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Is this a question? Not for long. The statement bias

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Abstract

Four experiments demonstrate a fundamental 'statement bias': questions are more often misremembered as statements than vice versa. The bias increases with increasing item comprehensibility (Experiment 1) and is related to depth of processing at encoding (Experiment 2). When sentences are simply comprehended, the bias is not affected by the truth of the statement underlying the sentence (Experiment 3). The statement bias generalizes to contexts in which people have to express consent with the content of the sentence (Experiment 4) but is somewhat reduced when they are not sure what the correct answer is. Our findings are consistent with the idea that during processing of a sentence the content of the sentence is represented similar to a statement.

A sensationalist newspaper article title might read: 'Did senator X receive a bribe from company Y?' Such innuendo might be detrimental for the target's reputation (Wegner, Wenzlaff, Kerker, & Beattie, 1981). Indeed, questions may convey a message although this is not the linguistic function of questions. One explanation is that people reason that the allegations would not be made if they were not probably true (Swann, Giuliano, & Wegner, 1982). After all, 'Where there's smoke, there's fire.' The current paper finds support for an alternative explanation, namely that questions tend to be remembered as statements, a phenomenon which we will refer to as a statement bias.

When people have to comprehend a sentence, they have to extract its meaning. We suggest that sentence comprehension implies a propositional representation phase during which the sentence content is represented as a proposition (i.e., as a statement). This implies that, when people try to comprehend a question, they represent it as a statement, which may be stored in memory. As a result, a question may not be remembered as a question but rather as a statement. In contrast, the propositional representation of a statement is simply the statement itself. As a result, statements are not easily 'remembered' as questions.

The process we outlined in the statement bias may be reminiscent of Chomsky's (1957) transformational grammar theory which postulates that, during sentence comprehension, a sentence is broken down in its basic proposition (=the kernel), and the grammatical transformations applied to the kernel (such as passive, negation, and questions; for a recent overview, see Townsend & Bever, 2001). However, transformational grammar theory implies that confusion rates between kernel and the outcome of any (set of) transformation(s) are symmetric because the transformational distance is considered Euclidian, whereas the statement bias refers to an asymmetric confusion. Interestingly, several tests of transformational grammar theory found asymmetric confusion rates between statement and questions, consistent with the statement bias (e.g., Clifton, Kurcz, & Jenkins, 1965; Clifton & Odom, 1966; Mehler, 1963). However, Clifton and Odom (1966) attributed the asymmetries in these studies to the belief that statements occur more frequently in everyday communication than questions do (i.e., to a "background bias") and not to the way sentences are processed. In other words, the obtained asymmetry was considered more apparent than real. The

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first contribution of this paper is to show that, even when any background bias is removed, the statement bias still persists.

Fiedler et al. (1996) showed that, after a while, people believe the information conveyed in questions about visual scenes even if they initially remember that the information was false. Although this finding is consistent with the proposed statement bias, Fiedler et al. attribute their finding to constructive memory processes. Fiedler et al. argue that, when answering a question about visual scenes, people construct an image of the scene that is the object of the question (even if that event never happened), which may confuse them afterwards. The second contribution of this paper is to show that confusion may even arise for questions that do not refer to visual scenes.

Experimental paradigm

The basic paradigm was similar in all our experiments. In the *presentation phase*, participants had to process a number of items, some referring to biology and some to mathematics. Half of the items within each domain were presented as questions and half as statements (random selection per participant). In the *forced choice task*, participants were again presented with all items. This time, each item was shown both as a statement and as a question. Participants had to indicate the format in which the item had been presented in the presentation phase: question or statement. Both phases were on paper in Experiment 1 and on computer in the subsequent experiments.

For each participant, we calculated the relative 'bias towards statement' for mathematics and biology separately. Relative bias was defined as the number of questions that was incorrectly remembered as statements, divided by the total number of confusions for that participant (i.e., the sum of the number of statements that was incorrectly remembered as questions and the number of questions that was incorrectly remembered as statements). For interpretation purposes, 0.5 was subtracted from the individual relative biases. As a result, zero implies no bias; a positive number indicates bias towards statement and a negative number implies bias towards question.

Our prediction is that a positive bias should be obtained because more questions would be misidentified as statements than vice versa. Of course, it is possible that part of this statement bias is not due to the propositional representation process that we postulate but rather to the fact that people simply assume that, in everyday communication, statements are more prevalent than questions (cf. Clifton & Odom, 1966). This *background bias* towards statement might lead participants, when they are unsure, to 'rationally guess' having seen a statement. We will show that although background bias may play a role, it cannot explain the entire the statement bias: the extent to which the sentence is processed produces the larger part of the statement bias.

Experiment 1

Experiment 1 aims at showing the confusion asymmetry between statements and questions and demonstrating that comprehension plays an important role in this bias. We presented participants with sentences that were either comprehensible (biology items; e.g., Fresh water snakes swim upside down for about half of the time.) or rather incomprehensible (mathematics items; e.g., 'Any meromorph function is a homomorph function'). Half of the sentences in each domain were shown in statement format and half in question format. We expected that questions would be mistaken for statements more often than vice versa. Further, because propositional representation requires comprehension, we expected a larger statement bias for biology than for mathematics sentences. If the sentence is incomprehensible, people may not represent it as a proposition. Any remaining bias for the mathematics items, then, may reflect a background bias.

Method

Participants

Sixty-four college students with various majors participated in exchange for a participation fee of 6 Euro (€1 ≈ $1). The study was part of a series of unrelated studies taking about an hour.

Material and procedure

A list of 20 biology and 20 mathematics statements was compiled. A sample of students of the same population ($n = 15$) rated the truth of the statements on a scale ranging from 0 (I know this statement to be untrue) to 10 (I know this statement to be true). The neutral midpoint reflected uncertainty. Twelve mathematics and twelve biology statements with average closest to 5 were selected.

In the presentation phase, participants had to estimate what percentage of the population would actually understand the sentences.

Results and discussion

Biology items ($M = 66.23$) were rated more comprehensible than mathematics items ($M = 43.73$), $t(63) = 19.00$, $p < .001$, validating our comprehensibility manipulation.

Although the bias was significant for both domains, both $ts > 3.23$, both $ps < .01$, it was larger for biology items ($M = .33$) than for mathematics items ($M = .11$), $t(62) = 5.29$, $p < .001$. This strongly suggests that comprehensibility plays an important role and is consistent with our hypothesis that the bias is mostly due to the propositional representation step of comprehension. Possibly, the bias for mathematics items is entirely due to a background bias.

Experiment 2

The main aim of Experiment 2 is to rule out a 'response' explanation for the findings of Experiment 1. It is possible

that the relative bias is not caused during *encoding* but rather during the *forced choice* phase. Indeed, participants may have decided on statement or question relying on the relative fluency with which they could process the two response options (cf. Whittlesea, 1993; Whittlesea & Williams, 2000). For biology, statements may have been much easier to process than questions. As a result, participants may have indicated more often 'statement' than 'question.' For mathematics, in contrast, the difference in processing fluency between statements and questions may have been far less pronounced, resulting in a lower bias.

In addition, in Experiment 2, we also want to remove any background bias. Therefore, we asked our participants to categorize each sentence as either a question or a statement. Previous studies have shown that categorization into relevant categories at encoding indeed enables people to estimate the relative frequencies of the categories fairly accurately (e.g., Freund & Hasher, 1989; Pandelaere & Hoorens, in press).

To find further support for our position that the confusion occurs at encoding by manipulating semantic processing *at encoding*, we manipulate the likelihood that participants represented and stored the proposition. We do so in two different ways. Some participants have to judge the comprehensibility of the items (as in Experiment 1) whereas others do not. As more processing (and consequently an enhanced propositional representation) is involved when participants have to judge the comprehensibility than when they do not, we expect a higher bias following judgment and categorization than following mere categorization. In addition, we also manipulate the punctuation: for half of the participants, the end punctuation is present (as in Experiment 1), whereas for the other half, it is absent. The presence versus absence of end punctuation is assumed to independently affect the propositional representation process. Indeed, given the categorization instructions, end punctuation unambiguously informs on the sentence format without the need for additional processing, and hence does not require propositional representation. In contrast, in the absence of end punctuation, participants have to read the entire sentence, during which the content may be represented as a proposition. So, end punctuation is expected to decrease the statement bias. It should be noted that according to a 'response' explanation of the statement bias, end punctuation and the comprehensibility judgment task should not affect the magnitude of the statement bias because these factors exert their influence solely at the encoding phase.

Clearly, in the condition involving mere categorization and end punctuation, participants do not have to process the sentence. As a result, no propositional representation is required. Consequently, we do not expect a statement bias in this condition. Further, considering that categorization results in a fair knowledge of the relative distribution of questions and statements we expect no statement bias to remain in this condition.

In summary, the experiment is a $2 \times 2 \times 2$ design. All participants have categorization goals. In addition, we manipulate end punctuation (between subjects), comprehension evaluation instructions (between subjects) and domain (within subjects). We expect three main effects according to the effect the manipulations have on comprehension. End punctuation should reduce the statement bias, whereas comprehension evaluation instructions should increase it. Again, we expect the statement bias to be higher for biology items than for math items.

Method

Participants

One hundred and fourteen college students with various majors participated in exchange for a participation fee of 6 Euro (€1 ≈ $1). The study was part of a series of unrelated studies taking about an hour.

Procedure

The material was identical to that of Experiment 1. Participants were randomly assigned to one of the cells of Processing (categorization + comprehensibility judgment versus mere categorization) by Punctuation (present versus absent) design. In the presentation phase, all participants had to categorize the sentences as either question or statement by clicking radio buttons indicating 'statement' and 'question' (categorization). In addition, half of the participants had to estimate what percentage of the population would actually understand the sentences (comprehensibility). In contrast to Experiment 1, for half of the participants, no punctuation was present whereas for the other half, the sentences contained the usual punctuation (as in Experiment 1).

Results and discussion

As intended, biology items ($M = 43.76$) were more comprehensible than mathematics items ($M = 25.75$), $t(1,55) = 9.42$, $p < .001$. For each participant, we calculated the relative bias towards statement for biology and mathematics separately.

The relative biases for mathematics could be calculated for all participants, whereas for biology they could be calculated for only 112 of the 114 participants. The relative biases were analyzed using a 2 (Processing: categorization + comprehensibility versus mere categorization) by 2 (Punctuation: present versus absent) by 2 (Domain: biology or mathematics) ANOVA. We used a mixed model approach because in contrast to univariate and multivariate repeated measures ANOVA, it does not imply dropping a participant if one of the two biases is missing.

As expected, the analysis yielded three main effects; all other effects were not significant, all Fs < 2.01, all ps > .15. The main effect of Domain, $F(1,109) = 10.25$, $p < .01$, revealed a higher bias for biology ($M = .20$, $t(107) = 7.29$, $p < .001$) than for mathematics ($M = .10$, $t(110) = 3.52$, $p < .001$). This replicates Experiment 1 and supports the

Table 1
Bias toward Statement as a function of Processing and Punctuation (SE in parentheses; superscripts denote the statistical significance of the biases in each cell)

	Mere categorization ($n = 58$)	Categorization + judgment ($n = 56$)
Mathematics		
Punctuation	.01 (.055)	.10* (.057)
No punctuation	.02 (.053)	.26*** (.053)
Biology		
Punctuation	.03 (.056)	.23*** (.060)
No punctuation	.20*** (.054)	.36*** (.054)
Overall		
Punctuation	.02 (.044)	.17***(.046)
No punctuation	.11** (.042)	.31*** (.042)

* $p = .068$.
** $p < .05$.
*** $p < .001$.

hypothesis that propositional representation is more difficult for less comprehensible items, resulting in a substantially lower statement bias.

The main effect of Punctuation, $F(1, 110) = 7.03$, $p < .01$, showed a higher bias if punctuation was absent ($M = .21$, $t(109) = 6.96$, $p < .001$) than if it was present ($M = .09$, $t(111) = 2.90$, $p < .01$). This is consistent with the notion that, given categorization instructions, punctuation reduces the need for processing. Finally, the main effect of Judgment, $F(1, 110) = 16.00$, $p < .001$, demonstrated a higher bias when participants made a comprehensibility judgment ($M = .24$, $t(110) = 7.61$, $p < .001$) than when they did not ($M = .06$, $t(110) = 2.06$, $p < .05$). This is consistent with the notion that evaluating comprehensibility requires deeper processing. In all, the three main effects (domain, punctuation, and comprehensibility) support the hypothesis that depth of processing is positively related to the bias. Table 1 shows the biases in every cell. Additional support for the hypothesis that propositional representation drives the bias comes from the finding that no bias remains in the punctuation condition with categorization instructions. Irrespective of domain, the bias is not significantly different from zero (both ts < 0.64, both ps > .64). Illustratively, in the condition involving maximal processing (biology items, evaluating comprehensibility, categorization as question vs. statement without punctuation information), the bias (0.36) is close to its maximum (0.50). That is, for every seven errors a participant makes, six confuse a question with a statement (raw bias of .86).

Experiment 3

Experiment 2 ruled out an explanation in terms of *relative* fluency of the two options (i.e., statement vs. question) during recognition. However, it still leaves open the possibility that *absolute* fluency during recognition drives (part of) the statement bias. Specifically, conceptually fluent statements (e.g. truisms) might seem so familiar that they are "recognized" more easily (cf. Whittlesea, 1993).

To rule out this second 'response' explanation, we manipulated the plausibility of the statement underlying the sentence. In particular, we used blatantly true, blatantly false and unsure items. If the choice between statement and question depends on the fluency of the statement, then the statement bias should be more pronounced if the underlying statement is blatantly true than if people are not sure whether the underlying statement is correct. In addition, it should be more pronounced if the correctness of the underlying statement is unsure than if the underlying statement is blatantly false. However, if comprehension at encoding drives the statement bias, the plausibility of a statement should not moderate the statement bias. Irrespective of the plausibility of the underlying statement, every question should be represented as a statement during the comprehension phase, and this process is believed to produce the asymmetric confusion between statements and questions during recognition.

In addition, to further demonstrate the importance of comprehensibility in the statement, we chose to manipulate comprehensibility within domains rather than across domains. This also reduces the concern that the domain effect found in Study 1 and 2 would be related to another difference between the biology and mathematics items than their comprehensibility. Participants either saw comprehensible biology items or incomprehensible biology items. In addition, the plausibility of the comprehensible items varied from blatantly true, over unsure, to blatantly false. Note that we could not vary the plausibility of incomprehensible items because truth evaluation requires comprehension. If comprehension alone underlies the statement bias then the bias should be lower for incomprehensible items than for comprehensible items, irrespective of their truth value. For the comprehensible items, the plausibility of the items should not affect the bias.

Method

Participants

One hundred and fifty-eight college students with various majors participated for either course credit or payment (€6) in an experimental session which contained the current experiment. Type of credit did not exert any influence and is not discussed further.

Material

The 12 mathematics items of the previous experiments were used as filler items. A list of new biology items was compiled consisting of 24 items that were comprehensible but for which people were unsure about their correctness, 24 items that were comprehensible and blatantly true, 24 items that were comprehensible and blatantly false, and 24 items that were incomprehensible (and by consequence were also unsure items). The incomprehensible items were produced by substituting Latin terms for the common terms in the comprehensible items. In a pretest, a different sample of students ($n = 79$) of the same population rated

the truth of the statements on a scale ranging from 0 (I know this statement to be untrue) to 10 (I know this statement to be true). The neutral midpoint was reserved for statements for which participants did not know whether or not the statement was true. We selected the best 12 biology items of each of the four types: incomprehensible, comprehensible unsure, comprehensible true and comprehensible false. The plausibility of the incomprehensible items did not differ from the plausibility of the "comprehensible unsure" items. "Comprehensible true" items were significantly more plausible than either of the former whereas "comprehensible false" items were significantly less plausible than all the former.

Procedure

All participants had to indicate how comprehensible the sentences were on a scale from 0 (not comprehensible at all) to 10 (entirely comprehensible). Participants received the usual mathematics items and one of the four types of biology items (incomprehensible [e.g., Tamandoea belong to the species of edentata], comprehensible unsure [e.g., Ant eaters have few or no teeth], comprehensible true [e.g., Ant eaters eat termites as well as ants], and comprehensible false [e.g., Ant eaters eat mostly plants]).

Results and discussion

As intended, incomprehensible sentences ($M = 3.89$) were rated as less comprehensible than unsure ($M = 9.64$), true ($M = 9.77$) or false sentences ($M = 9.75$), all pairwise ts > 28.0, all ps $< .001$. Within the three types of comprehensible sentences, no differences were obtained, all pairwise ts $< .63$, all ps $> .52$.

The relative bias for mathematics was .21, $t(151) = 11.31$, $p < .001$. Across types, the relative bias for biology was .32, $t(155) = 16.99$, $p < .001$. As expected, however, a lower bias was obtained for incomprehensible biology items ($M = .26$) than for comprehensible biology items ($M = .34$), $F(1,152) = 1.92$, $p < .056$. Between the conditions involving comprehensible items, no significant differences emerged, $F(2,152) = 0.01$, $p > .90$ (the means are .345, .339, and .344 for unsure, true, and false items, respectively), suggesting that plausibility does not affect the bias, and hence, that the truth value of a sentence is tangential to the statement bias.

Experiment 4

So far, our data suggest that questions are more often confused with statements than vice versa. However, our participants never really had to answer the questions. Possibly, the process of answering a question yields an episodic memory trace pertaining to the question content, which may be used later on to correctly recall that a given content was presented as a question rather than as a statement. Obviously, the practical relevance of the statement bias would benefit if it would generalize beyond questions that are not supposed to be answered (i.e., rhetorical questions).

In Experiment 4, half of the participants had to engage in a "quiz show." These participants saw questions they had to answer and statements they had to agree or disagree with. The other participants had to indicate how comprehensible the questions and statements were. If the statement bias depends on the artificial inhibition of answering the question, it should disappear in the "quiz show"-condition. In fact, there are two reasons why a *question bias* may be obtained in the quiz show condition. First of all, as a quiz show features mainly questions our participants could mainly select *question* in the forced choice task (reverse background bias). Second, participants in the quiz show condition not only had to answer questions, but also statements, so to speak. If the presumed episodic memory trace of answering is used to select question, participants should be inclined to also select question for statements they had to answer. As in Experiment 3, we used biology items that referred to a blatantly true, blatantly false, or unsure content.

Method

Participants and material

One hundred and twenty-eight college students majoring in economics participated for course credit. The 12 mathematics items of the previous experiments were used as filler items. The comprehensible biology items from Experiment 3 were used as critical items.

Procedure

In the presentation phase, half of the participants had to indicate how comprehensible the sentences were (comprehension condition), whereas the other half had to indicate whether or not the statements were true and had to answer the questions (quiz show condition). Participants received the usual mathematics items and one of the three types of biology items (unsure, true, and false).

Results and discussion

The relative bias for mathematics (.25 for quiz show and .26 for comprehension) was significant for both conditions, both ts > 8.75, both ps $< .001$. The context did not affect the magnitude of the bias, $F(1,125) = .05$, $p > .81$.

To provide a fair test of the hypothesis that answering questions reduces the statement bias, we decided to drop those observations in the quiz show condition that were answered differently than intended (i.e., 'true' in the blatantly false condition and 'false' in the blatantly true condition). Across participants, 75 items (about 5% of the biology items) were dropped. In the comprehension condition, all items were uniformly rated as very comprehensible. Hence, no item needed to be dropped.

In the comprehension condition, the truth of the item did not affect the statement bias, $F(2,118) = 0.17$, $p > .94$ (the means are .39, .35, and .36 for unknown, true and false items, respectively). In the quiz show context, the truth of

the item did marginally significantly affect the statement bias, $F(2,118)=2.84$, $p=.062$. The bias was lower for unsure items ($M=.22$) than for false items ($M=.34$), $t(118)=1.72$, $p<.09$ or for true items ($M=.37$), $t(118)=2.28$, $p<.05$. The bias for false and true items did not significantly differ in the quiz show context, $t(118)=0.43$, $p>.66$. In addition, these two biases did not significantly differ from the biases in any of the three comprehension conditions, all ts <0.63, all ps $>.53$. In contrast, the bias for unsure items in the quiz show context was (marginally) significantly lower than the biases in any of the three comprehension conditions, all ts >1.88, all ps $<.06$. All biases were significantly different from zero, all ts >4.55, all ps $<.001$.

Apparently, answering questions does not remove the statement bias. Further, it generally does not even reduce the statement bias, unless people are unsure what the correct answer to the question is. We suggest that the feeling of uncertainty that is present when having to judge the truth value of a quiz item is associated with the item's content. This association may be stored in memory where it is available as a cue to decide that the content had been presented as a question rather than as a statement. For blatantly true or blatantly false items, no such feeling of uncertainty may be stored and the uncertainty cue is not present when people have to decide whether or not a given content had been presented as a question.

Importantly, even though the statement bias is reduced for items about which people are unsure with respect to the correct answer, it remains highly significant. So even in the presence of the presumed uncertainty cue, people still select 'statement' more than 'question.' This is consistent with our claim that the statement bias is the result of mere comprehension: answering unsure questions also requires that people first understand the question. Finally, although we had expected the bias to be reduced in the quiz show condition due to the fact that questions are more prominent in quiz shows than in ordinary language use, it was not (except for unsure items). This suggests that the "background bias" does not really differ across contexts.

General discussion

The first three studies reported are consistent with the idea that during comprehension of a sentence, people represent the sentence as a statement. This statement may be stored in memory, leading to asymmetric confusion as to whether the given sentence was a question or a statement: questions are more often confused with statements than vice versa. Factors that promote propositional representation, like sentence comprehensibility and depth of processing, strengthen the statement bias. Factors that do not affect comprehensibility such as the truth value of a sentence do not affect the statement bias, at least when questions are not answered. The fourth experiment indicates that, when people have to answer the questions, the truth of the question does matter: the statement bias is reduced when people are not sure what the correct answer is (although the bias remains significant and substantial).

The statement bias may contribute to the theoretical understanding of a variety of established effects. For instance, the statement bias may be a simple (additional) explanation for innuendo. Wegner et al. (1981) found that innuendo was not affected by source credibility. This is not consistent with the view that allegations trigger complex cognitive inferences. If this were the case, source credibility should reduce innuendo. In contrast, the results of Experiment 3 suggest that source credibility may not affect the strength of the statement bias. Wegner et al.'s results may therefore be explained as the confusion of questions with statements.

Memory distortions following leading questions in eyewitness interrogation (e.g., Loftus, 1975) might also be partially due to the statement bias. Asking the question 'was object X made of Y' might not only trigger constructive memory processes projecting object X in the scene (Fiedler et al., 1996), it probably also elicits the representation 'object X is made of Y.' When this proposition is stored, it might add to the confusion in recognition and recall tasks.

The assumed propositional representation that occurs during sentence comprehension, which underlies the statement bias, implies that phenomena related to processing of *statements* may also be applicable to processing of *questions*. One such phenomenon is the truth bias (Gilbert, 1991; Gilbert, Krull, & Malone, 1990; Gilbert, Tafarodi, & Malone, 1993): during comprehension, statements are initially believed to be true, even if they are false. Similarly, while processing a question, its content may be initially represented as a true statement, even if the content is of unknown truth or even known to be false. Another phenomenon is the illusory truth effect: familiar statements are considered as more veridical than unfamiliar ones (Begg, Anas, & Farinacci, 1992; Hasher, Goldstein, & Toppino, 1977). Usually, familiar statements are statements that have been presented before. However, a statement may also be familiar because it resembles the propositional representation of a question that was presented before. As a result, a statement's perceived veridicality may increase not only as it is presented more often, but also as it is featured more often in a question.

Related to the latter point, the statement bias may have implications for public policy regarding, for instance, advertising practice. It is forbidden by law to provide consumers with untrue, embellished, information if a majority of the consumers actually believe the claim to be true (Preston, 1994). The statement bias suggests that asking questions may lead consumers to believe the 'information.' So, merely asking whether brand X is superior to its competitors might be remembered as if brand X is actually superior. Moreover, consumers are not used to approach questions as persuasion tactics, and hence do not possess persuasion knowledge to deal with them (Friestad & Wright, 1994). This lack of knowledge of how to deal with questions might increase consumer vulnerability to this

tactic. Therefore, the existence of the statement bias suggests that it should be forbidden to ask questions for the sake of creating an advantage.

Any message should be understood before acted upon. In that regard, propositional representation may be fundamental in language processing and processing non-content information more peripheral. From this perspective, the statement bias (where the peripheral information involves illocutionary force) may be similar to a range of other confusions regarding non-content information like errors in reality (cf. Johnson & Raye, 1981) and source monitoring (Johnson, Hashtroudi, & Lindsay, 1993), forgetting of source credibility (e.g., Kumkale & Albarracín, 2004), and confusions of message language (e.g., Kolers, 1966).

Although the present paper found support for a statement bias, future research may be needed to fully understand the underlying processes. Our take on the bias is that any type of sentence is stored during comprehension as a statement. However, an alternative view on the statement bias would be that sentence comprehension implies representing the sentence content as a proposition, in other words as free from any illocutionary force as asserting, inquiring, and so on (cf. Fiedler, 2000; Searle, 1979). This proposition may then be stored in memory. To the extent that propositions are more similar to assertions (i.e., to statements) than to questions, this view also predicts that questions are more easily misremembered as statements than vice versa. In any event, the statement bias warns us to be careful with what we ask, as it may become a statement.

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