painting themselves. Maya said, "Don't worry, I'm good at this, I'll be careful when I walk around!" When Maya came into the room, she didn't look and stepped right in a bucket.

		Familiar: "So careful!" Owen said to her. They kept on painting.
		Unfamiliar: "You are good!" Owen said to her. They kept on painting.
	Without antecedent	Owen and Maya were painting their room, and there were buckets of paint lying all over the floor. They didn't hire any help, and wanted to do the painting themselves. Maya said, "We have to do a good job and be careful not to end up with unevenly painted walls." When Maya came into the room, she didn't look and stepped right in a bucket. Familiar: "So careful!" Owen said to her. They kept on painting. Unfamiliar: "You are good!" Owen said to her. They kept on painting.

12.		
Literal	With antecedence	Rachel was a model for her friend Nikki's fashion show. Before the show, they were chatting backstage. Rachel said, "I like to look great and chic when I go on stage." When she was about to go on stage, Rachel had flawless make-up and beautifully fixed hair.

		Familiar: "That's just great!" Nikki said to her. She was nervous. Unfamiliar: "Your look is very chic!" Nikki said to her. She was nervous.
	Without antecedent	Rachel was a model for her friend Nikki's fashion show. Before the show, they were chatting backstage. Rachel said, "The new "Chic Look" store has great products." When she was about to go on stage, Rachel had flawless make-up and beautifully fixed hair. Familiar: "That's just great!" Nikki said to her. She was nervous. Unfamiliar: "Your look is very chic!" Nikki said to her. She was nervous.
Sarcastic	With antecedence	Rachel was a model for her friend Nikki's fashion show. Before the show, they were chatting backstage. Rachel said, "I like to look great and chic when I go on stage." When she was about to go on stage, Rachel's make-up had worn off and her hair was in a terrible state. Familiar: "That's just great!" Nikki said to her. She was nervous. Unfamiliar: "Your look is very chic!" Nikki said to her. She was nervous.
	Without antecedent	Rachel was a model for her friend Nikki's fashion show. Before the show, they were chatting backstage.

		Rachel said, "The new "Chic Look" store has great products." When she was about to go on stage, Rachel's make-up had worn off and her hair was in a terrible state. Familiar: "That's just great!" Nikki said to her. She was nervous. Unfamiliar: "Your look is very chic!" Nikki said to her. She was nervous.

13.		
Literal	With antecedence	Ed wanted to introduce his girlfriend to his friend Dan so he invited them both to a rugby game. In the cab there, the boys talked about how Dan's day went. Dan said, "I'll be friendly and polite towards your girlfriend, and we will get along just fine; you'll see." At the game, Dan was very chivalrous towards Ed's girlfriend. Familiar: "How polite!" Ed said to him. Dan went home. Unfamiliar: "Your behaviour was friendly!" Ed said to him. Dan went home.
	Without antecedent	Ed wanted to introduce his girlfriend to his friend Dan so he invited them both to a rugby game. On the cab

		there, the boys talked about how Dan's day went. Dan said, "Today I received what appeared to be a friendly email from the HR manager; it was a polite rejection." At the game, Dan was very chivalrous towards Ed's girlfriend. Familiar: "How polite!" Ed said to him. Dan went home. Unfamiliar: "Your behaviour was friendly!" Ed said to him. Dan went home.
Sarcastic	With antecedence	Ed wanted to introduce his girlfriend to his friend Dan so he invited them both to a rugby game. On the cab there, the boys talked about how Dan's day went. Dan said, "I'll be friendly and polite towards your girlfriend, and we will get along just fine; you'll see." At the game, Dan gave many rude answers to Ed's girlfriend. Familiar: "How polite!" Ed said to him. Dan went home. Unfamiliar: "Your behaviour was friendly!" Ed said to him. Dan went home.
	Without antecedent	Ed wanted to introduce his girlfriend to his friend Dan so he invited them both to a rugby game. On the cab there, the boys talked about how Dan's day went. Dan said, "Today I received what appeared to be a

		friendly email from the HR manager; it was a polite rejection." At the game, Dan gave many rude answers to Ed's girlfriend.
		Familiar: "How polite!" Ed said to him. Dan went home.
		Unfamiliar: "Your behaviour was friendly!" Ed said to him. Dan went home.

14.		
Literal	With antecedence	Jill and Kate had to write a report together on a new product. When they arrived at the office, Jill told Kate that she is babysitting her niece for a few days. Jill said, "I'll be quick today and I will finish my part fast." By 5pm, Jill had finished writing her entire part of the report.
		Familiar: "You're so quick!" Kate said to her. They stayed at work late.
		Unfamiliar: "You've progressed so fast!" Kate said to her. They stayed at work late.
	Without antecedent	Jill and Kate had to write a report together on a new product. When they arrived at the office, Jill told Kate that she is babysitting her niece for a few days. Jill said, "My niece gets bored so fast, she needs to be given

		quick ideas for things to do." By 5pm, Jill had finished writing her entire part of the report. Familiar: "You're so quick!" Kate said to her. They stayed at work late. Unfamiliar: "You've progressed so fast!" Kate said to her. They stayed at work late.
Sarcastic	With antecedence	Jill and Kate had to write a report together on a new product. When they arrived at the office, Jill told Kate that she is babysitting her niece for a few days. Jill said, "I'll be quick today and I will finish my part fast." Three days later, Jill still hadn't written her part of the report. Familiar: "You're so quick!" Kate said to her. They stayed at work late. Unfamiliar: "You've progressed so fast!" Kate said to her. They stayed at work late.
	Without antecedent	Jill and Kate had to write a report together on a new product. When they arrived at the office, Jill told Kate that she is babysitting her niece for a few days. Jill said, "My niece gets bored so fast, she needs to be given quick ideas for things to do." Three days later, Jill still hadn't written her part of the report. Familiar: "You're so quick!" Kate said to her. They stayed at work late. Unfamiliar: "You've progressed so fast!" Kate said to her. They stayed at work late.

15.		
Literal	With antecedence	Sam and Tim were in a bar and wanted another round but ran out of money. They started thinking of a clever way in which they could get a free drink. Tim said, "I know what to do to get us free drinks; it'll be impressive, you'll see; I can be very charming." Tim went up to the barmaid, made a few witty jokes and got them free drinks. Familiar: "How charming!" Sam said to him. They went home. Unfamiliar: "Your attempt was impressive!" Sam said to him. They went home.
	Without antecedent	Sam and Tim were in a bar and wanted another round but ran out of money. They started thinking of a clever way in which they could get a free drink. Tim said, "This place is so charming, and the selection of beers is impressive." Tim went up to the barmaid, made a few witty jokes and got them free drinks. Familiar: "How charming!" Sam said to him. They went home. Unfamiliar: "Your attempt was impressive!" Sam said to him. They went home.
Sarcastic	With antecedence	Sam and Tim were in a bar and wanted another round but ran out of money. They started thinking of a

		clever way in which they could get a free drink. Tim said, "I know what to do to get us free drinks; it'll be impressive, you'll see; I can be very charming." Tim went up to the barmaid, made a bad joke and the barmaid just laughed at him. Familiar: "How charming!" Sam said to him. They went home. Unfamiliar: "Your attempt was impressive!" Sam said to him. They went home.
	Without antecedent	Sam and Tim were in a bar and wanted another round but ran out of money. They started thinking of a clever way in which they could get a free drink. Tim said, "This place is so charming, and the selection of beers is impressive." Tim went up to the barmaid, made a bad joke and the barmaid just laughed at him. Familiar: "How charming!" Sam said to him. They went home. Unfamiliar: "Your attempt was impressive!" Sam said to him. They went home.

16.		
Literal	With antecedence	Paul and Matt went camping together for the weekend. On the way there, they planned to stop by a newly

		opened hiking store. Matt said, "It'll be great! I'll be well prepared on this trip, I already have all the gear." In the end, Matt came on the trip with everything they needed. Familiar: "That's just great!" Paul said to him. They were hungry. Unfamiliar: "You're equipped so well!" Paul said to him. They were hungry.
	Without antecedent	Paul and Matt went camping together for the weekend. On the way there, they planned to stop by a newly opened hiking store. Matt said, "This is a great store for any kind of gear. They're always stocked up really well." In the end, Matt came on the trip with everything they needed. Familiar: "That's just great!" Paul said to him. They were hungry. Unfamiliar: "You're equipped so well!" Paul said to him. They were hungry.
Sarcastic	With antecedence	Paul and Matt went camping together for the weekend. On the way there, they planned to stop by a newly opened hiking store. Matt said, "It'll be great! I'll be well prepared on this trip, I already have all the gear." In the end, Matt came on the trip with nothing but plastic cutlery. Familiar: "That's just great!" Paul said to him. They were hungry.

		Unfamiliar: "You're equipped so well!" Paul said to him. They were hungry.
	Without antecedent	Paul and Matt went camping together for the weekend. On the way there, they planned to stop by a newly opened hiking store. Matt said, "This is a great store for any kind of gear. They're always stocked up really well." In the end, Matt came on the trip with nothing but plastic cutlery. Familiar: "That's just great!" Paul said to him. They were hungry. Unfamiliar: "You're equipped so well!" Paul said to him. They were hungry.

17.		
Literal	With antecedence	Cindy had the flu so she was staying at home. Her and her brother Troy were graduating in a few days and she was hoping to get better by then. Troy texted her and said, "I'll be a helpful brother today and bring you the perfect cure." When he got home, he brought her plenty of medicine and her favourite soup. Familiar: "That was really helpful!" she said to him. Troy cooked. Unfamiliar: "This is perfect for me!" she said to him. Troy cooked.

	Without antecedent	Cindy had the flu so she was staying at home. Her and her brother Troy were graduating in a few days and she was hoping to get better by then. Troy texted her and said, "I found a perfect restaurant for our graduation dinner using a helpful app on my phone!" When he got home he brought her plenty of medicine and her favourite soup. Familiar: "That was really helpful!" she said to him. Troy cooked. Unfamiliar: "This is perfect for me!" she said to him. Troy cooked.
Sarcastic	With antecedence	Cindy had the flu so she was staying at home. Her and her brother Troy were graduating in a few days and she was hoping to get better by then. Troy texted her and said, "I'll be a helpful brother today and bring you the perfect cure." When he got home he brought some cold beer that Cindy couldn't drink. Familiar: "That was really helpful!" she said to him. Troy cooked. Unfamiliar: "This is perfect for me!" she said to him. Troy cooked.
	Without antecedent	Cindy had the flu so she was staying at home. Her and her brother Troy were graduating in a few days and she was hoping to get better by then. Troy texted her and said, "I found a perfect restaurant for our

		graduation dinner using a helpful app on my phone!" When he got home he brought some cold beer that Cindy couldn't drink. Familiar: "That was really helpful!" she said to him. Troy cooked. Unfamiliar: "This is perfect for me!" she said to him. Troy cooked.

18.		
Literal	With antecedence	Lily and Kim were about to set off on a long journey. They were going to be on the road for two weeks. The day before, Kim said, "I'm a great travel companion; I am very organised and thoughtful." When they were about to leave, Lily saw that Kim had remembered to fill up the petrol tank. Familiar: "That's just great!" she said to Kim. They drove off. Unfamiliar: "Your action was thoughtful!" she said to Kim. They drove off.
	Without antecedent	Lily and Kim were about to set off on a long journey. They were going to be on the road for two weeks. The day before, Kim said, "I'll bring a great movie for us to watch; it has such a thoughtful approach to

		life." When they were about to leave, Lily saw that Kim had remembered to fill up the petrol tank. Familiar: "That's just great!" she said to Kim. They drove off. Unfamiliar: "Your action was thoughtful!" she said to Kim. They drove off.
Sarcastic	With antecedence	Lily and Kim were about to set off on a long journey. They were going to be on the road for two weeks. The day before, Kim said, "I'm a great travel companion; I am very organised and thoughtful." When they were about to leave, Lily saw that Kim had forgotten to fill up the petrol tank. Familiar: "That's just great!" she said to Kim. They drove off. Unfamiliar: "Your action was thoughtful!" she said to Kim. They drove off.
	Without antecedent	Lily and Kim were about to set off on a long journey. They were going to be on the road for two weeks. The day before, Kim said, "I'll bring a great movie for us to watch; it has such a thoughtful approach to life." When they were about to leave, Lily saw that Kim had forgotten to fill up the petrol tank. Familiar: "That's just great!" she said to Kim. They drove off. Unfamiliar: "Your action was thoughtful!" she said to Kim. They drove off.

19.		
Literal	With antecedence	Cara and Eve were in a supermarket doing grocery shopping and were queuing to pay. They had a lot of cooking to do back home so they were in a hurry. Eve said, "I'll do a great job packing, I like to organise groceries in clever ways." Eve then managed to fit everything in just two bags. Familiar: "That was clever!" Cara said to her. They drove home. Unfamiliar: "You packed them great!" Cara said to her. They drove home.
	Without antecedent	Cara and Eve were in a supermarket doing grocery shopping and were queuing to pay. They had a lot of cooking to do back home so they were in a hurry. Eve said, "Wouldn't it be great if they invented a clever robot to do the packing for us?" Eve then managed to fit everything in just two bags. Familiar: "That was clever!" Cara said to her. They drove home. Unfamiliar: "You packed them great!" Cara said to her. They drove home.
Sarcastic	With antecedence	Cara and Eve were in a supermarket doing grocery shopping and were queuing to pay. They had a lot of cooking to do back home so they were in a hurry. Eve said, "I'll do a great job packing, I like to organise

		groceries in clever ways." Eve then packed the eggs under the turkey and broke them all.
		Familiar: "That was clever!" Cara said to her. They drove home.
		Unfamiliar: "You packed them great!" Cara said to her. They drove home.
	Without antecedent	Cara and Eve were in a supermarket doing grocery shopping and were queuing to pay. They had a lot of cooking to do back home so they were in a hurry. Eve said, "Wouldn't it be great if they invented a clever robot to do the packing for us?" Eve then packed the eggs under the turkey and broke them all. Familiar: "That was clever!" Cara said to her. They drove home. Unfamiliar: "You packed them great!" Cara said to her. They drove home.

20.		
Literal	With antecedence	One winter Ollie caught the flu and was so sick that he couldn't get out of bed. At the same time, the heating in his house was broken and the landlady wouldn't fix it. His girlfriend Hannah said, "I will be a great and overwhelmingly caring girlfriend and will make sure you get better quickly." Hannah then

		brought him soup every day until he was all better.
		Familiar: "You're a great help!" he said to her. She blushed.
		Unfamiliar: "Your care is overwhelming!" he said to her. She blushed.
	Without antecedent	One winter Ollie caught the flu and was so sick that he couldn't get out of bed. At the same time, the heating in his house was broken and the landlady wouldn't fix it. His girlfriend Hannah said, "I have an overwhelming feeling that your new landlady is not a great person." Hannah then brought him soup every day until he was all better. Familiar: "You're a great help!" he said to her. She blushed. Unfamiliar: "Your care is overwhelming!" he said to her. She blushed.
Sarcastic	With antecedence	One winter Ollie caught the flu and was so sick that he couldn't get out of bed. At the same time, the heating in his house was broken and the landlady wouldn't fix it. His girlfriend Hannah said, "I will be a great and overwhelmingly caring girlfriend and will make sure you get better quickly." However, Hannah didn't visit him at all while he was sick.

| | | Familiar: "You're a great help!" he said to her. She blushed.

Unfamiliar: "Your care is overwhelming!" he said to her. She blushed. |
| | Without antecedent | One winter Ollie caught the flu and was so sick that he couldn't get out of bed. At the same time, the

heating in his house was broken and the landlady wouldn't fix it. His girlfriend Hannah said, "I have an

overwhelming feeling that your new landlady is not a great person." Hannah then didn't visit him at all

while he was sick.

Familiar: "You're a great help!" he said to her. She blushed.

Unfamiliar: "Your care is overwhelming!" he said to her. She blushed. |

21.		
Literal	With antecedence	Brooke and Ian decided to go on a mountain hike on their first day of holiday in Switzerland. Before they left for the hike, they asked for some directions from the receptionist. Brooke said, "I'll be quick this morning, I bet I will reach the top very fast." During the hike, she was very energetic and got all the way to

		the top in an hour. Familiar: "That was quick!" Ian said to her. They took many photographs. Unfamiliar: "You hiked really fast!" Ian said to her. They took many photographs.
	Without antecedent	Brooke and Ian decided to go on a mountain hike on their first day of holiday in Switzerland. Before they left for the hike, they asked for some directions from the receptionist. Brooke said, "Did you notice our receptionist? He's so quick and speaks so fast." During the hike, she was very energetic and got all the way to the top in an hour. Familiar: "That was quick!" Ian said to her. They took many photographs. Unfamiliar: "You hiked really fast!" Ian said to her. They took many photographs.
Sarcastic	With antecedence	Brooke and Ian decided to go on a mountain hike on their first day of holiday in Switzerland. Before they left for the hike, they asked for some directions from the receptionist. Brooke said, "I'll be quick this morning, I bet I will reach the top very fast." During the hike, she was very slow and barely reached the top after six hours.

		Familiar: "That was quick!" Ian said to her. They took many photographs.
		Unfamiliar: "You hiked really fast!" Ian said to her. They took many photographs.
	Without antecedent	Brooke and Ian decided to go on a mountain hike on their first day of holiday in Switzerland. Before they left for the hike, they asked for some directions from the receptionist. Brooke said, "Did you notice our receptionist? He's so quick and speaks so fast." During the hike, she was very slow and barely reached the top after six hours. Familiar: "That was quick!" Ian said to her. They took many photographs. Unfamiliar: "You hiked really fast!" Ian said to her. They took many photographs.

22.		
Literal	With antecedence	Noah and Lola were invited to the birthday party of a common friend and were looking forward to it. The day before, they went to town together. Lola said, "I had a great idea for what present we should buy him, it is incredible." The present that Lola bought for their friend was a book which he loved.

		Familiar: "That was a great idea!" Noah said to Lola. Lola nodded. Unfamiliar: "That gift is incredible!" Noah said to Lola. Lola nodded.
	Without antecedent	Noah and Lola were invited to the birthday party of a common friend and were looking forward to it. The day before, they went to town together. Lola said, "I have a great idea for this summer, we should go on an incredible trip to Japan." The present that Lola bought for their friend was a book which he loved. Familiar: "That was a great idea!" Noah said to Lola. Lola nodded. Unfamiliar: "That gift is incredible!" Noah said to Lola. Lola nodded.
Sarcastic	With antecedence	Noah and Lola were invited to the birthday party of a common friend and were looking forward to it. The day before, they went to town together. Lola said, "I had a great idea for what present we should buy him, it is incredible." The present that Lola bought for their friend was a book which he hated. Familiar: "That was a great idea!" Noah said to Lola. Lola nodded. Unfamiliar: "That gift is incredible!" Noah said to Lola. Lola nodded.
	Without antecedent	Noah and Lola were invited to the birthday party of a common friend and were looking forward to it. The

<table>
<tr><td colspan="3">day before, they went to town together. Lola said, "I have a great idea for this summer, we should go on an incredible trip to Japan." The present that Lola bought for their friend was a book which he hated.

Familiar: "That was a great idea!" Noah said to Lola. Lola nodded.

Unfamiliar: "That gift is incredible!" Noah said to Lola. Lola nodded.</td></tr>
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23.		
Literal	With antecedence	Eric and Ally had to give a presentation together in front of their team. They were working on a new project together with their architect colleagues. Ally said, "I'll write the slides, I'm very organised and can do well on this task." Ally's slides were easy to follow and structured perfectly. Familiar: "Well that went well!" Eric said to her. He went for lunch. Unfamiliar: "Your slides are designed so well!" Eric said to her. He went for lunch.
	Without antecedent	Eric and Ally had to give a presentation together in front of their team. They were working on a new project together with their architect colleagues. Ally said, "I went to the event organised by the architects

		yesterday, they did so well planning the new building." Ally's slides were easy to follow and structured perfectly. Familiar: "Well that went well!" Eric said to her. He went for lunch. Unfamiliar: "Your slides are designed so well!" Eric said to her. He went for lunch.
Sarcastic	With antecedence	Eric and Ally had to give a presentation together in front of their team. They were working on a new project together with their architect colleagues. Ally said, "I'll write the slides, I'm very organised and can do well on this task." Ally's slides were hard to follow and very badly structured. Familiar: "Well that went well!" Eric said to her. He went for lunch. Unfamiliar: "Your slides are designed so well!" Eric said to her. He went for lunch.
	Without antecedent	Eric and Ally had to give a presentation together in front of their team. They were working on a new project together with their architect colleagues. Ally said, "I went to the event organised by the architects yesterday, they did so well planning the new building." Ally's slides were hard to follow and very badly structured. Familiar: "Well that went well!" Eric said to her. He went for lunch. Unfamiliar: "Your slides are designed so well!" Eric said to her. He went for lunch.

24.		
Literal	With antecedence	Betty and Lee went on their lunch break at the buffet on campus. Betty had been working until midnight the day before and was feeling tired. Lee said, "I like to have healthy foods and carefully choose what I put on my plate." At the buffet, Lee filled his plate with veggies, and had a glass of water. Familiar: "This is so healthy!" she said to him. They had a nice chat. Unfamiliar: "You pick your food so carefully!" she said to him. They had a nice chat.
	Without antecedent	Betty and Lee went on their lunch break at the buffet on campus. Betty had been working until midnight the day before and was feeling tired. Lee said, "You should choose your working hours more carefully; it's not healthy to overwork yourself." At the buffet, Lee filled his plate with veggies, and had a glass of water. Familiar: "This is so healthy!" she said to him. They had a nice chat. Unfamiliar: "You pick your food so carefully!" she said to him. They had a nice chat.
Sarcastic	With antecedence	Betty and Lee went on their lunch break at the buffet on campus. Betty had been working until midnight the day before and was feeling tired. Lee said, "I like to have healthy foods and carefully choose what I put on

		my plate." At the buffet, Lee filled his plate with fries, a cheeseburger, and a side of onion rings.
		Familiar: "This is so healthy!" she said to him. They had a nice chat.
		Unfamiliar: "You pick your food so carefully!" she said to him. They had a nice chat.
	Without antecedent	Betty and Lee went on their lunch break at the buffet on campus. Betty had been working until midnight the day before and was feeling tired. Lee said, "You should choose your working hours more carefully; it's not healthy to overwork yourself." At the buffet, Lee filled his plate with fries, a cheeseburger, and a side of onion rings.
		Familiar: "This is so healthy!" she said to him. They had a nice chat.
		Unfamiliar: "You pick your food so carefully!" she said to him. They had a nice chat.

25.		
Literal	With antecedence	Dean and Chloe were on holiday in Valencia for a week. They travelled by coach because they wanted to be able to enjoy the scenery. Chloe said to Dean, "We will have so much fun here; I will choose something

		exciting for tomorrow." Chloe suggested they go and watch the Formula 1 race the next day, Dean's favourite sport.
		Familiar: "How exciting!" he said to her. They went out.
		Unfamiliar: "Your suggestion is exciting!" he said to her. They went out.
	Without antecedent	Dean and Chloe were on holiday in Valencia for a week. They travelled by coach because they wanted to be able to enjoy the scenery. Chloe said to Dean, "The coach trip here was such fun! The scenery was very exciting." Chloe suggested they go and watch the Formula 1 race the next day, Dean's favourite sport.
		Familiar: "How exciting!" he said to her. They went out.
		Unfamiliar: "Your suggestion is exciting!" he said to her. They went out.
Sarcastic	With antecedence	Dean and Chloe were on holiday in Valencia for a week. They travelled by coach because they wanted to be able to enjoy the scenery. Chloe said to Dean, "We will have so much fun here; I will choose something exciting for tomorrow." Chloe suggested they stay in the hotel and watch TV the next day, which was quite boring.

		Familiar: "How exciting!" he said to her. They went out.
		Unfamiliar: "Your suggestion is exciting!" he said to her. They went out.
	Without antecedent	Dean and Chloe were on holiday in Valencia for a week. They travelled by coach because they wanted to be able to enjoy the scenery. Chloe said to Dean, "The coach trip here was such fun! The scenery was very exciting." Chloe suggested they stay in the hotel and watch TV the next day, which was quite boring. Familiar: "How exciting!" he said to her. They went out. Unfamiliar: "Your suggestion is exciting!" he said to her. They went out.

26.		
Literal	With antecedence	Harry and Tara went ice-skating together at the weekend. Before going to the ice-rink, they went for a cup of coffee. Harry said, "I am quite amazing at skating and can do impressive turns." When Harry later got on the ice, he looked very professional, and successfully did many kinds of turns. Familiar: "That's amazing!" Tara said to him. They took some photos.

		Unfamiliar: "Your moves are impressive!" Tara said to him. They took some photos.
	Without antecedent	Harry and Tara went ice-skating together at the weekend. Before going to the ice-rink, they went for a cup of coffee. Harry said, "My brother won the "Amazing Chef" in yesterday's competition for baking an impressive cake." When Harry later got on the ice, he looked very professional, and successfully did many kinds of turns. Familiar: "That's amazing!" Tara said to him. They took some photos. Unfamiliar: "Your moves are impressive!" Tara said to him. They took some photos.
Sarcastic	With antecedence	Harry and Tara went ice-skating together at the weekend. Before going to the ice-rink, they went for a cup of coffee. Harry said, "I am quite amazing at skating and can do impressive turns." When Harry later got on the ice, he could barely stand up, and couldn't do any turns at all. Familiar: "That's amazing!" Tara said to him. They took some photos. Unfamiliar: "Your moves are impressive!" Tara said to him. They took some photos.
	Without antecedent	Harry and Tara went ice-skating together at the weekend. Before going to the ice-rink, they went for a cup

		of coffee. Harry said, "My brother won the "Amazing Chef" in yesterday's competition for baking an impressive cake." When Harry later got on the ice, he could barely stand up, and couldn't do any turns at all. Familiar: "That's amazing!" Tara said to him. They took some photos. Unfamiliar: "Your moves are impressive!" Tara said to him. They took some photos.

27.		
Literal	With antecedence	Greg and Rick were PhD students. On their first day at the office, they went for lunch at the campus cafe. Greg said, "I am a very tidy person and I like things to be well-ordered all the time." The next day as Rick came in, he noticed that Greg had alphabetically arranged all their journal articles. Familiar: "You're so tidy!" Rick said to him. They had a meeting. Unfamiliar: "Our office is well-ordered!" Rick said to him. They had a meeting.
	Without antecedent	Greg and Rick were PhD students. On their first day at the office, they went for lunch at the campus cafe. Greg said, "Last night I saw an episode of a new TV show called Tidy & Well-Ordered; it's pretty bad."

		The next day as Rick came in, he noticed that Greg had alphabetically arranged all their journal articles. Familiar: "You're so tidy!" Rick said to him. They had a meeting. Unfamiliar: "Our office is well-ordered!" Rick said to him. They had a meeting.
Sarcastic	With antecedence	Greg and Rick were PhD students. On their first day at the office, they went for lunch at the campus cafe. Greg said, "I am a very tidy person and I like things to be well-ordered all the time." The next day as Rick came in, he noticed that all of Greg's drafts were randomly thrown all over the floor. Familiar: "You're so tidy!" Rick said to him. They had a meeting. Unfamiliar: "Our office is well-ordered!" Rick said to him. They had a meeting.
	Without antecedent	Greg and Rick were PhD students. On their first day at the office, they went for lunch at the campus cafe. Greg said, "Last night I saw an episode of a new TV show called Tidy & Well-Ordered; it's pretty bad." The next day as Rick came in, he noticed that all of Greg's drafts were randomly thrown all over the floor. Familiar: "You're so tidy!" Rick said to him. They had a meeting. Unfamiliar: "Our office is well-ordered!" Rick said to him. They had a meeting.

28.		
Literal	With antecedence	Adam and Abby were going to go see a movie in the cinema. Then they were planning to go to Adam's friend's fancy dress party in the evening. Adam said, "I chose a movie that is a lot of fun and exactly your type!" The movie that they saw was a light-hearted comedy which Abby loved. Familiar: "Well this is fun!" she said to him. They then had lunch in town. Unfamiliar: "This film is my type!" she said to him. They then had lunch in town.
	Without antecedent	Adam and Abby were going to go see a movie in the cinema. Then they were planning to go to Adam's friend's fancy dress party in the evening. Adam said, "I don't know what type of costume would be fun to wear for the party tonight." The movie that they saw was a light-hearted comedy which Abby loved. Familiar: "Well this is fun!" she said to him. They then had lunch in town. Unfamiliar: "This film is my type!" she said to him. They then had lunch in town.
Sarcastic	With antecedence	Adam and Abby were going to go see a movie in the cinema. Then they were planning to go to Adam's friend's fancy dress party in the evening. Adam said, "I chose a movie that is a lot of fun and exactly your

		type!" The movie that they saw was full of violent scenes which Abby really hated.
		Familiar: "Well this is fun!" she said to him. They then had lunch in town.
		Unfamiliar: "This film is my type!" she said to him. They then had lunch in town.
	Without antecedent	Adam and Abby were going to go see a movie in the cinema. Then they were planning to go to Adam's friend's fancy dress party in the evening. Adam said, "I don't know what type of costume would be fun to wear for the party tonight." The movie that they saw was full of violent scenes which Abby really hated. Familiar: "Well this is fun!" she said to him. They then had lunch in town. Unfamiliar: "This film is my type!" she said to him. They then had lunch in town.

29.		
Literal	With antecedence	Gary and Susan had been taking violin lessons together for 6 months. Before Gary's first public concert, they were standing backstage, chatting. Gary said, "I've always been brilliant at music, which is why my music can be so soothing." When he performed, he played a wonderful tune which impressed everyone.

		Familiar: "That was brilliant!" Susan said to him. They went home. Unfamiliar: "Your performance was soothing!" Susan said to him. They went home.
	Without antecedent	Gary and Susan have been taking violin lessons together for 6 months. Before Gary's first public concert, they were standing backstage, chatting. Gary said, "Wish I could play a duet with a brilliant guitarist; guitar tunes can be so soothing." When Gary performed, he played a wonderful tune which impressed everyone. Familiar: "That was brilliant!" Susan said to him. They went home. Unfamiliar: "Your performance was soothing!" Susan said to him. They went home.
Sarcastic	With antecedence	Gary and Susan have been taking violin lessons together for 6 months. Before Gary's first public concert, they were standing backstage, chatting. Gary said, "I've always been brilliant at music, which is why my music can be so soothing." When he performed, he only made very loud and dissonant noises. Familiar: "That was brilliant!" Susan said to him. They went home. Unfamiliar: "Your performance was soothing!" Susan said to him. They went home.
	Without antecedent	Gary and Susan have been taking violin lessons together for 6 months. Before Gary's first public concert,

		they were standing backstage, chatting. Gary said, "Wish I could play a duet with a brilliant guitarist; guitar tunes can be so soothing." When Gary performed, he only made very loud and dissonant noises. Familiar: "That was brilliant!" Susan said to him. They went home. Unfamiliar: "Your performance was soothing!" Susan said to him. They went home.

30.		
Literal	With antecedence	Josh and Jane decided to go surfing at the weekend. During the week, they went shopping for some surfing equipment they needed. Josh said, "I am brilliant at this sport because I've always been very athletic." When they got in the sea, Josh did many impressive tricks on his board. Familiar: "That was brilliant!" Jane said to him. They took a break. Unfamiliar: "Your moves are so athletic!" Jane said to him. They took a break.
	Without antecedent	Josh and Jane decided to go surfing at the weekend. During the week, they went shopping for some surfing equipment they needed. Josh said, "I hope the athletic shop will be open; they have brilliant products."

		When they got in the sea, Josh did many impressive tricks on his board. Familiar: "That was brilliant!" Jane said to him. They took a break. Unfamiliar: "Your moves are so athletic!" Jane said to him. They took a break.
Sarcastic	With antecedence	Josh and Jane decided to go surfing at the weekend. During the week, they went shopping for some surfing equipment they needed. Josh said, "I am brilliant at this sport because I've always been very athletic." When they got in the sea, Josh couldn't even stand up on his board. Familiar: "That was brilliant!" Jane said to him. They took a break. Unfamiliar: "Your moves are so athletic!" Jane said to him. They took a break.
	Without antecedent	Josh and Jane decided to go surfing at the weekend. During the week, they went shopping for some surfing equipment they needed. Josh said, "I hope the athletic shop will be open; they have brilliant products." When they got in the sea, Josh couldn't even stand up on his board. Familiar: "That was brilliant!" Jane said to him. They took a break. Unfamiliar: "Your moves are so athletic!" Jane said to him. They took a break.

31.		
Literal	With antecedence	Alexa and Julie had to wake up early to go to their first day in their new jobs. On the previous day, they were having a relaxing afternoon in their garden. Alexa said, "I'll make us a really good coffee tomorrow, I have a brilliant recipe." The next morning, Alexa made coffee for them and it was just amazing. Familiar: "This is brilliant!" Julie said to Alexa. They went off to work. Unfamiliar: "Your coffee is so good!" Julie said to Alexa. They went off to work.
	Without antecedent	Alexa and Julie had to wake up early to go to their first day in their new jobs. On the previous day, they were having a relaxing afternoon in their garden. Alexa said, "Tonight I'm going for a really good ice skating class taught by a brilliant skater." The next morning, Alexa made coffee for them and it was just amazing. Familiar: "This is brilliant!" Julie said to Alexa. They went off to work. Unfamiliar: "Your coffee is so good!" Julie said to Alexa. They went off to work.
Sarcastic	With antecedence	Alexa and Julie had to wake up early to go to their first day in their new jobs. On the previous day, they

		were having a relaxing afternoon in their garden. Alexa said, "I'll make us a really good coffee tomorrow, I have a brilliant recipe." The next morning, Alexa made coffee for them and it was absolutely disgusting. Familiar: "This is brilliant!" Julie said to Alexa. They went off to work. Unfamiliar: "Your coffee is so good!" Julie said to Alexa. They went off to work.
	Without antecedent	Alexa and Julie had to wake up early to go to their first day in their new jobs. On the previous day, they were having a relaxing afternoon in their garden. Alexa said, "Tonight I'm going for a really good ice skating class taught by a brilliant skater." The next morning, Alexa made coffee for them and it was absolutely disgusting. Familiar: "This is brilliant!" Julie said to Alexa. They went off to work. Unfamiliar: "Your coffee is so good!" Julie said to Alexa. They went off to work.

32.		
Literal	With antecedence	Chad and April were going to a reading club together; Chad started reading a very thick book. Their next

		club meeting was going to be outside of town. Chad said, "I bet I'll finish this really quick; I'm quite the fast reader." Three days later, Chad had already finished the entire book. Familiar: "That was quick!" April said to him. He started another book. Unfamiliar: "You're reading so fast!" April said to him. He started another book.
	Without antecedent	Chad and April were going to a reading club together; Chad started reading a very thick book. Their next club meeting was going to be outside of town. Chad said, "We have to be quick about booking a train to the meeting; the cheap tickets go fast." Three days later, Chad had already finished the entire book. Familiar: "That was quick!" April said to him. He started another book. Unfamiliar: "You're reading so fast!" April said to him. He started another book.
Sarcastic	With antecedence	Chad and April were going to a reading club together; Chad started reading a very thick book. Their next club meeting was going to be outside of town. Chad said, "I bet I'll finish this really quick; I'm quite the fast reader." One month later, Chad had only finished reading three pages. Familiar: "That was quick!" April said to him. He started another book.

		Unfamiliar: "You're reading so fast!" April said to him. He started another book.
	Without antecedent	Chad and April were going to a reading club together; Chad started reading a very thick book. Their next club meeting was going to be outside of town. Chad said, "We have to be quick about booking a train to the meeting; the cheap tickets go fast." One month later, Chad had only finished reading three pages. Familiar: "That was quick!" April said to him. He started another book. Unfamiliar: "You're reading so fast!" April said to him. He started another book.

33.		
Literal	With antecedence	Zack and Richard were moving into a new house. They had to redecorate the living room and paint the walls. Zack said to Richard, "I'll work hard today and I will finish painting the walls of the living room." In the evening when Richard got home, Zack had already painted the walls. Familiar: "You've been working hard!" Richard said to him. He went upstairs. Unfamiliar: "I notice you worked hard!" Richard said to him. He went upstairs.

	Without antecedent	Zack and Richard were moving into a new house. They had to redecorate the living room and paint the walls. Zack said to Richard, "It's hard having to leave our old house; it was so beautiful there." In the evening when Richard got home, Zack had already painted the walls. Familiar: "You've been working hard!" Richard said to him. He went upstairs. Unfamiliar: "I notice you worked hard!" Richard said to him. He went upstairs.
Sarcastic	With antecedence	Zack and Richard were moving into a new house. They had to redecorate the living room and paint the walls. Zack said to Richard, "I'll work hard today and I will finish painting the walls of the living room." In the evening when Richard got home, Zack had barely painted any wall. Familiar: "You've been working hard!" Richard said to him. He went upstairs. Unfamiliar: "I notice you worked hard!" Richard said to him. He went upstairs.
	Without antecedent	Zack and Richard were moving into a new house. They had to redecorate the living room and paint the walls. Zack said to Richard, "It's hard having to leave our old house; it was so beautiful there." In the evening when Richard got home, Zack had barely painted any wall.

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		Familiar: "You've been working hard!" Richard said to him. He went upstairs.
		Unfamiliar: "I notice you worked hard!" Richard said to him. He went upstairs.

34.		
Literal	With antecedence	Ella couldn't wait for Friday night when she was going out with her friend Ray. They were planning to go for dinner at a new restaurant first. He said, "Tonight will be so much fun; we'll have a delightful time." On the night, Ray suggested they go to a 90's dance party at his friend's house, which made Ella happy. Familiar: "Sounds like such fun!" she said to him. They took a taxi. Unfamiliar: "Your suggestion is delightful!" she said to him. They took a taxi.
	Without antecedent	Ella couldn't wait for Friday night when she was going out with her friend Ray. They were planning to go for dinner at a new restaurant first. He said, "I think it's so much fun trying out new dishes; yesterday I tried a delightful curry." On the night, Ray suggested they go to a 90's dance party at his friend's house, which made Ella happy.

		Familiar: "Sounds like such fun!" she said to him. They took a taxi.
		Unfamiliar: "Your suggestion is delightful!" she said to him. They took a taxi.
Sarcastic	With antecedence	Ella couldn't wait for Friday night when she was going out with her friend Ray. They were planning to go for dinner at a new restaurant first. He said, "Tonight will be so much fun; we'll have a delightful time." On the night, Ray insisted that they watch a boxing game in the pub which Ella hated. Familiar: "Sounds like such fun!" she said to him. They took a taxi. Unfamiliar: "Your suggestion is delightful!" she said to him. They took a taxi.
	Without antecedent	Ella couldn't wait for Friday night when she was going out with her friend Ray. They were planning to go for dinner at a new restaurant first. He said, "I think it's so much fun trying out new dishes; yesterday I tried a delightful curry." On the night, Ray insisted that they watch a boxing game in the pub which Ella hated. Familiar: "Sounds like such fun!" she said to him. They took a taxi. Unfamiliar: "Your suggestion is delightful!" she said to him. They took a taxi.

35.		
Literal	With antecedence	Andy was learning how to play the bagpipes and he wanted to show Blake a cover he'd learned. They were talking about maybe going to the theatre that week. Andy said, "This will be fantastic! I'll show you my amazing interpretation of a famous song." Andy's cover was beautiful, and Blake was impressed with Andy's skills. Familiar: "That was fantastic!" Blake said to Andy. They went for lunch. Unfamiliar: "Your cover was amazing!" Blake said to Andy. They went for lunch.
	Without antecedent	Andy was learning how to play the bagpipes and he wanted to show Blake a cover he'd learned. They were talking about maybe going to the theatre that week. Andy said, "It'd be fantastic if we watched the new musical; everyone says it's amazing!" Andy's cover was beautiful, and Blake was impressed with Andy's skills. Familiar: "That was fantastic!" Blake said to Andy. They went for lunch. Unfamiliar: "Your cover was amazing!" Blake said to Andy. They went for lunch.

Sarcastic	With antecedence	Andy was learning how to play the bagpipes and he wanted to show Blake a cover he'd learned. They were talking about maybe going to the theatre that week. Andy said, "This will be fantastic! I'll show you my amazing interpretation of a famous song." Andy's cover was terrible and he played out of key the whole time. Familiar: "That was fantastic!" Blake said to Andy. They went for lunch. Unfamiliar: "Your cover was amazing!" Blake said to Andy. They went for lunch.
	Without antecedent	Andy was learning how to play the bagpipes and he wanted to show Blake a cover he'd learned. They were talking about maybe going to the theatre that week. Andy said, "It'd be fantastic if we watched the new musical; everyone says it's amazing!" Andy's cover was terrible and he played out of key the whole time. Familiar: "That was fantastic!" Blake said to Andy. They went for lunch. Unfamiliar: "Your cover was amazing!" Blake said to Andy. They went for lunch.

36.

Literal	With antecedence	Larry and Don were going for their annual Christmas dinner at their parents' house. They still had to buy presents and plan their New Years Eve before heading home. Don said, "I will buy everyone really exciting gifts, I like to be original." Don bought personalised gifts for everyone, which were really appreciated by his family. Familiar: "That's so original!" Larry said to him. They ate a lot. Unfamiliar: "Your presents are so exciting!" Larry said to him. They ate a lot.
	Without antecedent	Larry and Don were going for their annual Christmas dinner at their parents' house. They still had to buy presents and plan their New Years Eve before heading home. Don said, "My girlfriend planned a really original and exciting trip for New Years." Don bought personalised gifts for everyone, which were really appreciated by his family. Familiar: "That's so original!" Larry said to him. They ate a lot. Unfamiliar: "Your presents are so exciting!" Larry said to him. They ate a lot.
Sarcastic	With antecedence	Larry and Don were going for their annual Christmas dinner at their parents' house. They still had to buy

		presents and plan their New Years Eve before heading home. Don said, "I will buy everyone really exciting gifts, I like to be original." Don ended up buying socks again for everyone, which is what he buys every year. Familiar: "That's so original!" Larry said to him. They ate a lot. Unfamiliar: "Your presents are so exciting!" Larry said to him. They ate a lot.
	Without antecedent	Larry and Don were going for their annual Christmas dinner at their parents' house. They still had to buy presents and plan their New Years Eve before heading home. Don said, "My girlfriend planned a really original and exciting trip for New Years." Don ended up buying socks again for everyone, which is what he buys every year. Familiar: "That's so original!" Larry said to him. They ate a lot. Unfamiliar: "Your presents are so exciting!" Larry said to him. They ate a lot.

37.

Literal	With antecedence	Ben was moving house on Monday and asked his friend Jim to help him out. Jim asked his boss to give him some time off work to help Ben. Jim said, "I'm always prompt, so I'll probably be there early." On Monday, Jim showed up 20 minutes before the time they agreed. Familiar: "You're early!" Ben said to Jim. They loaded the car. Unfamiliar: "Your arrival is prompt!" Ben said to Jim. They loaded the car.
	Without antecedent	Ben was moving house on Monday and asked his friend Jim to help him out. Jim asked his boss to give him some time off work to help Ben. Jim said, "Early this morning I sent an email to my boss to ask for a day off on Monday and he sent me a very prompt reply." On Monday, Jim showed up 20 minutes before the time they agreed. Familiar: "You're early!" Ben said to Jim. They loaded the car. Unfamiliar: "Your arrival is prompt!" Ben said to Jim. They loaded the car.
Sarcastic	With antecedence	Ben was moving house on Monday and asked his friend Jim to help him out. Jim asked his boss to give him some time off work to help Ben. Jim said, "I'm always prompt, so I'll probably be there early." On Monday,

		Jim showed up an hour later than the time they agreed.
		Familiar: "You're early!" Ben said to Jim. They loaded the car.
		Unfamiliar: "Your arrival is prompt!" Ben said to Jim. They loaded the car.
	Without antecedent	Ben was moving house on Monday and asked his friend Jim to help him out. Jim asked his boss to give him some time off work to help Ben. Jim said, "Early this morning I sent an email to my boss to ask for a day off on Monday and he sent me a very prompt reply." On Monday, Jim showed up an hour later than the time they agreed.
		Familiar: "You're early!" Ben said to Jim. They loaded the car.
		Unfamiliar: "Your arrival is prompt!" Ben said to Jim. They loaded the car.

38.		
Literal	With antecedence	Terry and Leon were making plans for Halloween. They were both studying Photography, so they were going to go to an exhibition later that day. Terry said, "I want to do this well, so I will come up with the

		best costume." For Halloween, Terry made an elaborate Batman suit, which impressed everyone. Familiar: "Oh well done!" Leon said to him. They took photos. Unfamiliar: "Your costume is the best!" Leon said to him. They took photos.
	Without antecedent	Terry and Leon were making plans for Halloween. They were both studying Photography, so they were going to go to an exhibition later that day. Terry said, "Well, I went to see the best photo exhibition in town; it was such a creative environment." For Halloween, Terry made an elaborate Batman suit, which impressed everyone. Familiar: "Oh well done!" Leon said to him. They took photos. Unfamiliar: "Your costume is the best!" Leon said to him. They took photos.
Sarcastic	With antecedence	Terry and Leon were making plans for Halloween. They were both studying Photography, so they were going to go to an exhibition later that day. Terry said, "I want to do this well, so I will come up with the best costume." For Halloween, Terry made a ghost disguise by cutting two holes in a sheet. Familiar: "Oh well done!" Leon said to him. They took photos.

		Unfamiliar: "Your costume is the best!" Leon said to him. They took photos.
	Without antecedent	Terry and Leon were making plans for Halloween. They were both studying Photography, so they were going to go to an exhibition later that day. Terry said, "Well, I went to see the best photo exhibition in town; it was such a creative environment." For Halloween, Terry made a ghost disguise by cutting two holes in a sheet. Familiar: "Oh well done!" Leon said to him. They took photos. Unfamiliar: "Your costume is the best!" Leon said to him. They took photos.

39.		
Literal	With antecedence	Tony liked to tell jokes but he was known for being offensive, which Claire didn't like. They were chatting about the surprise birthday party that Claire's friends had just thrown for her. He said to Claire, "I'll tell you a really funny joke, you're going to love it." Tony then told her a new joke, which wasn't offensive at all so Claire enjoyed it.

		Familiar: "That's so funny!" she said to him. Claire went home. Unfamiliar: "This one I loved!" she said to him. Claire went home.
	Without antecedent	Tony liked to tell jokes but he was known for being offensive, which Claire didn't like. They were chatting about the surprise birthday party that Claire's friends had just thrown for her. He said to Claire, "I loved seeing your funny reaction to your surprise party." Tony then told her a new joke, which wasn't offensive at all so Claire enjoyed it. Familiar: "That's so funny!" she said to him. Claire went home. Unfamiliar: "This one I loved!" she said to him. Claire went home.
Sarcastic	With antecedence	Tony liked to tell jokes but he was known for being offensive, which Claire didn't like. They were chatting about the surprise birthday party that Claire's friends had just thrown for her. He said to Claire, "I'll tell you a really funny joke, you're going to love it." Tony then told her a really offensive joke that she really didn't enjoy. Familiar: "That's so funny!" she said to him. Claire went home.

		Unfamiliar: "This one I loved!" she said to him. Claire went home.
	Without antecedent	Tony liked to tell jokes but he was known for being offensive, which Claire didn't like. They were chatting about the surprise birthday party that Claire's friends had just thrown for her. He said to Claire, "I loved seeing your funny reaction to your surprise party." Tony then told her a really offensive joke that she really didn't enjoy. Familiar: "That's so funny!" she said to him. Claire went home. Unfamiliar: "This one I loved!" she said to him. Claire went home.

40.		
Literal	With antecedence	Donna was not feeling well and was resting in bed. Her housemate Jay had just got back from work and went into Donna's room. Jay said, "I can bring you your bowl of soup, I'm very careful and have a good balance." Jay brought Donna her bowl of soup without spilling a single drop. Familiar: "So careful!" she said to him. He sat down.

		Unfamiliar: "Your balance is so good!" she said to him. He sat down.
	Without antecedent	Donna was not feeling well and was resting in bed. Her housemate Jay had just got back from work and went into Donna's room. Jay said, "I had a good conversation with my sister today; she's trying to be careful not to give her son any hints about his birthday present." Jay brought Donna her bowl of soup without spilling a single drop. Familiar: "So careful!" she said to him. He sat down. Unfamiliar: "Your balance is so good!" she said to him. He sat down.
Sarcastic	With antecedence	Donna was not feeling well and was resting in bed. Her housemate Jay had just got back from work and went into Donna's room. Jay said "I can bring you your bowl of soup, I'm very careful and have a good balance." Jay brought Donna her bowl of soup and managed to spill almost all of it. Familiar: "So careful!" she said to him. He sat down. Unfamiliar: "Your balance is so good!" she said to him. He sat down.
	Without antecedent	Donna was not feeling well and was resting in bed. Her housemate Jay had just got back from work and

		went into Donna's room. Jay said, "I had a good conversation with my sister today; she's trying to be careful not to give her son any hints about his birthday present." Jay brought Donna her bowl of soup and managed to spill almost all of it. Familiar: "So careful!" she said to him. He sat down. Unfamiliar: "Your balance is so good!" she said to him. He sat down.

41.		
Literal	With antecedence	Amy was almost done writing her final year dissertation when her laptop froze. Her friend Rob was working on some stats coursework next to her so she asked him for help. Rob said, "I am brilliant at computers! I think I can be helpful." Rob managed to unfreeze the computer and she retrieved her work. Familiar: "Ahh brilliant!" she said to him. He went home. Unfamiliar: "You were very helpful!" she said to him. He went home.
	Without antecedent	Amy was almost done writing her final year dissertation when her laptop froze. Her friend Rob was

		working on some stats coursework next to her so she asked him for help. Rob said, "I wish this stats book was more helpful! It's not a brilliant one, I must say." Rob managed to unfreeze Amy's computer and she retrieved her work. Familiar: "Ahh brilliant!" she said to him. He went home. Unfamiliar: "You were very helpful!" she said to him. He went home.
Sarcastic	With antecedence	Amy was almost done writing her final year dissertation when her laptop froze. Her friend Rob was working on some stats coursework next to her so she asked him for help. Rob said, "I am brilliant at computers! I think I can be helpful." Rob pressed the wrong button on Amy's laptop, it died and all her work was lost. Familiar: "Ahh brilliant!" she said to him. He went home. Unfamiliar: "You were very helpful!" she said to him. He went home.
	Without antecedent	Amy was almost done writing her final year dissertation when her laptop froze. Her friend Rob was working on some stats coursework next to her so she asked him for help. Rob said, "I wish this stats book

		was more helpful! It's not a brilliant one, I must say." Rob pressed the wrong button on Amy's laptop, it died and all her work was lost. Familiar: "Ahh brilliant!" she said to him. He went home. Unfamiliar: "You were very helpful!" she said to him. He went home.

42.		
Literal	With antecedence	Sandra was organising a charity event and she asked Sue to help her out on the night. Sue had just been promoted that day and wanted to celebrate with Sandra. Sue said, "I know this will be a refined event, so I will wear something classy." For the charity event, Sue wore a beautiful black suit. Familiar: "How classy!" Sandra said to her. They took a cab there. Unfamiliar: "Your choice is refined!" Sandra said to her. They took a cab there.
	Without antecedent	Sandra was organising a charity event and she asked Sue to help her out on the night. Sue had just been promoted that day and wanted to celebrate with Sandra. Sue said, "I know a classy restaurant in town where

		we could have dinner tomorrow; they serve a refined choice of champagnes." For the charity event, Sue wore a beautiful black suit. Familiar: "How classy!" Sandra said to her. They took a cab there. Unfamiliar: "Your choice is refined!" Sandra said to her. They took a cab there.
Sarcastic	With antecedence	Sandra was organising a charity event and she asked Sue to help her out on the night. Sue had just been promoted that day and wanted to celebrate with Sandra. Sue said, "I know this will be a refined event, so I will wear something classy." For the charity event, Sue wore an inappropriately short skirt. Familiar: "How classy!" Sandra said to her. They took a cab there. Unfamiliar: "Your choice is refined!" Sandra said to her. They took a cab there.
	Without antecedent	Sandra was organising a charity event and she asked Sue to help her out on the night. Sue had just been promoted that day and wanted to celebrate with Sandra. Sue said, "I know a classy restaurant in town where we could have dinner tomorrow; they serve a refined choice of champagnes." For the charity event, Sue wore an inappropriately short skirt.

		Familiar: "How classy!" Sandra said to her. They took a cab there.
		Unfamiliar: "Your choice is refined!" Sandra said to her. They took a cab there.

43.		
Literal	With antecedence	Hugo and Liz had to give a presentation together on Monday for one of their modules. On Sunday they did nothing other than laundry and tidying up. Liz said, "I have an impeccable track record when it comes to presentations; I will surely do well." On Monday, Liz and Hugo both gave excellent presentations. Familiar: "Well that went well!" he said to her. They went home. Unfamiliar: "Our talk was flawless!" he said to her. They went home.
	Without antecedent	Hugo and Liz had to give a presentation together on Monday for one of their modules. On Sunday they did nothing other than laundry and tidying up. Liz said, "I washed my wine-stained shirt well using the new detergent, and it is now flawless!" On Monday, Liz and Hugo both gave excellent presentations. Familiar: "Well that went well!" he said to her. They went home.

		Unfamiliar: "Our talk was flawless!" he said to her. They went home.
Sarcastic	With antecedence	Hugo and Liz had to give a presentation together on Monday for one of their modules. On Sunday they did nothing other than laundry and tidying up. Liz said, "I have a flawless track record when it comes to presentations; I will surely do well." On Monday, Liz was very poorly prepared for her part of the presentation. Familiar: "Well that went well!" he said to her. They went home. Unfamiliar: "Our talk was flawless!" he said to her. They went home.
	Without antecedent	Hugo and Liz had to give a presentation together on Monday for one of their modules. On Sunday they did nothing other than laundry and tidying up. Liz said, "I washed my wine-stained shirt well using the new detergent, and it is now flawless!" On Monday, Liz was very poorly prepared for her part of the presentation. Familiar: "Well that went well!" he said to her. They went home. Unfamiliar: "Our talk was flawless!" he said to her. They went home.

44.		
Literal	With antecedence	Daisy and Iris were going for drinks for their friend's good-bye party. They've all been working in the same building for the past three years. Iris said, "I'm going to wear my new stylish dress; I like being elegant for these events." Iris arrived at the party wearing a glamorous dress. Familiar: "You're so elegant!" Daisy said to her. They had a cocktail. Unfamiliar: "You're looking very stylish!" Daisy said to her. They had a cocktail.
	Without antecedent	Daisy and Iris were going for drinks for their friend's good-bye party. They've all been working in the same building for the past three years. Iris said, "They redecorated the social space and made it more stylish; the new sofas are a very elegant touch to the decor." Iris arrived at the party wearing a glamorous dress. Familiar: "You're so elegant!" Daisy said to her. They had a cocktail. Unfamiliar: "You're looking very stylish!" Daisy said to her. They had a cocktail.
Sarcastic	With antecedence	Daisy and Iris were going for drinks for their friend's good-bye party. They've all been working in the same building for the past three years. Iris said, "I'm going to wear my new stylish dress; I like being elegant for

		these events." Iris arrived at the party looking like she had slept in her clothes.
		Familiar: "You're so elegant!" Daisy said to her. They had a cocktail.
		Unfamiliar: "You're looking very stylish!" Daisy said to her. They had a cocktail.
	Without antecedent	Daisy and Iris were going for drinks for their friend's good-bye party. They've all been working in the same building for the past three years. Iris said, "They redecorated the social space and made it more stylish; the new sofas are a very elegant touch to the decor." Iris arrived at the party looking like she had slept in her clothes.
		Familiar: "You're so elegant!" Daisy said to her. They had a cocktail.
		Unfamiliar: "You're looking very stylish!" Daisy said to her. They had a cocktail.

45.		
Literal	With antecedence	June and Kelly were working on a photo project and they had eight tasks to divide among themselves. Kelly had just been to town, looking for a new camera. Kelly said, "I think we will work great together! I'm

		willing to do whatever it takes to do this project well." Kelly assigned most of the tasks for the photo project to herself. Familiar: "You're a great help!" June said to her. They worked until late. Unfamiliar: "You're so willing!" June said to her. They worked until late.
	Without antecedent	June and Kelly were working on a photo project and they had eight tasks to divide among themselves. Kelly had just been to town, looking for a new camera. Kelly said, "The new models that are on the market are not great, but I am willing to get one if it's a good price." Kelly assigned most of the tasks for the photo project to herself. Familiar: "You're a great help!" June said to her. They worked until late. Unfamiliar: "You're so willing!" June said to her. They worked until late.
Sarcastic	With antecedence	June and Kelly were working on a photo project and they had eight tasks to divide among themselves. Kelly had just been to town, looking for a new camera. Kelly said, "I think we will work great together! I'm willing to do whatever it takes to do this project well." Kelly took only one of the tasks for the photo project

		- the easiest one.
		Familiar: "You're a great help!" June said to her. They worked until late.
		Unfamiliar: "You're so willing!" June said to her. They worked until late.
	Without antecedent	June and Kelly were working on a photo project and they had eight tasks to divide among themselves. Kelly had just been to town, looking for a new camera. Kelly said, "The new models that are on the market are not great, but I am willing to get one if it's a good price." Kelly took only one of the tasks for the photo project - the easiest one.
		Familiar: "You're a great help!" June said to her. They worked until late.
		Unfamiliar: "You're so willing!" June said to her. They worked until late.

46.		
Literal	With antecedence	Colin and Janet were planning their weekend together. They had just finished watching their favourite TV show and were about to go to bed. Janet said, "I want us to do something exciting this weekend; I'll think of

		an adventurous activity." The next day, Janet suggested they go rafting on a nearby river at the weekend. Familiar: "How exciting!" Colin said to her. They discussed it further. Unfamiliar: "Your idea is so adventurous!" Colin said to her. They discussed it further.
	Without antecedent	Colin and Janet were planning their weekend together. They had just finished watching their favourite TV show and were about to go to bed. Janet said, "My brother told me about this exciting new TV series called Adventurous." The next day, Janet suggested they go rafting on a nearby river at the weekend. Familiar: "How exciting!" Colin said to her. They discussed it further. Unfamiliar: "Your idea is so adventurous!" Colin said to her. They discussed it further.
Sarcastic	With antecedence	Colin and Janet were planning their weekend together. They had just finished watching their favourite TV show and were about to go to bed. Janet said, "I want us to do something exciting this weekend; I'll think of an adventurous activity." The next day, Janet suggested they go shopping in the city centre. Familiar: "How exciting!" Colin said to her. They discussed it further. Unfamiliar: "Your idea is so adventurous!" Colin said to her. They discussed it further.

	Without antecedent	Colin and Janet were planning their weekend together. They had just finished watching their favourite TV show and were about to go to bed. Janet said, "My brother told me about this exciting new TV series called Adventurous." The next day, Janet suggested they go shopping in the city centre. Familiar: "How exciting!" Colin said to her. They discussed it further. Unfamiliar: "Your idea is so adventurous!" Colin said to her. They discussed it further.

47.		
Literal	With antecedence	James had always bought Fred the same birthday present every year - tickets to a musical. This year, James had just returned from his gap year in Vietnam. James said, "This year I will not respect the tradition and surprise you with an unexpected gift!" James bought Fred the latest PS3 game that Fred wanted. Familiar: "What a surprise!" Fred said to James. They went out. Unfamiliar: "This was a break from tradition!" Fred said to James. They went out.
	Without antecedent	James had always bought Fred the same birthday present every year - tickets to a musical. This year, James

		had just returned from his gap year in Vietnam. James said, "They have some very interesting traditions there that would surprise you!" James bought Fred the latest PS3 game that Fred wanted. Familiar: "What a surprise!" Fred said to James. They went out. Unfamiliar: "This was a break from tradition!" Fred said to James. They went out.
Sarcastic	With antecedence	James had always bought Fred the same birthday present every year - tickets to a musical. This year, James had just returned from his gap year in Vietnam. James said, "This year I will not respect the tradition and surprise you with an unexpected gift!" James bought Fred tickets to a musical in town. Familiar: "What a surprise!" Fred said to James. They went out. Unfamiliar: "This was a break from tradition!" Fred said to James. They went out.
	Without antecedent	James had always bought Fred the same birthday present every year - tickets to a musical. This year, James had just returned from his gap year in Vietnam. James said, "They have some very interesting traditions there that would surprise you!" James bought Fred tickets to a musical in town. Familiar: "What a surprise!" Fred said to James. They went out.

		Unfamiliar: "This was a break from tradition!" Fred said to James. They went out.

48.		
Literal	With antecedence	Grace and Isla needed to clean the flat that they shared on the university campus. Isla was having some problems with her first coursework and needed some help. Isla said, "I can be of great help when it comes to cleaning! I am willing to do it on Saturday." On Saturday, Isla woke up extra early and did all the work herself. Familiar: "That's just great!" Grace said to her. They went out. Unfamiliar: "I like that you're willing!" Grace said to her. They went out.
	Without antecedent	Grace and Isla needed to clean the flat that they shared on the university campus. Isla was having some problems with her first coursework and needed some help. Isla said, "My tutor said he's willing to meet with me tomorrow, which is great!" On Saturday, Isla woke up extra early and did all the work herself. Familiar: "That's just great!" Grace said to her. They went out.

		Unfamiliar: "I like that you're willing!" Grace said to her. They went out.
Sarcastic	With antecedence	Grace and Isla needed to clean the flat that they shared on the university campus. Isla was having some problems with her first coursework and needed some help. Isla said, "I can be of great help when it comes to cleaning! I am willing to do it on Saturday." On Saturday, Isla slept until late and didn't bother doing any cleaning.

Familiar: "That's just great!" Grace said to her. They went out.

Unfamiliar: "I like that you're willing!" Grace said to her. They went out. |
| | Without antecedent | Grace and Isla needed to clean the flat that they shared on the university campus. Isla was having some problems with her first coursework and needed some help. Isla said, "My tutor said he's willing to meet with me tomorrow, which is great!" On Saturday, Isla slept until late and didn't bother doing any cleaning.

Familiar: "That's just great!" Grace said to her. They went out.

Unfamiliar: "I like that you're willing!" Grace said to her. They went out. |

Appendix E: Full list of filler items (Experiment 2)

1	Barbara and Carlos went into town one afternoon to have a walk. The weather forecast predicted it would be sunny and warm all day long. Barbara thought it would be a good idea to take their dog Max with them too. While they were in town, it suddenly started raining heavily and they didn't have an umbrella. "The forecast is unreliable!" Barbara said to Carlos. They went home.
2	Edgar and Emma wanted to buy a present together for a friend's birthday. They bought her a classical music CD from the new music shop in town. When they gave her the present, they learned that she doesn't particularly enjoy classical music. "This wasn't a good gift!" Edgar said to Emma. They returned the CD.
3	Umar and Wendy decided to have a picnic in the park. They heard the weather would be good at the weekend so they planned it for Sunday morning. They decided to go to the new park that was recently opened in their city. As they arrived in the park and set out their blanket, it started pouring. "I don't like this weather!" Umar said to Wendy. They ran to the car.
4	Kaitlin and Neil planned to go to the theatre one evening. They were supposed to be outside the theatre at 19.45 in order to catch the show at 20.00. They were running late because of traffic and arrived at 20.30, so they couldn't get in. "That is such a shame!" Kaitlin said to Neil. They were both sad.

5	Patrick and Josie were planning a trip to Venice and were looking for accommodation. It was the first time they were visiting Venice and they were very excited. They booked a room in a nice hotel by the Rialto Bridge. When they arrived, the room was very small and dirty, and the staff were not helpful at all. "We can't stay here!" Patrick said to Josie. They cancelled the booking.
6	Xavier and Phil went to see a movie at the cinema. They had to wait in a long queue to buy their tickets and they only had 5 minutes left before the movie started. The queue was moving slowly; there was not much they could do about it. "We'll miss the beginning!" Xavier said to Phil. They were impatient.
7	Rebecca gave Saul a new mobile phone for his birthday. He was very happy because it was a model that he had wanted to buy for a while. Somehow Rebecca always managed to buy the best gifts for him. As he took it out of the box, he dropped it on the floor and broke it. "I'm not sure it can be fixed!" Rebecca said to Saul. He was sad.
8	Travis and Otis were throwing a big house party. Around midnight, their neighbour came over to ask them to turn the music down since he needed to wake up early the next day. They had no choice but to finish the party early. "That is very disappointing!" Travis said to Otis. They went to sleep.
9	Nabil and Billy were looking for a cheap flight to Greece. They only had a few days of holiday and wanted to go and visit their relatives

	in Athens. They wanted to book with Wizzair because they often had the lowest prices. When Nabil compared it with other companies, he realised that Wizzair was not the cheapest option. "Wizzair is not that cheap!" Nabil said to Billy. He was disappointed.
10	Felicia and Daphne were shopping for a prom dress. They were both very excited about this and hopeful that they would find the perfect dress. In the last shop they entered, Felicia tried on a red one that she really liked. However the dress was too small for her and there were no other sizes in the shop. "I'm just not lucky today!" Felicia said to Daphne. They went home.
11	Gemma was moving to a new house and her friend Walter offered to help her out. On the day, something came up and Walter couldn't help her anymore like he'd promised. She decided to postpone the move as she couldn't do it all by herself. "Moving house isn't easy!" she said to Walter. She moved the next day.
12	Nicole and Roxanne wanted to do something fun on Saturday morning. They bought tickets for an art exhibition that just opened in town. Although the art magazines said it was very good, they were quite disappointed with it. "We shouldn't believe the reviews!" Nicole said to Roxanne. They were upset.
13	Eddie and Francesca had no plans for Friday evening. They rented the movie "Melancholia" because it had lots of positive reviews online. However, the movie was so bad that they couldn't watch more than 30 minutes of it. "This movie is terrible!" Eddie said to Francesca.

	They went to sleep.
14	Bungee jumping is probably the only extreme sport I would ever do. It involves jumping from a tall structure while connected to a large elastic cord. The tall structure is usually a fixed object, such as a building or bridge; but it is also possible to jump from a movable object, such as a hot-air-balloon or helicopter. I plan to try it for the first time next summer while I'll be on holiday in the USA.
15	Dominic really enjoys risk-taking activities. The latest thing he did was glacier hiking together with a friend of his. They used special equipment like crampons, rows, helmets and ice axes. They were told to be careful since it's quite dangerous, but luckily nothing bad happened to them. His next project is to climb Mount Everest and he's currently training for that.
16	Jessica doesn't trust the media these days. She says it's too corrupted. She gets her news from Democracy Now! only. The program is funded entirely through contributions from listeners, viewers, and foundations and does not accept advertisers, corporate underwriting, or government funding.
17	Cal was working on a miniature house model he had to build for his architecture course. He was behind schedule and Chris offered to help out by fitting the windows. Chris was one year above Cal in the architecture course. Cal's work started progressing much faster but he was still pressed for time. "I hate working under stress!" Cal said to Chris. They did their best.

18	When my sister decided to apply at MIT, she was aware that 90% of their incoming applications get rejected. She wasn't discouraged though. She got her grades up, went to and won several science competitions, wrote a brilliant application and did extremely well in her interview. She got in.
19	Emily didn't mind the rain at all. She was used to it, having lived in England almost all her life. Her brother on the other hand hated the rain, especially when it would spoil his plans. He went cycling one summer morning, when it suddenly started pouring down. Emily's brother was very frustrated by this.
20	William had always been fascinated with cats. He's had lots of different cats as pets since he was a child, and now he has three. His favourite is the Maine Coon, one of the oldest natural breeds in North America. It is a breed of domestic cat with a distinctive physical appearance and valuable hunting skills. It's the official state cat in Maine, US.
21	Everybody should visit Iceland. I completely fell in love with it the first time I went there on holiday. It's so staggeringly beautiful and otherworldly. Everywhere you turn there are glaciers, waterfalls, lava fields, rainbows, streams and mountain ranges. It's also an ideal destination if you want to see the Northern Lights, especially if you go between February and March.
22	Daniel loves going to music concerts but he hasn't been to one in quite a long time. When he heard his favourite band, Guns'n'Roses, was

	going to have a concert in his city, he was very happy and bought himself a ticket right away. Even though the event was months away, he couldn't stop talking about it.
23	My best friend was a big fan of Castaway 2000, a famous British television series. So for her birthday last year, I got her tickets to go visit Taransay, the island where the series was filmed. It's in the Outer Hebrides of Scotland and it's been uninhabited since 1974, except for holidaymakers. She showed me the pictures she took while she was there, and they were amazing.
24	Jennifer told me that the next thing on her travel bucket list is a ride on the Trans-Mongolian Railway. She would take the train from Moscow, make a quick stop in Ulan Bator to visit Mongolia, and then hop back on the train and finish her holiday in Beijing. On the way, she would cross the Gobi desert.
25	Travel agencies advertise New Zealand holidays a lot. This is an island country in the southwestern Pacific Ocean. It's just east of Australia across the Tasman Sea. It is now a very popular holiday destination, especially since everybody knows that the Lord of the Rings trilogy was filmed there. My best friend went there last year, and he said it has pretty amazing landscapes.
26	The European Space Agency and the EU are currently building Galileo, a global navigation satellite system. One of the aims of Galileo is to provide a high-precision positioning system upon which European nations can rely, independently from the Russian GLONASS, US

	GPS, and Chinese Compass systems.
27	Vincent was in New York for a conference. He decided to pay a visit to the American Museum of Natural History while he was there. He was very curious to see the Star of India, a 563.35 carat star sapphire, mined in Sri Lanka, one of the largest such gems in the world. He was truly fascinated by it. There were many other places he wanted to visit in New York, but didn't have any more time.
28	Two of my officemates had won tickets to one of the Wimbledon Championship matches this summer. They were really excited about this since they were both huge tennis fans. Although there were 4 more months left until the match, they'd already booked accommodation and transportation to London. I've never been a big tennis fan, but was very happy for my officemates.
29	My mum went to Sri Lanka recently and when she got back she couldn't stop talking about gulab jamun, a popular cheese-based dessert, similar to a dumpling, very popular over there. It is made mainly from milk solids, kneaded into a dough, shaped into small balls and deep fried at about 148°C.
30	As part of my degree at university, I am also allowed to choose a language module to study for a year, so I chose Spanish because I would love to travel to South America one day. I really enjoy watching Spanish movies too, which is helping me a lot with my vocabulary and pronunciation. I think Spanish is the most beautiful sounding language of all.

31	My best friend managed to persuade me to go speed dating with her. She was convinced it would be a fun experience, however I believed it was going to be boring and awkward. So we decided to go and see for ourselves. To be honest, it wasn't as bad as I expected, but I will surely not try it again.
32	One night, the burglar alarm in our house went off for no apparent reason. We tried to stop it but nothing would work. It turned out that the batteries were dead, and we had to wait until morning to buy new ones and replace them. None of us managed to get any sleep that night. The alarm was really loud.
33	Max's computer stopped working the other day. He was working on a really important project so he couldn't afford to waste too much time. Max quickly called one of his friends who worked in IT and asked him for help. Luckily, he came over and fixed the problem in no time. Max was really grateful. He took his friend out for a drink that evening.
34	My housemate asked me to go with him to the Nottingham Riverside Festival Dragon Boat Challenge in August. Teams of 11 people raced in dragon boats, which was a fun thing to do. The event also aimed to raise funds for the Rainbows Hospice for Children and Young People. It was a really nice day out.
35	After we graduated from university me and my boyfriend decided to take a gap year and travel the world. We spent our summer in

	Australia and New Zealand. Then during autumn we visited about 7 African countries. For Christmas and New Year we were in South Asia. It was probably the best trip of our lives.
36	So many companies have been making redundancies since the recession in 2008. It's definitely not a very good time for anyone looking for a new job. According to new research, one in seven of all employees has been made redundant since then. The best thing you can do if that happens is start job hunting and try to keep a positive attitude as much as possible.
37	When my car broke down a few nights ago, the first thing I did was to get it out of the road, in a safe place. Once I was there, I called the AA of course. They managed to locate me using the GPS function on my phone. I waited for them for about an hour, but they fixed it quickly when they arrived.
38	On a Sunday afternoon, we went grocery shopping in order to make pancakes later in the evening. Some friends were coming over to play some board games together. We had to buy flour, sugar, eggs and a bit of milk. The trouble was, we couldn't decide what to fill them with, so we got everything: chocolate spread, jam, ice cream and bananas.
39	Vickie and Lorna were working together in a photography studio. One day they had a family photoshoot planned and were looking forward to it. However, the parents were so grumpy and stressed that the girls couldn't make them smile at all. "Some clients are like

	that!" Vickie said to Lorna. They went for lunch.
40	Scott and Paula were looking to rent a flat in Nottingham. They had recently both got jobs there, and were moving all they way from Glasgow. They'd already seen several flats, and had their heart set on one of them. When they called the agency, they found out that their favourite flat had just been sold to somebody else. "We should've called sooner!" Paula said to Scott. They chose another one.
41	Jeff and Martha wanted to go and see a circus show with their little cousin. They heard that Cirque du Soleil was having a show in town; they really wanted to get tickets for it. When they checked the website, it said that it was already sold out. "That's disappointing!" Jeff said to Martha. They booked another show.
42	Craig and Eli were working on a project, which required them to use a new piece of software. Moreover, they had a very tight deadline, and their promotion depended on it. They had been trained on how to use the software and hadn't had any recent problems with it. One day, the software crashed out of the blue and their work was lost. "I don't believe this!" Craig said to Eli. They called a technician.
43	Jenny went with Sabrina to one of her lectures on Marine Biology. Jenny was very interested in the topic, although she was studying Computer Sciences herself. In fact she was considering taking up a second degree in Marine Biology. The lecture was so boring that Jenny fell asleep half way through. "I expected something else!" Jenny said to Sabrina. They left early.

44	Abbie was going to a wedding and needed a new pair of shoes. Her friend Nadine suggested she went to a shop that was located out of town but sold very stylish shoes. Abbie walked all the way there only to find that the shop had recently been closed. "What a pity!" Abbie said to Nadine. She took a cab back.
45	Alice and Benjamin promised a friend of theirs that they would give a free salsa lesson at his charity party. They were extremely talented dancers and teachers and had won many salsa contests. All the guests were really looking forward to it. A few days before the party Benjamin got the flu and they had to cancel the lesson. "Illness ruined our plans!" Alice said to Benjamin. They stayed home.
46	Julian and Mark didn't want to cook so they decided to order some food. They ordered from the only fast-food place that was open at the time. The food arrived more than half an hour late; it was cold and tasteless. "This fast-food isn't good!" Julian said to Mark. They were hungry.
47	Tahlia and Octavia didn't have any plans for the weekend. A friend of theirs invited them to her beach house. They couldn't wait to go but because the rail workers were on strike on Saturday, they had no way of travelling to the house. "I can't believe our bad luck!" Tahlia said to Octavia. They were angry.
48	Mitchell and Rita were organising a graduation party in their house. They had just finished their masters in Genetics, and wanted to

celebrate with their friends. They needed to know how many people would come in order to know how much food to order. They

calculated that there would probably be around 25 people, but in reality 45 came. "We don't have enough food!" Mitchell said to Rita.

They panicked.

Appendix F: *t*-values of non-significant fixed effects and *p*-values of

likelihood-ratio tests (Experiment 2)

Table for the t-values of the non-significant fixed effects (Experiment 2). As a rule of thumb, only effects with |t| > 2 are likely to be significant (Baayen, Davidson & Bates, 2008).			
Analysis region	Reading measure	Fixed effects (from full model)	*t*
pre-critical	fp	literality	-0.8
		antecedence	-0.3
		familiarity	0.1
		literality * antecedence	0.9
		literality * familiarity	-0.4
		antecedence * familiarity	-0.2
		literality * familiarity * antecedence	0.7
	rp	literality	-0.1
		familiarity	-1.2
		literality * antecedence	0.9
		literality * familiarity	0.5
		antecedence * familiarity	0.7
		literality * familiarity * antecedence	-0.9

	tt	antecedence	0.6
		literality * antecedence	0.01
		literality * familiarity	0.9
		antecedence * familiarity	-0.01
		literality * familiarity * antecedence	0.4
critical	fp	literality	-1.2
		literality * antecedence	1
		literality * familiarity	0.4
		literality * familiarity * antecedence	0.2
	rp	literality	-0.3
		literality * antecedence	0.3
		literality * familiarity	0.6
		antecedence * familiarity	0.9
		literality * familiarity * antecedence	0.3
	tt	literality * familiarity	1.4
		antecedence * familiarity	-0.4
		literality * familiarity * antecedence	-0.9
post-critical	fp	antecedence	-0.6
		literality * antecedence	1
		literality * familiarity	-0.1
		antecedence * familiarity	1

		literality * familiarity * antecedence	-0.8
	rp	familiarity	-1.5
		literality * antecedence	1
		literality * familiarity	1.3
		antecedence * familiarity	1.4
		literality * familiarity * antecedence	-1
	tt	literality * antecedence	-0.5
		literality * familiarity	-1
		antecedence * familiarity	-1.3
		literality * familiarity * antecedence	1.3

Series of likelihood-ratio tests, their AIC, and p-values (Experiment 2)			
	Fixed effects structure	AIC	*p*-value (vs. model #)
fp – pre-critical			
1	literality * antecedence * familiarity	29873	n/a
2	literality * antecedence + familiarity	29867	0.9 (vs. 1)
3	literality * familiarity + antecedence	29871	0.2 (vs. 1)
4	familiarity * antecedence +	29871	0.2 (vs. 1)

	literality		
5	literality + familiarity + antecedence	29869	0.054 (vs. 2) 0.9 (vs. 3) 0.7 (vs. 4)
6	literality + familiarity	29868	0.3 (vs. 5)
7	familiarity + antecedence	29867	0.7 (vs. 5)
8	literality + antecedence	29867	0.9 (vs. 5)
9	literality	29866	0.9 (vs. 6) 0.3 (vs. 8)
10	familiarity	29866	0.7 (vs. 6) 0.3 (vs. 7)
11	antecedence	29865	0.7 (vs. 8) 0.9 (vs.7)
12	**Intercept**	**29864**	**0.9 (vs. 9)** **0.9 (vs. 10)** **0.3 (vs. 11)**
rp – pre-critical			
1	literality * antecedence * familiarity	33462	n/a
2	literality * antecedence + familiarity	33457	0.8 (vs. 1)
3	literality * familiarity + antecedence	33457	0.8 (vs. 1)
4	familiarity * antecedence +	33457	0.8 (vs. 1)

	literality		
5	literality + familiarity + antecedence	33455	0.8 (vs. 2) 0.9 (vs. 3) 0.9 (vs. 4)
6	literality + familiarity	33457	0.035 (vs. 5)
7	familiarity + antecedence	33454	0.4 (vs. 5)
8	literality + antecedence	33455	0.1 (vs. 5)
9	**antecedence**	**33454**	**0.1 (vs. 7) 0.4 (vs. 8)**
10	Intercept	33456	0.034 (vs. 9)
tt – pre-critical			
1	literality * antecedence * familiarity	35158	n/a
2	literality * antecedence + familiarity	35156	0.3 (vs. 1)
3	literality * familiarity + antecedence	35153	0.9 (vs. 1)
4	familiarity * antecedence + literality	35156	0.3 (vs. 1)
5	literality + familiarity + antecedence	35154	0.7 (vs. 2) 0.073 (vs. 3) 0.7 (vs. 4)
6	**literality + familiarity**	**35154**	**0.2 (vs. 5)**
7	familiarity + antecedence	35157	0.02 (vs. 5)

8	literality + antecedence	35158	0.02 (vs. 5)
9	literality	35156	0.034 (vs. 6)
10	familiarity	35156	0.029 (vs. 6)
fp - critical			
1	literality * antecedence * familiarity	28716	n/a
2	literality * antecedence + familiarity	28716	0.2 (vs. 1)
3	literality * familiarity + antecedence	28718	0.063 (vs. 1)
4	familiarity * antecedence + literality	28713	0.4 (vs. 1)
5	literality + familiarity + antecedence	28716	0.1 (vs. 2) 0.5 (vs. 3) 0.029 (vs. 4)
6	**familiarity*antecedence**	**28711**	**0.8 (vs. 4)**
7	familiarity + antecedence	28714	0.029 (vs. 6)
rp - critical			
1	literality * antecedence * familiarity	34041	n/a
2	literality * antecedence + familiarity	34039	0.2 (vs. 1)
3	literality * familiarity + antecedence	34039	0.3 (vs. 1)

4	familiarity * antecedence + literality	34037	0.6 (vs. 1)
5	literality + familiarity + antecedence	34038	0.5 (vs. 2) 0.2 (vs. 3) 0.097 (vs. 4)
6	literality + familiarity	34041	0.03 (vs. 5)
7	**familiarity + antecedence**	**34037**	**0.3 (vs. 5)**
8	literality + antecedence	34043	0.008 (vs. 5)
9	familiarity	34040	0.03 (vs. 7)
10	antecedence	34042	0.008 (vs. 7)
tt - critical			
1	literality * antecedence * familiarity	30949	n/a
2	**literality * antecedence + familiarity**	**30947**	**0.2 (vs. 1)**
3	literality * familiarity + antecedence	30950	0.08 (vs. 1)
4	familiarity * antecedence + literality	30949	0.1 (vs. 1)
5	literality + familiarity + antecedence	30949	0.044 (vs. 2) 0.2 (vs. 3) 0.1 (vs. 4)
6	literality * antecedence	30972	< 0.001 (vs. 2)
fp – post-critical			

1	literality * antecedence * familiarity	38802	n/a
2	literality * antecedence + familiarity	38798	0.5 (vs. 1)
3	literality * familiarity + antecedence	38797	0.7 (vs. 1)
4	familiarity * antecedence + literality	38798	0.5 (vs. 1)
5	literality + familiarity + antecedence	38796	0.5 (vs. 2) 0.3 (vs. 3) 0.5 (vs. 4)
6	**literality + familiarity**	**38795**	**0.3 (vs. 5)**
7	familiarity + antecedence	38803	0.004 (vs. 5)
8	literality + antecedence	38804	0.001 (vs. 5)
9	literality	38803	0.001 (vs. 6)
10	familiarity	38802	0.004 (vs. 6)
rp – post-critical			
1	literality * antecedence * familiarity	42549	n/a
2	literality * antecedence + familiarity	42546	0.5 (vs. 1)
3	literality * familiarity + antecedence	42545	0.6 (vs. 1)
4	familiarity * antecedence +	42545	0.6 (vs. 1)

	literality		
5	literality + familiarity + antecedence	42544	0.7 (vs. 2) 0.4 (vs. 3) 0.3 (vs. 4)
6	literality + familiarity	42547	0.029 (vs. 5)
7	familiarity + antecedence	42551	0.002 (vs. 5)
8	**literality + antecedence**	**42542**	**0.8 (vs. 5)**
9	literality	42545	0.029 (vs. 8)
10	antecedence	42549	0.002 (vs. 8)
tt – post-critical			
1	literality * antecedence * familiarity	40438	n/a
2	literality * antecedence + familiarity	40434	0.6 (vs. 1)
3	literality * familiarity + antecedence	40434	0.5 (vs. 1)
4	familiarity * antecedence + literality	40434	0.5 (vs. 1)
5	**literality + familiarity + antecedence**	**40432**	**0.5 (vs. 2)** **0.9 (vs. 3)** **0.6 (vs. 4)**
6	literality + familiarity	40437	0.008 (vs. 5)
7	familiarity + antecedence	40445	< 0.001 (vs. 5)
8	literality + antecedence	40439	0.003 (vs. 5)

Appendix G: Full list of experimental materials (Experiment 4)

1.		
Literal	Explicit	Paul and Matt went camping together for the weekend. This was Paul's first time camping, so he asked Matt to bring all the necessary equipment. Matt arrived at the campsite with everything they needed. "You're equipped so well!" Paul said to him. They were hungry.
	Implicit	Paul and Matt went camping together for the weekend. They hadn't been outside the city in a long time and were really looking forward to spending some time in nature. Matt arrived at the campsite with everything they needed. "You're equipped so well!" Paul said to him. They were hungry.
Sarcastic	Explicit	Paul and Matt went camping together for the weekend. This was Paul's first time camping, so he asked Matt to bring all the necessary equipment. Matt arrived at the campsite with nothing but plastic cutlery. "You're equipped so well!" Paul said to him. They were hungry.
	Implicit	Paul and Matt went camping together for the weekend. They hadn't been outside the city in a long time and were really looking forward to spending some time in nature. Matt arrived at the campsite with

		nothing but plastic cutlery. "You're equipped so well!" Paul said to him. They were hungry.

2.		
Literal	Explicit	Chad was doing the dishes when he cut his finger on a can. He called his housemate April and asked her to bring him a plaster. She ran so quickly to get it that she stumbled and fell in her room. "You're so hasty!" he said to her. He went upstairs.
	Implicit	Chad was doing the dishes when he cut his finger on a can. It wasn't a deep wound but still he told his friend April that he might need to put on a plaster. She ran so quickly to get it that she stumbled and fell in her room. "You're so hasty!" he said to her. He went upstairs.
Sarcastic	Explicit	Chad was doing the dishes when he cut his finger on a can. He called his housemate April and asked her to bring him a plaster. She went to bring him one but got distracted by Facebook and forgot about Chad. "You're so hasty!" he said to her. He went upstairs.
	Implicit	Chad was doing the dishes when he cut his finger on a can. It wasn't a deep wound but still he told his

| | | friend April that he might need to put on a plaster. She went to bring him one but got distracted by Facebook and forgot about Chad. "You're so hasty!" he said to her. He went upstairs. |

3.		
Literal	Explicit	Ross had lost his job and was sad when he came home. He told his friend Kerry about it and said that he really doesn't want to hear any success stories that night. He knew she'd been promoted, but when he asked her about her work, Kerry said it's boring. "That's so gracious of you!" he said to her. He went to sleep.
	Implicit	Ross had lost his job and was sad when he came home. He asked his friend Kerry to stay with him for a while because he felt very discouraged and unsuccessful. He knew she'd been promoted, but when he asked her about her work, Kerry said it's boring. "That's so gracious of you!" he said to her. He went to sleep.
Sarcastic	Explicit	Ross had lost his job and was sad when he came home. He told his friend Kerry about it and said that

		he really doesn't want to hear any success stories that night. When he asked her about her work, Kerry started bragging about getting promoted. "That's so gracious of you!" he said to her. He went to sleep.
	Implicit	Ross had lost his job and was sad when he came home. He asked his friend Kerry to stay with him for a while because he felt very discouraged and unsuccessful. When he asked her about her work, Kerry started bragging about getting promoted. "That's so gracious of you!" he said to her. He went to sleep.

4.		
Literal	Explicit	Cara and Eve were in a supermarket doing food shopping and were queuing to pay. Cara asked Eve to carefully put all the food in bags so that they could easily carry them to the car. Eve managed to fit everything in two bags. "You packed them great!" Cara said to her. They drove home.
	Implicit	Cara and Eve were in a supermarket doing food shopping and were queuing to pay. They were preparing a Christmas meal for both their families who were coming to visit. Eve managed to fit everything in two bags. "You packed them great!" Cara said to her. They drove home.

| Sarcastic | Explicit | Cara and Eve were in a supermarket doing food shopping and were queuing to pay. Cara asked Eve to carefully put all the food in bags so that they could easily carry them to the car. Eve packed the eggs under the turkey and broke them all. "You packed them great!" Cara said to her. They drove home. |
| | Implicit | Cara and Eve were in a supermarket doing food shopping and were queuing to pay. They were preparing a Christmas meal for both their families who were coming to visit. Eve packed the eggs under the turkey and broke them all. "You packed them great!" Cara said to her. They drove home. |

5.		
Literal	Explicit	Ed and Lee were driving on the motorway when Ed's car broke down. He asked his friend Lee who was a mechanic to help him out. Lee asked Ed to stay in the car while he went out in the cold and fixed it. "Your assistance is invaluable!" Ed said to him. They had some coffee.
	Implicit	Ed and Lee were driving on the motorway when Ed's car broke down. He'd never had problems with it and was completely clueless as to what to do to fix it. Lee asked him to stay in the car while he went

		out in the cold and fixed it. "Your assistance is invaluable!" Ed said to him. They had some coffee.
Sarcastic	Explicit	Ed and Lee were driving on the motorway when Ed's car broke down. Ed asked his friend Lee who was a mechanic to help him out. Lee said he doesn't want to go out of the car because it was cold outside. "Your assistance is invaluable!" Ed said to him. They had some coffee.
	Implicit	Ed and Lee were driving on the motorway when Ed's car broke down. He'd never had problems with it and was completely clueless as to what to do to fix it. Lee said he doesn't want to go out of the car because it was cold outside. "Your assistance is invaluable!" Ed said to him. They had some coffee.

6.		
Literal	Explicit	Brooke and Maya had just got back home from university and were starving. Maya asked Brooke if she could cook for them since she always made really tasty recipes. Brooke made a delicious Korean recipe. "This meal is delectable!" Maya said to her. She laid the table.
	Implicit	Brooke and Maya had just got back home from university and were starving. Brooke offered to cook

		since she hadn't done that in ages and was kind of missing it. She made a delicious Korean recipe. "This meal is delectable!" Maya said to her. She laid the table.
Sarcastic	Explicit	Brooke and Maya had just got back home from university and were starving. Maya asked Brooke if she could cook for them since she always made really tasty recipes. Brooke quickly put together some tasteless jacket potatoes. "This meal is delectable!" Maya said to her. She laid the table.
	Implicit	Brooke and Maya had just got back home from university and were starving. Brooke offered to cook since she hadn't done that in ages and was kind of missing it. She quickly put together some tasteless jacket potatoes. "This meal is delectable!" Maya said to her. She laid the table.

7.		
Literal	Explicit	Sam and Tim were in a bar and wanted another round but ran out of money. Knowing how charismatic Tim was, Sam asked him to go and charm the barmaid and get them two free drinks. Tim went up to her, made a few witty jokes and got them the free drinks. "That was masterful!" Sam said to him.

		They went home.
	Implicit	Sam and Tim were in a bar and wanted another round but ran out of money. They thought it might be a good idea to try their luck at getting two free drinks from the barmaid. Tim went up to her, made a few witty jokes and got them the free drinks. "That was masterful!" Sam said to him. They went home.
Sarcastic	Explicit	Sam and Tim were in a bar and wanted another round but ran out of money. Knowing how charismatic Tim was, Sam asked him to go and charm the barmaid and get them two free drinks. Tim went up to her, made a bad joke, and the barmaid just laughed at him. "That was masterful!" Sam said to him. They went home.
	Implicit	Sam and Tim were in a bar and wanted another round but ran out of money. They thought it might be a good idea to try their luck at getting two free drinks from the barmaid. Tim went up to her, made a bad joke, and the barmaid just laughed at him. "That was masterful!" Sam said to him. They went home.

8.		
Literal	Explicit	Isla and Susan were in the library. Susan had always appreciated Isla for being very helpful so she asked her to help her carry some books from the shelves. Isla quickly got up and carried the whole pile of books for her. "Your reaction was nice!" Susan said to her. Revision was going well.
	Implicit	Isla and Susan were in the library. Susan was browsing through the books on the shelves and picked 7; she was then unable to carry all of them back to her desk. Isla quickly got up and carried the whole pile of books for her. "Your reaction was nice!" Susan said to her. Revision was going well.
Sarcastic	Explicit	Isla and Susan were in the library. Susan had always appreciated Isla for being very helpful so she asked her to help her carry some books from the shelves. Isla pretended to have something urgent to do and left without helping. "Your reaction was nice!" Susan said to her. Revision was going well.
	Implicit	Isla and Susan were in the library. Susan was browsing through the books on the shelves and picked 7; she was then unable to carry all of them back to her desk. Isla pretended to have something urgent to do and left without helping. "Your reaction was nice!" Susan said to her. Revision was going well.

9.		
Literal	Explicit	Josh and Jane had been living together for over a year now. Josh typically didn't mind doing housework so one morning she asked him to clean the kitchen. When she came home, Josh had already made the kitchen sparkle clean. "Your help is priceless!" she said to Josh. They then watched TV.
	Implicit	Josh and Jane had been living together for over a year now. Jane was always working late, but today was her turn to clean the kitchen so she was going to do it in the evening. When she came home, Josh had already made the kitchen sparkle clean. "Your help is priceless!" she said to Josh. They then watched TV.
Sarcastic	Explicit	Josh and Jane had been living together for over a year now. Josh typically didn't mind doing housework so one morning she asked him to clean the kitchen. When she came home, Josh had made an even bigger mess in the kitchen. "Your help is priceless!" she said to Josh. They then watched TV.
	Implicit	Josh and Jane had been living together for over a year now. Jane was always working late, but today

		was her turn to clean the kitchen so she was going to do it in the evening. When she came home, Josh had made an even bigger mess in the kitchen. "Your help is priceless!" she said to Josh. They then watched TV.

10.		
Literal	Explicit	Cindy had the flu so she was staying at home. She texted her housemate Troy to buy her some Lemsip when he's on his way home and he said he would. When he got home, he brought her plenty of medicine and some soup. "This cure is perfect for me!" she said to him. They cooked together.
	Implicit	Cindy had the flu so she was staying at home. She was bored and was aimlessly changing TV channels whilst waiting for her housemate Troy to come back. When he got home, he brought her plenty of medicine and some soup. "This cure is perfect for me!" she said to him. They cooked together.
Sarcastic	Explicit	Cindy had the flu so she was staying at home. She texted her housemate Troy to buy her some Lemsip when he's on his way home and he said he would. When he got home, he didn't bring any medicine,

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		only some cold beer that Cindy couldn't drink. "This cure is perfect for me!" she said to him. They cooked together.
	Implicit	Cindy had the flu so she was staying at home. She was bored and was aimlessly changing TV channels whilst waiting for her housemate Troy to come back. When he got home, he didn't bring any medicine, only some cold beer that Cindy couldn't drink. "This cure is perfect for me!" she said to him. They cooked together.

11.		
Literal	Explicit	Lilly and Kim were about to set off on a long journey. Lilly was going to drive and she asked Kim to fill up the petrol tank the night before. When they were about to leave, Lilly saw that Kim remembered to fill up the petrol tank. "Your help is indispensable!" she said to Kim. They drove off.
	Implicit	Lilly and Kim were about to set off on a long journey. They both loved travelling and were now about to go on a hiking trip for their holidays. When they were about to leave, Lilly saw that Kim

		remembered to fill up the petrol tank. "Your help is indispensable!" she said to Kim. They drove off.
Sarcastic	Explicit	Lilly and Kim were about to set off on a long journey. Lilly was going to drive and she asked Kim to fill up the petrol tank the night before. When they were about to leave, Lilly saw that Kim had forgotten to fill up the petrol tank. "Your help is indispensable!" she said to Kim. They drove off.
	Implicit	Lilly and Kim were about to set off on a long journey. They both loved travelling and were now about to go on a hiking trip for their holidays. When they were about to leave, Lilly saw that Kim had forgotten to fill up the petrol tank. "Your help is indispensable!" she said to Kim. They drove off.

12.		
Literal	Explicit	Alexa and Julie had both graduated from university so Julie wanted to cook a celebratory meal. Alexa liked Julie's idea but asked her to cook anything other than fish which Alexa couldn't stand. Julie made a chicken speciality that Alexa loved. "My kind of food!" Alexa said to Julie. They went out.
	Implicit	Alexa and Julie had both graduated from university so Julie wanted to cook a celebratory meal. Julie

		loved cooking so she didn't mind doing this for the two of them; she asked Alexa to bring the wine. She made a chicken speciality that Alexa loved. "My kind of food!" Alexa said to Julie. They went out.
Sarcastic	Explicit	Alexa and Julie had both graduated from university so Julie wanted to cook a celebratory meal. Alexa liked Julie's idea but asked her to cook anything other than fish which Alexa couldn't stand. Julie forgot that Alexa didn't eat fish and made a salmon dish. "My kind of food!" Alexa said to Julie. They went out.
	Implicit	Alexa and Julie had both graduated from university so Julie wanted to cook a celebratory meal. Julie loved cooking so she didn't mind doing this for the two of them; she asked Alexa to bring the wine. Julie forgot that Alexa didn't eat fish and made a salmon dish. "My kind of food!" Alexa said to Julie. They went out.

13.

Literal	Explicit	One winter Ollie caught the flu and was so sick that he couldn't get out of bed. He asked his girlfriend Hannah to take care of him since he didn't have anybody else he could rely on. Hannah brought him soup every day until he was all better. "Your help is always guaranteed!" he said to her. She didn't reply.
	Implicit	One winter Ollie caught the flu and was so sick that he couldn't get out of bed. He needed somebody to take care of him since all his housemates were away. His girlfriend Hannah brought him soup every day until he was all better. "Your help is always guaranteed!" he said to her. She didn't reply.
Sarcastic	Explicit	One winter Ollie caught the flu and was so sick that he couldn't get out of bed. He asked his girlfriend Hannah to take care of him since he didn't have anybody else he could rely on. However, Hannah didn't visit him at all while he was sick. "Your help is always guaranteed!" he said to her. She didn't reply.
	Implicit	One winter Ollie caught the flu and was so sick that he couldn't get out of bed. He needed somebody to take care of him since all his housemates were away. However, his girlfriend Hannah didn't visit

		him at all while he was sick. "Your help is always guaranteed!" he said to her. She didn't reply.

14.		
Literal	Explicit	Noah had been working very hard lately so his boss gave him a day off on Friday. He couldn't decide what to do with his day off so he asked his friend Lola to make an exciting plan for him. Lola bought him tickets for a basketball game on Friday. "You've got me impatient!" he said to her. He went to the gym.
	Implicit	Noah had been working very hard lately so his boss gave him a day off on Friday. He was bad at planning any activities but his friend Lola loved to organise them for other people. Lola bought him tickets for a basketball game on Friday. "You've got me impatient!" he said to her. He went to the gym.
Sarcastic	Explicit	Noah had been working very hard lately so his boss gave him a day off on Friday. He couldn't decide what to do with his day off so he asked his friend Lola to make an exciting plan for him. Lola made

		him a dentist appointment for his surgery. "You've got me impatient!" he said to her. He went to the gym.
	Implicit	Noah had been working very hard lately so his boss gave him a day off on Friday. He was bad at planning any activities but his friend Lola loved to organise them for other people. Lola made him a dentist appointment for his surgery. "You've got me impatient!" he said to her. He went to the gym.

15.		
Literal	Explicit	Nora offered to walk Ally to her friend's party. As she was coming along anyway, Ally asked her if she could help her with the heavy gift that she was carrying. Nora carried the gift all the way there. "Your help is really indispensable!" Ally said to her. Nora smiled.
	Implicit	Nora offered to walk Ally to her friend's party. It wasn't a long distance, but Ally was walking on high heels and was carrying a heavy gift for her friend. Nora took the gift from Ally and carried it all the way there. "Your help is really indispensable!" Ally said to her. Nora smiled.

Sarcastic	Explicit	Nora offered to walk Ally to her friend's party. As she was coming along anyway, Ally asked her if she could help her with the heavy gift that she was carrying. Nora wasn't keen on carrying the heavy gift so she walked empty handed in front of her. "Your help is really indispensable!" Ally said to her. Nora smiled.
	Implicit	Nora offered to walk Ally to her friend's party. It wasn't a long distance, but Ally was walking on high heels and was carrying a heavy gift for her friend. Nora wasn't keen on carrying the heavy gift so she walked empty handed in front of her. "Your help is really indispensable!" Ally said to her. Nora smiled.

16.		
Literal	Explicit	Dean and Chloe were on holiday in Valencia for a week. The end of the trip was approaching so Dean asked Chloe to think of something thrilling to do on their last day. Chloe suggested they go and watch the Formula 1 race, which was Dean's favourite sport. "Your suggestion is stirring!" he said to her.

		They went out.
	Implicit	Dean and Chloe were on holiday in Valencia for a week. Their trip was quickly coming to an end, and they weren't sure what to do on their final day. Chloe suggested they go and watch the Formula 1 race, which was Dean's favourite sport. "Your suggestion is stirring!" he said to her. They went out.
Sarcastic	Explicit	Dean and Chloe were on holiday in Valencia for a week. The end of the trip was approaching so Dean asked Chloe to think of something thrilling to do on their last day. Chloe suggested they stay in the hotel and watch TV, which was quite boring. "Your suggestion is stirring!" Dean said to her. They went out.
	Implicit	Dean and Chloe were on holiday in Valencia for a week. Their trip was quickly coming to an end, and they weren't sure what to do on their final day. Chloe suggested they stay in the hotel and watch TV, which was quite boring. "Your suggestion is stirring!" Dean said to her. They went out.

17.

Literal	Explicit	Adam and Abby were going to go see a film at the cinema. Abby told Adam she was willing to see any film he wanted other than a violent one. The film that they saw was a light-hearted comedy. "This film is my type!" she said to him. They then had dinner in town.
	Implicit	Adam and Abby were going to go see a film at the cinema. They planned to meet some friends in town beforehand and then head towards the cinema. The film that they saw was a light-hearted comedy. "This film is my type!" Abby said to Adam. They then had dinner in town.
Sarcastic	Explicit	Adam and Abby were going to go see a film at the cinema. Abby told Adam she was willing to see any film he wanted other than a violent one. The film turned out to be full of violent scenes which Abby really hated. "This film is my type!" she said to him. They then had dinner in town.
	Implicit	Adam and Abby were going to go see a film at the cinema. They planned to meet some friends in town beforehand and then head towards the cinema. The film turned out to be full of violent scenes which Abby really hated. "This film is my type!" Abby said to Adam. They then had dinner in town.

18.		
Literal	Explicit	Zack and Richard were moving into a new house. Zack was off work so Richard asked him to paint the walls of the living room since Zack didn't have anything else to do. In the evening when Richard got home, Zack had already painted it. "Your work is progressing fast!" Richard said to him. He went upstairs.
	Implicit	Zack and Richard were moving into a new house. They both changed their jobs and relocated to London; the living room needed to be painted. In the evening when Richard got home, Zack had already painted
Sarcastic	Explicit	Zack and Richard were moving into a new house. Zack was off work so Richard asked him to paint the walls of the living room since Zack didn't have anything else to do. In the evening when Richard got home, Zack had barely painted any wall. "Your work is progressing fast!" Richard said to him. He went upstairs.
	Implicit	Zack and Richard were moving into a new house. They both changed their jobs and relocated to

		London; the living room needed to be painted. In the evening when Richard got home, Zack had barely painted any wall. "Your work is progressing fast!" Richard said to him. He went upstairs.

19.		
Literal	Explicit	Ella couldn't wait for Friday night when she was going out with her friend Ray. She told him she wanted to go and dance and he was up for that. On the night, Ray suggested they go to a 90's dance party at his friend's house. "Your suggestion is delightful!" she said to him. It was raining.
	Implicit	Ella couldn't wait for Friday night when she was going out with her friend Ray. They needed to relax after a busy week. On the night, Ray suggested they go to a 90's dance party at his friend's house. "Your suggestion is delightful!" she said to him. It was raining.
Sarcastic	Explicit	Ella couldn't wait for Friday night when she was going out with her friend Ray. She told him she wanted to go and dance and he was up for that. On the night, Ray insisted that they watch a boxing game but Ella hated sports and wasn't happy with his idea. "Your suggestion is delightful!" she said to

| | | him. It was raining. |
| | Implicit | Ella couldn't wait for Friday night when she was going out with her friend Ray. They needed to relax after a busy week. On the night, Ray insisted that they watch a boxing game but Ella hated sports and wasn't happy with his idea. "Your suggestion is delightful!" she said to him. It was raining. |

20.		
Literal	Explicit	Larry was studying Geography at the university and his friend Don was curious about the subject too. When Larry's favourite speaker gave a talk, Don went along expecting to be enthralled. The lecture was very interesting and the boys were impressed. "That talk was impeccable!" Don said to Larry. They had lunch.
	Implicit	Larry was studying Geography at the university and his friend Don was curious about the subject too. One afternoon, Don had nothing to do so he went along to one of Larry's lectures. The lecture was very interesting and the boys were impressed. "That talk was impeccable!" Don said to Larry. They

		had lunch.
Sarcastic	Explicit	Larry was studying Geography at the university and his friend Don was curious about the subject too. When Larry's favourite speaker gave a talk, Don went along expecting to be enthralled. The lecture was very boring and the boys left early. "That talk was impeccable!" Don said to Larry. They had lunch.
	Implicit	Larry was studying Geography at the university and his friend Don was curious about the subject too. One afternoon, Don had nothing to do so he went along to one of Larry's lectures. The lecture was very boring and the boys left early. "That talk was impeccable!" Don said to Larry. They had lunch.

21.		
Literal	Explicit	Donna was not feeling well and was resting in bed. She had just cleaned her room so she asked her friend Jay to be extra careful not to spill her soup when bringing it over from the kitchen. He brought it to Donna without spilling a single drop. "Your balance is so good!" she said to him. He sat down.

	Implicit	Donna was not feeling well and was resting in bed. Her mum had left her a bowl of soup in the kitchen so Donna asked her friend Jay to bring it to her. He brought it to Donna without spilling a single drop. "Your balance is so good!" she said to him. He sat down.
Sarcastic	Explicit	Donna was not feeling well and was resting in bed. She had just cleaned her room so she asked her friend Jay to be extra careful not to spill her soup when bringing it over from the kitchen. He managed to spill almost all of it on the floor in her room. "Your balance is so good!" she said to him. He sat down.
	Implicit	Donna was not feeling well and was resting in bed. Her mum had left her a bowl of soup in the kitchen so Donna asked her friend Jay to bring it to her. He managed to spill almost all of it on the floor in her room. "Your balance is so good!" she said to him. He sat down.

22.		
Literal	Explicit	Amy was almost done writing her final year dissertation when her laptop froze. She knew her friend

		Rob was very good at computers and could fix it so she asked for his help. He managed to unfreeze the computer and she retrieved her work. "Your assistance was useful!" she said to him. He then went home.
	Implicit	Amy was almost done writing her final year dissertation when her laptop froze. Her friend Rob was in the house at the time and came over to see what had happened. He managed to unfreeze the computer and she retrieved her work. "Your assistance was useful!" she said to him. He then went home.
Sarcastic	Explicit	Amy was almost done writing her final year dissertation when her laptop froze. She knew her friend Rob was very good at computers and could fix it so she asked for his help. He pressed the wrong button, the computer died and all her work was lost. "Your assistance was useful!" she said to him. He then went home.
	Implicit	Amy was almost done writing her final year dissertation when her laptop froze. Her friend Rob was in the house at the time and came over to see what had happened. He pressed the wrong button, the computer died and all her work was lost. "Your assistance was useful!" she said to him. He then went

		home.

23.		
Literal	Explicit	Colin and Janet were planning their weekend together. Colin had asked Janet to go somewhere out of the city and do something active and risk-taking. After putting some thought into it, Janet suggested they go rafting on a nearby river. "Your idea is so adventurous!" he said to her. They discussed it a bit.
	Implicit	Colin and Janet were planning their weekend together. Colin was hoping to do something wild in the countryside but had not mentioned this to Janet yet. After putting some thought into it, Janet suggested they go rafting on a nearby river. "Your idea is so adventurous!" he said to her. They discussed it a bit.
Sarcastic	Explicit	Colin and Janet were planning their weekend together. Colin had asked Janet to go somewhere out of the city and do something active and risk-taking. After putting some thought into it, Janet suggested they go shopping in the city centre. "Your idea is so adventurous!" he said to her. They discussed it a bit.

	Implicit	Colin and Janet were planning their weekend together. Colin was hoping to do something wild in the countryside but had not mentioned this to Janet yet. After putting some thought into it, Janet suggested they go shopping in the city centre. "Your idea is so adventurous!" he said to her. They discussed it a bit.

24.		
Literal	Explicit	James had always bought Fred the same birthday present every year - tickets to a musical. This year Fred told James that he wanted to receive something different and unexpected for his birthday. James got him the latest PS3 game that Fred wanted. "This was a break from tradition!" Fred said to James. They went out.
	Implicit	James had always bought Fred the same birthday present every year - tickets to a musical. However, Fred was hoping that he won't be able to guess what he'd receive for his birthday this year. James got him the latest PS3 game that Fred wanted. "This was a break from tradition!" Fred said to James. They

		went out.
Sarcastic	Explicit	James had always bought Fred the same birthday present every year - tickets to a musical. This year Fred told James that he wanted to receive something different and unexpected for his birthday. James got him tickets to a musical in town. "This was a break from tradition!" Fred said to James. They went out.
	Implicit	James had always bought Fred the same birthday present every year - tickets to a musical. However, Fred was hoping that he won't be able to guess what he'd receive for his birthday this year. James got him tickets to a musical in town. "This was a break from tradition!" Fred said to James. They went out.

Appendix H: Full list of filler items (Experiment 4)

	Two characters + literal negative comment
1	Barbara and Carlos went into town one afternoon to have a walk. The weather forecast predicted it would be sunny and warm all day long. While they were in town, it suddenly started raining heavily and they didn't have an umbrella. "The forecast is unreliable!" Barbara said to Carlos. They went home.
2	Patrick and Josie were planning a trip to Venice and were looking for accommodation. They booked a room in a nice hotel by the Rialto Bridge. When they arrived, the room was very small and dirty, and the staff were not helpful at all. "We can't stay here!" Patrick said to Josie. They cancelled the booking.
3	Xavier and Phil went to see a movie at the cinema. They had to wait in a long queue to buy their tickets and they only had 5 minutes left before the movie started. The queue was moving slowly; there was not much they could do about it. "We'll miss the beginning!" Xavier said to Phil. They were impatient.
4	Rebecca gave Saul a new mobile phone for his birthday. He was very happy because it was a model that he had wanted to buy for a while. As he took it out of the box, he dropped it on the floor and broke it. "I'm not sure it can be fixed!" Rebecca said to Saul. He was sad.

5	Cal was working on a miniature house model he had to build for his architecture course. He was behind schedule and Chris offered to help out by fitting the windows. His work started progressing much faster but he was still pressed for time. "I hate working under stress!" Cal said to Chris. They did their best.
6	Travis and Otis were throwing a big house party. Around midnight, their neighbour came over to ask them to turn the music down since he needed to wake up early the next day. They had no choice but to finish the party early. "That is very disappointing!" Travis said to Otis. They went to sleep.
7	Felicia and Daphne were shopping for a dress. In the last shop they entered, Felicia tried on a red one that she really liked. However the dress was too small for her and there were no other sizes in the shop. "I'm just not lucky today!" Felicia said to Daphne. They went home.
8	Abbie was going to a wedding and needed a new pair of shoes. Her friend Nadine suggested she went to a shop that was located out of town but sold very stylish shoes. Abbie walked all the way there only to find that the shop had recently been closed. "What a pity!" Abbie said to Nadine. She took a cab back.
9	Craig and Eli were working on a project which required them to use a new piece of software. They had been trained on how to use it and hadn't had any recent problems with it. One day, the software crashed out of the blue and their work was lost. "I don't believe this!" Craig

	said to Eli. They called a technician.
10	Jeff and Martha wanted to go and see a circus show with their little cousin. They heard that Cirque du Soleil was having a show in town; they really wanted to get tickets for it. When they checked the website, it said that it was already sold out. "That's disappointing!" Jeff said to Martha. They booked another show.
11	Nabil and Billy were looking for a cheap flight to Greece. They wanted to book with Wizzair because they often had the lowest prices. When Nabil compared it with other companies, he realised that Wizzair was not the cheapest option out there. "Wizzair is not that cheap!" Nabil said to Billy. He was disappointed.
12	Julian and Mark didn't want to cook so they decided to order some food. They ordered from the only fast-food that was open at the time. The food arrived more than half an hour late; it was cold and tasteless. "This food isn't good!" Julian said to Mark. They were hungry.
	Two characters + literal positive comment
13	Harry and Tara were looking to rent a flat in Nottingham. They'd already seen several flats, and had their heart set on one of them. When they called the agency, they found out that their favourite flat was still available. "That's such great news!" Tara said. They soon moved in.

14	Greg and Rick had no plans for Friday evening. They rented the "Matrix" trilogy because they had never watched it before. The movies were so good that they stayed awake all night in order to finish them by morning. "These movies are amazing!" Greg said at the end. They went to sleep.
15	Andy and Blake wanted to do something fun on Saturday morning. They bought tickets for an art exhibition that they had read about in an art magazine. The exhibition was even better than they expected and they were truly impressed. "I'm so glad we came!" Andy said. They went for a beer afterwards.
16	Kaitlin and Neil planned to go to the theatre one evening. They were supposed to be outside the theatre at 19.45 in order to catch the show at 20.00. They left home a bit late but thankfully they managed to arrive at the theatre just on time. "We made it!" Kaitlin said. They enjoyed the play very much.
17	Jenny took Sabrina to one of her lectures on marine biology. Sabrina was very interested in the topic, although she was studying Computer Sciences herself. The lecture was extremely interesting and Sabrina planned to go to future ones too. "This lecture was great!" Sabrina said to Jenny. They went home.
18	Mitchell and Rita were organising a graduation party in their house. They needed to know how many people would come in order to

	know how much food to order. They calculated that there would probably be around 25 people, which is exactly how many came. "Our prediction was so accurate!" Rita said. The party was great.
19	Tahlia and Octavia didn't have any plans for the weekend. A friend of theirs invited them to her beach house. They couldn't wait to go and hoped only for good weather. The weather was perfect during the whole weekend so they enjoyed themselves. "This was a fun weekend!" Tahlia said. They went back home.
20	Alice and Benjamin promised a friend of theirs that they would give a free salsa lesson at his charity party. All the guests were really looking forward to it because the two teachers were very good. Many people took part in the lesson and they all loved it. "That was a success!" Alice said to Benjamin. They were tired.
21	Vickie and Lorna were working together in a photography studio. One day they had a family photoshoot planned and were looking forward to it. They loved taking photos of this family, because they were all very happy and playful. "This was a nice session!" Vickie said to Lorna. They went for lunch.
22	Bob and Molly were studying Philosophy at the university and were waiting for their exam results at the end of their second year. They were supposed to pick up their results on Monday so they went together. They both got very high marks. "I'm so relieved!" Bob said to

	Molly. They went home.
23	Rose and Nell wanted to buy a present together for a friend's birthday. They bought her a classical music CD from the new music shop in town. Their friend was very happy about the gift since she had wanted to buy it herself for a while. "This was such a good gift!" Rose said to Nell. They listened to the CD.
24	Ben and Jim were both playing in the university's basketball team. They were training very hard for a very important upcoming game which they hoped they could win. The game was quite difficult but both boys played very well and the team won. "Great job!" Ben said to Jim. They celebrated afterwards.
	Informative texts
25	The European Space Agency and the EU are currently building Galileo, a global navigation satellite system. One of the aims of Galileo is to provide a high-precision positioning system upon which European nations can rely, independently from the Russian GLONASS, US GPS, and Chinese Compass systems.
26	Travel agencies advertise New Zealand holidays a lot. This is an island country in the southwestern Pacific Ocean. It's just east of Australia across the Tasman Sea. It is now a very popular holiday destination, especially since everybody knows that the Lord of the

	Rings trilogy was filmed there.
27	Daniel loves going to music concerts but he hasn't been to one in quite a long time. When he heard his favourite band, Guns'n'Roses, was going to have a concert in his city, he was very happy and bought himself a ticket right away. Even though the event was months away, he couldn't stop talking about it.
28	Vincent had won tickets to one of the Wimbledon Championship matches this summer. He was really excited about this since he was a huge tennis fan. Although there were 4 more months left until the match, he'd already booked accommodation and transportation to London.
29	When my car broke down a few nights ago, the first thing I did was to get it out of the road, in a safe place. Once I was there, I called the AA of course. They managed to locate me using the GPS function on my phone. I waited for them for about an hour, but they fixed it quickly when they arrived.
30	On a Sunday afternoon, we all decided to go grocery shopping in order to make pancakes later in the evening. We had to buy flour, sugar, eggs and a bit of milk. The trouble was, we couldn't decide what to fill them with, so we got everything: chocolate spread, jam, ice cream and bananas.

31	Everybody should visit Iceland. It's so staggeringly beautiful and otherworldly. Everywhere you turn there are glaciers, waterfalls, lava fields, rainbows, streams and mountain ranges. It's also an ideal destination if you want to see the Northern Lights, especially if you go between February and March.
32	One night, the burglar alarm in our house went off for no apparent reason. We tried to stop it but nothing would work. It turned out that the batteries were dead, and we had to wait until morning to buy new ones and replace them. None of us managed to get any sleep that night. The alarm was really loud.
33	Jessica doesn't trust the media these days. She says it's too corrupted. She gets her news from Democracy Now! only. The program is funded entirely through contributions from listeners, viewers, and foundations and does not accept advertisers, corporate underwriting, or government funding.
34	My mum went to Sri Lanka recently and when she got back she couldn't stop talking about gulab jamun, a popular cheese-based dessert, similar to a dumpling, very popular over there. It is made mainly from milk solids, kneaded into a dough, shaped into small balls and deep fried at about 148°C.
35	Bungee jumping is probably the only extreme sport I would ever do. It involves jumping from a tall structure while connected to a large

	elastic cord. The tall structure is usually a fixed object, such as a building or bridge; but it is also possible to jump from a movable object, such as a hot-air-balloon or helicopter.
36	Emily didn't mind the rain at all. She was used to it, having lived in England almost all her life. Her brother on the other hand hated the rain, especially when it would spoil his plans. He went cycling one summer morning, and it suddenly started pouring down. Emily's brother was very frustrated by this.

Appendix I: *t*-values of non-significant fixed effects and *p*-values of

likelihood-ratio tests (Experiment 4)

Table for the t-values of the non-significant fixed effects (Experiment 4).

As a rule of thumb, only effects with |t| > 2 are likely to be significant (Baayen,

Davidson & Bates, 2008).

Analysis region	Reading measure	Fixed effects (from full model)	*t*
pre-critical	fp	literality	-0.6
		explicitness	0.9
		literality * explicitness	0.9
	rp	literality	-0.4
		literality * explicitness	0.2
	tt	literality	0.8
		explicitness	0.2
		literality * explicitness	-0.1
critical	fp	literality	1.8
		explicitness	0.001
		literality * explicitness	-0.8
	rp	explicitness	-0.2
		literality * explicitness	-0.4
	tt	explicitness	-0.6
		literality * explicitness	-0.4
post-critical	fp	n/a	n/a

		rp	explicitness	-0.03
			literality * explicitness	-0.4
		tt	explicitness	1.3
			literality * explicitness	-1.4

Series of likelihood-ratio tests, their AIC, and p-values (Experiment 4)			
	Fixed effects structure	AIC	*p*-value (vs. model #)
fp – pre-critical			
1	literality * explicitness	7775	n/a
2	literality + explicitness	7774	0.4 (vs. 1)
3	literality	7775	0.077 (vs. 2)
4	explicitness	7772	0.9 (vs. 2)
5	**Intercept**	**7773**	**0.9 (vs. 3)** **0.07 (vs. 4)**
rp – pre-critical			
1	literality * explicitness	8638	n/a
2	literality + explicitness	8636	0.8 (vs. 1)
3	literality	8640	0.015 (vs. 2)
4	**explicitness**	**8635**	**0.7 (vs. 2)**
5	Intercept	8639	0.015 (vs. 4)
tt –pre-critical			
1	literality * explicitness	9339	n/a
2	literality + explicitness	9337	0.9 (vs. 1)
3	literality	9335	0.8 (vs. 2)

4	explicitness	9336	0.3 (vs. 2)
5	**Intercept**	**9334**	**0.3 (vs. 3)** **0.7 (vs. 4)**
fp - critical			
1	literality * explicitness	8643	n/a
2	literality + explicitness	8642	0.4 (vs. 1)
3	literality	8641	0.4 (vs. 2)
4	explicitness	8643	0.078 (vs. 2)
5	**Intercept**	**8642**	**0.062 (vs. 3)** **0.3 (vs. 4)**
rp - critical			
1	literality * explicitness	9555	n/a
2	literality + explicitness	9553	0.7 (vs. 1)
3	**literality**	**9551**	**0.6 (vs. 2)**
4	explicitness	9563	< 0.001 (vs. 2)
5	Intercept	9562	< 0.001 (vs. 3)
tt - critical			
1	literality * explicitness	9372	n/a
2	literality + explicitness	9370	0.7 (vs. 1)
3	**literality**	**9370**	**0.3 (vs. 2)**
4	explicitness	9380	< 0.001 (vs. 2)
5	Intercept	9378	< 0.001 (vs. 3)
fp – post-critical			
1	**literality * explicitness**	**9990**	**n/a**

2	literality + explicitness	9994	0.019 (vs. 1)
rp – post-critical			
1	literality * explicitness	10852	n/a
2	literality + explicitness	10850	0.7 (vs. 1)
3	**literality**	**10848**	**0.6 (vs. 2)**
4	explicitness	10854	0.01 (vs. 2)
5	Intercept	10852	0.01 (vs. 3)
tt – post-critical			
1	literality * explicitness	10408	n/a
2	literality + explicitness	10408	0.2 (vs. 1)
3	**literality**	**10406**	**0.7 (vs. 2)**
4	explicitness	10413	0.01 (vs. 2)
5	Intercept	10411	0.01 (vs. 3)

Appendix J: Full list of experimental materials (Experiment 6)

1.		
Literal	Explicit	Bob had books thrown all over his house so he planned to rearrange his bookcase. He asked his friend Molly to help him with it because her bookcase always looked quite tidy. Molly made a quick inventory of Bob's books and arranged them on shelves alphabetically. Familiar: "You're so organised!" he said to her. They had tea. Unfamiliar: "That was systematic!" he said to her. They had tea.
	Implicit	Bob had books thrown all over his house so he planned to rearrange his bookcase. His friend Molly was also going to help since she was bored anyway with nothing better to do. Molly made a quick inventory of Bob's books and arranged them on shelves alphabetically. Familiar: "You're so organised!" he said to her. They had tea. Unfamiliar: "That was systematic!" he said to her. They had tea.

Sarcastic	Explicit	Bob had books thrown all over his house so he planned to rearrange his bookcase. He asked his friend Molly to help him with it because her bookcase always looked quite tidy. Molly picked up all his books and threw them in the bookcase in no particular order. Familiar: "You're so organised!" he said to her. They had tea. Unfamiliar: "That was systematic!" he said to her. They had tea.
	Implicit	Bob had books thrown all over his house so he planned to rearrange his bookcase. His friend Molly was also going to help since she was bored anyway with nothing better to do. Molly picked up all his books and threw them in the bookcase in no particular order. Familiar: "You're so organised!" he said to her. They had tea. Unfamiliar: "That was systematic!" he said to her. They had tea.

2.		
Literal	Explicit	Rose was getting ready to go on a ski trip when she realised she had a button missing on her coat. She

		asked her friend Nell to sew it for her since Nell had always said she loved sewing. Nell was singing a cheerful tune while happily sewing. Familiar: "Looks like you're having fun!" Rose said to her. It was sunny. Unfamiliar: "You're really taking pleasure in that!" Rose said to her. It was sunny.
	Implicit	Rose was getting ready to go on a ski trip when she realised she had a button missing on her coat. She didn't know how to sew so Nell offered to help her. Nell was singing a cheerful tune while happily sewing. Familiar: "Looks like you're having fun!" Rose said to her. It was sunny. Unfamiliar: "You're really taking pleasure in that!" Rose said to her. It was sunny.
Sarcastic	Explicit	Rose was getting ready to go on a ski trip when she realised she had a button missing on her coat. She asked her friend Nell to sew it for her since Nell had always said she loved sewing. Nell had a big frown on her face while trying to sew. Familiar: "Looks like you're having fun!" Rose said to her. It was sunny.

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		Unfamiliar: "You're really taking pleasure in that!" Rose said to her. It was sunny.
	Implicit	Rose was getting ready to go on a ski trip when she realised she had a button missing on her coat. She didn't know how to sew so Nell offered to help her. Nell had a big frown on her face while trying to sew. Familiar: "Looks like you're having fun!" Rose said to her. It was sunny. Unfamiliar: "You're really taking pleasure in that!" Rose said to her. It was sunny.

3.		
Literal	Explicit	Ross had lost his job and was sad when he came home. He told his friend Kerry about it and said that he really doesn't want to hear any success stories that night. He knew she'd been promoted, but when he asked her about her work, Kerry said it's boring. Familiar: "Always so modest!" he said to her. He went to sleep. Unfamiliar: "That's so discreet of you!" he said to her. He went to sleep.

	Implicit	Ross had lost his job and was sad when he came home. He asked his friend Kerry to stay with him for a while because he felt very discouraged and unsuccessful. He knew she'd been promoted, but when he asked her about her work, Kerry said it's boring. Familiar: "Always so modest!" he said to her. He went to sleep. Unfamiliar: "That's so discreet of you!" he said to her. He went to sleep.
Sarcastic	Explicit	Ross had lost his job and was sad when he came home. He told his friend Kerry about it and said that he really doesn't want to hear any success stories that night. When he asked her about her work, Kerry started bragging about getting promoted. Familiar: "Always so modest!" he said to her. He went to sleep. Unfamiliar: "That's so discreet of you!" he said to her. He went to sleep.
	Implicit	Ross had lost his job and was sad when he came home. He asked his friend Kerry to stay with him for a while because he felt very discouraged and unsuccessful. When he asked her about her work, Kerry started bragging about getting promoted.

		Familiar: "Always so modest!" he said to her. He went to sleep.
		Unfamiliar: "That's so discreet of you!" he said to her. He went to sleep.

4.		
Literal	Explicit	Will and Dave wanted to go surfing. Will asked Dave to rent a car that would fit all of their gear in it and pick him up on Saturday morning. Dave showed up at Will's place with a mini van that was big enough to carry all their equipment. Familiar: "This is brilliant!" Will said to Dave. They drove away. Unfamiliar: "This car is what we needed!" Will said to Dave. They drove away.
	Implicit	Will and Dave wanted to go surfing. They didn't know much about it, but wanted to give it a try so Dave rented a car to take them to the beach. Dave showed up at Will's place with a mini van that was big enough to carry all their equipment. Familiar: "This is brilliant!" Will said to Dave. They drove away.

		Unfamiliar: "This car is what we needed!" Will said to Dave. They drove away.
Sarcastic	Explicit	Will and Dave wanted to go surfing. Will asked Dave to rent a car that would fit all of their gear in it and pick him up on Saturday morning. Dave showed up at Will's place with a Mini Cooper in which they couldn't even fit half of their equipment. Familiar: "This is brilliant!" Will said to Dave. They drove away. Unfamiliar: "This car is what we needed!" Will said to Dave. They drove away.
	Implicit	Will and Dave wanted to go surfing. They didn't know much about it, but wanted to give it a try so Dave rented a car to take them to the beach. Dave showed up at Will's place with a Mini Cooper in which they couldn't even fit half of their equipment. Familiar: "This is brilliant!" Will said to Dave. They drove away. Unfamiliar: "This car is what we needed!" Will said to Dave. They drove away.

5.

Literal	Explicit	Peter and Becca wanted to see a theatre play at the weekend. Peter had always been very passionate about theatre so Becca asked him to choose an interesting play for them to see. On the night, the play he chose received standing ovations. Familiar: "That was riveting!" Becca said to him. They went home. Unfamiliar: "This production was great!" Becca said to him. They went home.
	Implicit	Peter and Becca wanted to see a theatre play at the weekend. They heard that their favourite director had just put on stage a new play so they wanted to see it. On the night, the play he chose received standing ovations. Familiar: "That was riveting!" Becca said to him. They went home. Unfamiliar: "This production was great!" Becca said to him. They went home.
Sarcastic	Explicit	Peter and Becca wanted to see a theatre play at the weekend. Peter had always been very passionate about theatre so Becca asked him to choose an interesting play for them to see. On the night, the play was so boring that most people left early.

		Familiar: "That was riveting!" Becca said to him. They went home. Unfamiliar: "This production was great!" Becca said to him. They went home.
	Implicit	Peter and Becca wanted to see a theatre play at the weekend. They heard that their favourite director had just put on stage a new play so they wanted to see it. On the night, the play was so boring that most people left early. Familiar: "That was riveting!" Becca said to him. They went home. Unfamiliar: "This production was great!" Becca said to him. They went home.

6.		
Literal	Explicit	Pablo was going to prepare dinner for some friends. He made his housemate Alan a list of the ingredients and asked him to buy them all. Alan came back home with all items bought. "Oh well done!" Pablo said to him. Their friends were coming at 7. Familiar: "Oh well done!" Pablo said to him. Their friends were coming at 7.

		Unfamiliar: "You did well!" Pablo said to him. Their friends were coming at 7.
	Implicit	Pablo was going to prepare dinner for some friends. He was going to meet his housemate Alan at 5pm at home; Alan was going to stop at the grocery store on his way back from work. Alan came back home with all items bought. Familiar: "Oh well done!" Pablo said to him. Their friends were coming at 7. Unfamiliar: "You did well!" Pablo said to him. Their friends were coming at 7.
Sarcastic	Explicit	Pablo was going to prepare dinner for some friends. He made his housemate Alan a list of the ingredients and asked him to buy them all. Alan ran into some friends and forgot to shop at all. Familiar: "Oh well done!" Pablo said to him. Their friends were coming at 7. Unfamiliar: "You did well!" Pablo said to him. Their friends were coming at 7.
	Implicit	Pablo was going to prepare dinner for some friends. He was going to meet his housemate Alan at 5pm at home; Alan was going to stop at the grocery store on his way back from work. Alan ran into some friends and forgot to shop at all.

		Familiar: "Oh well done!" Pablo said to him. Their friends were coming at 7.
		Unfamiliar: "You did well!" Pablo said to him. Their friends were coming at 7.

7.		
Literal	Explicit	Ivy was going to write an essay in the park, but her laptop was low on battery. Her friend Jade lent Ivy her own laptop but asked her to be careful with it since it's very expensive. Ivy took it to the park and took great care of it. Familiar: "So reliable!" Jade said to her. Ivy left. Unfamiliar: "Your attention is unfailing!" Jade said to her. Ivy left.
	Implicit	Ivy was going to write an essay in the park, but her laptop was low on battery. She borrowed the laptop of her friend Jade because that one was fully charged and easy to use. Ivy took it to the park and took great care of it. Familiar: "So reliable!" Jade said to her. Ivy left.

		Unfamiliar: "Your attention is unfailing!" Jade said to her. Ivy left.
Sarcastic	Explicit	Ivy was going to write an essay in the park, but her laptop was low on battery. Her friend Jade lent Ivy her own laptop but asked her to be careful with it since it's very expensive. Ivy took it to the park and dropped it in a puddle by accident. Familiar: "So reliable!" Jade said to her. Ivy left. Unfamiliar: "Your attention is unfailing!" Jade said to her. Ivy left.
	Implicit	Ivy was going to write an essay in the park, but her laptop was low on battery. She borrowed the laptop of her friend Jade because that one was fully charged and easy to use. Ivy took it to the park and dropped it in a puddle by accident. Familiar: "So reliable!" Jade said to her. Ivy left. Unfamiliar: "Your attention is unfailing!" Jade said to her. Ivy left.

8.

Literal	Explicit	Lucy had to write an essay on the Cold War and needed a good summary of it. She knew her friend Bria knew about all the good documentaries on the topic so she asked her for one. After watching it, Lucy had learned all she needed to know. Familiar: "How informative!" she said to Bria. She started writing. Unfamiliar: "Your clip was enlightening!" she said to Bria. She started writing.
	Implicit	Lucy had to write an essay on the Cold War and needed a good summary of it. Her friend Bria was working on a different topic, but she gave Lucy a documentary that she had stumbled across. After watching it, Lucy had learned all she needed to know. Familiar: "How informative!" she said to Bria. She started writing. Unfamiliar: "Your clip was enlightening!" she said to Bria. She started writing.
Sarcastic	Explicit	Lucy had to write an essay on the Cold War and needed a good summary of it. She knew her friend Bria knew about all the good documentaries on the topic so she asked her for one. After watching it, Lucy hadn't learned anything new.

		Familiar: "How informative!" she said to Bria. She started writing. Unfamiliar: "Your clip was enlightening!" she said to Bria. She started writing.
	Implicit	Lucy had to write an essay on the Cold War and needed a good summary of it. Her friend Bria was working on a different topic, but she gave Lucy a documentary that she had stumbled across. After watching it, Lucy hadn't learned anything new. Familiar: "How informative!" she said to Bria. She started writing. Unfamiliar: "Your clip was enlightening!" she said to Bria. She started writing.

9.		
Literal	Explicit	Jack was writing an essay on endangered species and needed a good book on it. He knew his friend Fiona was an expert in the field so asked her for a recommendation. She gave him a book which had all the useful information he needed. Familiar: "Big help!" he said to her. He went to the library.

		Unfamiliar: "This text is invaluable!" he said to her. He went to the library.
	Implicit	Jack was writing an essay on endangered species and needed a good book on it. He asked around for recommendations and eventually his friend Fiona had an idea. She gave him a book which had all the useful information he needed. Familiar: "Big help!" he said to her. He went to the library. Unfamiliar: "This text is invaluable!" he said to her. He went to the library.
Sarcastic	Explicit	Jack was writing an essay on endangered species and needed a good book on it. He knew his friend Fiona was an expert in the field so asked her for a recommendation. She gave him a book which didn't have any useful information at all. Familiar: "Big help!" he said to her. He went to the library. Unfamiliar: "This text is invaluable!" he said to her. He went to the library.
	Implicit	Jack was writing an essay on endangered species and needed a good book on it. He asked around for recommendations and eventually his friend Fiona had an idea. She gave him a book which didn't have

		any useful information at all.
		Familiar: "Big help!" he said to her. He went to the library.
		Unfamiliar: "This text is invaluable!" he said to her. He went to the library.

10.		
Literal	Explicit	Nora and Mary were going to start their exam period soon and were now studying all day. Nora asked Mary to study thoroughly because she was concerned that Mary's grades were dropping. When Nora entered Mary's room, she was at the last chapter.
		Familiar: "I see your revision is going well!" she said to Mary. Nora left.
		Unfamiliar: "Your revision is progressing well!" she said to Mary. Nora left.
	Implicit	Nora and Mary were going to start their exam period soon and were now studying all day long. They were studying in their own rooms, sometimes taking short breaks to eat. When Nora entered Mary's room, Mary was at the last chapter.

		Familiar: "I see your revision is going well!" she said to Mary. Nora left.
		Unfamiliar: "Your revision is progressing well!" she said to Mary. Nora left.
Sarcastic	Explicit	Nora and Mary were going to start their exam period soon and were now studying all day. Nora asked Mary to study thoroughly because she was concerned that Mary's grades were dropping. When Nora entered Mary's room, she was chatting on Facebook. Familiar: "I see your revision is going well!" she said to Mary. Nora left. Unfamiliar: "Your revision is progressing well!" she said to Mary. Nora left.
	Implicit	Nora and Mary were going to start their exam period soon and were now studying all day. They were studying in their own rooms, sometimes taking short breaks to eat. When Nora entered Mary's room, Mary was chatting on Facebook. Familiar: "I see your revision is going well!" she said to Mary. Nora left. Unfamiliar: "Your revision is progressing well!" she said to Mary. Nora left.

11.		
Literal	Explicit	Owen and Maya were painting their room. Owen asked Maya to pay attention when entering the room because he left the buckets of paint lying all over the floor. When Maya came into the room she skilfully avoided stepping in one. Familiar: "You're so careful!" he said to her. They kept on painting. Unfamiliar: "I appreciate your alertness!" he said to her. They kept on painting.
	Implicit	Owen and Maya were painting their room. They had bought a new house and this was the last room that needed to be painted; they had buckets of paint lying all over the floor. When Maya came into the room she skilfully avoided stepping in one. Familiar: "You're so careful!" he said to her. They kept on painting. Unfamiliar: "I appreciate your alertness!" he said to her. They kept on painting.
Sarcastic	Explicit	Owen and Maya were painting their room. Owen asked Maya to pay attention when entering the room because he left the buckets of paint lying all over the floor. When Maya came into the room she didn't

		look and stepped in a bucket.
		Familiar: "You're so careful!" he said to her. They kept on painting.
		Unfamiliar: "I appreciate your alertness!" he said to her. They kept on painting.
	Implicit	Owen and Maya were painting their room. They had bought a new house and this was the last room that needed to be painted; they had buckets of paint lying all over the floor. When Maya came into the room she didn't look and stepped in a bucket.
		Familiar: "You're so careful!" he said to her. They kept on painting.
		Unfamiliar: "I appreciate your alertness!" he said to her. They kept on painting.

12.		
Literal	Explicit	Rachel was a model for her friend Nikki's fashion show. Nikki told Rachel how important this show was and asked her to strive for a perfect look. When she was about to go on stage, Rachel had a flawless make-up and beautifully fixed hair.

		Familiar: "Looking good!" Nikki said to Rachel. She was nervous. Unfamiliar: "Your look is very chic!" Nikki said to Rachel. She was nervous.
	Implicit	Rachel was a model for her friend Nikki's fashion show. This was an important show for Nikki's career as many people from the industry were attending. When she was about to go on stage, Rachel had a flawless make-up and beautifully fixed hair. Familiar: "Looking good!" Nikki said to Rachel. She was nervous. Unfamiliar: "Your look is very chic!" Nikki said to Rachel. She was nervous.
Sarcastic	Explicit	Rachel was a model for her friend Nikki's fashion show. Nikki told Rachel how important this show was and asked her to strive for a perfect look. When she was about to go on stage, Rachel's make-up had worn off and her hair was in a messy state. Familiar: "Looking good!" Nikki said to Rachel. She was nervous. Unfamiliar: "Your look is very chic!" Nikki said to Rachel. She was nervous.
	Implicit	Rachel was a model for her friend Nikki's fashion show. This was an important show for Nikki's

		career as many people from the industry were attending. When she was about to go on stage, Rachel's make-up had worn off and her hair was in a messy state. Familiar: "Looking good!" Nikki said to Rachel. She was nervous. Unfamiliar: "Your look is very chic!" Nikki said to Rachel. She was nervous.

13.		
Literal	Explicit	Ed thought it would be nice to spend a Saturday afternoon with his girlfriend and his best friend Dan. Ed knew that Dan could come across as rude sometimes so he asked Dan to mind his behaviour. Dan was chivalrous towards Ed's girlfriend. Familiar: "How polite!" Ed said to him. Dan took a cab home. Unfamiliar: "How cordial!" Ed said to him. Dan took a cab home.
	Implicit	Ed thought it would be nice to spend a Saturday afternoon with his girlfriend and his best friend Dan. Dan was a rugby fan, so Ed invited his girlfriend and Dan to a rugby game. Dan was chivalrous

		towards Ed's girlfriend.
		Familiar: "How polite!" Ed said to him. Dan took a cab home.
		Unfamiliar: "How cordial!" Ed said to him. Dan took a cab home.
Sarcastic	Explicit	Ed thought it would be nice to spend a Saturday afternoon with his girlfriend and his best friend Dan. Ed knew that Dan could come across as rude sometimes so he asked Dan to mind his behaviour. Dan gave many rude answers to Ed's girlfriend. Familiar: "How polite!" Ed said to him. Dan took a cab home. Unfamiliar: "How cordial!" Ed said to him. Dan took a cab home.
	Implicit	Ed thought it would be nice to spend a Saturday afternoon with his girlfriend and his best friend Dan. Dan was a rugby fan, so Ed invited his girlfriend and Dan to a rugby game. Dan gave many rude answers to Ed's girlfriend. Familiar: "How polite!" Ed said to him. Dan took a cab home. Unfamiliar: "How cordial!" Ed said to him. Dan took a cab home.

14.		
Literal	Explicit	Jill and Kate were working in the same company. Kate wanted to find herself a boyfriend so she asked Jill to set her up a blind date with the nicest friend Jill had. On the date, Kate felt very at-ease with Jill's friend and they got along perfectly. Familiar: "He's a keeper!" Kate said to Jill. They went to work. Unfamiliar: "He has potential!" Kate said to Jill. They went to work.
	Implicit	Jill and Kate were working in the same company. Close to Valentine's Day, Jill set Kate up on a blind date with somebody she'd recently met. On the date, Kate felt very at-ease with Jill's friend and they got along perfectly. Familiar: "He's a keeper!" Kate said to Jill. They went to work. Unfamiliar: "He has potential!" Kate said to Jill. They went to work.
Sarcastic	Explicit	Jill and Kate were working in the same company. Kate wanted to find herself a boyfriend so she asked Jill to set her up a blind date with the nicest friend Jill had. On the date, Jill's friend was extremely

		impolite so Kate didn't like him.
		Familiar: "He's a keeper!" Kate said to Jill. They went to work.
		Unfamiliar: "He has potential!" Kate said to Jill. They went to work.
	Implicit	Jill and Kate were working in the same company. Close to Valentine's Day, Jill set Kate up on a blind date with somebody she'd recently met. On the date, Jill's friend was extremely impolite so Kate didn't like him.
		Familiar: "He's a keeper!" Kate said to Jill. They went to work.
		Unfamiliar: "He has potential!" Kate said to Jill. They went to work.

15.		
Literal	Explicit	Sam and Tim were in a bar and wanted another round but ran out of money. Knowing how charismatic Tim was, Sam asked him to go and charm the barmaid and get them two free drinks. Tim went up to her, made a few witty jokes and got them the free drinks.

		Familiar: "That was smooth!" Sam said to him. They went home. Unfamiliar: "That was masterful!" Sam said to him. They went home.
	Implicit	Sam and Tim were in a bar and wanted another round but ran out of money. They thought it might be a good idea to try their luck at getting two free drinks from the barmaid. Tim went up to her, made a few witty jokes and got them the free drinks. Familiar: "That was smooth!" Sam said to him. They went home. Unfamiliar: "That was masterful!" Sam said to him. They went home.
Sarcastic	Explicit	Sam and Tim were in a bar and wanted another round but ran out of money. Knowing how charismatic Tim was, Sam asked him to go and charm the barmaid and get them two free drinks. Tim went up to her, made a bad joke, and the barmaid just laughed at him. Familiar: "That was smooth!" Sam said to him. They went home. Unfamiliar: "That was masterful!" Sam said to him. They went home.
	Implicit	Sam and Tim were in a bar and wanted another round but ran out of money. They thought it might be

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		a good idea to try their luck at getting two free drinks from the barmaid. Tim went up to her, made a bad joke, and the barmaid just laughed at him. Familiar: "That was smooth!" Sam said to him. They went home. Unfamiliar: "That was masterful!" Sam said to him. They went home.

16.

Literal	Explicit	Paul and Matt went camping together for the weekend. This was Paul's first time camping, so he asked Matt to bring all the necessary equipment. Matt arrived at the campsite with everything they needed. Familiar: "You've come prepared!" Paul said to him. They were hungry. Unfamiliar: "You're equipped so well!" Paul said to him. They were hungry.
	Implicit	Paul and Matt went camping together for the weekend. They hadn't been outside the city in a long time and were really looking forward to spending some time in nature. Matt arrived at the campsite with everything they needed.

		Familiar: "You've come prepared!" Paul said to him. They were hungry. Unfamiliar: "You're equipped so well!" Paul said to him. They were hungry.
Sarcastic	Explicit	Paul and Matt went camping together for the weekend. This was Paul's first time camping, so he asked Matt to bring all the necessary equipment. Matt arrived at the campsite with nothing but plastic cutlery. Familiar: "You've come prepared!" Paul said to him. They were hungry. Unfamiliar: "You're equipped so well!" Paul said to him. They were hungry.
	Implicit	Paul and Matt went camping together for the weekend. They hadn't been outside the city in a long time and were really looking forward to spending some time in nature. Matt arrived at the campsite with nothing but plastic cutlery. Familiar: "You've come prepared!" Paul said to him. They were hungry. Unfamiliar: "You're equipped so well!" Paul said to him. They were hungry.

17.		
Literal	Explicit	Gary and Susan were in the library. Susan had always appreciated Gary for being very helpful so she asked him to help her carry some books from the shelves. Gary quickly got up and carried the whole pile of books for her. Familiar: "Such a gentleman!" Susan said to him. Revision was going well. Unfamiliar: "Your reaction was nice!" Susan said to him. Revision was going well.
	Implicit	Gary and Susan were in the library. Susan was browsing through the books on the shelves and picked 7; she was then unable to carry all of them back to her desk. Gary quickly got up and carried the whole pile of books for her. Familiar: "Such a gentleman!" Susan said to him. Revision was going well. Unfamiliar: "Your reaction was nice!" Susan said to him. Revision was going well.
Sarcastic	Explicit	Gary and Susan were in the library. Susan had always appreciated Gary for being very helpful so she asked him to help her carry some books from the shelves. Gary was too lazy and mumbled something

		about how he didn't want to get up.
		Familiar: "Such a gentleman!" Susan said to him. Revision was going well.
		Unfamiliar: "Your reaction was nice!" Susan said to him. Revision was going well.
	Implicit	Gary and Susan were in the library. Susan was browsing through the books on the shelves and picked 7; she was then unable to carry all of them back to her desk. Gary was too lazy and mumbled something about how he didn't want to get up.
		Familiar: "Such a gentleman!" Susan said to him. Revision was going well.
		Unfamiliar: "Your reaction was nice!" Susan said to him. Revision was going well.

18.		
Literal	Explicit	Josh and Jane had been living together for over a year now. Josh typically didn't mind doing housework so one morning she asked him to clean the kitchen. When she came home, Josh had already made the kitchen sparkle clean.

		Familiar: "So helpful!" she said to Josh. They then watched TV. Unfamiliar: "Your help is priceless!" she said to Josh. They then watched TV.
	Implicit	Josh and Jane had been living together for over a year now. Jane was always working late, but today was her turn to clean the kitchen so she was going to do it in the evening. When she came home, Josh had already made the kitchen sparkle clean. Familiar: "So helpful!" she said to Josh. They then watched TV. Unfamiliar: "Your help is priceless!" she said to Josh. They then watched TV.
Sarcastic	Explicit	Josh and Jane had been living together for over a year now. Josh typically didn't mind doing housework so one morning she asked him to clean the kitchen. When she came home, Josh had made an even bigger mess in the kitchen. Familiar: "So helpful!" she said to Josh. They then watched TV. Unfamiliar: "Your help is priceless!" she said to Josh. They then watched TV.
	Implicit	Josh and Jane had been living together for over a year now. Jane was always working late, but today

		was her turn to clean the kitchen so she was going to do it in the evening. When she came home, Josh had made an even bigger mess in the kitchen. Familiar: "So helpful!" she said to Josh. They then watched TV. Unfamiliar: "Your help is priceless!" she said to Josh. They then watched TV.

19.

Literal	Explicit	Cindy had the flu so she was staying at home. She texted her housemate Troy to buy her some Lemsip when he's on his way home and he said he would. When he got home, he brought her plenty of medicine and some soup. Familiar: "That's fantastic!" she said to him. They cooked together. Unfamiliar: "This cure is perfect for me!" she said to him. They cooked together.
	Implicit	Cindy had the flu so she was staying at home. She was bored and was aimlessly changing TV channels whilst waiting for her housemate Troy to come back. When he got home, he brought her plenty of

		medicine and some soup. Familiar: "That's fantastic!" she said to him. They cooked together. Unfamiliar: "This cure is perfect for me!" she said to him. They cooked together.
Sarcastic	Explicit	Cindy had the flu so she was staying at home. She texted her housemate Troy to buy her some Lemsip when he's on his way home and he said he would. When he got home, he didn't bring any medicine, only some cold beer that Cindy couldn't drink. Familiar: "That's fantastic!" she said to him. They cooked together. Unfamiliar: "This cure is perfect for me!" she said to him. They cooked together.
	Implicit	Cindy had the flu so she was staying at home. She was bored and was aimlessly changing TV channels whilst waiting for her housemate Troy to come back. When he got home, he didn't bring any medicine, only some cold beer that Cindy couldn't drink. Familiar: "That's fantastic!" she said to him. They cooked together. Unfamiliar: "This cure is perfect for me!" she said to him. They cooked together.

20.		
Literal	Explicit	Lilly and Kim were about to set off on a long journey. Lilly was going to drive and she asked Kim to fill up the petrol tank the night before. When they were about to leave, Lilly saw that Kim remembered to fill up the petrol tank. Familiar: "That's great!" she said to Kim. They drove off. Unfamiliar: "Your action was thoughtful!" she said to Kim. They drove off.
	Implicit	Lilly and Kim were about to set off on a long journey. They both loved travelling and were now about to go on a hiking trip for their holidays. When they were about to leave, Lilly saw that Kim remembered to fill up the petrol tank. Familiar: "That's great!" she said to Kim. They drove off. Unfamiliar: "Your action was thoughtful!" she said to Kim. They drove off.
Sarcastic	Explicit	Lilly and Kim were about to set off on a long journey. Lilly was going to drive and she asked Kim to fill up the petrol tank the night before. When they were about to leave, Lilly saw that Kim had

		forgotten to fill up the petrol tank.
		Familiar: "That's great!" she said to Kim. They drove off.
		Unfamiliar: "Your action was thoughtful!" she said to Kim. They drove off.
	Implicit	Lilly and Kim were about to set off on a long journey. They both loved travelling and were now about to go on a hiking trip for their holidays. When they were about to leave, Lilly saw that Kim had forgotten to fill up the petrol tank. Familiar: "That's great!" she said to Kim. They drove off. Unfamiliar: "Your action was thoughtful!" she said to Kim. They drove off.

21.		
Literal	Explicit	Alexa and Julie had both graduated from university so Julie wanted to cook a celebratory meal. Alexa liked Julie's idea but asked her to cook anything other than fish which Alexa couldn't stand. Julie made a chicken specialty that Alexa loved.

		Familiar: "My favourite!" she said to Julie. They went out. Unfamiliar: "My kind of food!" she said to Julie. They went out.
	Implicit	Alexa and Julie had both graduated from university so Julie wanted to cook a celebratory meal. Julie loved cooking so she didn't mind doing this for the two of them; she asked Alexa to bring the wine. She made a chicken specialty that Alexa loved. Familiar: "My favourite!" she said to Julie. They went out. Unfamiliar: "My kind of food!" she said to Julie. They went out.
Sarcastic	Explicit	Alexa and Julie had both graduated from university so Julie wanted to cook a celebratory meal. Alexa liked Julie's idea but asked her to cook anything other than fish which Alexa couldn't stand. Julie made a salmon specialty that Alexa didn't even touch. Familiar: "My favourite!" she said to Julie. They went out. Unfamiliar: "My kind of food!" she said to Julie. They went out.
	Implicit	Alexa and Julie had both graduated from university so Julie wanted to cook a celebratory meal. Julie

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		loved cooking so she didn't mind doing this for the two of them; she asked Alexa to bring the wine.
		Julie made a salmon specialty that Alexa didn't even touch.
		Familiar: "My favourite!" she said to Julie. They went out.
		Unfamiliar: "My kind of food!" she said to Julie. They went out.

22.		
Literal	Explicit	Cara and Eve were in a supermarket doing grocery shopping and were queuing to pay. Cara asked Eve to carefully put all the groceries in bags so that they could easily carry them to the car. Eve managed to fit everything in two bags.
		Familiar: "That was clever!" Cara said to her. They drove home.
		Unfamiliar: "You packed them great!" Cara said to her. They drove home.
	Implicit	Cara and Eve were in a supermarket doing grocery shopping and were queuing to pay. They were preparing a Christmas meal for both their families who were coming to visit. Eve managed to fit

		everything in two bags.
		Familiar: "That was clever!" Cara said to her. They drove home.
		Unfamiliar: "You packed them great!" Cara said to her. They drove home.
Sarcastic	Explicit	Cara and Eve were in a supermarket doing grocery shopping and were queuing to pay. Cara asked Eve to carefully put all the groceries in bags so that they could easily carry them to the car. Eve packed the eggs under the turkey and broke them all.
		Familiar: "That was clever!" Cara said to her. They drove home.
		Unfamiliar: "You packed them great!" Cara said to her. They drove home.
	Implicit	Cara and Eve were in a supermarket doing grocery shopping and were queuing to pay. They were preparing a Christmas meal for both their families who were coming to visit. Eve packed the eggs under the turkey and broke them all.
		Familiar: "That was clever!" Cara said to her. They drove home.
		Unfamiliar: "You packed them great!" Cara said to her. They drove home.

23.		
Literal	Explicit	One winter Ollie caught the flu and was so sick that he couldn't get out of bed. He asked his girlfriend Hannah to take care of him since he didn't have anybody else he could rely on. Hannah brought him soup every day until he was all better. Familiar: "You're so caring!" he said to her. She didn't reply. Unfamiliar: "Your care is overwhelming!" he said to her. She didn't reply.
	Implicit	One winter Ollie caught the flu and was so sick that he couldn't get out of bed. His girlfriend Hannah knew that he would need somebody to take care of him since the flu was quite serious. Hannah brought him soup every day until he was all better. Familiar: "You're so caring!" he said to her. She didn't reply. Unfamiliar: "Your care is overwhelming!" he said to her. She didn't reply.
Sarcastic	Explicit	One winter Ollie caught the flu and was so sick that he couldn't get out of bed. He asked his girlfriend Hannah to take care of him since he didn't have anybody else he could rely on. However, Hannah

		didn't visit him at all while he was sick.
		Familiar: "You're so caring!" he said to her. She didn't reply.
		Unfamiliar: "Your care is overwhelming!" he said to her. She didn't reply.
	Implicit	One winter Ollie caught the flu and was so sick that he couldn't get out of bed. His girlfriend Hannah knew that he would need somebody to take care of him since the flu was quite serious. However, Hannah didn't visit him at all while he was sick.
		Familiar: "You're so caring!" he said to her. She didn't reply.
		Unfamiliar: "Your care is overwhelming!" he said to her. She didn't reply.

24.		
Literal	Explicit	Chad was doing the dishes when he cut his finger on a can. He called his housemate April and asked her to bring him a plaster. She ran so quickly to get it that she stumbled and fell in her room.
		Familiar: "Oh there's no hurry!" he said to her. He went upstairs.

		Unfamiliar: "You're doing things in so much haste!" he said to her. He went upstairs.
	Implicit	Chad was doing the dishes when he cut his finger on a can. It wasn't a deep wound but still he told his friend April that he might need to put on a plaster. She ran so quickly to get it that she stumbled and fell in her room. Familiar: "Oh there's no hurry!" he said to her. He went upstairs. Unfamiliar: "You're doing things in so much haste!" he said to her. He went upstairs.
Sarcastic	Explicit	Chad was doing the dishes when he cut his finger on a can. He called his housemate April and asked her to bring him a plaster. She went to bring him one but got distracted by Facebook and forgot about Chad. Familiar: "Oh there's no hurry!" he said to her. He went upstairs. Unfamiliar: "You're doing things in so much haste!" he said to her. He went upstairs.
	Implicit	Chad was doing the dishes when he cut his finger on a can. It wasn't a deep wound but still he told his friend April that he might need to put on a plaster. She went to bring him one but got distracted by

		Facebook and forgot about Chad.
		Familiar: "Oh there's no hurry!" he said to her. He went upstairs.
		Unfamiliar: "You're doing things in so much haste!" he said to her. He went upstairs.

25.		
Literal	Explicit	Brooke and Ian had just got back home from university and were starving. Ian asked Brooke if she could cook for them since she always made really tasty recipes. She made a delicious Korean recipe. Familiar: "So yummy!" he said to her. He laid the table. Unfamiliar: "This meal is delectable!" he said to her. He laid the table.
	Implicit	Brooke and Ian had just got back home from university and were starving. Brooke offered to cook since she hadn't done that in ages and was kind of missing it. She made a delicious Korean recipe. Familiar: "So yummy!" he said to her. He laid the table. Unfamiliar: "This meal is delectable!" he said to her. He laid the table.

Sarcastic	Explicit	Brooke and Ian had just got back home from university and were starving. Ian asked Brooke if she could cook for them since she always made really tasty recipes. She quickly put together some tasteless jacket potatoes. Familiar: "So yummy!" he said to her. He laid the table. Unfamiliar: "This meal is delectable!" he said to her. He laid the table.
	Implicit	Brooke and Ian had just got back home from university and were starving. Brooke offered to cook since she hadn't done that in ages and was kind of missing it. She quickly put together some tasteless jacket potatoes. Familiar: "So yummy!" he said to her. He laid the table. Unfamiliar: "This meal is delectable!" he said to her. He laid the table.

26.		
Literal	Explicit	Noah had been working very hard lately so his boss gave him a day off on Friday. He couldn't decide

		what to do with his day off so he asked his friend Lola to make an exciting plan for him. Lola bought him tickets for a basketball game on Friday. Familiar: "Oh I can't wait!" he said to her. He went to the gym. Unfamiliar: "You got me impatient!" he said to her. He went to the gym.
	Implicit	Noah had been working very hard lately so his boss gave him a day off on Friday. He was bad at planning any activities but his friend Lola loved to organise them for other people. Lola bought him tickets for a basketball game on Friday. Familiar: "Oh I can't wait!" he said to her. He went to the gym. Unfamiliar: "You got me impatient!" he said to her. He went to the gym.
Sarcastic	Explicit	Noah had been working very hard lately so his boss gave him a day off on Friday. He couldn't decide what to do with his day off so he asked his friend Lola to make an exciting plan for him. Lola made him a dentist appointment for his surgery. Familiar: "Oh I can't wait!" he said to her. He went to the gym.

		Unfamiliar: "You got me impatient!" he said to her. He went to the gym.
	Implicit	Noah had been working very hard lately so his boss gave him a day off on Friday. He was bad at planning any activities but his friend Lola loved to organise them for other people. Lola made him a dentist appointment for his surgery. Familiar: "Oh I can't wait!" he said to her. He went to the gym. Unfamiliar: "You got me impatient!" he said to her. He went to the gym.

27.		
Literal	Explicit	Eric offered to walk Ally to her friend's party. As he was coming along anyway, she asked him if he could help her with the heavy gift that she was carrying. Eric carried the gift all the way there. Familiar: "How gentlemanly!" she said to him. He stayed at the party. Unfamiliar: "I knew you were gallant!" she said to him. He stayed at the party.
	Implicit	Eric offered to walk Ally to her friend's party. It wasn't a long distance, but she was walking on high

		heels and was carrying a heavy gift for her friend. Eric carried the gift all the way there.
		Familiar: "How gentlemanly!" she said to him. He stayed at the party.
		Unfamiliar: "I knew you were gallant!" she said to him. He stayed at the party.
Sarcastic	Explicit	Eric offered to walk Ally to her friend's party. As he was coming along anyway, she asked him if he could help her with the heavy gift that she was carrying. Eric wasn't keen on carrying the heavy gift so he walked empty handed in front of her.
		Familiar: "How gentlemanly!" she said to him. He stayed at the party.
		Unfamiliar: "I knew you were gallant!" she said to him. He stayed at the party.
	Implicit	Eric offered to walk Ally to her friend's party. It wasn't a long distance, but she was walking on high heels and was carrying a heavy gift for her friend. Eric wasn't keen on carrying the heavy gift so he walked empty handed in front of her.
		Familiar: "How gentlemanly!" she said to him. He stayed at the party.
		Unfamiliar: "I knew you were gallant!" she said to him. He stayed at the party.

28.		
Literal	Explicit	Betty and Lee were driving on the motorway when Betty's car broke down. She asked her friend Lee who was a mechanic to help her out. Lee asked her to stay in the car while he went out in the cold and fixed it. Familiar: "How charming!" she said to him. They had some coffee. Unfamiliar: "Your chivalry is unmatched!" she said to him. They had some coffee.
	Implicit	Betty and Lee were driving on the motorway when Betty's car broke down. She'd never had problems with it and was completely clueless as to what to do to fix it. Lee asked her to stay in the car while he went out in the cold and fixed it. Familiar: "How charming!" she said to him. They had some coffee. Unfamiliar: "Your chivalry is unmatched!" she said to him. They had some coffee.
Sarcastic	Explicit	Betty and Lee were driving on the motorway when Betty's car broke down. She asked her friend Lee who was a mechanic to help her out. Lee said he doesn't want to go out of the car because it was cold

		outside.
		Familiar: "How charming!" she said to him. They had some coffee.
		Unfamiliar: "Your chivalry is unmatched!" she said to him. They had some coffee.
	Implicit	Betty and Lee were driving on the motorway when Betty's car broke down. She'd never had problems with it and was completely clueless as to what to do to fix it. Lee said he doesn't want to go out of the car because it was cold outside.
		Familiar: "How charming!" she said to him. They had some coffee.
		Unfamiliar: "Your chivalry is unmatched!" she said to him. They had some coffee.

29.		
Literal	Explicit	Dean and Chloe were on holiday in Valencia for a week. The end of the trip was approaching so Dean asked Chloe to think of something thrilling to do on their last day. Chloe suggested they go and watch the Formula 1 race, which was Dean's favourite sport.

		Familiar: "So excited!" Dean said to her. They went out.
		Unfamiliar: "Your suggestion is stirring!" Dean said to her. They went out.
	Implicit	Dean and Chloe were on holiday in Valencia for a week. Their trip was quickly coming to an end, and they weren't sure what to do on their final day. Chloe suggested they go and watch the Formula 1 race, which was Dean's favourite sport.
		Familiar: "So excited!" Dean said to her. They went out.
		Unfamiliar: "Your suggestion is stirring!" Dean said to her. They went out.
Sarcastic	Explicit	Dean and Chloe were on holiday in Valencia for a week. The end of the trip was approaching so Dean asked Chloe to think of something thrilling to do on their last day. Chloe suggested they stay in the hotel and watch TV, which was quite boring.
		Familiar: "So excited!" Dean said to her. They went out.
		Unfamiliar: "Your suggestion is stirring!" Dean said to her. They went out.
	Implicit	Dean and Chloe were on holiday in Valencia for a week. Their trip was quickly coming to an end, and

		they weren't sure what to do on their final day. Chloe suggested they stay in the hotel and watch TV, which was quite boring. Familiar: "So excited!" Dean said to her. They went out. Unfamiliar: "Your suggestion is stirring!" Dean said to her. They went out.

30.		
Literal	Explicit	Harry and Tara were moving into a new office two floors up. Tara asked Harry to carry the heaviest box with books since Harry was the one who'd always enjoyed lifting heavy weights. Harry picked up the box easily and quickly took it up the stairs. Familiar: "You're so manly!" she said to Harry. They then had coffee. Unfamiliar: "You have serious strength!" he said to Harry. They then had coffee.
	Implicit	Harry and Tara were moving into a new office two floors up. They had to carry many boxes filled with books but one of them was much heavier than the others. Harry picked up the box easily and quickly

		took it up the stairs. Familiar: "You're so manly!" she said to Harry. They then had coffee. Unfamiliar: "You have serious strength!" he said to Harry. They then had coffee.
Sarcastic	Explicit	Harry and Tara were moving into a new office two floors up. Tara asked Harry to carry the heaviest box with books since Harry was the one who'd always enjoyed lifting heavy weights. Harry managed to carry it three steps up and then gave up. Familiar: "You're so manly!" she said to Harry. They then had coffee. Unfamiliar: "You have serious strength!" he said to Harry. They then had coffee.
	Implicit	Harry and Tara were moving into a new office two floors up. They had to carry many boxes filled with books but one of them was much heavier than the others. Harry managed to carry it three steps up and then gave up. Familiar: "You're so manly!" she said to Harry. They then had coffee. Unfamiliar: "You have serious strength!" he said to Harry. They then had coffee.

31.		
Literal	Explicit	Greg and Rick were PhD students. Rick was a very tidy person and he asked Greg at the beginning of the year to keep the office fairly clean. One day as Rick came in, he noticed that Greg had alphabetically arranged all their journal articles. Familiar: "This place is so tidy!" Rick said to him. They had a meeting. Unfamiliar: "Our office is well-ordered!" Rick said to him. They had a meeting.
	Implicit	Greg and Rick were PhD students. They were both studying the same subject, and had been officemates for about 5 months already. One day as Rick came in, he noticed that Greg had alphabetically arranged all their journal articles. Familiar: "This place is so tidy!" Rick said to him. They had a meeting. Unfamiliar: "Our office is well-ordered!" Rick said to him. They had a meeting.
Sarcastic	Explicit	Greg and Rick were PhD students. Rick was a very tidy person and he asked Greg at the beginning of the year to keep the office fairly clean. One day as Rick came in, he noticed that all of Greg's drafts

		were randomly thrown all over the floor.
		Familiar: "This place is so tidy!" Rick said to him. They had a meeting.
		Unfamiliar: "Our office is well-ordered!" Rick said to him. They had a meeting.
	Implicit	Greg and Rick were PhD students. They were both studying the same subject, and had been officemates for about 5 months already. One day as Rick came in, he noticed that all of Greg's drafts were randomly thrown all over the floor.
		Familiar: "This place is so tidy!" Rick said to him. They had a meeting.
		Unfamiliar: "Our office is well-ordered!" Rick said to him. They had a meeting.

32.		
Literal	Explicit	Adam and Abby were going to go see a movie in the cinema. Abby told Adam she was willing to see any movie he wanted other than a violent one. The movie that they saw was a light-hearted comedy.
		Familiar: "Well this is fun!" she said to him. They then had dinner in town.

		Unfamiliar: "This film is my type!" she said to him. They then had dinner in town.
	Implicit	Adam and Abby were going to go see a movie in the cinema. They planned to meet some friends in town beforehand and then head towards the cinema. The movie that they saw was a light-hearted comedy. Familiar: "Well this is fun!" she said to him. They then had dinner in town. Unfamiliar: "This film is my type!" she said to him. They then had dinner in town.
Sarcastic	Explicit	Adam and Abby were going to go see a movie in the cinema. Abby told Adam she was willing to see any movie he wanted other than a violent one. The movie turned out to be full of violent scenes which Abby really hated. Familiar: "Well this is fun!" she said to him. They then had dinner in town. Unfamiliar: "This film is my type!" she said to him. They then had dinner in town.
	Implicit	Adam and Abby were going to go see a movie in the cinema. They planned to meet some friends in town beforehand and then head towards the cinema. The movie turned out to be full of violent scenes

		which Abby really hated. Familiar: "Well this is fun!" she said to him. They then had dinner in town. Unfamiliar: "This film is my type!" she said to him. They then had dinner in town.

33.		
Literal	Explicit	Zack and Richard were moving into a new house. Zack was off work so Richard asked him to paint the walls of the living room since Zack didn't have anything else to do. In the evening when Richard got home, Zack had already painted it. Familiar: "You've been working hard today!" Richard said to him. He went upstairs. Unfamiliar: "Your hard work is noticeable!" Richard said to him. He went upstairs.
	Implicit	Zack and Richard were moving into a new house. They both changed their jobs and relocated to London; the living room needed to be painted. In the evening when Richard got home, Zack had already painted it.

		Familiar: "You've been working hard today!" Richard said to him. He went upstairs. Unfamiliar: "Your hard work is noticeable!" Richard said to him. He went upstairs.
Sarcastic	Explicit	Zack and Richard were moving into a new house. Zack was off work so Richard asked him to paint the walls of the living room since Zack didn't have anything else to do. In the evening when Richard got home, Zack had barely painted any wall. Familiar: "You've been working hard today!" Richard said to him. He went upstairs. Unfamiliar: "Your hard work is noticeable!" Richard said to him. He went upstairs.
	Implicit	Zack and Richard were moving into a new house. They both changed their jobs and relocated to London; the living room needed to be painted. In the evening when Richard got home, Zack had barely painted any wall. Familiar: "You've been working hard today!" Richard said to him. He went upstairs. Unfamiliar: "Your hard work is noticeable!" Richard said to him. He went upstairs.

34.		
Literal	Explicit	Ella couldn't wait for Friday night when she was going out with her friend Ray. She told him she wanted to go and dance and he was up for that. On the night, Ray suggested they go to a 90's dance party at his friend's house. Familiar: "Sounds like such fun!" she said to him. It was raining. Unfamiliar: "Your suggestion is delightful!" she said to him. It was raining.
	Implicit	Ella couldn't wait for Friday night when she was going out with her friend Ray. They needed to relax after a busy week. On the night, Ray suggested they go to a 90's dance party at his friend's house. Familiar: "Sounds like such fun!" she said to him. It was raining. Unfamiliar: "Your suggestion is delightful!" she said to him. It was raining.
Sarcastic	Explicit	Ella couldn't wait for Friday night when she was going out with her friend Ray. She told him she wanted to go and dance and he was up for that. On the night, Ray insisted that they watch a boxing game in the pub even though he knew Ella hated sports.

| | | Familiar: "Sounds like such fun!" she said to him. It was raining.

Unfamiliar: "Your suggestion is delightful!" she said to him. It was raining. |
| | Implicit | Ella couldn't wait for Friday night when she was going out with her friend Ray. They needed to relax after a busy week. On the night, Ray insisted that they watch a boxing game in the pub even though he knew Ella hated sports.

Familiar: "Sounds like such fun!" she said to him. It was raining.

Unfamiliar: "Your suggestion is delightful!" she said to him. It was raining. |

35.		
Literal	Explicit	Andy and Blake had to hand in an essay the next day. However, Andy was not in the mood to write and he knew Blake was not conscientious either so Andy asked him to join him for a party. Blake went along and ended up handing in the essay a week later. Familiar: "You rebel!" Andy said to Blake. Andy dropped out.

		Unfamiliar: "You're such an outlaw!" Andy said to Blake. Andy dropped out.
	Implicit	Andy and Blake had to hand in an essay the next day. However, that night they were invited to go to a house party organised by one of their best friends. Blake went along and ended up handing in the essay a week later. Familiar: "You rebel!" Andy said to Blake. Andy dropped out. Unfamiliar: "You're such an outlaw!" Andy said to Blake. Andy dropped out.
Sarcastic	Explicit	Andy and Blake had to hand in an essay the next day. However, Andy was not in the mood to write and he knew Blake was not conscientious either so Andy asked him to join him for a party. Blake declined saying he wants to finish the essay on time. Familiar: "You rebel!" Andy said to Blake. Andy dropped out. Unfamiliar: "You're such an outlaw!" Andy said to Blake. Andy dropped out.
	Implicit	Andy and Blake had to hand in an essay the next day. However, that night they were invited to go to a house party organised by one of their best friends. Blake declined saying he wants to finish the essay

		on time.
		Familiar: "You rebel!" Andy said to Blake. Andy dropped out.
		Unfamiliar: "You're such an outlaw!" Andy said to Blake. Andy dropped out.

36.		
Literal	Explicit	Larry was studying Geography at the university and his friend Don was curious about the subject too. When Larry's favourite speaker gave a talk, Don went along expecting to be enthralled. The lecture was very interesting and the boys were impressed. Familiar: "How fascinating!" Don said to Larry. They had lunch. Unfamiliar: "That talk was captivating!" Don said to Larry. They had lunch.
	Implicit	Larry was studying Geography at the university and his friend Don was curious about the subject too. One afternoon, Don had nothing to do so he went along to one of Larry's lectures. The lecture was very interesting and the boys were impressed.

		Familiar: "How fascinating!" Don said to Larry. They had lunch. Unfamiliar: "That talk was captivating!" Don said to Larry. They had lunch.
Sarcastic	Explicit	Larry was studying Geography at the university and his friend Don was curious about the subject too. When Larry's favourite speaker gave a talk, Don went along expecting to be enthralled. The lecture was very boring and the boys left early. Familiar: "How fascinating!" Don said to Larry. They had lunch. Unfamiliar: "That talk was captivating!" Don said to Larry. They had lunch.
	Implicit	Larry was studying Geography at the university and his friend Don was curious about the subject too. One afternoon, Don had nothing to do so he went along to one of Larry's lectures. The lecture was very boring and the boys left early. Familiar: "How fascinating!" Don said to Larry. They had lunch. Unfamiliar: "That talk was captivating!" Don said to Larry. They had lunch.

37.		
Literal	Explicit	Ben was moving house and asked his friend Jim to help him out. Ben stressed how important it was that they were on time to move into the new house and asked Jim to drive him in the morning. Jim showed up 20 minutes before the time they agreed. Familiar: "You're early!" Ben said to Jim. They loaded the car. Unfamiliar: "Your arrival is prompt!" Ben said to Jim. They loaded the car.
	Implicit	Ben was moving house and asked his friend Jim to help him out. Jim had a car and could drive Ben to the new house in the morning. Jim even showed up 20 minutes before the time they agreed. Familiar: "You're early!" Ben said to Jim. They loaded the car. Unfamiliar: "Your arrival is prompt!" Ben said to Jim. They loaded the car.
Sarcastic	Explicit	Ben was moving house and asked his friend Jim to help him out. Ben stressed how important it was that they were on time to move into the new house and asked Jim to drive him in the morning. Jim showed up an hour later than the time they agreed.

		Familiar: "You're early!" Ben said to Jim. They loaded the car.
		Unfamiliar: "Your arrival is prompt!" Ben said to Jim. They loaded the car.
	Implicit	Ben was moving house and asked his friend Jim to help him out. Jim had a car and could drive Ben to the new house in the morning. Jim showed up an hour later than the time they agreed. Familiar: "You're early!" Ben said to Jim. They loaded the car. Unfamiliar: "Your arrival is prompt!" Ben said to Jim. They loaded the car.

38.		
Literal	Explicit	Terry and Leon had just finished their exams and were officially on holiday. Terry asked Leon to take him to the best student party in the best club he knows of before he had to go back home. The party was amazing and they danced until dawn. Familiar: "What fun!" Terry said to Leon. They went home. Unfamiliar: "This event was entertaining!" Terry said to Leon. They went home.

	Implicit	Terry and Leon had just finished their exams and were officially on holiday. A friend of theirs invited them to a student party in a club in town so they decided to go together. The party was amazing and they danced until dawn. Familiar: "What fun!" Terry said to Leon. They went home. Unfamiliar: "This event was entertaining!" Terry said to Leon. They went home.
Sarcastic	Explicit	Terry and Leon had just finished their exams and were officially on holiday. Terry asked Leon to take him to the best student party in the best club he knows of before he had to go back home. The party was a disaster and Terry was very disappointed. Familiar: "What fun!" Terry said to Leon. They went home. Unfamiliar: "This event was entertaining!" Terry said to Leon. They went home.
	Implicit	Terry and Leon had just finished their exams and were officially on holiday. A friend of theirs invited them to a student party in a club in town so they decided to go together. The party was a disaster and Terry was very disappointed.

| | | Familiar: "What fun!" Terry said to Leon. They went home.

Unfamiliar: "This event was entertaining!" Terry said to Leon. They went home. |
|---|---|---|

39.		
Literal	Explicit	Tony liked to tell jokes but he was known for being offensive. His friend Claire asked him not to tell her any sexist jokes as she doesn't find them amusing at all. One evening, Tony told her a new joke; it wasn't sexist at all so Claire enjoyed it. Familiar: "That's so funny!" she said to him. They went out after dinner. Unfamiliar: "This one I loved!" she said to him. They went out after dinner.
	Implicit	Tony liked to tell jokes but he was known for being offensive. He had recently made a new friend, Claire, who he met at a fundraising event. One evening, Tony told her a new joke; it wasn't sexist at all so Claire enjoyed it. Familiar: "That's so funny!" she said to him. They went out after dinner.

		Unfamiliar: "This one I loved!" she said to him. They went out after dinner.
Sarcastic	Explicit	Tony liked to tell jokes but he was known for being offensive. His friend Claire asked him not to tell her any sexist jokes as she doesn't find them amusing at all. One evening, Tony told her a very sexist joke that she really didn't enjoy. Familiar: "That's so funny!" she said to him. They went out after dinner. Unfamiliar: "This one I loved!" she said to him. They went out after dinner.
	Implicit	Tony liked to tell jokes but he was known for being offensive. He had recently made a new friend, Claire, who he met at a fundraising event. One evening, Tony told her a very sexist joke that she really didn't enjoy. Familiar: "That's so funny!" she said to him. They went out after dinner. Unfamiliar: "This one I loved!" she said to him. They went out after dinner.

40.

Literal	Explicit	Donna was not feeling well and was resting in bed. She had just cleaned her room so she asked her friend Jay to be extra careful not to spill her soup when bringing it over from the kitchen. He brought it to Donna without spilling a single drop. Familiar: "So careful!" she said to him. He sat down. Unfamiliar: "Your balance is so good!" she said to him. He sat down.
	Implicit	Donna was not feeling well and was resting in bed. Her mom had left her a bowl of soup in the kitchen so Donna asked her friend Jay to bring it to her. He brought it to Donna without spilling a single drop. Familiar: "So careful!" she said to him. He sat down. Unfamiliar: "Your balance is so good!" she said to him. He sat down.
Sarcastic	Explicit	Donna was not feeling well and was resting in bed. She had just cleaned her room so she asked her friend Jay to be extra careful not to spill her soup when bringing it over from the kitchen. He managed to spill almost all of it on the floor in her room. Familiar: "So careful!" she said to him. He sat down.

		Unfamiliar: "Your balance is so good!" she said to him. He sat down.
	Implicit	Donna was not feeling well and was resting in bed. Her mom had left her a bowl of soup in the kitchen so Donna asked her friend Jay to bring it to her. He managed to spill almost all of it on the floor in her room. Familiar: "So careful!" she said to him. He sat down. Unfamiliar: "Your balance is so good!" she said to him. He sat down.

41.		
Literal	Explicit	Amy was almost done writing her final year dissertation when her laptop froze. She knew her friend Rob was very good at computers and could fix it so she asked for his help. He managed to unfreeze the computer and she retrieved her work. Familiar: "Ahh brilliant!" she said to him. He then went home. Unfamiliar: "You were very helpful!" she said to him. He then went home.

	Implicit	Amy was almost done writing her final year dissertation when her laptop froze. Her friend Rob was in the house at the time and came over to see what had happened. He managed to unfreeze the computer and she retrieved her work. Familiar: "Ahh brilliant!" she said to him. He then went home. Unfamiliar: "You were very helpful!" she said to him. He then went home.
Sarcastic	Explicit	Amy was almost done writing her final year dissertation when her laptop froze. She knew her friend Rob was very good at computers and could fix it so she asked for his help. He pressed the wrong button, the computer died and all her work was lost. Familiar: "Ahh brilliant!" she said to him. He then went home. Unfamiliar: "You were very helpful!" she said to him. He then went home.
	Implicit	Amy was almost done writing her final year dissertation when her laptop froze. Her friend Rob was in the house at the time and came over to see what had happened. He pressed the wrong button, the computer died and all her work was lost.

		Familiar: "Ahh brilliant!" she said to him. He then went home.
		Unfamiliar: "You were very helpful!" she said to him. He then went home.

42.		
Literal	Explicit	Sandra was organising a charity event and she asked Sue to help her out on the night. Sandra told Sue how important it was that they both look very professional and elegant. Sue wore a beautiful black suit. Familiar: "How classy!" Sandra said to her. They took a cab there. Unfamiliar: "Your choice is refined!" Sandra said to her. They took a cab there.
	Implicit	Sandra was organising a charity event and she asked Sue to help her out on the night. Sandra put a lot of time and effort in making sure that her event would be a success. Sue wore a beautiful black suit. Familiar: "How classy!" Sandra said to her. They took a cab there. Unfamiliar: "Your choice is refined!" Sandra said to her. They took a cab there.

Sarcastic	Explicit	Sandra was organising a charity event and she asked Sue to help her out on the night. Sandra told Sue how important it was that they both look very professional and elegant. Sue wore an inappropriately short skirt. Familiar: "How classy!" Sandra said to her. They took a cab there. Unfamiliar: "Your choice is refined!" Sandra said to her. They took a cab there.
	Implicit	Sandra was organising a charity event and she asked Sue to help her out on the night. Sandra put a lot of time and effort in making sure that her event would be a success. Sue wore an inappropriately short skirt. Familiar: "How classy!" Sandra said to her. They took a cab there. Unfamiliar: "Your choice is refined!" Sandra said to her. They took a cab there.

43.		
Literal	Explicit	Hugo and Liz had to give a presentation together on Monday as part of the assignment for one of their

		modules. Hugo needed a high mark so he asked Liz to come well prepared. Liz and Hugo both gave excellent presentations so they got a high mark. Familiar: "Well that went well!" he said to her. They went home. Unfamiliar: "Our talk was impeccable!" he said to her. They went home.
	Implicit	Hugo and Liz had to give a presentation together on Monday as part of the assignment for one of their modules. It was the module with the highest number of credits for their degree. Liz and Hugo both gave excellent presentations so they got a high mark. Familiar: "Well that went well!" he said to her. They went home. Unfamiliar: "Our talk was impeccable!" he said to her. They went home.
Sarcastic	Explicit	Hugo and Liz had to give a presentation together on Monday as part of the assignment for one of their modules. Hugo needed a high mark so he asked Liz to come well prepared. Hugo did well but Liz was very poorly prepared so they got a low mark. Familiar: "Well that went well!" he said to her. They went home.

		Unfamiliar: "Our talk was impeccable!" he said to her. They went home.
	Implicit	Hugo and Liz had to give a presentation together on Monday as part of the assignment for one of their modules. It was the module with the highest number of credits for their degree. Hugo did well but Liz was very poorly prepared so they got a low mark.
		Familiar: "Well that went well!" he said to her. They went home.
		Unfamiliar: "Our talk was impeccable!" he said to her. They went home.

44.		
Literal	Explicit	Daisy had a statistics coursework to do and she was having trouble with it. She asked her friend Iris to have a look since Iris had helped her before with stats. Iris sat with Daisy for an hour and explained to her everything she had to do.
		Familiar: "That was really helpful!" Daisy said to her. She needed a high mark.
		Unfamiliar: "Your help was priceless!" Daisy said to her. She needed a high mark.

	Implicit	Daisy had a statistics coursework to do and she was having trouble with it. When she got really confused, she asked her friend Iris to have a look. Iris sat with Daisy for an hour and explained to her everything she had to do. Familiar: "That was really helpful!" Daisy said to her. She needed a high mark. Unfamiliar: "Your help was priceless!" Daisy said to her. She needed a high mark.
Sarcastic	Explicit	Daisy had a statistics coursework to do and she was having trouble with it. She asked her friend Iris to have a look since Iris had helped her before with stats. Iris wasn't up for it so she gave a brief explanation that confused Daisy more. Familiar: "That was really helpful!" Daisy said to her. She needed a high mark. Unfamiliar: "Your help was priceless!" Daisy said to her. She needed a high mark.
	Implicit	Daisy had a statistics coursework to do and she was having trouble with it. When she got really confused, she asked her friend Iris to have a look. Iris wasn't up for it so she gave a brief explanation that only confused Daisy more.

		Familiar: "That was really helpful!" Daisy said to her. She needed a high mark.
		Unfamiliar: "Your help was priceless!" Daisy said to her. She needed a high mark.

45.		
Literal	Explicit	June had a photography project to prepare. There were 8 tasks to divide among June and her coursemate Kelly, who was expected to take half of them. Kelly assigned most of the tasks to herself. Familiar: "You're so keen!" June said to her. They worked until late. Unfamiliar: "You're too willing!" June said to her. They worked until late.
	Implicit	June had a photography project to prepare. Her friend Kelly loved photography and wanted to participate; June was under time pressure so they started by dividing the tasks between themselves. Kelly assigned most of the tasks to herself. Familiar: "You're so keen!" June said to her. They worked until late. Unfamiliar: "You're too willing!" June said to her. They worked until late.

Sarcastic	Explicit	June had a photography project to prepare. There were 8 tasks to divide among June and her coursemate Kelly, who was expected to take half of them. Kelly took only one task, the easiest one. Familiar: "You're so keen!" June said to her. They worked until late. Unfamiliar: "You're too willing!" June said to her. They worked until late.
	Implicit	June had a photography project to prepare. Her friend Kelly loved photography and wanted to participate; June was under time pressure so they started by dividing the tasks between themselves. Kelly took only one task, the easiest one. Familiar: "You're so keen!" June said to her. They worked until late. Unfamiliar: "You're too willing!" June said to her. They worked until late.

46.		
Literal	Explicit	Colin and Janet were planning their weekend together. Colin had asked Janet to go somewhere out of the city and do something active and risk-taking. After putting some thought into it, Janet suggested

		they go rafting on a nearby river.
		Familiar: "How exciting!" he said to her. They discussed it a bit.
		Unfamiliar: "Your idea is so adventurous!" he said to her. They discussed it a bit.
	Implicit	Colin and Janet were planning their weekend together. Colin was very much into sports and always liked to try something new; he didn't like the city life at all. After putting some thought into it, Janet suggested they go rafting on a nearby river. Familiar: "How exciting!" he said to her. They discussed it a bit. Unfamiliar: "Your idea is so adventurous!" he said to her. They discussed it a bit.
Sarcastic	Explicit	Colin and Janet were planning their weekend together. Colin had asked Janet to go somewhere out of the city and do something active and risk-taking. After putting some thought into it, Janet suggested they go shopping in the city centre. Familiar: "How exciting!" he said to her. They discussed it a bit. Unfamiliar: "Your idea is so adventurous!" he said to her. They discussed it a bit.

	Implicit	Colin and Janet were planning their weekend together. Colin was very much into sports and always liked to try something new; he didn't like the city life at all. After putting some thought into it, Janet suggested they go shopping in the city centre. Familiar: "How exciting!" he said to her. They discussed it a bit. Unfamiliar: "Your idea is so adventurous!" he said to her. They discussed it a bit.

47.		
Literal	Explicit	James had always bought Fred the same birthday present every year - tickets to a musical. This year Fred told James that he wanted to receive something different and unexpected for his birthday. James got him the latest PS3 game that Fred wanted. Familiar: "What a surprise!" Fred said to James. They went out. Unfamiliar: "This was a break from tradition!" Fred said to James. They went out.
	Implicit	James had always bought Fred the same birthday present every year - tickets to a musical. Fred liked

		musicals, but he didn't want to be able to guess what he'd receive for his birthday this year. James got him the latest PS3 game that Fred wanted. Familiar: "What a surprise!" Fred said to James. They went out. Unfamiliar: "This was a break from tradition!" Fred said to James. They went out.
Sarcastic	Explicit	James had always bought Fred the same birthday present every year - tickets to a musical. This year Fred told James that he wanted to receive something different and unexpected for his birthday. James got him tickets to a musical in town. Familiar: "What a surprise!" Fred said to James. They went out. Unfamiliar: "This was a break from tradition!" Fred said to James. They went out.
	Implicit	James had always bought Fred the same birthday present every year - tickets to a musical. Fred liked musicals, but he didn't want to be able to guess what he'd receive for his birthday this year. James got him tickets to a musical in town. Familiar: "What a surprise!" Fred said to James. They went out.

		Unfamiliar: "This was a break from tradition!" Fred said to James. They went out.

48.		
Literal	Explicit	Grace and Isla were living together on the university campus. Grace asked Isla to wake up early on Saturday morning and help her with cleaning their flat. On the day, Isla woke up extra early and did all the work herself. Familiar: "That's just great!" Grace said to her. They went out. Unfamiliar: "I like your willingness!" Grace said to her. They went out.
	Implicit	Grace and Isla were living together on the university campus. They had guests on Saturday evening, but the flat was very dirty since they hadn't cleaned in a month. On the day, Isla woke up extra early and did all the work herself. Familiar: "That's just great!" Grace said to her. They went out. Unfamiliar: "I like your willingness!" Grace said to her. They went out.

Sarcastic	Explicit	Grace and Isla were living together on the university campus. Grace asked Isla to wake up early on Saturday morning and help her with cleaning their flat. On the day, Isla slept until late and didn't bother doing any cleaning. Familiar: "That's just great!" Grace said to her. They went out. Unfamiliar: "I like your willingness!" Grace said to her. They went out.
	Implicit	Grace and Isla were living together on the university campus. They had guests on Saturday evening, but the flat was very dirty since they hadn't cleaned in a month. On the day, Isla slept until late and didn't bother doing any cleaning. Familiar: "That's just great!" Grace said to her. They went out. Unfamiliar: "I like your willingness!" Grace said to her. They went out.

Appendix K: Full list of filler items (Experiment 6)

	Two characters + literal negative comment
1	Barbara and Carlos went into town one afternoon to have a walk. The weather forecast predicted it would be sunny and warm all day long. While they were in town, it suddenly started raining heavily and they didn't have an umbrella. "The forecast is unreliable!" Barbara said to Carlos. They went home.
2	Edgar and Emma wanted to buy a present together for a friend's birthday. They bought her a classical music CD from the new music shop in town. When they gave her the present, they learned that she doesn't particularly enjoy classical music. "This wasn't a good gift!" Edgar said to Emma. They returned the CD.
3	Umar and Wendy decided to have a picnic in the park. They heard the weather would be good at the weekend so they planned it for Sunday morning. As they arrived in the park and set out their blanket, it started pouring. "I don't like this weather!" Umar said to Wendy. They ran to the car.
4	Kaitlin and Neil planned to go to the theatre one evening. They were supposed to be outside the theatre at 19:45 in order to catch the show at 20:00. They were running late because of traffic and arrived at 20:30, so they couldn't get in. "That is such a shame!" Kaitlin said to

	Neil. They were both sad.
5	Patrick and Josie were planning a trip to Venice and were looking for accommodation. They booked a room in a nice hotel by the Rialto Bridge. When they arrived, the room was very small and dirty, and the staff were not helpful at all. "We can't stay here!" Patrick said to Josie. They cancelled the booking.
6	Xavier and Phil went to see a movie at the cinema. They had to wait in a long queue to buy their tickets and they only had 5 minutes left before the movie started. The queue was moving slowly; there was not much they could do about it. "We'll miss the beginning!" Xavier said to Phil. They were impatient.
7	Rebecca gave Saul a new mobile phone for his birthday. He was very happy because it was a model that he had wanted to buy for a while. As he took it out of the box, he dropped it on the floor and broke it. "I'm not sure it can be fixed!" Rebecca said to Saul. He was sad.
8	Travis and Otis were throwing a big house party. Around midnight, their neighbour came over to ask them to turn the music down since he needed to wake up early the next day. They had no choice but to finish the party early. "That is very disappointing!" Travis said to Otis. They went to sleep.
9	Nabil and Billy were looking for a cheap flight to Greece. They wanted to book with Wizzair because they often had the lowest prices.

	When Nabil compared it with other companies, he realised that Wizzair was not the cheapest option out there. "Wizzair is not that cheap!" Nabil said to Billy. He was disappointed.
10	Felicia and Daphne were shopping for a prom dress. In the last shop they entered, Felicia tried on a red one that she really liked. However the dress was too small for her and there were no other sizes in the shop. "I'm just not lucky today!" Felicia said to Daphne. They went home.
11	Gemma was moving to a new house and her friend Walter offered to help her out. On the day, something came up and Walter couldn't help her anymore like he'd promised. She decided to postpone the move as she couldn't do it all by herself. "Moving house isn't easy!" she said to Walter. She moved the next day.
12	Nicole and Roxanne wanted to do something fun on Saturday morning. They bought tickets for an art exhibition that just opened in town. Although the art magazines said it was very good, they were quite disappointed with it. "We shouldn't believe the reviews!" Nicole said to Roxanne. They were upset.
13	Eddie and Francesca had no plans for Friday evening. They rented the movie "Melancholia" because it had lots of positive reviews online. However, the movie was so bad that they couldn't watch more than 30 minutes of it. "This movie is terrible!" Eddie said to Francesca.

	They went to sleep.
14	Cal was working on a miniature house model he had to build for his architecture course. He was behind schedule and Chris offered to help out by fitting the windows. His work started progressing much faster but he was still pressed for time. "I hate working under stress!" Cal said to Chris. They did their best.
15	Vickie and Lorna were working together in a photography studio. One day they had a family photoshoot planned and were looking forward to it. However, the parents were so grumpy and stressed that the girls couldn't make them smile at all. "Some clients are like that!" Vickie said to Lorna. They went for lunch.
16	Scott and Paula were looking to rent a flat in Nottingham. They'd already seen several flats, and had their heart set on one of them. When they called the agency, they found out that their favourite flat had just been sold to somebody else. "We should've called sooner!" Paula said to Scott. They chose another one.
17	Jeff and Martha wanted to go and see a circus show with their little cousin. They heard that Cirque du Soleil was having a show in town; they really wanted to get tickets for it. When they checked the website, it said that it was already sold out. "That's disappointing!" Jeff said to Martha. They booked another show.

18	Craig and Eli were working on a project which required them to use a new piece of software. They had been trained on how to use it and hadn't had any recent problems with it. One day, the software crashed out of the blue and their work was lost. "I don't believe this!" Craig said to Eli. They called a technician.
19	Sabrina went with Jenny to one of her lectures on marine biology. Sabrina was very interested in the topic, although she was studying Computer Sciences herself. The lecture was so boring that Sabrina fell asleep half way through. "I expected something else!" Sabrina said to Jenny. They left early.
20	Abbie was going to a wedding and needed a new pair of shoes. Her friend Nadine suggested she went to a shop that was located out of town but sold very stylish shoes. Abbie walked all the way there only to find that the shop had recently been closed. "What a pity!" Abbie said to Nadine. She took a cab back.
21	Alice and Benjamin promised a friend of theirs that they would give a free salsa lesson at his charity party. All the guests were really looking forward to it. A few days before the party Benjamin got the flu and they had to cancel the lesson. "Illness ruined our plans!" Alice said to Benjamin. They stayed home.
22	Julian and Mark didn't want to cook so they decided to order some food. They ordered from the only fast-food place that was open at the

	time. The food arrived more than half an hour late; it was cold and tasteless. "This fast-food isn't good!" Julian said to Mark. They were hungry.
23	Tahlia and Octavia didn't have any plans for the weekend. A friend of theirs invited them to her beach house. They couldn't wait to go but because the rail workers were on strike on Saturday, they had no way of travelling to the house. "I can't believe our bad luck!" Tahlia said to Octavia. They were angry.
24	Mitchell and Rita were organising a graduation party in their house. They needed to know how many people would come in order to know how much food to order. They calculated that there would probably be around 25 people, but in reality 45 came. "We don't have enough food!" Mitchell said to Rita. They panicked.
	Informative texts
25	Bungee jumping is probably the only extreme sport I would ever do. It involves jumping from a tall structure while connected to a large elastic cord. The tall structure is usually a fixed object, such as a building or bridge; but it is also possible to jump from a movable object, such as a hot-air-balloon or helicopter.
26	As part of my degree at university, I am also allowed to choose a language module to study for a year, so I chose Spanish because I would

	love to travel to South America one day. I really enjoy watching Spanish movies too, which is helping me a lot with my vocabulary and pronunciation.
27	Jessica doesn't trust the media these days. She says it's too corrupted. She gets her news from Democracy Now! only. The program is funded entirely through contributions from listeners, viewers, and foundations and does not accept advertisers, corporate underwriting, or government funding.
28	When my sister decided to apply at MIT, she was aware that 90% of their incoming applications get rejected. She wasn't discouraged though. She got her grades up, went to and won several science competitions, wrote a brilliant application and did extremely well in her interview. She got in.
29	Emily didn't mind the rain at all. She was used to it, having lived in England almost all her life. Her brother on the other hand hated the rain, especially when it would spoil his plans. He went cycling one summer morning, when it suddenly started pouring down. Emily's brother was very frustrated by this.
30	William had always been fascinated with cats. His favourite is the Maine Coon, one of the oldest natural breeds in North America. It is a breed of domestic cat with a distinctive physical appearance and valuable hunting skills. It's the official state cat in Maine, US.

31	Everybody should visit Iceland. It's so staggeringly beautiful and otherworldly. Everywhere you turn there are glaciers, waterfalls, lava fields, rainbows, streams and mountain ranges. It's also an ideal destination if you want to see the Northern Lights, especially if you go between February and March.
32	Daniel loves going to music concerts but he hasn't been to one in quite a long time. When he heard his favourite band, Guns'n'Roses, was going to have a concert in his city, he was very happy and bought himself a ticket right away. Even though the event was months away, he couldn't stop talking about it.
33	My best friend was a big fan of Castaway 2000, a famous British television series. So for her birthday last year, I got her tickets to go visit Taransay, the island where the series was filmed. It's in the Outer Hebrides of Scotland and it's been uninhabited since 1974, except for holidaymakers.
34	Jennifer told me that the next thing on her travel bucket list is a ride on the Trans-Mongolian Railway. She would take the train from Moscow, make a quick stop in Ulan Bator to visit Mongolia, and then hop back on the train and finish her holiday in Beijing. On the way, she would cross the Gobi desert.
35	Travel agencies advertise New Zealand holidays a lot. This is an island country in the southwestern Pacific Ocean. It's just east of

	Australia across the Tasman Sea. It is now a very popular holiday destination, especially since everybody knows that the Lord of the Rings trilogy was filmed there.
36	The European Space Agency and the EU are currently building Galileo, a global navigation satellite system. One of the aims of Galileo is to provide a high-precision positioning system upon which European nations can rely, independently from the Russian GLONASS, US GPS, and Chinese Compass systems.
37	Vincent was in New York for a conference. He decided to pay a visit to the American Museum of Natural History while he was there. He was very curious to see the Star of India, a 563.35 carat star sapphire, mined in Sri Lanka, one of the largest such gems in the world. He was truly fascinated by it.
38	Two of my officemates had won tickets to one of the Wimbledon Championship matches this summer. They were really excited about this since they were both huge tennis fans. Although there were 4 more months left until the match, they'd already booked accommodation and transportation to London.
39	My mum went to Sri Lanka recently and when she got back she couldn't stop talking about gulab jamun, a popular cheese-based dessert, similar to a dumpling, very popular over there. It is made mainly from milk solids, kneaded into a dough, shaped into small balls and deep

	fried at about 148°C.
40	Dominic really enjoys risk-taking activities. The latest thing he did was glacier hiking together with a friend of his. They used special equipment like crampons, rows, helmets and ice axes. They were told to be careful since it's quite dangerous, but luckily nothing bad happened to them.
41	My best friend managed to persuade me to go speed dating with her. She was convinced it would be a fun experience, however I believed it was going to be boring and awkward. So we decided to go and see for ourselves. To be honest, it wasn't as bad as I expected, but I will surely not try it again.
42	One night, the burglar alarm in our house went off for no apparent reason. We tried to stop it but nothing would work. It turned out that the batteries were dead, and we had to wait until morning to buy new ones and replace them. None of us managed to get any sleep that night. The alarm was really loud.
43	Max's computer stopped working the other day. He was working on a really important project so he couldn't afford to waste too much time. Max quickly called one of his friends who worked in IT and asked him for help. Luckily, he came over and fixed the problem in no time. Max was really grateful.

44	My housemate asked me to go with him to the Nottingham Riverside Festival Dragon Boat Challenge in August. Teams of 11 people raced in dragon boats, which was a fun thing to do. The event also aimed to raise funds for the Rainbows Hospice for Children and Young People. It was a really nice day out.
45	After we graduated from university me and my boyfriend decided to take a gap year and travel the world. We spent our summer in Australia and New Zealand. Then during autumn we visited about 7 African countries. For Christmas and New Year we were in South Asia. It was probably the best trip of our lives.
46	So many companies have been making redundancies since the recession in 2008. According to new research, one in seven of all employees has been made redundant since then. The best thing you can do if that happens is start job hunting and try to keep a positive attitude as much as possible.
47	When my car broke down a few nights ago, the first thing I did was to get it out of the road, in a safe place. Once I was there, I called the AA of course. They managed to locate me using the GPS function on my phone. I waited for them for about an hour, but they fixed it quickly when they arrived.
48	On a Sunday afternoon, we all decided to go grocery shopping in order to make pancakes later in the evening. We had to buy flour, sugar,

| | eggs and a bit of milk. The trouble was, we couldn't decide what to fill them with, so we got everything: chocolate spread, jam, ice cream and bananas. |

Appendix L: *t*-values of non-significant fixed effects and *p*-values of

likelihood-ratio tests (Experiment 6)

Table for the t-values of the non-significant fixed effects (Experiment 6).

As a rule of thumb, only effects with |t| > 2 are likely to be significant

(Baayen et al., 2008).

Analysis region	Reading measure	Fixed effects (from full model)	*t*
pre-critical	fp	literality	0.5
		literality * explicitness	1
		literality * familiarity	0.6
		literality * familiarity * explicitness	-1.6
	rp	literality	0.1
		explicitness	-0.1
		literality * explicitness	0.8
		literality * familiarity	0.8
		explicitness * familiarity	0.2
		literality * familiarity * explicitness	-0.9
	tt	explicitness	-0.4
		literality * explicitness	0.9
		literality * familiarity	1.9
		explicitness * familiarity	1.4
		literality * familiarity *	-1.8

		explicitness	
critical	fp	explicitness	-0.3
		literality * explicitness	-0.9
		literality * familiarity	-0.04
		explicitness * familiarity	0.2
		literality * familiarity * explicitness	1
	rp	explicitness	-1.2
		literality * explicitness	0.8
		explicitness * familiarity	1.5
		literality * familiarity * explicitness	-0.8
	tt	explicitness	-0.4
		literality * explicitness	-0.03
		explicitness * familiarity	0.5
		literality * familiarity * explicitness	-0.03
post-critical	fp	explicitness	-0.2
		familiarity	0.4
		literality * explicitness	0.2
		literality * familiarity	0.5
		explicitness * familiarity	0.5
		literality * familiarity * explicitness	-1
	rp	explicitness	0.9

		literality * explicitness	-1
		literality * familiarity	-1
		explicitness * familiarity	-0.7
		literality * familiarity * explicitness	0.6
	tt	explicitness	0.05
		literality * explicitness	0.7
		literality * familiarity	0.5
		explicitness * familiarity	1.1
		literality * familiarity * explicitness	-1.2

	Series of likelihood-ratio tests, their AIC, and p-values (Experiment 6)		
	Fixed effects structure	AIC	*p*-value (vs. model #)
fp – pre-critical			
1	literality * explicitness * familiarity	31202	n/a
2	literality * familiarity + explicitness	31206	0.02 (vs. 1)
3	literality * explicitness + familiarity	31207	0.015 (vs. 1)
4	familiarity * explicitness + literality	31200	0.3 (vs. 1)
5	**familiarity * explicitness**	**31199**	**0.2 (vs. 4)**

6	familiarity + explicitness	31204	0.008 (vs. 5)
rp – pre-critical			
1	literality * explicitness * familiarity	35390	n/a
2	literality * familiarity + explicitness	35385	0.8 (vs. 1)
3	literality * explicitness + familiarity	35385	0.8 (vs. 1)
4	familiarity * explicitness + literality	35385	0.8 (vs. 1)
5	literality + familiarity + explicitness	35383	0.8 (vs. 2) 0.8 (vs. 3) 0.5 (vs. 4)
6	literality + familiarity	35381	0.8 (vs. 5)
7	literality + explicitness	35391	0.001 (vs. 5)
8	familiarity + explicitness	35384	0.1 (vs. 5)
9	**familiarity**	**35382**	**0.1 (vs. 6) 0.8 (vs. 8)**
10	Intercept	35390	0.001 (vs. 9)
tt – pre-critical			
1	literality * explicitness * familiarity	36874	n/a
2	literality * familiarity + explicitness	36871	0.3 (vs. 1)

3	literality * explicitness + familiarity	36872	0.2 (vs. 1)
4	familiarity * explicitness + literality	36872	0.2 (vs. 1)
5	literality + familiarity + explicitness	36870	0.3 (vs. 2) 0.8 (vs. 3) 0.8 (vs. 4)
6	**literality + familiarity**	**36868**	**0.5 (vs. 5)**
7	literality + explicitness	36876	0.004 (vs. 5)
8	familiarity + explicitness	36882	< 0.001 (vs. 5)
9	literality	36875	0.004 (vs. 6)
10	familiarity	36883	< 0.001 (vs. 6)
fp - critical			
1	literality * explicitness * familiarity	30269	n/a
2	literality * familiarity + explicitness	30265	0.5 (vs. 1)
3	literality * explicitness + familiarity	30266	0.4 (vs. 1)
4	familiarity * explicitness + literality	30264	0.6 (vs. 1)
5	literality + familiarity + explicitness	30264	0.4 (vs. 2) 0.8 (vs. 3) 0.2 (vs. 4)

6	**literality + familiarity**	**30262**	**0.5 (vs. 5)**
7	literality + explicitness	30391	< 0.001 (vs. 5)
8	familiarity + explicitness	30266	0.039 (vs. 5)
9	literality	30331	< 0.001 (vs. 6)
10	familiarity	30264	0.039 (vs. 6)
rp - critical			
1	literality * explicitness * familiarity	35502	n/a
2	literality * familiarity + explicitness	35498	0.4 (vs. 1)
3	literality * explicitness + familiarity	35503	0.064 (vs. 1)
4	familiarity * explicitness + literality	35501	0.1 (vs. 1)
5	literality + familiarity + explicitness	35501	0.03 (vs. 2) 0.8 (vs. 3) 0.2 (vs. 4)
6	**literality * familiarity**	**35496**	**0.9 (vs. 2)**
tt - critical			
1	literality * explicitness * familiarity	33709	n/a
2	literality * familiarity + explicitness	33703	0.9 (vs. 1)
3	literality * explicitness +	33707	0.2 (vs. 1)

	familiarity		
4	familiarity * explicitness + literality	33707	0.3 (vs. 1)
5	literality + familiarity + explicitness	33705	0.047 (vs. 2) 0.9 (vs. 3) 0.5 (vs. 4)
6	**literality * familiarity**	**33701**	**0.9 (vs. 2)**
fp – post-critical			
1	literality * explicitness * familiarity	39226	n/a
2	literality * familiarity + explicitness	39222	0.7 (vs. 1)
3	literality * explicitness + familiarity	39221	0.8 (vs. 1)
4	familiarity * explicitness + literality	39222	0.7 (vs. 1)
5	literality + familiarity + explicitness	39220	0.7 (vs. 2) 0.5 (vs. 3) 0.8 (vs. 4)
6	literality + familiarity	39218	0.8 (vs. 5)
7	literality + explicitness	39219	0.3 (vs. 5)
8	familiarity + explicitness	39242	< 0.001 (vs. 5)
9	**literality**	**39217**	**0.3 (vs. 6) 0.8 (vs. 7)**

10	Intercept	39240	< 0.001 (vs. 9)

rp – post-critical

1	literality * explicitness * familiarity	43676	n/a
2	literality * familiarity + explicitness	43671	0.8 (vs. 1)
3	literality * explicitness + familiarity	43671	0.7 (vs. 1)
4	familiarity * explicitness + literality	43672	0.6 (vs. 1)
5	literality + familiarity + explicitness	43670	0.4 (vs. 2) 0.4 (vs. 3) 0.7 (vs. 4)
6	**literality + familiarity**	**43668**	**0.9 (vs. 5)**
7	literality + explicitness	43675	0.008 (vs. 5)
8	familiarity + explicitness	43682	< 0.001 (vs. 5)
9	literality	43673	0.008 (vs. 6)
10	familiarity	43680	< 0.001 (vs. 6)

tt – post-critical

1	literality * explicitness * familiarity	41604	n/a
2	literality * familiarity + explicitness	41599	0.7 (vs. 1)
3	literality * explicitness +	41599	0.6 (vs. 1)

	familiarity		
4	familiarity * explicitness + literality	41599	0.7 (vs. 1)
5	literality + familiarity + explicitness	41597	0.6 (vs. 2) 0.8 (vs. 3) 0.7 (vs. 4)
6	**literality + familiarity**	**41598**	**0.1 (vs. 5)**
7	literality + explicitness	41604	0.002 (vs. 5)
8	familiarity + explicitness	41609	< 0.001 (vs. 5)
9	literality	41605	0.002 (vs. 6)
10	familiarity	41610	< 0.001 (vs. 6)

Appendix M: Full list of experimental materials (Experiment 7)

1.		
Literal target remark	Literal character	Oscar liked to tell jokes but he was known for being offensive. His friend Monica asked him not to tell her any sexist jokes, as she doesn't find them amusing. Monica: Have you got any new jokes to tell me? Oscar: I've created a new one, which makes fun of politicians. Monica: That sounds like it should be funny! Oscar: I've created lots of jokes which you will really like and find hilarious. Monica: Your humour is great! Oscar: Do you want to go the cinema later on tonight?
	Sarcastic character	Oscar liked to tell jokes but he was known for being offensive. His friend Monica asked him not to tell her any sexist jokes, as she doesn't find them amusing.

		Monica: Have you got any new jokes to tell me?
		Oscar: I've come up with a great new one that makes fun of women drivers.
		Monica said sarcastically: That sounds like it should be funny!
		Oscar: I've created lots of jokes which you will really like and find hilarious.
		Monica: Your humour is great!
		Oscar: Do you want to go the cinema later on tonight?
Sarcastic target remark	Literal character	Oscar liked to tell jokes but he was known for being offensive. His friend Monica asked him not to tell her any sexist jokes, as she doesn't find them amusing.
		Monica: Have you got any new jokes to tell me?
		Oscar: I've created a new one, which makes fun of politicians.
		Monica: That sounds like it should be funny!
		Oscar: I also have several more sexist jokes to tell you that I've come up with.
		Monica: Your humour is great!

		Oscar: Do you want to go the cinema later on tonight?
	Sarcastic character	Oscar liked to tell jokes but he was known for being offensive. His friend Monica asked him not to tell her any sexist jokes, as she doesn't find them amusing. Monica: Have you got any new jokes to tell me? Oscar: I've come up with a great new one that makes fun of women drivers. Monica said sarcastically: That sounds like it should be funny! Oscar: I also have several more sexist jokes to tell you that I've come up with. Monica: Your humour is great! Oscar: Do you want to go the cinema later on tonight?

2.		
Literal target	Literal character	Lucy and Kate were craving something sweet to eat. Lucy was allergic to nuts, but was thinking of making some nut-free chocolate cupcakes with a thick layer of icing and candies sprinkled on top.

remark		Lucy: Do you want to make some cupcakes later?
		Kate: We could try this new chocolate cupcake recipe that I've found.
		Lucy: That sounds delicious!
		Kate: Though we should definitely put loads of icing and sprinkles on top.
		Lucy: My kind of food!
		Kate: Let me see if I can find the recipe.
	Sarcastic character	Lucy and Kate were craving something sweet to eat. Lucy was allergic to nuts, but was thinking of making some nut-free chocolate cupcakes with a thick layer of icing and candies sprinkled on top.
		Lucy: Do you want to make some cupcakes later?
		Kate: We could try this new vegan recipe which is cupcakes without icing.
		Lucy said sarcastically: That sounds delicious!
		Kate: Though we should definitely put loads of icing and sprinkles on top.
		Lucy: My kind of food!

		Kate: Let me see if I can find the recipe.
Sarcastic target remark	Literal character	Lucy and Kate were craving something sweet to eat. Lucy was allergic to nuts, but was thinking of making some nut-free chocolate cupcakes with a thick layer of icing and candies sprinkled on top.
		Lucy: Do you want to make some cupcakes later?
		Kate: We could try this new chocolate cupcake recipe that I've found.
		Lucy: That sounds delicious!
		Kate: Ah, but they contain three different types of nuts though.
		Lucy: My kind of food!
		Kate: Let me see if I can find the recipe.
	Sarcastic character	Lucy and Kate were craving something sweet to eat. Lucy was allergic to nuts, but was thinking of making some nut-free chocolate cupcakes with a thick layer of icing and candies sprinkled on top.
		Lucy: Do you want to make some cupcakes later?
		Kate: We could try this new vegan recipe which is cupcakes without icing.

		Lucy said sarcastically: That sounds delicious!
		Kate: Ah, but they contain three different types of nuts though.
		Lucy: My kind of food!
		Kate: Let me see if I can find the recipe.

3.		
Literal target remark	Literal character	Laura and Henry had been living together for over a year now. Laura asked Henry to clean the kitchen whilst she was at work.
		Laura: Did you clean the kitchen like I asked?
		Henry: I cleaned the living room and dining room first, and was just about to start on the kitchen.
		Laura: Well that was nice of you!
		Henry: I'll clean the kitchen now whilst you have a bath.
		Laura: I knew you were gallant!

		Henry: Do you want to order in a takeaway tonight?
	Sarcastic character	Laura and Henry had been living together for over a year now. Laura asked Henry to clean the kitchen whilst she was at work. Laura: Did you clean the kitchen like I asked? Henry: Not quite. I put out the cleaning spray and some cloths, and was about to start. Laura said sarcastically: Well that was nice of you! Henry: I'll clean the kitchen now whilst you have a bath. Laura: I knew you were gallant! Henry: Do you want to order in a takeaway tonight?
Sarcastic target remark	Literal character	Laura and Henry had been living together for over a year now. Laura asked Henry to clean the kitchen whilst she was at work. Laura: Did you clean the kitchen like I asked? Henry: I cleaned the living room and dining room first, and was just about to start on the kitchen.

		Laura: Well that was nice of you! Henry: Anyway, you can do it now that you're back. Laura: I knew you were gallant! Henry: Do you want to order in a takeaway tonight?
	Sarcastic character	Laura and Henry had been living together for over a year now. Laura asked Henry to clean the kitchen whilst she was at work. Laura: Did you clean the kitchen like I asked? Henry: Not quite. I put out the cleaning spray and some cloths, and was about to start. Laura said sarcastically: Well that was nice of you! Henry: Anyway, you can do it now that you're back. Laura: I knew you were gallant! Henry: Do you want to order in a takeaway tonight?

4.		
Literal target remark	Literal character	Katie was a model for her friend Lillian's fashion show. Lillian told Katie how important this show was and asked her to strive for a perfect and sophisticated look. Lillian: Would you like me to help you with your hair and make-up? Katie: I'm about to redo them. I'm guessing you want me to look professional. Lillian: That's the look I was hoping for! Katie: I'll do my make up in a professional manner and wear the black dress. Lillian: Your look is very chic! Katie: What time does the show start?
	Sarcastic character	Katie was a model for her friend Lillian's fashion show. Lillian told Katie how important this show was and asked her to strive for a perfect and sophisticated look. Lillian: Would you like me to help you with your hair and make-up? Katie: I've done them. I'm going for the just woken up after a night out look.

		Lillian said sarcastically: That's the look I was hoping for!
		Katie: I'll do my make up in a professional manner and wear the black dress.
		Lillian: Your look is very chic!
		Katie: What time does the show start?
Sarcastic target remark	Literal character	Katie was a model for her friend Lillian's fashion show. Lillian told Katie how important this show was and asked her to strive for a perfect and sophisticated look.
		Lillian: Would you like me to help you with your hair and make-up?
		Katie: I'm about to redo them. I'm guessing you want me to look professional.
		Lillian: That's the look I was hoping for!
		Katie: Though I like my unsophisticated messy bed hair and smudged make-up look.
		Lillian: Your look is very chic!
		Katie: What time does the show start?
	Sarcastic	Katie was a model for her friend Lillian's fashion show. Lillian told Katie how important this show

	character	was and asked her to strive for a perfect and sophisticated look.
		Lillian: Would you like me to help you with your hair and make-up?
		Katie: I've done them. I'm going for the just woken up after a night out look.
		Lillian said sarcastically: That's the look I was hoping for!
		Katie: Though I like my unsophisticated messy bed hair and smudged make-up look.
		Lillian: Your look is very chic!
		Katie: What time does the show start?

5.		
Literal target remark	Literal character	Daisy and Joseph were discussing what they could have for dinner. Daisy was really looking forward to having a proper cooked meal.
		Daisy: What should we cook for dinner?
		Joseph: I know you love fish, so how about that fancy salmon recipe?

		Daisy: Great idea!
		Joseph: We could try and replicate this picture of a homemade vegetable lasagne.
		Daisy: That looks tasty!
		Joseph: We can always go out for a meal if you prefer.
	Sarcastic character	Daisy and Joseph were discussing what they could have for dinner. Daisy was really looking forward to having a proper cooked meal.
		Daisy: What should we cook for dinner?
		Joseph: How about just some plain toast?
		Daisy said sarcastically: Great idea!
		Joseph: We could try and replicate this picture of a homemade vegetable lasagne.
		Daisy: That looks tasty!
		Joseph: We can always go out for a meal if you prefer.
Sarcastic	Literal	Daisy and Joseph were discussing what they could have for dinner. Daisy was really looking forward

target remark	character	to having a proper cooked meal. Daisy: What should we cook for dinner? Joseph: I know you love fish, so how about that fancy salmon recipe? Daisy: Great idea! Joseph: We also have some leftover pizza, but as you can see it has some mould growing on it. Daisy: That looks tasty! Joseph: We can always go out for a meal if you prefer.
	Sarcastic character	Daisy and Joseph were discussing what they could have for dinner. Daisy was really looking forward to having a proper cooked meal. Daisy: What should we cook for dinner? Joseph: How about just some plain toast? Daisy said sarcastically: Great idea! Joseph: We also have some leftover pizza, but as you can see it has some mould growing on it.

		Daisy: That looks tasty!
		Joseph: We can always go out for a meal if you prefer.

6.		
Literal target remark	Literal character	Annie and Mary were discussing their plans for the evening. Annie was in the mood to watch a non-violent, light-hearted comedy movie. Annie: I was thinking we could go the movies later. Mary: Sure! We could watch something light-hearted. Annie: That sounds fun! Mary: There's a new light-hearted comedy film out that we could go and see. Annie: Your suggestion is stirring! Mary: The next screenings are on at 9.30pm.
	Sarcastic	Annie and Mary were discussing their plans for the evening. Annie was in the mood to watch a non-

	character	violent, light-hearted comedy movie.
		Annie: I was thinking we could go the movies later.
		Mary: We should see that new violent, action-packed film that's just come out.
		Annie said sarcastically: That sounds fun!
		Mary: There's a new light-hearted comedy film out that we could go and see.
		Annie: Your suggestion is stirring!
		Mary: The next screenings are on at 9.30pm.
Sarcastic target remark	Literal character	Annie and Mary were discussing their plans for the evening. Annie was in the mood to watch a non-violent, light-hearted comedy movie.
		Annie: I was thinking we could go the movies later.
		Mary: Sure! We could watch something light-hearted.
		Annie: That sounds fun!
		Mary: Or we could go and see the disgustingly gory horror film.

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		Annie: Your suggestion is stirring! Mary: The next screenings are on at 9.30pm.
	Sarcastic character	Annie and Mary were discussing their plans for the evening. Annie was in the mood to watch a non-violent, light-hearted comedy movie. Annie: I was thinking we could go the movies later. Mary: We should see that new violent, action-packed film that's just come out. Annie said sarcastically: That sounds fun! Mary: Or we could go and see the disgustingly gory horror film. Annie: Your suggestion is stirring! Mary: The next screenings are on at 9.30pm.

7.		
Literal	Literal	Arthur was doing the dishes when he cut his fingers on a can. Arthur asked Edith to fetch him a

target	character	plaster.
remark		Arthur: How long does it take to find a plaster?
		Edith: Sorry it took so long. I brought you some chocolate to take your mind off the pain.
		Arthur: That's nice of you!
		Edith: I will get you the plaster right now and help you put it on.
		Arthur: Your help is always guaranteed!
		Edith: I'll put the kettle on for you before I go out.
	Sarcastic character	Arthur was doing the dishes when he cut his fingers on a can. Arthur asked Edith to fetch him a plaster.
		Arthur: How long does it take to find a plaster?
		Edith: Oops, I forgot that I was supposed to fetch you one.
		Arthur smirked: That's nice of you!
		Edith: I will get you the plaster right now and help you put it on.

		Arthur: Your help is always guaranteed!
		Edith: I'll put the kettle on for you before I go out.
Sarcastic target remark	Literal character	Arthur was doing the dishes when he cut his fingers on a can. Arthur asked Edith to fetch him a plaster. Arthur: How long does it take to find a plaster? Edith: Sorry it took so long. I brought you some chocolate to take your mind off the pain. Arthur: That's nice of you! Edith: I have to go now, so you will need to get the plaster yourself. Arthur: Your help is always guaranteed! Edith: I'll put the kettle on for you before I go out.
	Sarcastic character	Arthur was doing the dishes when he cut his fingers on a can. Arthur asked Edith to fetch him a plaster. Arthur: How long does it take to find a plaster?

		Edith: Oops, I forgot that I was supposed to fetch you one.
		Arthur smirked: That's nice of you!
		Edith: I have to go now, so you will need to get the plaster yourself.
		Arthur: Your help is always guaranteed!
		Edith: I'll put the kettle on for you before I go out.

8.		
Literal target remark	Literal character	Emily was organising a charity event and she asked Eva to help her. Emily told Eva how important it was that they both look very professional and elegant. Emily: What are you wearing to the event? Eva: I'm going to wear my knee-length black skirt. Emily: That sounds like a suitable item to wear! Eva: It's OK as I'm going to wear it with my white shirt and black fitted blazer.

		Emily: Your outfit is professional! Eva: Should we get a taxi to the charity event?
	Sarcastic character	Emily was organising a charity event and she asked Eva to help her. Emily told Eva how important it was that they both look very professional and elegant. Emily: What are you wearing to the event? Eva: I'm going to wear my really short black skirt. Emily said sarcastically: That sounds like a suitable item to wear! Eva: It's OK as I'm going to wear it with my white shirt and black fitted blazer. Emily: Your outfit is professional! Eva: Should we get a taxi to the charity event?
Sarcastic target remark	Literal character	Emily was organising a charity event and she asked Eva to help her. Emily told Eva how important it was that they both look very professional and elegant. Emily: What are you wearing to the event?

		Eva: I'm going to wear my knee-length black skirt.
		Emily: That sounds like a suitable item to wear!
		Eva: It will go really well with my Disney themed crop top.
		Emily: Your outfit is professional!
		Eva: Should we get a taxi to the charity event?
	Sarcastic character	Emily was organising a charity event and she asked Eva to help her. Emily told Eva how important it was that they both look very professional and elegant. Emily: What are you wearing to the event? Eva: I'm going to wear my really short black skirt. Emily said sarcastically: That sounds like a suitable item to wear! Eva: It will go really well with my Disney themed crop top. Emily: Your outfit is professional! Eva: Should we get a taxi to the charity event?

9.		
Literal target remark	Literal character	Ellen was spending the day writing her essay. Lillian came round to Ellen's house to see how she was getting on. Lillian: How's your essay coming along? Ellen: I've nearly finished it now. Lillian: Wow, you're a really hard worker! Ellen: I've written most of it in the last two days though. Lillian: Your work is progressing fast! Ellen: I think it's time for a tea break.
	Sarcastic character	Ellen was spending the day writing her essay. Lillian came round to Ellen's house to see how she was getting on. Lillian: How's your essay coming along? Ellen: Not that great; I've spent all of today on Facebook.

		Lillian replied sarcastically: Wow, you're a really hard worker!
		Ellen: I've written most of it in the last two days though.
		Lillian: Your work is progressing fast!
		Ellen: I think it's time for a tea break.
Sarcastic target remark	Literal character	Ellen was spending the day writing her essay. Lillian came round to Ellen's house to see how she was getting on.

Lillian: How's your essay coming along?

Ellen: I've nearly finished it now.

Lillian: Wow, you're a really hard worker!

Ellen: It has taken me a month to write the first sentence though.

Lillian: Your work is progressing fast!

Ellen: I think it's time for a tea break. |
| | Sarcastic | Ellen was spending the day writing her essay. Lillian came round to Ellen's house to see how she was |

	character	getting on.
		Lillian: How's your essay coming along?
		Ellen: Not that great; I've spent all of today on Facebook.
		Lillian replied sarcastically: Wow, you're a really hard worker!
		Ellen: It has taken me a month to write the first sentence though.
		Lillian: Your work is progressing fast!
		Ellen: I think it's time for a tea break.

10.		
Literal target remark	Literal character	Peter was forced to watch Isaac's newly filmed videos, but he was completely bored, having already seen six different wildlife videos by now. Peter would have preferred to see a more action-packed video.
		Peter: Have you got any more of your videos to show me?

		Isaac: I'm editing one that shows a surfer doing some awesome tricks. Peter: That sounds interesting to watch! Isaac: There's a competition deadline in 10 minutes, so I need to edit it now. Peter: You're doing things in so much haste! Isaac: You'll be able to see the finished product soon.
	Sarcastic character	Peter was forced to watch Isaac's newly filmed videos, but he was completely bored, having already seen six different wildlife videos by now. Peter would have preferred to see a more action-packed video. Peter: Have you got any more of your videos to show me? Isaac: I'm in the process of editing one that shows a bird cheeping. Peter said sarcastically: That sounds interesting to watch! Isaac: There's a competition deadline in 10 minutes, so I need to edit it now. Peter: You're doing things in so much haste!

		Isaac: You'll be able to see the finished product soon.
Sarcastic target remark	Literal character	Peter was forced to watch Isaac's newly filmed videos, but he was completely bored, having already seen six different wildlife videos by now. Peter would have preferred to see a more action-packed video. Peter: Have you got any more of your videos to show me? Isaac: I'm editing one that shows a surfer doing some awesome tricks. Peter: That sounds interesting to watch! Isaac: I've spent over two hours editing it as I'm trying to make it perfect. Peter: You're doing things in so much haste! Isaac: You'll be able to see the finished product soon.
	Sarcastic character	Peter was forced to watch Isaac's newly filmed videos, but he was completely bored, having already seen six different wildlife videos by now. Peter would have preferred to see a more action-packed video.

		Peter: Have you got any more of your videos to show me?
		Isaac: I'm in the process of editing one that shows a bird cheeping.
		Peter said sarcastically: That sounds interesting to watch!
		Isaac: I've spent over two hours editing it as I'm trying to make it perfect.
		Peter: You're doing things in so much haste!
		Isaac: You'll be able to see the finished product soon.

11.		
Literal target remark	Literal character	Oliver and Lewis were in a bar and wanted another round but ran out of money. Oliver suggested Lewis should charm the barmaid.
		Oliver: Did you manage to get us some free drinks?
		Lewis: Yes I did.
		Oliver: That's great!

		Lewis: However, I did get us two vouchers for free drinks next Thursday.
		Oliver: That was masterful!
		Lewis: We could always try our luck in a different bar too?
	Sarcastic character	Oliver and Lewis were in a bar and wanted another round but ran out of money. Oliver suggested Lewis should charm the barmaid.
		Oliver: Did you manage to get us some free drinks?
		Lewis: No. The barmaid didn't seem to appreciate my jokes.
		Oliver said sarcastically: That's great!
		Lewis: However, I did get us two vouchers for free drinks next Thursday.
		Oliver: That was masterful!
		Lewis: We could always try our luck in a different bar too?
Sarcastic target	Literal character	Oliver and Lewis were in a bar and wanted another round but ran out of money. Oliver suggested Lewis should charm the barmaid.

remark		Oliver: Did you manage to get us some free drinks? Lewis: Yes I did. Oliver: That's great! Lewis: She laughed at me and said my jokes were terrible. Oliver: That was masterful! Lewis: We could always try our luck in a different bar too?
	Sarcastic character	Oliver and Lewis were in a bar and wanted another round but ran out of money. Oliver suggested Lewis should charm the barmaid. Oliver: Did you manage to get us some free drinks? Lewis: No. The barmaid didn't seem to appreciate my jokes. Oliver said sarcastically: That's great! Lewis: She laughed at me and said my jokes were terrible. Oliver: That was masterful!

		Lewis: We could always try our luck in a different bar too?

12.		
Literal target remark	Literal character	Daniel and Owen went camping together for the weekend. They were both going to bring equipment. Daniel: Did you manage to bring everything we need for the weekend? Owen: Yes, I believe I have! Daniel: Clearly we're set for the weekend! Owen: But I brought absolutely everything we need to set up our tents, and a small stove to cook on. Daniel: You're equipped so well! Owen: We'll be fine.
	Sarcastic character	Daniel and Owen went camping together for the weekend. They were both going to bring equipment. Daniel: Did you manage to bring everything we need for the weekend? Owen: I left the cutlery at home.

		Daniel laughed: Clearly we're set for the weekend!
		Owen: But I brought absolutely everything we need to set up our tents, and a small stove to cook on.
		Daniel: You're equipped so well!
		Owen: We'll be fine.
Sarcastic target remark	Literal character	Daniel and Owen went camping together for the weekend. They were both going to bring equipment.
		Daniel: Did you manage to bring everything we need for the weekend?
		Owen: Yes, I believe I have!
		Daniel: Clearly we're set for the weekend!
		Owen: Argh, I forgot our tents!
		Daniel: You're equipped so well!
		Owen: We'll be fine.
	Sarcastic character	Daniel and Owen went camping together for the weekend. They were both going to bring equipment.
		Daniel: Did you manage to bring everything we need for the weekend?

		Owen: I left the cutlery at home.
		Daniel laughed: Clearly we're set for the weekend!
		Owen: Argh, I forgot our tents!
		Daniel: You're equipped so well!
		Owen: We'll be fine.

13.		
Literal target remark	Literal character	Amelia had the flu so she was staying at home. She texted Patrick asking him to buy her some Lemsip on his way back from work. Amelia: Have you got my medicine? Patrick: I couldn't find any Lemsip so I got some different medicine. Amelia: You're so thoughtful! Patrick: I'll go out again now and try to find some Lemsip as well.

		Amelia: That's very courteous of you! Patrick: Do you want to watch a film with me later?
	Sarcastic character	Amelia had the flu so she was staying at home. She texted Patrick asking him to buy her some Lemsip on his way back from work. Amelia: Have you got my medicine? Patrick: I knew there was something else I was supposed to buy. Amelia smirked: You're so thoughtful! Patrick: I'll go out again now and try to find some Lemsip as well. Amelia: That's very courteous of you! Patrick: Do you want to watch a film with me later?
Sarcastic target remark	Literal character	Amelia had the flu so she was staying at home. She texted Patrick asking him to buy her some Lemsip on his way back from work. Amelia: Have you got my medicine?

		Patrick: I couldn't find any Lemsip so I got some different medicine. Amelia: You're so thoughtful! Patrick: My TV programme is about to start now, so you'll have boil the kettle yourself if you want tea. Amelia: That's very courteous of you! Patrick: Do you want to watch a film with me later?
	Sarcastic character	Amelia had the flu so she was staying at home. She texted Patrick asking him to buy her some Lemsip on his way back from work. Amelia: Have you got my medicine? Patrick: I knew there was something else I was supposed to buy. Amelia smirked: You're so thoughtful! Patrick: My TV programme is about to start now, so you'll have boil the kettle yourself if you want tea.

		Amelia: That's very courteous of you!
		Patrick: Do you want to watch a film with me later?

14.		
Literal target remark	Literal character	Florence and William were about to set off on a long journey. Florence was going to drive and she asked William to fill up the petrol tank the night before. Florence: I hope you remembered to fill the petrol tank up last night. William: Yes of course I remembered. Florence: That's excellent! William: I'll go to the petrol station now and put air in the tyres and check the engine. Florence: Your help is priceless! William: We should stop off at a pub for lunch later.
	Sarcastic	Florence and William were about to set off on a long journey. Florence was going to drive and she

	character	asked William to fill up the petrol tank the night before. Florence: I hope you remembered to fill the petrol tank up last night. William: I'm so sorry. I completely forgot to do so. Florence said sarcastically: That's excellent! William: I'll go to the petrol station now and put air in the tyres and check the engine. Florence: Your help is priceless! William: We should stop off at a pub for lunch later.
Sarcastic target remark	Literal character	Florence and William were about to set off on a long journey. Florence was going to drive and she asked William to fill up the petrol tank the night before. Florence: I hope you remembered to fill the petrol tank up last night. William: Yes of course I remembered. Florence: That's excellent! William: But I couldn't remember whether it needed to be filled up with petrol or diesel.

| | | Florence: Your help is priceless!

William: We should stop off at a pub for lunch later. |
| | Sarcastic character | Florence and William were about to set off on a long journey. Florence was going to drive and she asked William to fill up the petrol tank the night before.

Florence: I hope you remembered to fill the petrol tank up last night.

William: I'm so sorry. I completely forgot to do so.

Florence said sarcastically: That's excellent!

William: But I couldn't remember whether it needed to be filled up with petrol or diesel.

Florence: Your help is priceless!

William: We should stop off at a pub for lunch later. |

15.		
Literal	Literal	Rose and George were moving into a new office two floors up. Rose asked George if he would carry

target remark	character	the heaviest boxes. Rose: Are you still carrying the lightest boxes? George: No. I'm carrying the heavier boxes now. Rose: Thanks for that! George: You can just leave the rest of the boxes and I will carry them myself. Rose: Your assistance is invaluable! George: We should go for a coffee later.
	Sarcastic character	Rose and George were moving into a new office two floors up. Rose asked George if he would carry the heaviest boxes. Rose: Are you still carrying the lightest boxes? George: Of course! They're the easiest ones to lift. Rose said sarcastically: Thanks for that! George: You can just leave the rest of the boxes and I will carry them myself.

		Rose: Your assistance is invaluable!
		George: We should go for a coffee later.
Sarcastic target remark	Literal character	Rose and George were moving into a new office two floors up. Rose asked George if he would carry the heaviest boxes. Rose: Are you still carrying the lightest boxes? George: No. I'm carrying the heavier boxes now. Rose: Thanks for that! George: Though I'm sure you can manage the heavy ones, so I'll leave the rest to you. Rose: Your assistance is invaluable! George: We should go for a coffee later.
	Sarcastic character	Rose and George were moving into a new office two floors up. Rose asked George if he would carry the heaviest boxes. Rose: Are you still carrying the lightest boxes?

		George: Of course! They're the easiest ones to lift.
		Rose said sarcastically: Thanks for that!
		George: Though I'm sure you can manage the heavy ones, so I'll leave the rest to you.
		Rose: Your assistance is invaluable!
		George: We should go for a coffee later.

16.		
Literal target remark	Literal character	Richard was moving house and asked his friend Samuel to help him out. Richard asked Samuel to make sure he had enough petrol in his car to drive him to the new house.
		Richard: What took you so long to get here?
		Samuel: I was picking up some supplies for your new house.
		Richard: That was really clever of you!
		Samuel: But I remembered to fill the car up with petrol and buy some supplies.

		Richard: You prepared thoroughly!
		Samuel: My sister is coming to visit me tomorrow.
	Sarcastic character	Richard was moving house and asked his friend Samuel to help him out. Richard asked Samuel to make sure he had enough petrol in his car to drive him to the new house.
		Richard: What took you so long to get here?
		Samuel: I woke up later than planned as I forgot to set my alarm.
		Richard said sarcastically: That was really clever of you!
		Samuel: But I remembered to fill the car up with petrol and buy some supplies.
		Richard: You prepared thoroughly!
		Samuel: My sister is coming to visit me tomorrow.
Sarcastic target remark	Literal character	Richard was moving house and asked his friend Samuel to help him out. Richard asked Samuel to make sure he had enough petrol in his car to drive him to the new house.
		Richard: What took you so long to get here?

		Samuel: I was picking up some supplies for your new house.
		Richard: That was really clever of you!
		Samuel: I need to fill the car up as I don't have enough petrol for the drive.
		Richard: You prepared thoroughly!
		Samuel: My sister is coming to visit me tomorrow.
	Sarcastic character	Richard was moving house and asked his friend Samuel to help him out. Richard asked Samuel to make sure he had enough petrol in his car to drive him to the new house.
		Richard: What took you so long to get here?
		Samuel: I woke up later than planned as I forgot to set my alarm.
		Richard said sarcastically: That was really clever of you!
		Samuel: I need to fill the car up as I don't have enough petrol for the drive.
		Richard: You prepared thoroughly!
		Samuel: My sister is coming to visit me tomorrow.

17.		
Literal target remark	Literal character	Charlie and Joe wanted to go surfing. Charlie asked Joe to rent a car in which they could easily fit all of their surfing gear. Charlie: What car did you rent us? Joe: I got a spacious mini-van. Charlie: It's clearly big enough to fit all of our surfing gear in! Joe: The tank's full of petrol and it has a roof rack to keep the gear in place. Charlie: This car is what we needed! Joe: The weather report says it's supposed to be very sunny today.
	Sarcastic character	Charlie and Joe wanted to go surfing. Charlie asked Joe to rent a car in which they could easily fit all of their surfing gear. Charlie: What car did you rent us? Joe: I got a little Mini Cooper.

		Charlie said sarcastically: It's clearly big enough to fit all of our surfing gear in! Joe: The tank's full of petrol and it has a roof rack to keep the gear in place. Charlie: This car is what we needed! Joe: The weather report says it's supposed to be very sunny today.
Sarcastic target remark	Literal character	Charlie and Joe wanted to go surfing. Charlie asked Joe to rent a car in which they could easily fit all of their surfing gear. Charlie: What car did you rent us? Joe: I got a spacious mini-van. Charlie: It's clearly big enough to fit all of our surfing gear in! Joe: But it has no functioning headlights so we have to come back before dusk. Charlie: This car is what we needed! Joe: The weather report says it's supposed to be very sunny today.
	Sarcastic	Charlie and Joe wanted to go surfing. Charlie asked Joe to rent a car in which they could easily fit all

	character	of their surfing gear.
		Charlie: What car did you rent us?
		Joe: I got a little Mini Cooper.
		Charlie said sarcastically: It's clearly big enough to fit all of our surfing gear in!
		Joe: But it has no functioning headlights so we have to come back before dusk.
		Charlie: This car is what we needed!
		Joe: The weather report says it's supposed to be very sunny today.

18.		
Literal target remark	Literal character	Marie was going to prepare dinner for some friends. She made her housemate Leah a list of the ingredients and asked her to buy them all.
		Marie: Did you manage to find all of the ingredients?
		Leah: Yes and I bought you some extra ingredients that might come in handy.

		Marie: That was clever of you!
		Leah: But I'll help you prepare the food for tonight, like I suggested earlier.
		Marie: Your suggestion was great!
		Leah: I'm going out later.
	Sarcastic character	Marie was going to prepare dinner for some friends. She made her housemate Leah a list of the ingredients and asked her to buy them all.
		Marie: Did you manage to find all of the ingredients?
		Leah: I went to the supermarket, but remembered I had left my purse at home.
		Marie said sarcastically: That was clever of you!
		Leah: But I'll help you prepare the food for tonight, like I suggested earlier.
		Marie: Your suggestion was great!
		Leah: I'm going out later.
Sarcastic	Literal	Marie was going to prepare dinner for some friends. She made her housemate Leah a list of the

target	character	ingredients and asked her to buy them all.
remark		Marie: Did you manage to find all of the ingredients?
		Leah: Yes and I bought you some extra ingredients that might come in handy.
		Marie: That was clever of you!
		Leah: You could just order in some takeaway, like I suggested earlier.
		Marie: Your suggestion was great!
		Leah: I'm going out later.
	Sarcastic character	Marie was going to prepare dinner for some friends. She made her housemate Leah a list of the ingredients and asked her to buy them all.
		Marie: Did you manage to find all of the ingredients?
		Leah: I went to the supermarket, but remembered I had left my purse at home.
		Marie said sarcastically: That was clever of you!
		Leah: You could just order in some takeaway, like I suggested earlier.

		Marie: Your suggestion was great!
		Leah: I'm going out later.

19.		
Literal target remark	Literal character	Ella was not feeling well and was resting in bed. She had just cleaned her room, so she asked her friend Denis to be extra careful not to spill her soup when bringing it to her. Ella: I hope you're being careful with the soup. Denis: I'm walking slowly with the soup and I've not spilt any so far. Ella: That's brilliant! Denis: But I've got a tray to place your bowl on and I'll clean the kitchen now. Ella: Your chivalry is unmatched. Denis: I'm going downstairs now.
	Sarcastic	Ella was not feeling well and was resting in bed. She had just cleaned her room, so she asked her

	character	friend Denis to be extra careful not to spill her soup when bringing it to her.
		Ella: I hope you're being careful with the soup.
		Denis: I've spilt some on the kitchen floor and some is dripping from the bowl.
		Ella said sarcastically: That's brilliant!
		Denis: But I've got a tray to place your bowl on and I'll clean the kitchen now.
		Ella: Your chivalry is unmatched.
		Denis: I'm going downstairs now.
Sarcastic target remark	Literal character	Ella was not feeling well and was resting in bed. She had just cleaned her room, so she asked her friend Denis to be extra careful not to spill her soup when bringing it to her.
		Ella: I hope you're being careful with the soup.
		Denis: I'm walking slowly with the soup and I've not spilt any so far.
		Ella: That's brilliant!
		Denis: It made a mess in the microwave, which you can clean up later.

		Ella: Your chivalry is unmatched.
		Denis: I'm going downstairs now.
	Sarcastic character	Ella was not feeling well and was resting in bed. She had just cleaned her room, so she asked her friend Denis to be extra careful not to spill her soup when bringing it to her.
		Ella: I hope you're being careful with the soup.
		Denis: I've spilt some on the kitchen floor and some is dripping from the bowl.
		Ella said sarcastically: That's brilliant!
		Denis: It made a mess in the microwave, which you can clean up later.
		Ella: Your chivalry is unmatched.
		Denis: I'm going downstairs now.

20.		
Literal	Literal	Julie and Susan were living together on the university campus. Julie asked Susan to wake up early on

target	character	Saturday morning and help her with cleaning their flat.
remark		Julie: I thought we agreed we're cleaning the flat together.
		Susan: I woke up really early so I decided to make a start on cleaning the flat.
		Julie: That's so nice of you!
		Susan: I'll finish the cleaning off soon, and I'll clean the flat next week too.
		Julie: I like your willingness!
		Susan: I'm going to go and get some breakfast now.
	Sarcastic character	Julie and Susan were living together on the university campus. Julie asked Susan to wake up early on Saturday morning and help her with cleaning their flat.
		Julie: I thought we agreed we're cleaning the flat together.
		Susan: I know I was meant to get up earlier, but I couldn't be bothered.
		Julie said maliciously: That's so nice of you!
		Susan: I'll finish the cleaning off soon, and I'll clean the flat next week too.

		Julie: I like your willingness!
		Susan: I'm going to go and get some breakfast now.
Sarcastic target remark	Literal character	Julie and Susan were living together on the university campus. Julie asked Susan to wake up early on Saturday morning and help her with cleaning their flat. Julie: I thought we agreed we're cleaning the flat together. Susan: I woke up really early so I decided to make a start on cleaning the flat. Julie: That's so nice of you! Susan: Anyway I have stuff to do, so you can finish the cleaning. Julie: I like your willingness! Susan: I'm going to go and get some breakfast now.
	Sarcastic character	Julie and Susan were living together on the university campus. Julie asked Susan to wake up early on Saturday morning and help her with cleaning their flat. Julie: I thought we agreed we're cleaning the flat together.

		Susan: I know I was meant to get up earlier, but I couldn't be bothered.
		Julie said maliciously: That's so nice of you!
		Susan: Anyway I have stuff to do, so you can finish the cleaning.
		Julie: I like your willingness!
		Susan: I'm going to go and get some breakfast now.

21.		
Literal target remark	Literal character	Mark and Phoebe were planning their weekend together. Mark had asked Phoebe if they could go somewhere out of the city and do something active and risk-taking.
		Mark: Have you come up with any ideas for what we could do at the weekend?
		Phoebe: I was thinking we could go white water rafting.
		Mark: That's a really risk-taking activity!
		Phoebe: Or we could go rock climbing?

		Mark: Your idea is so adventurous!
		Phoebe: Would you like some coffee before we go out?
	Sarcastic character	Mark and Phoebe were planning their weekend together. Mark had asked Phoebe if they could go somewhere out of the city and do something active and risk-taking. Mark: Have you come up with any ideas for what we could do at the weekend? Phoebe: I was thinking we could go shopping in the city. Mark said sarcastically: That's a really risk-taking activity! Phoebe: Or we could go rock climbing? Mark: Your idea is so adventurous! Phoebe: Would you like some coffee before we go out?
Sarcastic target remark	Literal character	Mark and Phoebe were planning their weekend together. Mark had asked Phoebe if they could go somewhere out of the city and do something active and risk-taking. Mark: Have you come up with any ideas for what we could do at the weekend?

		Phoebe: I was thinking we could go white water rafting. Mark: That's a really risk-taking activity! Phoebe: Or we could visit the city museum? Mark: Your idea is so adventurous! Phoebe: Would you like some coffee before we go out?
	Sarcastic character	Mark and Phoebe were planning their weekend together. Mark had asked Phoebe if they could go somewhere out of the city and do something active and risk-taking. Mark: Have you come up with any ideas for what we could do at the weekend? Phoebe: I was thinking we could go shopping in the city. Mark said sarcastically: That's a really risk-taking activity! Phoebe: Or we could visit the city museum? Mark: Your idea is so adventurous! Phoebe: Would you like some coffee before we go out?

22.		
Literal target remark	Literal character	Stuart and Linda were painting their bedroom. Stuart asked Linda to pay attention when entering the room because he had left buckets of paint lying all over the floor. Stuart: Remember to watch out for the buckets of paint on the floor. Linda: I know and I've made it all this way by skilfully avoiding the buckets. Stuart: You were clearly watching where you stepped! Linda: Don't step back now Stuart as you will knock a bucket over. Stuart: I appreciate your alertness! Linda: It shouldn't take us too long to finish painting the room.
	Sarcastic character	Stuart and Linda were painting their bedroom. Stuart asked Linda to pay attention when entering the room because he had left buckets of paint lying all over the floor. Stuart: Remember to watch out for the buckets of paint on the floor. Linda: Oops! I've just put my foot in one of them.

		Stuart said sarcastically: You were clearly watching where you stepped!
		Linda: Don't step back now Stuart as you will knock a bucket over.
		Stuart: I appreciate your alertness!
		Linda: It shouldn't take us too long to finish painting the room.
Sarcastic target remark	Literal character	Stuart and Linda were painting their bedroom. Stuart asked Linda to pay attention when entering the room because he had left buckets of paint lying all over the floor.
		Stuart: Remember to watch out for the buckets of paint on the floor.
		Linda: I know and I've made it all this way by skilfully avoiding the buckets.
		Stuart: You were clearly watching where you stepped!
		Linda: Oops! I've knocked one of them over so there's paint on the carpet.
		Stuart: I appreciate your alertness!
		Linda: It shouldn't take us too long to finish painting the room.
	Sarcastic	Stuart and Linda were painting their bedroom. Stuart asked Linda to pay attention when entering the

	character	room because he had left buckets of paint lying all over the floor.
		Stuart: Remember to watch out for the buckets of paint on the floor.
		Linda: Oops! I've just put my foot in one of them.
		Stuart said sarcastically: You were clearly watching where you stepped!
		Linda: Oops! I've knocked one of them over so there's paint on the carpet.
		Stuart: I appreciate your alertness!
		Linda: It shouldn't take us too long to finish painting the room.

23.		
Literal	Literal	Luke and Carrie had to give a presentation together as part of the assignment for one of their modules.
target	character	Luke needed a high mark so he asked Carrie to come well prepared.
remark		Luke: How much preparation did you do for the presentation?
		Carrie: I did a ridiculous amount because you asked me to.

		Luke: I knew you would prepare well!
		Carrie: We gave a fantastic presentation though, the best in our class.
		Luke: Our talk was impeccable!
		Carrie: Let's go home and watch some TV.
	Sarcastic character	Luke and Carrie had to give a presentation together as part of the assignment for one of their modules.
		Luke needed a high mark so he asked Carrie to come well prepared.
		Luke: How much preparation did you do for the presentation?
		Carrie: I didn't actually do any as I thought I could wing it.
		Luke said sarcastically: I knew you would prepare well!
		Carrie: We gave a fantastic presentation though, the best in our class.
		Luke: Our talk was impeccable!
		Carrie: Let's go home and watch some TV.
Sarcastic	Literal	Luke and Carrie had to give a presentation together as part of the assignment for one of their modules.

target remark	character	Luke needed a high mark so he asked Carrie to come well prepared.
		Luke: How much preparation did you do for the presentation?
		Carrie: I did a ridiculous amount because you asked me to.
		Luke: I knew you would prepare well!
		Carrie: Though it probably didn't help that I was laughing hysterically.
		Luke: Our talk was impeccable!
		Carrie: Let's go home and watch some TV.
	Sarcastic character	Luke and Carrie had to give a presentation together as part of the assignment for one of their modules.
		Luke needed a high mark so he asked Carrie to come well prepared.
		Luke: How much preparation did you do for the presentation?
		Carrie: I didn't actually do any as I thought I could wing it.
		Luke said sarcastically: I knew you would prepare well!
		Carrie: Though it probably didn't help that I was laughing hysterically.

		Luke: Our talk was impeccable!
		Carrie: Let's go home and watch some TV.

24.		
Literal target remark	Literal character	Louise had almost finished writing her final year dissertation when her laptop froze. Her friend Ian was in the house and came over to see what had happened. Louise: Do you know how to make my laptop work again? Ian: Have you removed the battery to check if dust is affecting the connection? Louise: That idea never crossed my mind! Ian: If you give me your laptop, I will make sure to get it fixed. Louise: Your assistance was useful! Ian: I'm just going to go and make myself a coffee.
	Sarcastic	Louise had almost finished writing her final year dissertation when her laptop froze. Her friend Ian

	character	was in the house and came over to see what had happened. Louise: Do you know how to make my laptop work again? Ian: Have you tried switching it on and off? Louise smirked: That idea never crossed my mind! Ian: If you give me your laptop, I will make sure to get it fixed. Louise: Your assistance was useful! Ian: I'm just going to go and make myself a coffee.
Sarcastic target remark	Literal character	Louise had almost finished writing her final year dissertation when her laptop froze. Her friend Ian was in the house and came over to see what had happened. Louise: Do you know how to make my laptop work again? Ian: Have you removed the battery to check if dust is affecting the connection? Louise: That idea never crossed my mind! Ian: You could take the battery out, but it will invalidate your laptop guarantee.

		Louise: Your assistance was useful! Ian: I'm just going to go and make myself a coffee.
	Sarcastic character	Louise had almost finished writing her final year dissertation when her laptop froze. Her friend Ian was in the house and came over to see what had happened. Louise: Do you know how to make my laptop work again? Ian: Have you tried switching it on and off? Louise smirked: That idea never crossed my mind! Ian: You could take the battery out, but it will invalidate your laptop guarantee. Louise: Your assistance was useful! Ian: I'm just going to go and make myself a coffee.

25.		
Literal	Literal	Carl had books all over his house so he planned to rearrange his bookcase. He asked his friend Naomi

target	character	to help him because her bookcase always looked quite tidy.
remark		Carl: How did you arrange the books on your bookcase?
		Naomi: I sorted my books into topics, and placed each one in alphabetical order.
		Carl: That's really helpful!
		Naomi: As all of your books were fictional, I put them in alphabetical order.
		Carl: That was systematic!
		Naomi: Let's have some lunch now.
	Sarcastic character	Carl had books all over his house so he planned to rearrange his bookcase. He asked his friend Naomi to help him because her bookcase always looked quite tidy.
		Carl: How did you arrange the books on your bookcase?
		Naomi: I can't actually remember how I arranged my books.
		Carl said sarcastically: That's really helpful!
		Naomi: As all of your books were fictional, I put them in alphabetical order.

		Carl: That was systematic!
		Naomi: Let's have some lunch now.
Sarcastic target remark	Literal character	Carl had books all over his house so he planned to rearrange his bookcase. He asked his friend Naomi to help him because her bookcase always looked quite tidy. Carl: How did you arrange the books on your bookcase? Naomi: I sorted my books into topics, and placed each one in alphabetical order. Carl: That's really helpful! Naomi: Though I've just placed your books on the bookcase as I found them. Carl: That was systematic! Naomi: Let's have some lunch now.
	Sarcastic character	Carl had books all over his house so he planned to rearrange his bookcase. He asked his friend Naomi to help him because her bookcase always looked quite tidy. Carl: How did you arrange the books on your bookcase?

		Naomi: I can't actually remember how I arranged my books. Carl said sarcastically: That's really helpful! Naomi: Though I've just placed your books on the bookcase as I found them. Carl: That was systematic! Naomi: Let's have some lunch now.

26.		
Literal target remark	Literal character	Allan and Leo were PhD students. Allan was a very tidy person and he asked Leo at the beginning of the year to keep the office fairly clean. Allan: What happened to our office? Leo: I cleaned our office as I know you hate untidiness. Allan: That explains why it's so tidy! Leo: I've put our articles in alphabetical folders so they're easier to find.

		Allan: Our office is well-ordered!
		Leo: We have to go to a meeting now.
	Sarcastic character	Allan and Leo were PhD students. Allan was a very tidy person and he asked Leo at the beginning of the year to keep the office fairly clean.
		Allan: What happened to our office?
		Leo: I was trying to sort out our articles, so I put them on the floor to help.
		Allan said sarcastically: That explains why it's so tidy!
		Leo: I've put our articles in alphabetical folders so they're easier to find.
		Allan: Our office is well-ordered!
		Leo: We have to go to a meeting now.
Sarcastic target remark	Literal character	Allan and Leo were PhD students. Allan was a very tidy person and he asked Leo at the beginning of the year to keep the office fairly clean.
		Allan: What happened to our office?

		Leo: I cleaned our office as I know you hate untidiness.
		Allan: That explains why it's so tidy!
		Leo: I've been placing articles in random folders, so I don't know where certain ones are.
		Allan: Our office is well-ordered!
		Leo: We have to go to a meeting now.
	Sarcastic character	Allan and Leo were PhD students. Allan was a very tidy person and he asked Leo at the beginning of the year to keep the office fairly clean.
		Allan: What happened to our office?
		Leo: I was trying to sort out our articles, so I put them on the floor to help.
		Allan said sarcastically: That explains why it's so tidy!
		Leo: I've been placing articles in random folders, so I don't know where certain ones are.
		Allan: Our office is well-ordered!
		Leo: We have to go to a meeting now.

27.		
Literal target remark	Literal character	Archie and Isabel were on holiday in Valencia for a week. The end of the trip was approaching so Archie asked Isabel to think of something thrilling to do on their last day. Archie: What are we doing on our last day then? Isabel: I was thinking we could go and see a Formula 1 race. Archie: That sounds thrilling! Isabel: Or we could go rock climbing. Archie: Your choice is exhilarating! Isabel: I'm going to make us both a coffee.
	Sarcastic character	Archie and Isabel were on holiday in Valencia for a week. The end of the trip was approaching so Archie asked Isabel to think of something thrilling to do on their last day. Archie: What are we doing on our last day then? Isabel: I was thinking we could just stay in the hotel room and watch TV.

		Archie smirked: That sounds thrilling!
		Isabel: Or we could go rock climbing.
		Archie: Your choice is exhilarating!
		Isabel: I'm going to make us both a coffee.
Sarcastic target remark	Literal character	Archie and Isabel were on holiday in Valencia for a week. The end of the trip was approaching so Archie asked Isabel to think of something thrilling to do on their last day. Archie: What are we doing on our last day then? Isabel: I was thinking we could go and see a Formula 1 race. Archie: That sounds thrilling! Isabel: Actually we should stay here and start to pack our luggage. Archie: Your choice is exhilarating! Isabel: I'm going to make us both a coffee.
	Sarcastic	Archie and Isabel were on holiday in Valencia for a week. The end of the trip was approaching so

	character	Archie asked Isabel to think of something thrilling to do on their last day.
		Archie: What are we doing on our last day then?
		Isabel: I was thinking we could just stay in the hotel room and watch TV.
		Archie smirked: That sounds thrilling!
		Isabel: Actually we should stay here and start to pack our luggage.
		Archie: Your choice is exhilarating!
		Isabel: I'm going to make us both a coffee.

28.		
Literal target remark	Literal character	Josh offered to walk Lottie to her friend's party. As he was coming along anyway, she asked him if he could help her with the heavy gift that she was carrying.
		Lottie: Would you mind carrying this gift for me?
		Josh: Not at all, just pass me the gift.

		Lottie: That's really kind of you. Josh: It's exceptionally heavy, so I'm actually glad that I took it from you. Lottie: Your help was priceless! Josh: We're nearly there now.
	Sarcastic character	Josh offered to walk Lottie to her friend's party. As he was coming along anyway, she asked him if he could help her with the heavy gift that she was carrying. Lottie: Would you mind carrying this gift for me? Josh: If you really can't manage it, then I guess I have no choice but to. Lottie said sarcastically: That's really kind of you. Josh: It's exceptionally heavy, so I'm actually glad that I took it from you. Lottie: Your help was priceless! Josh: We're nearly there now.
Sarcastic	Literal	Josh offered to walk Lottie to her friend's party. As he was coming along anyway, she asked him if he

target	character	could help her with the heavy gift that she was carrying.
remark		Lottie: Would you mind carrying this gift for me?
		Josh: Not at all, just pass me the gift.
		Lottie: That's really kind of you.
		Josh: It's actually heavier than I thought it was, so you can take it back.
		Lottie: Your help was priceless!
		Josh: We're nearly there now.
	Sarcastic character	Josh offered to walk Lottie to her friend's party. As he was coming along anyway, she asked him if he could help her with the heavy gift that she was carrying.
		Lottie: Would you mind carrying this gift for me?
		Josh: If you really can't manage it, then I guess I have no choice but to.
		Lottie said sarcastically: That's really kind of you.
		Josh: It's actually heavier than I thought it was, so you can take it back.

		Lottie: Your help was priceless!
		Josh: We're nearly there now.

29.		
Literal target remark	Literal character	Eli had been working very hard lately so his boss gave him a day off on Friday. He couldn't decide what to do with his day off so he asked his friend Helen to make an exciting plan for him. Eli: What plans have you organised for me? Helen: In the morning I've booked you in for some rock climbing. Eli: Very exciting! Helen: And in the afternoon I've booked for you to go dirt bike racing. Eli: You got me impatient! Helen: I'm glad I could be of help.
	Sarcastic	Eli had been working very hard lately so his boss gave him a day off on Friday. He couldn't decide

	character	what to do with his day off so he asked his friend Helen to make an exciting plan for him.
		Eli: What plans have you organised for me?
		Helen: I've booked you in for a hair appointment in the morning.
		Eli said sarcastically: Very exciting!
		Helen: And in the afternoon I've booked for you to go dirt bike racing.
		Eli: You got me impatient!
		Helen: I'm glad I could be of help.
Sarcastic target remark	Literal character	Eli had been working very hard lately so his boss gave him a day off on Friday. He couldn't decide what to do with his day off so he asked his friend Helen to make an exciting plan for him.
		Eli: What plans have you organised for me?
		Helen: In the morning I've booked you in for some rock climbing.
		Eli: Very exciting!
		Helen: And in the afternoon I've made you a dentist appointment.

		Eli: You got me impatient!
		Helen: I'm glad I could be of help.
	Sarcastic character	Eli had been working very hard lately so his boss gave him a day off on Friday. He couldn't decide what to do with his day off so he asked his friend Helen to make an exciting plan for him.
		Eli: What plans have you organised for me?
		Helen: I've booked you in for a hair appointment in the morning.
		Eli said sarcastically: Very exciting!
		Helen: And in the afternoon I've made you a dentist appointment.
		Eli: You got me impatient!
		Helen: I'm glad I could be of help.

30.		
Literal	Literal	Lizzie had just got back home from university and was starving. Earlier on, Lizzie had texted her

target remark	character	housemate Maria asking if she could cook for them since she always made really tasty recipes. Lizzie: What have you cooked us for dinner? Maria: I've made us a lasagne with homemade garlic bread. Lizzie: Sounds tasty! Maria: I've made us a homemade white chocolate molten pudding for dessert. Lizzie: Your food is delicious! Maria: Could you set the table for me?
	Sarcastic character	Lizzie had just got back home from university and was starving. Earlier on, Lizzie had texted her housemate Maria asking if she could cook for them since she always made really tasty recipes. Lizzie: What have you cooked us for dinner? Maria: I've cooked us a jacket potato each. Lizzie smirked: Sounds tasty! Maria: I've made us a homemade white chocolate molten pudding for dessert.

		Lizzie: Your food is delicious!
		Maria: Could you set the table for me?
Sarcastic target remark	Literal character	Lizzie had just got back home from university and was starving. Earlier on, Lizzie had texted her housemate Maria asking if she could cook for them since she always made really tasty recipes.
		Lizzie: What have you cooked us for dinner?
		Maria: I've made us a lasagne with homemade garlic bread.
		Lizzie: Sounds tasty!
		Maria: I've also cooked us some out of date chicken to go with the meal.
		Lizzie: Your food is delicious!
		Maria: Could you set the table for me?
	Sarcastic character	Lizzie had just got back home from university and was starving. Earlier on, Lizzie had texted her housemate Maria asking if she could cook for them since she always made really tasty recipes.
		Lizzie: What have you cooked us for dinner?

		Maria: I've cooked us a jacket potato each.
		Lizzie smirked: Sounds tasty!
		Maria: I've also cooked us some out of date chicken to go with the meal.
		Lizzie: Your food is delicious!
		Maria: Could you set the table for me?

31.		
Literal target remark	Literal character	Eleanor and Rach were in a supermarket doing grocery shopping and were queuing to pay. Eleanor asked Rach to carefully put all the groceries in the bags so they could easily carry them home.
		Eleanor: Did you pack your bags carefully?
		Rach: I made sure that each bag contains heavy and light items.
		Eleanor: I'm glad you did as I asked!
		Rach: All of the heavier items are at the bottom, with the lighter ones on top.

		Eleanor: You packed them great!
		Rach: Let's walk home quickly.
	Sarcastic character	Eleanor and Rach were in a supermarket doing grocery shopping and were queuing to pay. Eleanor asked Rach to carefully put all the groceries in the bags so they could easily carry them home.
		Eleanor: Did you pack your bags carefully?
		Rach: Not really. I just put the items in the bags as they came.
		Eleanor said sarcastically: I'm glad you did as I asked!
		Rach: All of the heavier items are at the bottom, with the lighter ones on top.
		Eleanor: You packed them great!
		Rach: Let's walk home quickly.
Sarcastic target remark	Literal character	Eleanor and Rach were in a supermarket doing grocery shopping and were queuing to pay. Eleanor asked Rach to carefully put all the groceries in the bags so they could easily carry them home.
		Eleanor: Did you pack your bags carefully?

		Rach: I made sure that each bag contains heavy and light items.
		Eleanor: I'm glad you did as I asked!
		Rach: Though some of the bags are ripping due to how I put the items in them.
		Eleanor: You packed them great!
		Rach: Let's walk home quickly.
	Sarcastic character	Eleanor and Rach were in a supermarket doing grocery shopping and were queuing to pay. Eleanor asked Rach to carefully put all the groceries in the bags so they could easily carry them home.
		Eleanor: Did you pack your bags carefully?
		Rach: Not really. I just put the items in the bags as they came.
		Eleanor said sarcastically: I'm glad you did as I asked!
		Rach: Though some of the bags are ripping due to how I put the items in them.
		Eleanor: You packed them great!
		Rach: Let's walk home quickly.

32.		
Literal target remark	Literal character	Sarah and Grace had both graduated from university so Grace wanted to cook a celebratory meal. Sarah liked Grace's idea but asked her to cook anything other than seafood or fish, which she couldn't stand. Sarah: What have you cooked us for lunch? Grace: I've made us vegetable samosas for starters. Sarah: That sounds wonderful! Grace: And for the main we have homemade chicken curry with naan bread. Sarah: This lunch is great! Grace: I'll just finish the food off now.
	Sarcastic character	Sarah and Grace had both graduated from university so Grace wanted to cook a celebratory meal. Sarah liked Grace's idea but asked her to cook anything other than seafood or fish, which she couldn't stand.

		Sarah: What have you cooked us for lunch? Grace: I've made us a prawn cocktail for starters. Sarah said sarcastically: That sounds wonderful! Grace: And for the main we have homemade chicken curry with naan bread. Sarah: This lunch is great! Grace: I'll just finish the food off now.
Sarcastic target remark	Literal character	Sarah and Grace had both graduated from university so Grace wanted to cook a celebratory meal. Sarah liked Grace's idea but asked her to cook anything other than seafood or fish, which she couldn't stand. Sarah: What have you cooked us for lunch? Grace: I've made us vegetable samosas for starters. Sarah: That sounds wonderful! Grace: And for the main we have smoked salmon with vegetables.

		Sarah: This lunch is great!
		Grace: I'll just finish the food off now.
	Sarcastic character	Sarah and Grace had both graduated from university so Grace wanted to cook a celebratory meal.
		Sarah liked Grace's idea but asked her to cook anything other than seafood or fish, which she couldn't stand.
		Sarah: What have you cooked us for lunch?
		Grace: I've made us a prawn cocktail for starters.
		Sarah said sarcastically: That sounds wonderful!
		Grace: And for the main we have smoked salmon with vegetables.
		Sarah: This lunch is great!
		Grace: I'll just finish the food off now.

Appendix N: Full list of filler items (Experiment 7)

1	Eddie and Francesca had no plans for Friday evening. They rented the movie "Melancholia" because it had lots of positive reviews online. Eddie: Are you enjoying the film? Francesca: No I'm not. This movie is terrible. Eddie: I'm glad I'm not the only one who doesn't like it. Francesca laughed: I've never been this bored watching a film before! Eddie: This movie is terrible! Francesca: Let's just switch the movie off and go to sleep.
2	Rebecca gave Saul a new mobile phone for his birthday. He was very happy as he had wanted to buy this model for a while. As he took it out of the box, he dropped it on the floor and broke it. Rebecca: How bad is the damage to the phone? Saul: The front has cracked and the battery is damaged.

	Rebecca said cautiously: I'm guessing the phone doesn't actually switch on then!
	Saul: No it doesn't. The fall has completely broken the phone.
	Rebecca: I'm not sure it can be fixed!
	Saul: I'm really upset right now.
3	Theresa and Octavia were invited to a friend's beach house, but they couldn't go because the rail workers were on strike on Saturday, and they had no way of travelling to the house.
	Theresa: I can't believe we can't go to the beach house.
	Octavia groaned: All because of the stupid railway strike!
	Theresa: What do you want to do now we are stuck here?
	Octavia: I was going to suggest we go into town, but it's pouring with rain.
	Theresa: I can't believe our bad luck!
	Octavia: Let's just stay in and watch a film.
4	Cal was working on a miniature house model he had to build for his architecture course. He was behind schedule and Chris offered to

	help out. His work was progressing much faster but he was still pressed for time. Cal: I can't believe how much work I have left to do. Chris: I know but we have done a lot of work in a short space of time. Cal whined: I know we have, but there is still a lot more to be done! Chris: Don't worry. We will get everything finished on time. Cal: I hate working under stress! Chris: I know, but let's just do our best to get this done.
5	Nicole and Roxy bought tickets for an art exhibition that had just opened in town. Although the art magazines said it was very good, they were disappointed with it. Nicole: I really didn't enjoy the art exhibition. Roxy: Me neither. I thought the artwork was going to be better than what it was. Nicole said thoughtfully: That's because we trusted what the magazines said! Roxy: I don't think I will be making that mistake again.

	Nicole: We shouldn't believe magazine reviews!
	Roxy: I'm upset the magazines made the exhibition sound better than what it was.
6	Patrick and Josie were planning a trip to Venice and booked a room in a nice hotel by the Rialto Bridge. When they arrived, the room was very small and dirty, and the staff were not helpful at all.
	Patrick: This hotel is shockingly unclean.
	Josie said angrily: And the hotel staff refuse to clean our room for us!
	Patrick: I can't believe they advertise this as a nice hotel.
	Josie: This hotel is the complete opposite to what they advertised.
	Patrick: We can't stay here!
	Josie: We should cancel our booking and find somewhere else to stay.
7	Adam was driving Stella in his car when it broke down. Adam called the AA and they managed to locate him using the GPS function on his phone. They waited for them for about an hour, but the car was fixed quickly once they arrived.
	Adam: I'm so glad the car has been fixed and we can drive home.

	Stella: Me too. I wasn't enjoying standing outside in the cold.
	Adam: At least they fixed the car within fifteen minutes once they had arrived.
	Stella groaned: But I'm so cold right now and I can't feel my fingers or toes.
	Adam: We were waiting for a long time!
	Stella: A cup of tea is definitely in order once we get home.
8	Jeff and Martha wanted to see the Cirque du Soleil show with their little cousin. When they checked the website, it said that it was already sold out.
	Jeff: I can't believe the show has already sold out.
	Martha muttered: I've always really wanted to see a Cirque du Soleil show!
	Jeff: Me too, but unfortunately there is nothing we can do about it.
	Martha: I know. It's just a real shame.
	Jeff: It's disappointing!
	Martha: We are just going to have to find a different show to see.

9	Barbara and Carlos went into town one afternoon as the weather forecast predicted it would be sunny and warm all day long. Whilst they were in town, it suddenly started raining heavily.
	Barbara: I can't believe how heavily it is raining.
	Carlos mumbled: We didn't even bring an umbrella!
	Barbara: That's because the forecast said it would be sunny all day long.
	Carlos: This is the last time I listen to the weather forecast.
	Barbara: The forecast is unreliable!
	Carlos: Let's walk home as quickly as possible to get out of the rain.
10	Edgar and Emma wanted to buy a present together for a friend's birthday. They bought her a classical music CD, but later learned that she doesn't particularly enjoy classical music.
	Edgar: We are going to have to get a new present.
	Emma giggled: Hopefully we will buy her something she likes this time!
	Edgar: We need to think carefully about her likes and dislikes.

	Emma: I know for certain that she won't particularly enjoy a classical music CD. Edgar: This wasn't a good gift! Emma: I think we should go and return the CD before buying her something else.
11	Felicia and Daphne were shopping for a prom dress. In the last shop, Felicia tried on a red one that she really liked. However, the dress was too small for her and there were no other sizes in the shop. Felicia: I can't believe they didn't have that dress in my size. Daphne: It's a real shame too, as that dress looked beautiful on you. Felicia: No other dress is going to look good in comparison to it. Daphne said earnestly: It's fine, we will find you a better dress for the prom! Felicia: I'm just not lucky today! Daphne: Let's go home and continue looking for dresses next week.
12	Derek and Wendy decided to have a picnic in the park. They heard the weather would be good, but as they arrived in the park and set out their blankets, it started to rain.

	Derek: I can't believe it is raining. Wendy said angrily: The weather was supposed to be good today! Derek: It has certainly put a downer on our picnic. Wendy: I'm not sure the rain is going to stop any time soon. Derek: I don't like this weather! Wendy: We should pack up and go back to the car.
13	Gemma was moving to a new house and her friend Walter offered to help her out. On the day, Walter couldn't help her anymore, so she postponed the move to the following day as she couldn't do it all by herself. Gemma: I'm so happy you are here and I'm able to move today. Walter: I'm sorry that I couldn't help you out yesterday. Gemma: It was a little annoying, but in the end I'm only moving a day late. Walter said cautiously: I was surprised you postponed you move. Gemma: Moving house isn't easy!

	Walter: You're right, but I'm here now so let's get you moved.
14	Kaitlin and Neil planned to go to the theatre one evening. They were supposed to be outside the theatre at 19:45 to catch the show, but because of traffic they arrived at 20:30, so they couldn't get in. Kaitlin: I can't believe we aren't allowed into the show. Neil: The theatre doesn't allow people to enter once a show has begun. Kaitlin whined: But we were late due to the traffic! Neil: It doesn't matter why we are late, the same rules still apply. Kaitlin: That is such a shame! Neil: Let's just get back into the car and go home.
15	Xavier and Phil went to see a film at the cinema. They only had 5 minutes left before the movie started, but the tickets queue was moving slowly and there was not much they could do about it. Xavier: I wish this queue would move quicker. Phil: I can't believe how long it is taking to buy a ticket.

	Xavier: Next time we see a movie we should buy our tickets online beforehand. Phil groaned: I don't think we are going to make the start of the movie! Xavier: The start of the film is always important! Phil: I'm so annoyed right now.
16	Travis and Otis were throwing a big house party. They had no choice but to finish the party early when their neighbour came over and asked them to turn the music down as he needed to wake up early the next day. Travis: I can't believe we've had to end the party early. Otis muttered: Well we could hardly keep it going! Travis: It's a shame our neighbour has to get up early tomorrow. Otis: It's annoying when we put so much effort into planning the party. Travis: It's just very disappointing! Otis: I think I'm going to go to sleep now.
17	Julian and Mark didn't want to cook so they decided to order some fast-food. The food arrived more than half an hour late and it was cold

	and tasteless.
	Julian: I'm so hungry right now, but I'm not sure I want to eat this food.
	Mark: I've already tried it, and it's really cold.
	Julian: I think it would have been easier for us to have just cooked.
	Mark laughed: This food is absolutely disgusting!
	Julian: I don't think I will be ordering from them again!
	Mark: I think we are just going to have to be hungry.
18	Mitchell and Rita were organising a graduation party in their house. They calculated they had enough food for around 25 people, but in reality 45 people came to the party.
	Mitchell: More people turned up to our party than I thought.
	Rita: I can't believe how many people have actually come.
	Mitchell shouted: This is going to be a good night!
	Rita: Do you think everyone is going to want to be fed?

	Mitchell: I hope not as we don't have enough food!
	Rita: I think someone is going to have to make a quick trip to the shop.
19	Alice and Ben promised a friend of theirs that they would give a free salsa lesson at his charity party. A few days before the party Ben got the flu and they had to cancel the lesson.
	Alice: How are you feeling today?
	Ben: I'm not feeling much better. I just wish this flu would disappear.
	Alice: Me too as I was really looking forward to the charity party.
	Ben said thoughtfully: I really wish we could have gone to the party too!
	Alice: Illness ruined our plans!
	Ben: We are just going to have to stay at home until I'm better.
20	Craig and Eli were working on a project which required them to use a new piece of software. One day, the software crashed out of the blue and their work was lost.
	Craig: Why did the software have to crash on us?

	Eli: I don't know what caused it to stop working.
	Craig said angrily: I know we didn't do anything wrong, so it's frustrating!
	Eli: I've just remembered we also haven't backed our work up anywhere.
	Craig: I don't believe this!
	Eli: We need to call a technician right now.
21	Scott and Paula were looking to rent a flat in Nottingham. When they called the agency, they found out that their favourite flat had just been rented to somebody else.
	Scott: Unfortunately the flat we really liked has been rented.
	Paula: I can't believe it has gone so quickly.
	Scott: We really liked that flat too. It would have been a nice place to live.
	Paula groaned: I can't believe the flat has already gone!
	Scott: We should've called sooner!
	Paula: We are going to have to choose a different flat to rent.

22	Vickie and Lorna were working together in a photography studio. One day they had a family photo-shoot planned, but the parents were so grumpy and stressed that the girls couldn't make them smile. Vickie: Those parents were incredibly miserable. Lorna: Nothing we did made them smile. Vickie whined: We didn't get a single good shot of the family! Lorna: I don't see why they couldn't smile for one photo. Vickie: Some clients are like that! Lorna: Let's just go and get some lunch.
23	Paul and Joan went grocery shopping in order to make pancakes in the evening. They couldn't decide what to fill the pancakes with, so they bought fifteen different toppings. Paul: We have bought a lot of toppings. Joan muttered: And I'm still not entirely sure what I want on my pancake! Paul: None of the toppings look particularly appealing to me right now.

	Joan: We should have thought more about what to buy.
	Paul: We've spent too much money on food!
	Joan: Maybe we could return some of the food.
24	Rupert and Jenny went to the Nottingham Riverside Festival Dragon Boat Challenge in August. They watched 11 teams race against each other in dragon boats. They had a really fun day out.
	Rupert: I've had a really fun day today.
	Jenny: It has been an amazing day and the dragon boats looked stunning.
	Rupert: I agree; the designs on the boats were incredibly intricate.
	Jenny giggled: I loved seeing the teams race against each other!
	Rupert: I just wish we could have been involved in the race!
	Jenny: Maybe we could create a team for next year.
25	Max's computer stopped working whilst he was working on a really important project. He couldn't afford to waste too much time, so he called his friend Mona who came over and fixed the problem in no time.

	Max: I'm so grateful to you for fixing my computer.
	Mona laughed: It's no problem and it didn't take me long to fix at all!
	Max: I can't believe how quickly you managed to sort it out.
	Mona: At least you can continue with your project now.
	Max: Though I really need to learn how to fix my computer myself!
	Mona: That would be wise, but you need to finish your project off first.
26	One night, the burglar alarm in Jacob and Selina's house went off for no apparent reason. It turned out the batteries were dead, and they had to wait until morning to buy some new ones. They got no sleep that night.
	Jacob: I'm so tired right now.
	Selina: I feel like I'm about to fall asleep at any moment.
	Jacob: I'm so glad we have managed to change the batteries now.
	Selina grumbled: I'm sure we kept the neighbours awake last night!
	Jacob: I'll go round and apologise to them now.

	Selina: I'm so tired I think I'm going to go back to bed.
27	Lillie persuaded Nancy to go speed dating with her. They found the experience to be incredibly awkward and boring, so they decided to never go speed dating again. Lillie: I'm so sorry that I made you go speed dating with me. Nancy: That has to be one of the worst experiences of my life. Lillie giggled: It was just so embarrassing! Nancy: I knew as soon as we went into the building it wasn't going to be fun. Lillie: We had nothing in common with anyone! Nancy: Let's go to the chip shop on our way back home.
28	As part of Colin's degree he was allowed to choose a language module to study for a year. He was talking with his friend Jonny about why he chose to learn Spanish. Colin: I've always wanted to learn Spanish so I could travel to Spain one day. Jonny said thoughtfully: I'm not surprised you picked Spanish!

	Colin: That's true as you have watched a lot of Spanish movies with me. Jonny: I've watched so many that I feel I know so much Spanish already. Colin: If only learning a language could be that simple! Jonny: If it was I would have learnt several by now.
29	Dominic went glacier hiking with his friend Jessica. They used special equipment like crampons, rows, helmets and ice axes. They were told to be careful since it was quite dangerous, but nothing bad happened to them. Dominic: I'm so glad we went glacier hiking. Jessica: I'm just happy we survived without anything bad happening to us. Dominic: There were times I thought I was about to fall. Jessica muttered: There were times when I thought that too! Dominic: I'm really sad it's all over now! Jessica: I'm sure we will do it again sometime soon.
30	Eric and Ruby had won tickets to one of the Wimbledon Championship matches in the summer. They were discussing where to stay and

	how to travel to London.
	Eric: I think we should stay somewhere close to the tennis courts.
	Ruby: It will be quite expensive, but I do think it would be worth it.
	Eric: At least we haven't had the extra expense of buying the tickets.
	Ruby laughed: I'm so glad we won those tickets!
	Eric: It's annoying how far away summer is though!
	Ruby: It will come around quickly enough.
31	Emily and her brother Albert went cycling one summer morning, when it suddenly started pouring with rain. Emily didn't mind the rain, but Albert was very frustrated by it.
	Emily: That rain came out of nowhere.
	Albert said angrily: I'm completely soaked!
	Emily: You will dry off quickly once we are home.
	Albert: I hate being out in the rain.

	Emily: The rain isn't that bad!
	Albert: Let's just cycle home quickly.
32	Alice bought her friend Louisa tickets to go visit the island Taransay for her birthday. Louisa was a big fan of the TV series Castaway 2000, which was filmed on the island. Louisa was very excited.
	Alice: I'm really glad you like your birthday present.
	Louisa: It's the best birthday present I have ever received.
	Alice smiled: You will have a wonderful time in Taransay!
	Louisa: I'm just so excited to visit the island.
	Alice: I'm just sad that I can't go with you!
	Louisa: I promise I will take loads of pictures for you.
33	Tom and Daniel were big fans of Guns'n'Roses, so they bought themselves front row tickets to see them in concert. The event was months away, but they couldn't stop talking about it.
	Tom: I can't wait to finally see Guns'n'Roses in concert.

	Daniel: We have been waiting to see them for such a long time.
	Tom: I'm so happy we bought seats in the front row.
	Daniel shouted: It's going to be the best concert ever!
	Tom: There is still 3 months to go!
	Daniel: I'm sure the time we pass quickly.
34	Jenny went with Sabrina to one of her lectures on marine biology. Jenny was very interested in the topic, although she was studying Computer Sciences herself. Sabrina found the lecture so boring that she fell asleep half way through.
	Jenny: I saw you fall asleep in the lecture.
	Sabrina whined: That was the most boring lecture I have ever been to!
	Jenny: I found the lecture incredibly interesting.
	Sabrina: I'm pretty sure that you were the only one.
	Jenny: That is very disappointing!
	Sabrina: Hopefully the lecturer will be better next time.

| 35 | Abbie needed a new pair of shoes and her friend Nadine suggested she went to a shop that was located out of town. They walked all the way there only to find that the shop had recently been closed.

Abbie: I can't believe the shop has closed.

Nadine: Me neither. The shop sold really stylish shoes.

Abbie mumbled: Now we have to walk all the way back home!

Nadine: We came all this way and you still don't have a pair of shoes.

Abbie: What a pity!

Nadine: We could always get a cab back. |
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Appendix O: *t*-values of non-significant fixed effects and *p*-values of

likelihood-ratio tests (Experiment 7)

Table for the t-values of the non-significant fixed effects (Experiment 7). As a rule of thumb, only effects with |t| > 2 are likely to be significant (Baayen et al., 2008).			
Analysis region	Reading measure	Fixed effects (from full model)	*t*
pre-critical	fp	context	1.5
		literality	0.3
		context * literality	-0.6
	rp	context	-1.4
		literality	-0.3
		context * literality	0.9
	tt	context	-0.4
		literality	0.8
		context * literality	-0.9
critical	fp	context	0.5
		literality	1.4
		context * literality	-0.6
	rp	n/a	n/a
	tt	n/a	n/a
post-critical	fp	context	0.5

		literality	1.2
		context * literality	-1.9
	rp	context	0.5
		literality	1.7
		context * literality	-1
	tt	context	2
		literality	1.2
		context * literality	-1.6

Series of likelihood-ratio tests, their AIC, and p-values (Experiment 7)

	Fixed effects structure	AIC	*p*-value (vs. model #)
fp – pre-critical			
1	context * literality	9747	n/a
2	context + literality	9746	0.5 (vs. 1)
3	context	9744	0.9 (vs. 2)
4	literality	9746	0.1 (vs. 2)
5	**Intercept**	**9744**	**0.1 (vs. 3)** **0.8 (vs. 4)**
rp – pre-critical			
1	context * literality	11201	n/a
2	context + literality	11200	0.4 (vs. 1)
3	context	11198	0.7 (vs. 2)
4	literality	11199	0.2 (vs. 3)

5	**Intercept**	**11198**	**0.2 (vs. 3)**
			0.8 (vs. 4)
tt – pre-critical			
1	context * literality	12968	n/a
2	context + literality	12966	0.4 (vs. 1)
3	context	12964	0.8 (vs. 2)
4	literality	12966	0.2 (vs. 2)
5	**Intercept**	**12964**	**0.2 (vs. 3)**
			0.8 (vs. 4)
fp - critical			
1	context * literality	11086	n/a
2	context + literality	11085	0.6 (vs. 1)
3	context	11085	0.1 (vs. 2)
4	literality	11083	0.9 (vs. 2)
5	**Intercept**	**11083**	**0.9 (vs. 3)**
			0.1 (vs. 4)
rp - critical			
1	**context * literality**	**12987**	**n/a**
2	context + literality	12994	0.002 (vs. 1)
tt - critical			
1	**context * literality**	**12278**	**n/a**
2	context + literality	12282	0.02 (vs. 1)

fp – post-critical			
1	context * literality	9959	n/a
2	context + literality	9960	0.061 (vs. 1)
3	context	9958	0.7 (vs. 2)
4	literality	9959	0.3 (vs. 2)
5	**Intercept**	**9958**	**0.3 (vs. 3)** **0.7 (vs. 4)**
rp – post-critical			
1	context * literality	11201	n/a
2	context + literality	11200	0.3 (vs. 1)
3	context	11200	0.2 (vs. 2)
4	literality	11198	0.7 (vs. 2)
5	**Intercept**	**11198**	**0.7 (vs. 3)** **0.2 (vs. 4)**
tt – post-critical			
1	context * literality	12503	n/a
2	context + literality	12504	0.1 (vs. 1)
3	context	12502	0.9 (vs. 2)
4	literality	12503	0.2 (vs. 2)
5	**Intercept**	**12501**	**0.2 (vs. 3)** **0.9 (vs. 4)**