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1 Direct speech quotations promote low relative-clause attachment in silent reading of

2 English

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14 **Abstract**

15 The implicit prosody hypothesis (Fodor, 1998, 2002) proposes that silent reading coincides with a
16 default, implicit form of prosody to facilitate sentence processing. Recent research demonstrated
17 that a more vivid form of implicit prosody is mentally simulated during silent reading of direct
18 speech quotations (e.g., *Mary said, "This dress is beautiful"*), with neural and behavioural
19 consequences (e.g., Yao, Belin, & Scheepers, 2011; Yao & Scheepers, 2011). Here, we explored the
20 relation between 'default' and 'simulated' implicit prosody in the context of relative-clause (RC)
21 attachment in English. Apart from confirming a general low RC-attachment preference in both
22 production (Experiment 1) and comprehension (Experiments 2 and 3), we found that during written
23 sentence completion (Experiment 1) or when reading silently (Experiment 2), the low RC-attachment
24 preference was reliably enhanced when the critical sentences were embedded in direct speech
25 quotations as compared to indirect speech or narrative sentences. However, when reading aloud
26 (Experiment 3), direct speech did not enhance the general low RC-attachment preference. The
27 results from Experiments 1 and 2 suggest a *quantitative boost* to implicit prosody (via auditory
28 perceptual simulation) during silent production/comprehension of direct speech. By contrast, when
29 reading aloud (Experiment 3), prosody becomes *equally salient* across conditions due to its explicit

30 nature; indirect speech and narrative sentences thus become as susceptible to prosody-induced
31 syntactic biases as direct speech. The present findings suggest a shared cognitive basis between
32 default implicit prosody and simulated implicit prosody, providing a new platform for studying the
33 effects of implicit prosody on sentence processing.

34 **Keywords:** implicit prosody; relative-clause attachment; inner voice; direct quotations; indirect
35 speech; mental simulation

36 1. Introduction

37 The implicit prosody hypothesis (IPH) proposes that a default, implicit form of prosody (e.g., speech
38 intonation, stresses, rhythms) is mentally activated during silent reading of written text (Fodor, 1998,
39 2002). Research shows that such implicit prosody can bias syntactic attachment interpretation in
40 structurally ambiguous sentences. For example, in a sentence like “*Someone shot the servant of the*
41 *actress who was on the balcony*”, the relative clause (RC) “*who was on the balcony*” can be attached
42 either *high* to the complex noun phrase “*the servant of the actress*” (NP1) or *low* to the more recent
43 noun phrase “*the actress*” (NP2). English native speakers typically prefer the low attachment
44 interpretation when reading such sentences (e.g., Carreiras & Clifton, 1993, 1999). Implicit prosody
45 is *assumed* to bias RC-attachment interpretation because the latter is influenced by prosodic
46 features such as pitch accents (Maynell, 1999; Quinn, Abdelghany, & Fodor, 2000) and prosodic
47 boundaries (Clifton, Carlson, & Frazier, 2002; Lovrić, Bradley, & Fodor, 2000, 2001) when sentences
48 are overtly spoken. However, the effect of implicit prosody on RC-attachment has not yet been
49 studied in the context of quotations.

50 New research suggests that implicit prosody may be enhanced during silent reading of direct speech
51 quotations (e.g., *Mary said: “The dress is beautiful”*) as compared to indirect speech sentences (e.g.,
52 *Mary said that the dress was beautiful*). Most notably, enhanced implicit prosody becomes evident
53 in higher activation of temporal voice areas in the auditory cortex (Yao et al., 2011; Yao, Belin, &
54 Scheepers, 2012; see also Belin, Zatorre, Lafaille, Ahad, & Pike, 2000). Moreover, implied speech
55 rates of quoted speakers were shown to influence the speed of silent reading, but only in direct
56 speech quotations (e.g., Stites, Luke, & Christianson, 2013; Yao & Scheepers, 2011). This more
57 enhanced implicit prosody may rely on audible speech-like representations that are mentally
58 *simulated* (Barsalou, 1999) specifically during silent reading of direct speech quotations. Little is
59 known, however, about the precise relationship between mentally ‘simulated’ implicit prosody (SIP)

60 in direct speech and Fodor et al.'s 'default' implicit prosody (DIP) which is assumed to be activated
61 regardless of pragmatic reporting style (direct speech, indirect speech, or narrative).

62 Theoretically, DIP and SIP may entail distinct cognitive processes. DIP is routinely projected onto
63 written stimuli during silent reading. It adds a constant channel of information to aid parsing,
64 especially when syntactic or semantic disambiguation cues are unavailable. In contrast, SIP is a
65 speech-like experience that is highly dependent on linguistic context and pragmatics. It allows
66 readers to mentally re-enact *how* a described protagonist spoke. These differences, however, do not
67 necessarily rule out a common underlying cognitive basis for DIP and SIP. Acoustic properties of DIP
68 and SIP are both correlated with that of explicit prosody in speech (Lovrić et al., 2000, 2001, Yao &
69 Scheepers, 2011, 2015), indicating the involvement of similar mental representations. Yao and
70 Scheepers (2015) therefore conjectured that SIP may be an enriched form of DIP. They proposed to
71 embed ambiguous RC-attachment structures in direct speech quotations so as to examine whether
72 attachment preferences during silent reading of such structures would be 'enhanced' when
73 compared to those in meaning-equivalent narrative sentences (Yao & Scheepers, 2015, p. 301). The
74 absence of such an enhancing influence of direct speech (vs. narrative) on attachment preferences
75 would suggest that DIP and SIP are cognitively distinct.

76 The present studies tested this hypothesis. English RC-attachment structures were embedded in
77 direct speech, indirect speech or narrative sentences. Participants either completed sentence
78 fragments ending in incomplete RCs (Experiment 1) or rated the felicity of unambiguous low vs. high
79 RC-attachments in silent reading (Experiment 2) and in oral reading (Experiment 3), respectively.
80 Given the general low RC-attachment bias in English, we expected that this bias should be more
81 pronounced for direct speech quotations than for indirect speech or narrative sentences in
82 Experiment 1 (sentence completion). For Experiment 2 (comprehension), we predicted, apart from a
83 general low-attachment preference, a more pronounced felicity difference between low vs. high RC-
84 attachments in the direct speech condition than in the indirect speech or narrative condition. By

85 contrast, we expected no such enhancement of the low RC-attachment bias in direct speech under
86 oral reading instructions (Experiment 3). This is because oral reading activates *explicit* prosody,
87 which should enhance the salience of prosody (and in turn, its influence on syntactic preferences)
88 *equally* across the three conditions. Thus, we only expected an overall low RC-attachment
89 preference (regardless of reporting style) in Experiment 3.

90 **2. Experiment 1**

91 All participants in Experiment 1 and 2 gave written consent and the experimental procedures were
92 approved by the Research Ethics Committee at the University of Manchester.

93 **2.1 Participants**

94 Fifty-four native English speakers (mean age 23 years, $SD=6.9$, 41 females) from the University of
95 Manchester participated in exchange for £2. The experiment took about 15 min.

96 **2.2 Materials and design**

97 Twenty-four sets of written scenarios were created (Appendix A). Each set contained a common
98 background sentence to set up a scenario. This was followed by a critical sentence that was either a
99 direct speech (DS), an indirect speech (IS), or a narrative sentence (NS). Each critical sentence
100 contained a matched target sentence fragment (underscored in Table 1). The fragment consisted of
101 a subject noun phrase followed by a verb and a complex object noun phrase with a prepositional-
102 phrase modifier. The fragments ended in a relative pronoun (*that* or *who*), prompting the generation
103 of a sentence-final relative clause that could either attach *low* to the most recent noun-phrase (NP2,
104 *the church*) or *high* to the whole preceding object noun-phrase (NP1, *the bells of the church*). The
105 critical host noun-phrases were either both animate or both inanimate and differed in number such
106 that NP1 was plural in half of the items and singular in the other half. Contrasting number marking in
107 this way aided later response scoring; e.g., in “the bells of the church that was beautiful” and “the
108 bells of the church that were beautiful”, relative-clause attachment was determined by assessing

109 whether the RC-verb was singular or plural. The reading materials were allotted to three stimulus
110 lists, counterbalanced using a Latin square (6 stories per condition per list). The order of the stories
111 was pseudo-randomised for each list. Each list was assigned to 18 participants.

112 **Table 1. Example stimuli for Experiment 1 and 2.**

Experiment 1

Frank and his friends were visiting some lovely places on their trip to Germany last year.

DS *He told the group: "I really liked the bells of the church that ..."*

IS *He told the group that he really liked the bells of the church that ...*

NS *It seemed that he really liked the bells of the church that ...*

Experiments 2 and 3

Frank and his friends were visiting some lovely places on their trip to Germany last year.

DS LA *He told the group: "I really liked the bells of the church that was right next to the town hall."*

HA *He told the group: "I really liked the bells of the church that were chiming every hour."*

IS LA *He told the group that he really liked the bells of the church that was right next to the town hall.*

HA *He told the group that he really liked the bells of the church that were chiming every hour.*

NS LA *It seemed that he really liked the bells of the church that was right next to the town hall.*

HA *It seemed that he really liked the bells of the church that were chiming every hour.*

113 DS=direct speech; IS=indirect speech; NS=narrative sentence; LA=low attachment; HA=high attachment.

114 **2.3 Procedure**

115 The RC completions were collected using pen and paper. Participants read written instructions and
116 practised on an example trial. The stimuli were printed on A4 sheets. Each story was printed in two
117 or three lines. The target sentence fragment was always presented in a single line to prevent
118 structural biases via line breaks. The fragment ended in an underscored blank space "____",
119 prompting participants to complete the fragment. There was no time limit to the task.

120 **2.4 Results**

121 **Response coding**

122 Responses were independently coded by two condition-blind annotators. Target completions were
123 coded as low attachment (LA), high attachment (HA) or unclassifiable (UC). The classification was
124 based on the number of the verb (singular or plural) in the completed RC and/or on plausibility
125 criteria (e.g., "the bells of the church that stood near the town hall" was coded as LA, and "the bells
126 of the church that chimed every hour" was coded as HA). Ambiguous and controversial completions
127 were coded as UC, which also included ungrammatical responses or responses that did not result in
128 a RC. Cross-tabulation of response codes indicated 'strong' inter-coder agreement (82%, expected

129 agreement *by chance*: 41%, *Cohen's Kappa*=.687, $p<.001$). Cases of disagreement were re-inspected
 130 and discussed to determine a final classification. The distribution of the final classifications is
 131 summarised in Table 2.

132 **Table 2. The distribution of different types of responses by condition.**

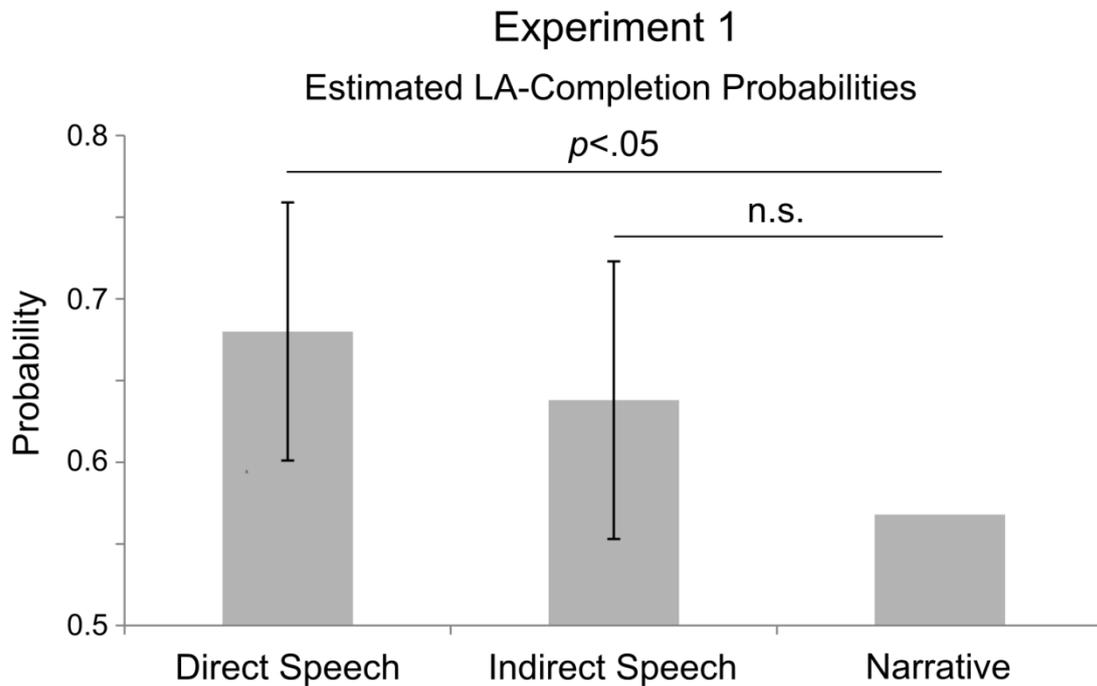
	All trials			Classifiable only	
	%LA	%HA	%UC	%LA	%HA
DS	56.7	31.0	12.3	64.6	35.4
IS	51.6	32.2	16.2	61.6	38.4
NS	47.7	37.3	15.0	56.1	43.9
Total	52.0	33.5	14.5	60.8	39.2

133 LA=low attachment; HA=high attachment; UC=unclassifiable; DS=direct speech; IS=indirect speech; NS=narrative sentence

134 **Analysis**

135 Generalised Linear Mixed Models (GLMMs) were fitted using the *glmer* function in *R*. We dummy-
 136 coded the three conditions into two contrast variables: The first variable encoded the DS-NS contrast,
 137 the second the IS-NS contrast (the *narrative* condition served as the baseline). We employed the
 138 maximal random effect structure justified by the design (cf. Barr, Levy, Scheepers, & Tily, 2013) with
 139 *subject* and *item* as crossed random factors. Given that the dependent variable was dichotomous,
 140 we specified a *binary logistic* model in the family argument of the *glmer* function.

141 A GLMM on UC (versus non-UC) responses indicated no significant cross-condition differences ($p>.7$
 142 per contrast). Excluding UC responses, a GLMM on low-attachment (coded 1) versus high-
 143 attachment (coded 0) completions showed that the DS condition elicited a significantly higher
 144 proportion of LA completions than the NS condition ($b=0.48$, $SE=0.20$, $z=2.38$, $p=.018$). In contrast,
 145 the IS condition did not differ reliably from the NS baseline ($b=0.29$, $SE=0.20$, $z=1.45$, $p=.148$). The
 146 model-estimated LA-completion probabilities are shown in Figure 1.



147

148 **Figure 1. Estimated low-attachment completion probabilities (classifiable responses-only) across the three**
 149 **conditions. Error bars indicate 95% confidence intervals for contrasts with the *Narrative* baseline. n.s.= not**
 150 **significant.**

151 **2.5 Discussion**

152 Experiment 1 replicated the low-attachment preference typically found in English (e.g., Carreiras &
 153 Clifton, 1993, 1999). Importantly, the probability of a low-attachment completion was significantly
 154 higher when RC-attachment structures were embedded in a *direct speech* quotation than in a
 155 *narrative* sentence; for *indirect speech* quotations, proportions of LA-completions were descriptively
 156 higher than for the *narrative* baseline, but not reliably so. These results support our hypothesis,
 157 suggesting that simulated implicit prosody (SIP) in silent reading of direct speech may be an enriched
 158 form of default implicit prosody (DIP); such enriched prosody apparently promotes low attachment
 159 decisions when completing English relative clause sentences.

160 Indirect speech only descriptively enhanced the likelihood of a low RC-attachment; it may reflect a
 161 lesser degree of SIP during indirect speech processing. This agrees well with previous neuroimaging

162 results showing that silent reading of indirect speech leads to an above-baseline activation of
163 temporal voice areas, but significantly less so than silent reading of direct speech (Yao et al., 2011).

164 **3. Experiment 2**

165 Experiment 2 investigated whether RC-attachment preferences are modulated by reporting style in
166 the context of *sentence comprehension*. Participants silently read unambiguously low-attached or
167 high-attached RC-attachment structures in direct speech, indirect speech, or narrative sentences.
168 After reading, participants rated the felicity of the sentences. We predicted that, overall, participants
169 would rate sentences with low-attached RCs as more felicitous than sentences with high-attached
170 RCs. Critically, this felicity difference should be most pronounced in the direct speech (DS) condition
171 and weakest in the narrative (NS) baseline condition, resulting in an interaction between RC-
172 attachment (low, high) and reporting style (DS, IS, and NS).

173 **3.1 Participants**

174 Twenty-four native English speakers (mean age 28 years, $SD=8.2$, 16 females) from the University of
175 Manchester participated in exchange for £1. The experiment took about 5-10 min.

176 **3.2 Materials and design**

177 The 24 items from Experiment 1 were modified such that the target fragments were now completed
178 with an unambiguously low-attached (LA) or a high-attached (HA) relative clause (see Appendix B).
179 To constrain RC-attachments, we not only relied on number agreement between the host-NP and
180 the verb of the RC, but also on plausibility criteria (cf. Table 1). This resulted in a 3 (Reporting Style) ×
181 2 (RC-Attachment) within-subjects and within-items design. The stimuli were allotted to 6 lists and
182 counterbalanced using a Latin square (4 stories per condition per list). The order of the stories was
183 randomised per participant. Each list was assigned to 6 participants.

184 **3.3 Procedure**

185 Stimulus presentation and data collection were implemented in OpenSesame (Mathôt, Schreij, &
186 Theeuwes, 2012) on a Dell Optiplex lab computer. The stories were presented in 15pt sans font in
187 the centre of the screen. Participants read the instructions and practised on an example trial before
188 the experiment began.

189 Each trial started with the trial number in the centre of the screen for 1 second, followed by the
190 story. Each story contained 2-3 sentence-segments that were presented sequentially in single lines
191 without line breaks. The final segment of each story contained the critical sentence. Participants
192 silently read each segment at a normal pace, and pressed space on a keyboard as soon as they
193 finished segment-reading. The button press cleared the display of the current segment, recorded the
194 reading time, and triggered the display of the next segment. Participants could not return to
195 previously read segments, ensuring that they would base their judgements more on the final (critical)
196 sentence. After the final segment, a 9-point 'readability' scale (1='very odd'; 9='reads very well') was
197 displayed. Participants were instructed to judge how readable each story was based on first
198 impressions. They gave ratings using the number keys on the keyboard.

199 **3.4 Results**

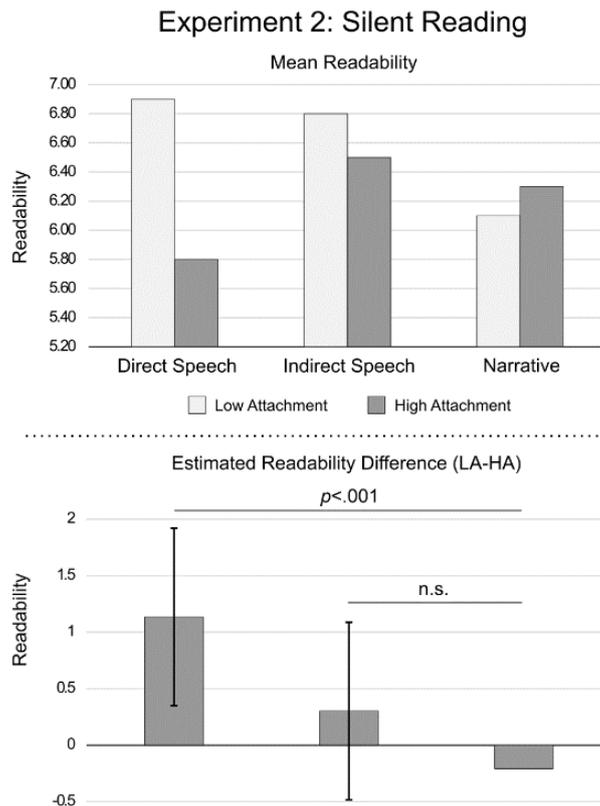
200 We fitted linear mixed models of readability ratings for the critical sentences using the *lmer* function
201 in *lme4*. We deviation-coded the three Reporting Style conditions into two contrast variables (*DS-NS*
202 and *IS-NS*, respectively). Mean-centred deviation coding was also used for the RC-Attachment
203 predictor. Again, we used the maximal random effect structure justified by the design (Barr et al.,
204 2013), but excluding random correlation terms due to convergence issues. The results are reported
205 in Table 3 (upper panel). Condition means and pairwise contrasts are shown in Figure 2 (left).

206

207 **Table 3. Linear mixed-effect model estimates of readability ratings in Experiment 2**

Fixed Effects	Estimate	S.E.	<i>t</i>	<i>p</i>
DS-NS	.18	.20	.90	.373
IS-NS	.45	.20	2.259	.024
Att(LA-HA)	.41	.24	1.73	.099
DS-NS × Att(LA-HA)	1.34	.40	3.35	<.001
IS-NS × Att(LA-HA)	.51	.40	1.27	.204

208 DS=direct speech; IS=indirect speech; NS=narrative sentence; Att=attachment type; LA=low attachment; HA=high
 209 attachment. Significant effects ($p<.05$) are highlighted in bold.



210
 211 **Figure 2. (Top) mean readability ratings after silent reading, Experiment 2. (Bottom) readability rating differences (low-**
 212 **vs. high-attachment) per reporting style condition, Experiment 2. Error bars indicate 95% confidence intervals for**
 213 **readability contrasts (low- vs. high-attachment) in relation to the narrative (baseline) condition. n.s.= not significant.**

214 There was a significant Reporting Style effect such that readability ratings were higher for *indirect*
 215 *speech* than for *narrative* sentences; the readability of *direct speech* sentences did not differ from
 216 the *narrative* condition. There was also a marginal RC-Attachment main effect ($p=.099$), indicating
 217 higher readability for *low-* rather than *high-*attachment structures. Our central question concerns
 218 the extent to which the readability of *low-* vs. *high-*attachment structures differs across different
 219 reporting styles. Indeed, the two predictors interacted: Relative to the *narrative* baseline, the low vs.

220 high-attachment contrast was significantly larger (+1.34 scale points \pm .40 SE) in the DS condition,
221 but only descriptively larger (+.51 scale points \pm .40 SE) in the IS condition.

222 **3.5 Discussion**

223 In Experiment 2 (comprehension), we again found evidence for a general low RC-attachment
224 preference in English: Regardless of reporting style, unambiguously low-attached RCs were rated as
225 marginally more readable than unambiguously high-attached RCs.

226 Crucially, the difference in rated readability for low- vs. high-attached RCs was significantly ($p < .001$)
227 more pronounced for RC structures that were embedded in direct speech quotations than for RC
228 structures in narrative contexts; indirect speech, by contrast, boosted the low RC-attachment
229 preference relative to the narrative baseline only descriptively ($p = .204$). This finding supports our
230 hypothesis, suggesting that SIP in silent reading of (particularly) direct speech boosts the low RC-
231 attachment preference in English.

232 However, the more pronounced low RC-attachment preference in direct speech may not necessarily
233 be driven by a primarily *quantitative* boost in the salience of implicit prosody via perceptual
234 simulation. As suggested by an anonymous reviewer, there may be *qualitative* differences in
235 prosodic phrasing between the direct speech and both the indirect speech and the narrative
236 conditions. For example, readers may be more likely to place an implicit phrase boundary [*] before
237 a direct speech quotation (e.g., *He told the group: [*] "I really liked the..."*) than before an indirect
238 speech quotation (e.g., *He told the group [*] that he really liked the...*) or a narrative sentence (e.g.,
239 *It seemed [*] that he really liked the...*). This early phrase boundary in direct speech could potentially
240 trigger the insertion of an additional phrase boundary after the head of NP1 (e.g., *"I really liked the*
241 *bells [*] of the church that..."*), thereby favouring a low-attachment interpretation of the RC (Lovrić,
242 Bradley, & Fodor, 2000, 2001; Quinn, Abdelghany, & Fodor, 2000; see also Selkirk, 2000).

243 Although the “quantitative” and “qualitative” accounts are both consistent with our results in silent
244 reading, they would make different predictions if participants read the sentences out loud. Indeed, if
245 the Reporting Style × RC-Attachment interaction in the readability ratings from Experiment 2 was
246 driven by a *quantitative* boost of implicit prosody for direct speech (via SIP), there should be no such
247 interaction in oral reading. This is because under *explicit* prosody conditions, the indirect speech and
248 narrative conditions would now experience a similar boost to the salience of prosodic phrasing. In
249 fact, prosodic phrasing would become *equally salient* (via explicit prosody) across the three
250 reporting style conditions. We would thus observe similar low RC-attachment preferences in all
251 conditions. By contrast, if the Reporting Style × Attachment interaction in Experiment 2 was driven
252 by *qualitative* differences in prosodic phrasing (as discussed earlier), we should still observe the
253 same interaction after oral reading of the sentences.

254 Moreover, we assumed that qualitative differences in prosodic phrasing between (specifically) direct
255 speech and the remaining two conditions should be measurable in different distributions of audible
256 pauses in various critical sentence positions. These predictions were tested in the following
257 experiment.

258 **4. Experiment 3**

259 Experiment 3 examined the effects of explicit prosody and prosodic phrasing on RC-attachment
260 preferences in *oral* reading. Using materials from Experiment 2, participants orally read
261 unambiguously low-attached or high-attached RC-attachment structures in direct speech, indirect
262 speech, or narrative sentences. After reading the sentences aloud, participants rated their felicity on
263 a 9-point scale, just as in Experiment 2.

264 **4.1 Participants**

265 Twenty-four native English speakers (mean age 28 years, $SD=9.1$, 11 females) from the University of
266 Manchester participated in exchange for £1. The experiment took about 10 min.

267 **4.2 Materials and design**

268 The materials and design were identical to Experiment 2.

269 **4.3 Procedure**

270 The procedure was the same as in Experiment 2. The only difference was that participants were
271 instructed to read the stories out loud (instead of silently) and that their responses were audio-
272 recorded throughout the experiment.

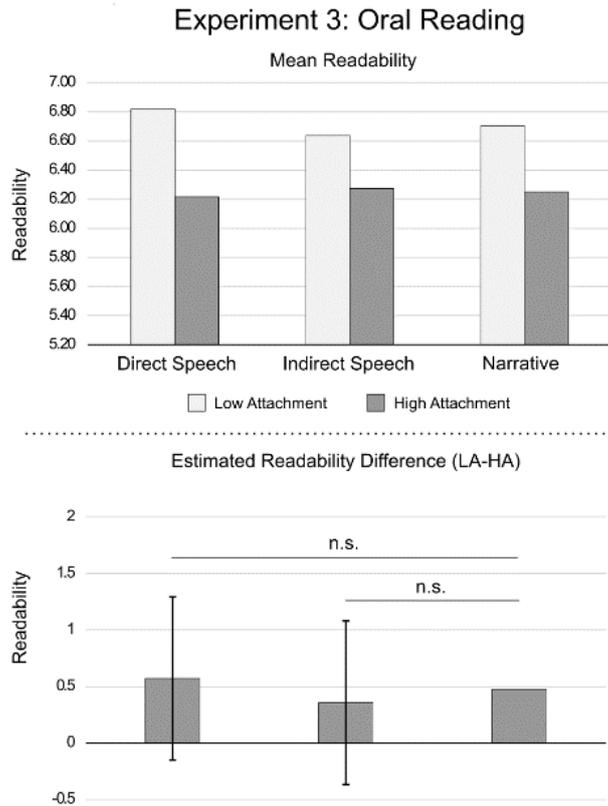
273 **4.4 Results**

274 We first fitted a linear mixed model to the readability ratings, in exactly the same manner as in
275 Experiment 2. The results are reported in Table 4. Condition means and pairwise contrasts are
276 shown in Figure 3.

277 **Table 4. Linear mixed-effect model estimates of readability ratings in Experiment 3**

Fixed Effects	Estimate	S.E.	t	p
DS-NS	.04	.17	.25	.806
IS-NS	-.04	.19	-.22	.827
Att(LA-HA)	.57	.25	2.25	.033
DS-NS × Att(LA-HA)	.15	.34	.43	.667
IS-NS × Att(LA-HA)	-.04	.34	-.12	.904

278 DS=direct speech; IS=indirect speech; NS=narrative sentence; Att=attachment type; LA=low attachment; HA=high
279 attachment. Significant effects ($p<.05$) are highlighted in bold.



280
 281 **Figure 3. (Top) mean readability ratings after oral reading, Experiment 3. (Bottom) readability rating differences (low- vs.**
 282 **high-attachment) per reporting style condition, Experiment 3. Error bars indicate 95% confidence intervals for**
 283 **readability contrasts (low- vs. high-attachment) in relation to the narrative (baseline) condition. n.s.= not significant..**

284 There was a significant main effect of RC-Attachment: readability ratings were about .57 ($\pm .25 SE$)
 285 scale points higher for low- than for high-attached RC structures. Unlike in Experiment 2, however,
 286 RC-Attachment did not interact with either the *DS-NS* or the *IS-NS* contrast.

287 Next, we performed acoustic analyses of the audio recordings in order to explore the differences in
 288 prosodic phrasing. Specifically, we focused on audible pauses (≥ 100 ms in duration) as an explicit
 289 marker for prosodic boundaries (Cutler, Dahan, & Van Donselaar, 1997) in three critical sentence
 290 positions: (i) before the critical quotation passage (e.g., *He told the group: [*] "I really liked the..." /*
 291 *He told the group [*] that he really liked the... / It seemed [*] that he really liked the...), (ii) after NP1*
 292 *(e.g., ...really liked the bells [*] of the church that...), and (iii) after NP2 (e.g., ...really liked the bells of*
 293 *the church [*] that...).* Note that a pause after NP1 should support low-attachment and a pause after
 294 NP2 high-attachment of the critical RC. The relevant percentage distributions (by condition and
 295 position) are reported in Table 5.

296 **Table 5. Percentages of pauses in each experimental condition: Before the critical quotations, after NP1, and after NP2.**

		Before	After NP1	After NP2
<i>DS</i>	<i>LA</i>	39.6 (5.0)	9.4 (3.0)	29.2 (4.7)
	<i>HA</i>	42.7 (5.1)	12.5 (3.4)	29.2 (4.7)
<i>IS</i>	<i>LA</i>	13.5 (3.5)	7.3 (2.7)	32.3 (4.8)
	<i>HA</i>	9.4 (3.0)	15.6 (3.7)	36.5 (4.9)
<i>NS</i>	<i>LA</i>	9.4 (3.0)	9.4 (3.0)	27.1 (4.6)
	<i>HA</i>	7.3 (2.7)	4.2 (2.1)	31.3 (4.8)

297 DS=direct speech; IS=indirect speech; NS=narrative sentence; LA=low attachment; HA=high attachment. Values in
 298 parentheses represent standard errors.

299 For each of the three critical sentence positions, occurrences of pauses were fitted in terms of binary
 300 logistic GLMMs. As before, all predictors were mean-centred (deviation coding). Fixed effects
 301 included the *DS-NS* and the *IS-NS* main effect contrasts (*NS* served as baseline), the *RC-Attachment*
 302 main effect, the *DS-NS* × *RC-Attachment* interaction, and the *IS-NS* × *RC-Attachment* interaction.
 303 Maximal (by subjects and items) random effect structures were used, but excluding random
 304 correlation terms due to convergence issues.

305 The GLMM results confirmed that participants were reliably more likely to insert a pause before
 306 direct speech quotations than before narrative sentences ($b=2.48$, $SE=.66$, $z=3.79$, $p<.001$ for the *DS-NS*
 307 main effect contrast). No further effects were registered in this position (all $ps>.44$). In post-NP1
 308 position, occurrences of pauses were rare (9.7% overall) and only the *IS-NS* × *RC-Attachment*
 309 coefficient was significant ($b=-1.76$, $SE=.79$, $z=-2.22$, $p=.027$). The latter confirmed a reliably
 310 different low versus high RC-attachment contrast in the indirect speech relative to the narrative
 311 (baseline) condition. Finally, in post-NP2 position, no reliable effects were registered (all $ps>.41$).

312 We also examined by-trial correlations (*phi*-coefficients for binary data) in occurrences of pauses
 313 across the three critical sentence positions. We found a small negative correlation between pauses
 314 occurring before quotation and pauses occurring after NP1 ($\phi=-.093$, $p=.026$), a small positive
 315 correlation between pauses after NP1 and pauses after NP2 ($\phi=+.123$, $p=.003$), and no discernible
 316 correlation between pauses before quotation and pauses after NP2 ($\phi=-.039$, $p=.352$).

317 **4.5 Discussion**

318 The readability ratings from Experiment 3 (oral reading) again confirmed a general low RC-
319 attachment bias in English. Importantly, unlike in Experiment 2 (silent reading), the difference in
320 rated readability for low- vs. high-attached RCs did not reliably interact with reporting style. We
321 examined the differential patterns of results between Experiment 2 and 3 in a supplemental mixed
322 model analysis using a 3-factorial *Experiment* × *Reporting Style* × *RC-Attachment* fixed effects design
323 (treating *Experiment* as between-subjects/within-items variable). This analysis indeed confirmed a
324 significant *Experiment* × *DS-NS* × *Attachment* estimate ($b=-1.20$, $SE=.53$, $z=-2.27$, $p=.023$). We take
325 this as support for a SIP-related ‘quantitative’ prosodic boost explanation of the results from
326 Experiment 2: in silent reading, the enhanced (more salient) implicit prosody for direct speech
327 engenders a more pronounced low RC-attachment preference relative to indirect speech or
328 narrative sentences; in oral reading, by contrast, prosodic phrasing is *equally salient* (i.e., explicit) in
329 all three conditions. Indirect speech and narrative sentences become as susceptible to prosody-
330 induced syntactic biases as direct speech sentences. The non-significant *Reporting Style* × *RC-*
331 *Attachment* interaction in the readability ratings of Experiment 3 was therefore not unexpected.

332 Also important were the acoustic analyses of the oral reading data from Experiment 3, based on
333 occurrences of audible pauses (≥ 100 ms in duration) in three critical sentence positions: before
334 quotation, after NP1, and after NP2. Research suggests that in English, pauses after NP1 support a
335 low-attachment interpretation of RC structures and pauses after NP2 a high-attachment
336 interpretation (Quinn et al., 2000). While our analyses showed that speakers were about four times
337 more likely to insert a phrasal boundary before direct quotes than before indirect quotes or
338 narrative sentences (Table 4), there was no convincing evidence that this had consequences for
339 attachment-relevant prosodic phrasing further downstream, i.e. with regards to pauses after NP1 or
340 after NP2, respectively. If anything, correlation analyses suggested that inserting a pause before the
341 critical quotation sentence was somewhat *negatively* associated with inserting a pause after NP1,
342 which might predict more prosodic support for high RC-attachment in the direct speech condition

343 (where pre-quote pauses were very likely). Taken together, our data show no compelling evidence
344 for qualitative differences in prosodic phrasing being the driving force behind the findings from
345 Experiments 1 and 2.

346 **5. General discussion**

347 Using a sentence completion task (Experiment 1) and an off-line readability judgement task
348 (Experiments 2 and 3), we replicated the general low-attachment preference for RC structures in
349 English.

350 Crucially, in both silent production and comprehension, we found that this low attachment
351 preference was more pronounced when the RC-structures were embedded in direct speech, as
352 compared to indirect speech or (particularly) narrative sentences. This interaction disappeared when
353 the RC structures were read aloud, and there was no clear evidence for qualitative differences in
354 attachment-relevant prosodic patterns in the reading aloud data from Experiment 3.

355 How do our findings relate to default implicit prosody (DIP) and simulated implicit prosody (SIP)
356 discussed in the introduction? Presuming that the low-attachment preference for RCs in English is
357 driven by prosodic factors, it appears plausible that the direct speech reporting style would
358 quantitatively enhance the salience of implicit prosody (via perceptual simulation of speech)
359 specifically during *silent* reading and/or completion of sentences (cf. Experiments 1 and 2). Previous
360 work has shown that silent reading of direct speech elicits higher activation of temporal voice areas
361 in the auditory cortex than indirect speech (Yao et al., 2011), suggesting more enhanced, mentally
362 simulated prosodic representations in silent reading of direct speech. Relative to other factors,
363 implicit prosody would hence play a more important role in silent reading of direct speech
364 quotations, thereby leading to a more pronounced low RC-attachment preference compared to
365 other reporting style conditions (Experiments 1 and 2).

366 It is also possible that direct speech would induce a *qualitatively* different pattern of implicit
367 prosodic phrasing (e.g., higher probabilities of placing a phrasal boundary after the head of NP1,
368 which would strengthen the low RC-attachment bias in direct speech as well). However, while our
369 oral reading data (Experiment 3) indicated that speakers were more likely to place a phrasal
370 boundary before direct speech quotations than equivalent indirect speech or narrative sentences,
371 the probabilities of placing a phrasal boundary after NP1 or NP2 were largely unaffected by
372 reporting style. Critically, the readability ratings from Experiment 3 (oral reading) did not show a
373 more pronounced low RC-attachment bias for direct speech quotations, contrasting with
374 Experiments 1 and 2. We interpret this as additional evidence for a more *quantitative* account (in
375 terms of salience of implicit prosody) whereby prosodic phrasing is equally salient (i.e., explicit)
376 across the three conditions during oral reading, resulting in similar low RC-attachment biases also in
377 indirect speech and narrative conditions.

378 In conclusion, our findings provide the first suggestion of a shared cognitive basis (Yao & Scheepers,
379 2015) between ‘default’ implicit prosody (Fodor, 1998, 2002) and ‘simulated’ implicit prosody (Yao
380 et al., 2011; Yao & Scheepers, 2011). Although research on SIP is still young, it complements
381 research on DIP by providing a potentially useful platform to directly manipulate and ‘enhance’
382 implicit prosody during silent reading, namely via the use of direct speech quotations. Future
383 research may consider replicating the effects of SIP on RC-attachment in other languages. For
384 instance, French, German and Spanish are known to have a high RC-attachment preference. If
385 attachment decisions are influenced by implicit prosody, then embedding RC structures in direct
386 quotes should yield a stronger high-attachment preference, specifically during *silent* reading or
387 sentence completion in those languages.

388 **ACKNOWLEDGEMENTS**

389 We thank the editor Jennifer E. Arnold and two anonymous referees for their insightful comments
390 and helpful suggestions. This work was presented at the 23rd Architectures and Mechanisms of
391 Language Processing conference and the Experimental Psychology Society meeting in January 2018.
392 This research was supported by Economic and Social Research Council Grant [ES/N002784/1] to B.
393 Yao.

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- 1 Councillor Nora was passionate about music education in the local area.**
DS When she met a friend, she said: "I recently visited the students of the piano teacher who _____."
IS When she met a friend, she said that she recently visited the students of the piano teacher who _____.
NS It appeared that she recently visited the students of the piano teacher who _____.
- 2 Manager Garry was asked why tonight's concert was running late.**
DS He explained: "I'm still waiting for the musicians of the pop star who _____."
IS He explained that he was still waiting for the musicians of the pop star who _____.
NS Apparently, he was still waiting for the musicians of the pop star who _____.
- 3 The charity Save the Children had recently received a series of large donations.**
DS In a press conference, the charity CEO said: "We cannot reveal the source of the donations that _____."
IS In a press conference, the charity CEO said that they could not reveal the source of the donations that _____.
NS In a press conference, the charity CEO refused to reveal the source of the donations that _____.
- 4 Chauffeur James was sharing his recent experience with friends in a local pub.**
DS He boasted: "Yesterday I met the representative of the state guests who _____"
IS He boasted that yesterday he met the representative of the state guests who _____.
NS Apparently, yesterday he met the representative of the state guests who _____.
- 5 Superintendent Larry had been reviewing a report of a money laundering case but the numbers did not add up.**
DS He called the finance officer and said: "I need to check the earnings of the company that _____."
IS He called the finance officer and said that he needed to check the earnings of the company that _____.
NS 1. Apparently, he needed to check the earnings of the company that _____.
- 6 The Smiths had been busy working on their family farm all day long. Over dinner, Mr Smith realised that he had forgotten something important.**
DS He said to his wife: "I still need to feed the calves of the cow that _____"
IS He said to his wife that he still needed to feed the calves of the cow that _____.
NS He still needed to feed the calves of the cow that _____.
- 7 Factory owner John was not happy about the performance figures in the past few months.**
DS He called his PA and said: "I need to speak to the supervisor of the employees who _____."
IS He called his PA and said that he needed to speak to the supervisor of the employees who _____.
NS 2. He wanted to speak to the supervisor of the employees who _____.
- 8 The manager of Sainsbury's was questioned about the drastic drop in fruit sales over the last month.**
DS He explained: "The terrible frost ruined the harvest of the fruit farms that _____."
IS He explained that the terrible frost had ruined the harvest of the fruit farms that _____.
NS 3. Apparently, the terrible frost had ruined the harvest of the fruit farms that _____.
- 9 Professor Bob was reviewing an extensive research report and had doubts over the quality of the work.**
DS He shook his head and commented: "I simply cannot agree with the method of the studies that _____."
IS He shook his head and commented that he simply could not agree with the method of the studies that _____.
NS He shook his head because he simply could not agree with the method of the studies that _____.
- 10 Kelly and Gemma were laughing out loud on a train, which obviously annoyed some fellow passengers.**
DS Kelly apologised and explained: "Sorry, we were amused at the articles of the newspaper that _____."
IS Kelly apologised and explained that they were amused at the articles of the newspaper that _____.
NS They continued laughing because they were amused at the articles of the newspaper that _____.
- 11 Social worker Tom had been volunteering at a local hospital for over a year. His friends did not understand why he would not get a properly paid job elsewhere.**
DS He blushed and murmured: "I .. actually fancy the nurse of the senior-citizens who _____."
IS He blushed and murmured that he actually fancied the nurse of the senior-citizens who _____.
NS He blushed because he actually fancied the nurse of the senior-citizens who _____.
- 12 The insurer was surveying a tenement housing complex owned by a rich oligarch.**
DS He told the landlord: "We need to insure the furniture of the apartments that _____."
IS He told the landlord that they needed to insure the furniture of the apartments that _____.
NS He assumed that they needed to insure the furniture of the apartments that _____.

- 13 Millions of usernames and passwords had recently been stolen from one of the biggest social network site.**
DS The Head of Internet Security said: "The hackers attacked the web sites of the service provider that _____."
IS The Head of Internet Security said that the hackers attacked the web sites of the service provider that _____.
NS It appeared that the hackers attacked the web sites of the service provider that _____.
- 14 Windsor Castle had recently been closed due to domestic affairs. Tipped by an insider, Royal Correspondent Peter spilled the beans.**
DS He explained: "A stranger blackmailed the butler of the royals who _____."
IS He explained that a stranger blackmailed the butler of the royals who _____.
NS It seemed that a stranger blackmailed the butler of the royals who _____.
- 15 The MI5 had recently intercepted a terrorist attack on London undergrounds. It turned out that the terrorists were working undercover in a trading company.**
DS A spokesman of the MI5 announced: "The secret service had confiscated all files of the organisation that _____."
IS A spokesman of the MI5 announced that the secret service had confiscated all files of the organisation that _____.
NS The secret service had confiscated all files of the organisation that _____.
- 16 There had been a bombing at the embassy today, injuring several people. A local shopkeeper witnessed the incident.**
DS He said: "I saw the bodyguard of the diplomats who _____."
IS He said that he saw the bodyguard of the diplomats who _____.
NS He saw the bodyguard of the diplomats who _____.
- 17 Astronomer Deborah was presenting her latest findings at an international conference.**
DS She said: "I observed the stars of the spiral galaxy that _____."
IS She said that she observed the stars of the spiral galaxy that _____.
NS She observed the stars of the spiral galaxy that _____.
- 18 Steven Fry went to Africa to record a BBC documentary on languages.**
DS He said: "I am thrilled to get to study the language of the tribes that _____."
IS He said that he was thrilled to get to study the language of the tribes that _____.
NS He was thrilled to get to study the language of the tribes that _____.
- 19 Finance consultant Louise was coaching students about domestic finances management.**
DS She said: "I always keep the letters of the bank that _____."
IS She said that she always kept the letters of the bank that _____.
NS Her advice was to always keep the letters of the bank that _____.
- 20 A new, child-friendly hotel was recently opened in south London.**
DS At the opening ceremony, the owner announced: "We offer free nutritious meals to the children of the hotel resident who _____."
IS At the opening ceremony, the owner announced that they offered free nutritious meals to the children of the hotel resident who _____.
NS At the opening ceremony, they offered free nutritious meals to the children of the hotel resident who _____.
- 21 At the crime scene, the police were investigating a murder case.**
DS An eye witness said, "Someone shot the servants of the actress who _____."
IS An eye witness said that someone shot the servants of the actress who _____.
NS It seemed that someone shot the servants of the actress who _____.
- 22 At the local museum, snake expert Thea was hosting an exhibition displaying her discoveries in Malaysia this summer.**
DS Addressing the audience, she said: "First I would like to show you videos of the snake that _____."
IS Addressing the audience, she said that first she would like to show them videos of the snake that _____.
NS First, she would show the audience some videos of the snake that _____.

23 Frank and his friends were visiting a local church on their travels to Germany.

DS He told the group: "I really liked the bells of the church that _____."

IS He told the group that he really liked the bells of the church that _____.

NS It seemed that he really liked the bells of the church that _____.

24 A series of scandals over corruption in the government had recently been reported by the BBC.

DS To address the public outrage, the Prime Minister promised: "We will carry out a full investigation into the advisors of the minister who _____."

IS To address the public outrage, the Prime Minister announced that they would carry out a full investigation into the advisors of the minister who _____.

NS To address the public outrage, the Prime Minister was determined to carry out a full investigation into the advisors of the minister who _____.

- 1 Councillor Nora was passionate about music education in the local area.**
LA-DS When she met a friend, she said: "I recently visited the students of the piano teacher who was also a composer."
LA-IS When she met a friend, she said that she recently visited the students of the piano teacher who was also a composer.
LA-NS It appeared that she recently visited the students of the piano teacher who was also a composer.
HA-DS When she met a friend, she said: "I recently visited the students of the piano teacher who were given free piano lessons."
HA-IS When she met a friend, she said that she recently visited the students of the piano teacher who were given free piano lessons.
HA-NS It appeared that she recently visited the students of the piano teacher who were given free piano lessons.
- 2 Manager Garry was asked why tonight's concert was running late.**
LA-DS He explained: "I'm still waiting for the musicians of the pop star who is headlining the concert."
LA-IS He explained that he was still waiting for the musicians of the pop star who was headlining the concert.
LA-NS Apparently, he was still waiting for the musicians of the pop star who was headlining the concert.
HA-DS He explained: "I'm still waiting for the musicians of the pop star who are tuning their instruments."
HA-IS He explained that he was still waiting for the musicians of the pop star who were tuning their instruments.
HA-NS Apparently, he was still waiting for the musicians of the pop star who were tuning their instruments.
- 3 The charity Save the Children had recently received a large donation.**
LA-DS In a press conference, the charity CEO said: "We cannot reveal the source of the donations that we have gratefully received."
LA-IS In a press conference, the charity CEO said that they could not reveal the source of the donations that they had gratefully received.
LA-NS In a press conference, the charity CEO refused to reveal the source of the donations that they had gratefully received.
HA-DS In a press conference, the charity CEO said: "We cannot reveal the source of the donations that has asked to remain anonymous."
HA-IS In a press conference, the charity CEO said that they could not reveal the source of the donations that had asked to remain anonymous.
HA-NS In a press conference, the charity CEO refused to reveal the source of the donations that had asked to remain anonymous.
- 4 Chauffeur James was sharing his recent experience with friends in a local pub.**
LA-DS He boasted: "Yesterday I met the representative of the state guests who were going to a fancy dinner at the White House."
LA-IS He boasted that yesterday he met the representative of the state guests who were going to a fancy dinner at the White House.
LA-NS Apparently, yesterday he met the representative of the state guests who were going to a fancy dinner at the White House.
HA-DS He boasted: "Yesterday I met the representative of the state guests who was very impressed with my driving."
HA-IS He boasted that yesterday he met the representative of the state guests who was very impressed with his driving.
HA-NS Apparently, yesterday he met the representative of the state guests who was very impressed with his driving.
- 5 Superintendent Larry had been reviewing a report of a money laundering case but the numbers did not add up.**
LA-DS He called the finance officer and said: "I need to check the earnings of the company that is located in Russia."
LA-IS He called the finance officer and said that he needed to check the earnings of the company that was located in Russia.
LA-NS Apparently, he needed to check the earnings of the company that was located in Russia.
HA-DS He called the finance officer and said: "I need to check the earnings of the company that are not yet accounted for."
HA-IS He called the finance officer and said that he needed to check the earnings of the company that were not yet accounted for.
HA-NS Apparently, he needed to check the earnings of the company that were not yet accounted for.
- 6 The Smiths had been busy working on their family farm all day long. Over dinner, Mr Smith realised that he had forgotten something important.**
LA-DS He said to his wife: "I still need to feed the calves of the cow that has been butchered this morning."
LA-IS He said to his wife that he still needed to feed the calves of the cow that had been butchered that morning.
LA-NS He still needed to feed the calves of the cow that had been butchered that morning.
HA-DS He said to his wife: "I still need to feed the calves of the cow that were born two days ago."
HA-IS He said to his wife that he still needed to feed the calves of the cow that were born two days ago.
HA-NS He still needed to feed the calves of the cow that were born two days ago.

- 7 Factory owner John was not happy about the performance figures in the past few months.**
- LA-DS He called his PA and said: "I need to speak to the supervisor of the employees who weren't pulling their weight."
 LA-IS He called his PA and said that he needed to speak to the supervisor of the employees who weren't pulling their weight.
 LA-NS He wanted to speak to the supervisor of the employees who weren't pulling their weight.
 HA-DS He called his PA and said: "I need to speak to the supervisor of the employees who was managing workers' performance."
 HA-IS He called his PA and said that he needed to speak to the supervisor of the employees who was managing workers' performance.
 HA-NS He wanted to speak to the supervisor of the employees who was managing workers' performance.
- 8 The manager of Sainsbury's was questioned about the drastic drop in fruit sales over the last month.**
- LA-DS He explained: "The terrible frost ruined the harvest of the fruit farms that are supplying fruits to the company."
 LA-IS He explained that the terrible frost had ruined the harvest of the fruit farms that were supplying fruits to the company.
 LA-NS Apparently, the terrible frost had ruined the harvest of the fruit farms that were supplying fruits to the company.
 HA-DS He explained: "The terrible frost ruined the harvest of the fruit farms that was growing so well."
 HA-IS He explained that the terrible frost had ruined the harvest of the fruit farms that was growing so well.
 HA-NS Apparently, the terrible frost had ruined the harvest of the fruit farms that was growing so well.
- 9 Professor Bob was reviewing an extensive research report and had doubts over the quality of the work.**
- LA-DS He shook his head and commented: "I simply cannot agree with the method of the studies that were carried out last year."
 LA-IS He shook his head and commented that he simply could not agree with the method of the studies that were carried out last year.
 LA-NS He shook his head because he simply could not agree with the method of the studies that were carried out last year.
 HA-DS He shook his head and commented: "I simply cannot agree with the method of the studies that was used by the researchers."
 HA-IS He shook his head and commented that he simply could not agree with the method of the studies that was used by the researchers.
 HA-NS He shook his head because he simply could not agree with the method of the studies that was used by the researchers.
- 10 Kelly and Gemma were laughing out loud on a train, which obviously annoyed some fellow passengers.**
- LA-DS Kelly apologised and explained: "Sorry, we were amused at the articles of the newspaper that we picked up at the station."
 LA-IS Kelly apologised and explained that they were amused at the articles of the newspaper that they picked up at the station.
 LA-NS They continued laughing because they were amused at the articles of the newspaper that they picked up at the station.
 HA-DS Kelly apologised and explained: "Sorry, we were amused at the articles of the newspaper that are written by comedians."
 HA-IS Kelly apologised and explained that they were amused at the articles of the newspaper that were written by comedians.
 HA-NS They continued laughing because they were amused at the articles of the newspaper that were written by comedians.
- 11 Social worker Tom had been volunteering at a local hospital for over a year. His friends did not understand why he would not get a properly paid job elsewhere.**
- LA-DS He smiled and said: "I actually enjoy helping the nurse of the senior-citizens who are suffering from dementia."
 LA-IS He smiled and said that he actually enjoyed helping the nurse of the senior-citizens who were suffering from dementia.
 LA-NS He smiled because he actually enjoyed helping the nurse of the senior-citizens who were suffering from dementia.
 HA-DS He smiled and said: "I actually enjoy helping the nurse of the senior-citizens who is always so cheerful."
 HA-IS He smiled and said that he actually enjoyed helping the nurse of the senior-citizens who was always so cheerful.
 HA-NS He smiled because he actually enjoyed helping the nurse of the senior-citizens who was always so cheerful.
- 12 The insurer was surveying a tenement housing complex owned by a rich oligarch.**
- LA-DS He told the landlord: "We need to insure the furniture of the apartments that are currently vacant."
 LA-IS He told the landlord that they needed to insure the furniture of the apartments that were currently vacant.
 LA-NS He assumed that they needed to insure the furniture of the apartments that were currently vacant.
 HA-DS He told the landlord: "We need to insure the furniture of the apartments that is antique and valuable."
 HA-IS He told the landlord that they needed to insure the furniture of the apartments that was antique and valuable.
 HA-NS He assumed that they needed to insure the furniture of the apartments that was antique and valuable.

- 13 Millions of usernames and passwords had recently been lost at one of the fastest-growing start-up companies in Asia.**
- LA-DS** An internet security expert said: "Some hackers deleted all customer details of a service provider that is based in India."
LA-IS An internet security expert said that some hackers deleted all customer details of a service provider that was based in India.
LA-NS It appeared that that some hackers deleted all customer details of a service provider that was based in India.
HA-DS An internet security expert said: "Some hackers deleted all customer details of a service provider that were saved on standard hard-drives."
HA-IS An internet security expert said that some hackers deleted all customer details of a service provider that were saved on standard hard-drives.
HA-NS It appeared that some hackers deleted all customer details of a service provider that were saved on standard hard-drives.
- 14 Windsor Castle had recently been closed due to domestic affairs. Tipped by an insider, Royal Correspondent Peter spilled the beans.**
- LA-DS** He explained: "A stranger blackmailed the butler of the royals who have employed him for 30 years."
LA-IS He explained that a stranger blackmailed the butler of the royals who had employed him for 30 years.
LA-NS It seemed that a stranger blackmailed the butler of the royals who had employed him for 30 years.
HA-DS He explained: "A stranger blackmailed the butler of the royals who has served them for 30 years."
HA-IS He explained that a stranger blackmailed the butler of the royals who had served them for 30 years.
HA-NS It seemed that a stranger blackmailed the butler of the royals who had served them for 30 years.
- 15 The MI5 had recently intercepted a terrorist attack on London undergrounds. It turned out that the terrorists were working undercover in a trading company.**
- LA-DS** A spokesman of the MI5 announced: "The secret service confiscated all files of the organisation that has contacted the terrorists."
LA-IS A spokesman of the MI5 announced that the secret service confiscated all files of the organisation that had contacted the terrorists.
LA-NS In a recent coup, the secret service confiscated all files of the organisation that had contacted the terrorists.
HA-DS A spokesman of the MI5 announced: "The secret service confiscated all files of the organisation that were found at the scene."
HA-IS A spokesman of the MI5 announced that the secret service confiscated all files of the organisation that were found at the scene.
HA-NS In a recent coup, the secret service confiscated all files of the organisation that were found at the scene.
- 16 There had been a bombing at the embassy today, injuring several people. A local shopkeeper witnessed the incident.**
- LA-DS** He said: "I saw the bodyguards of the diplomat who was visiting from France."
LA-IS He said that he saw the bodyguards of the diplomat who was visiting from France.
LA-NS He saw the bodyguards of the diplomat who was visiting from France.
HA-DS He said: "I saw the bodyguards of the diplomat who were injured protecting the diplomat."
HA-IS He said that he saw the bodyguards of the diplomat who were injured protecting the diplomat.
HA-NS He saw the bodyguards of the diplomat who were injured protecting the diplomat.
- 17 Astronomer Deborah was presenting her latest findings at an international conference.**
- LA-DS** She said: "I observed the stars of the spiral galaxy that is 10 times larger than the Milky Way."
LA-IS She said that she observed the stars of the spiral galaxy that was 10 times larger than the Milky Way.
LA-NS She observed the stars of the spiral galaxy that was 10 times larger than the Milky Way.
HA-DS She said: "I observed the stars of the spiral galaxy that are expected to collide with one another."
HA-IS She said that she observed the stars of the spiral galaxy that were expected to collide with one another.
HA-NS She observed the stars of the spiral galaxy that were expected to collide with one another.
- 18 Steven Fry went to Africa to record a BBC documentary on languages.**
- LA-DS** He said: "I am thrilled to get to study the language of the tribes that live deep in the Sahara Desert."
LA-IS He said that he was thrilled to get to study the language of the tribes that lived deep in the Sahara Desert.
LA-NS He was thrilled to get to study the language of the tribes that lived deep in the Sahara Desert.
HA-DS He said: "I am thrilled to get to study the language of the tribes that contains only vowels but not consonants."
HA-IS He said that he was thrilled to get to study the language of the tribes that contained only vowels but not consonants.
HA-NS He was thrilled to get to study the language of the tribes that contained only vowels but not consonants.

- 19 Finance consultant Louise was lecturing students about how to deal with financial correspondence.**
LA-DS She said: "One should always keep the letters of the bank that is managing one's investments."
LA-IS She said that one should always keep the letters of the bank that is managing one's investments.
LA-NS Her advice was to always keep the letters of the bank that is managing one's investments.
HA-DS She said: "One should always keep the letters of the bank that are posted in December."
HA-IS She said that one should always keep the letters of the bank that are posted in December.
HA-NS Her advice was to always keep the letters of the bank that are posted in December.
- 20 A new, child-friendly hotel was recently opened in South London.**
LA-DS At the opening ceremony, the owner announced: "We offer free nutritious meals to the children of any customer who books a room for five nights or more."
LA-IS At the opening ceremony, the owner announced that they offered free nutritious meals to the children of any customer who books a room for five nights or more.
LA-NS At the opening ceremony, they offered free nutritious meals to the children of any customer who books a room for five nights or more.
HA-DS At the opening ceremony, the owner announced: "We offer free nutritious meals to the children of any customer who are less than twelve years old."
HA-IS At the opening ceremony, the owner announced that they offered free nutritious meals to the children of any customer who were less than twelve years old.
HA-NS At the opening ceremony, they offered free nutritious meals to the children of any customer who were less than twelve years old.
- 21 At the crime scene, the police was investigating a murder case.**
LA-DS An eye witness said, "Someone shot the servants of the baroness who was attending a charity event."
LA-IS An eye witness said that someone shot the servants of the baroness who was attending a charity event.
LA-NS It seemed that someone shot the servants of the baroness who was attending a charity event.
HA-DS An eye witness said, "Someone shot the servants of the baroness who were from a poor neighborhood."
HA-IS An eye witness said that someone shot the servants of the baroness who were from a poor neighborhood.
HA-NS It seemed that someone shot the servants of the baroness who were from a poor neighborhood.
- 22 At the local museum, snake expert Thea was hosting an exhibition about a new species she recently discovered in Malaysia.**
LA-DS Addressing the audience, she said: "First I would like to show you some videos of the snake which is capable of swallowing a whole armadillo."
LA-IS Addressing the audience, she said that first she would like to show them some videos of the snake which was capable of swallowing a whole armadillo.
LA-NS First, she would show the audience some videos of the snake which was capable of swallowing a whole armadillo.
HA-DS Addressing the audience, she said: "First I would like to show you some videos of the snake which are all in high definition."
HA-IS Addressing the audience, she said that first she would like to show them some videos of the snake which were all in high definition.
HA-NS First, she would show the audience some videos of the snake which were all in high definition.
- 23 Frank and his friends were visiting some lovely places on their trip to Germany last year.**
LA-DS He told the group: "I really liked the bells of the church that was right next to the town hall."
LA-IS He told the group that he really liked the bells of the church that was right next to the town hall.
LA-NS It seemed that he really liked the bells of the church that was right next to the town hall.
HA-DS He told the group: "I really liked the bells of the church that were chiming every hour."
HA-IS He told the group that he really liked the bells of the church that were chiming every hour.
HA-NS It seemed that he really liked the bells of the church that were chiming every hour.
- 24 The BBC reported yet another series of scandals over corruption in the government last week.**
LA-DS To address the public outrage, the Prime Minister announced: "We will carry out a full investigation into the advisors of the minister who was accused of money laundering."
LA-IS To address the public outrage, the Prime Minister announced that they would carry out a full investigation into the advisors of the minister who was accused of money laundering.
LA-NS To address the public outrage, the Prime Minister was determined to carry out a full investigation into the advisors of the minister who was accused of money laundering.
HA-DS To address the public outrage, the Prime Minister announced: "We will carry out a full investigation into the advisors of the minister who are refusing to comment on the issue."
HA-IS To address the public outrage, the Prime Minister announced that they would carry out a full investigation into the advisors of the minister who were refusing to comment on the issue.
HA-NS To address the public outrage, the Prime Minister was determined to carry out a full investigation into the advisors of the minister who were refusing to comment on the issue.

