Alison Wray

Hidden in plain sound: overlooked repetition in *Just a Minute*

Abstract: In the BBC Radio Four panel game *Just a Minute* (JaM), players must speak fluently for one minute without hesitation, deviation, or repetition. Other players challenge them and take over the remainder of the minute if successful. What impact do the JaM rules have on players' spoken output? Study 1 compares twelve unchallenged JaM minutes with twelve sample minutes from an interview by the same speaker, Paul Merton. Although lower, his repetition rate in JaM is still >34%. Study 2 asks why so many repeated words go unchallenged. Analysis of 97 JaM rounds (18,500 words) from 12 complete episodes reveals that word class, word frequency, and the distance between mentions all play a role. The parameters of challenges in the game are modeled and there is consideration of why and how repetition occurs in a language and how the wider priorities of JaM as entertainment shape the linguistic patterns.

Keywords: Repetition, Game show, word class, word frequency, lexis

1 Introduction

BBC Radio 4's *Just a Minute* (JaM),[1] broadcast since 1967, is the world's longest-running radio panel show.[2] In this game, players must speak fluently for one minute on a specified topic without hesitation, deviation, or repetition. Transgressions are challenged by the other players, who win points and take over the subject for the remainder of the minute. When players regain the topic later, they must avoid repeating words they used in their previous contribution to that topic, even if a considerable quantity of material has intervened.

The demanding stipulation to avoid hesitation, deviation, or repetition – three core features of spoken discourse – is linguistically very interesting, since fluency is typically sustained by inserting hesitation filler sounds and

---

Alison Wray, Cardiff University, Cardiff, Wales, wraya@cardiff.ac.uk

phrases (e.g., *uh, um, I mean, you know*), reiterating material during onward planning (repetition), and going off on tangents while regrouping to the topic (deviation). This article begins by asking what impact the JaM rules have on the players' spoken output, given that they are not able to resort to these strategies. It develops into an examination of what makes some words easier to track than others, with a particular focus on the detection (or not) of repetition, and considers what level of control players have over how successfully they play the game.

2 The challenges of *Just a Minute*: a linguistic perspective

2.1 The shape of the game

Anyone hearing a description of the rules of JaM would likely recognise how demanding the game is for both the speaker and challenger. As one player, Dara Ó Briain, comments after being challenged, "I hate this damn game so much! It's designed in my own personal hell, this game!".[3] Paul Merton, the most experienced current player, comments that "It's always difficult".[4] According to one of the early players, Kenneth Williams, "This game has fiendish rules" (Williams 1985: 184) and "I had no idea a game could be so difficult" (Parsons 2014: 50). Another player, Stephen Fry, observes, "Do you know, it's a lot more difficult than it seems when you're listening on the radio" (Parsons 2014: 315).

It is not just that it is hard to avoid hesitation, repetition, and deviation in one's speech and to notice them in someone else's. The show is recorded in front of an audience, which adds important dynamics to the proceedings, not least the need to be entertaining and keep momentum (Paul Merton, personal communication, 2022). Decisions must be made in real time, based on what the players and chairman have noticed. There is no recourse to playbacks – there is no Video Assistant Referee, as in sports. Split-second judgements are needed, about what the speaker has actually said, whether it should be challenged and whether the challenge should be upheld.

All this would be difficult enough, even if it were entirely clear what should count as a breach of the rules of the game. But it is not. Particularly in relation to

---

repetition, there is frequent negotiation, there are many decisions that, in subsequent analysis, are dubious or puzzling, and there is plenty of inconsistency. While some of the inconsistency is due to human error (and a little may be the result of pre-broadcast editing), a substantial amount of it is because of the nature of the language itself, which is not really designed to fit neatly into the JaM rules.

1	Mike McShane	Many stories were told using dragons in mythology. One of my favourite tales is The Never-Ending Story which is an original...
2		Buzz
3	Nicholas Parsons	Paul Sinha has challenged
4	Paul Sinha	That's two uses of the word *story*
5	Parsons	*Story*, repetition of *story*. Yes so Paul you're in on *Dragons* with 49 seconds starting now
6	Sinha	Dragons are known by scientists as a Lazarus Taxon in that they used to be extinct but they now exist. The fire breathing creatures that were wiped out by a comet many years ago have been now replaced...
7		Buzz
8	Sinha	I know
9	Parsons	Sue challenged
10	Sue Perkins	Repetition of *now*

Example 1. Subject: Dragons (JaM10 in Study 2)

To illustrate, in Example 1, McShane has taken up the subject of *Dragons* and attempts to speak without hesitation, deviation, or repetition. Paul Sinha challenges him by pressing his buzzer. The chairman Nicholas Parsons identifies the challenger to the listening audience and invites him to state his objection. Sinha asserts that McShane has used the word *story* twice, and Parsons upholds the challenge. In fact, we can see from the transcript that McShane has not done so. He has used *stories* and *story*, which does not infringe the JaM rule on repetition. Nevertheless, he loses the turn to Sinha, who is soon challenged by Sue Perkins for the repetition of *now*. Notably, Sinha indicates (line 8) that he is aware of this (or another) transgression. Awareness by the speaker of having repeated a word is extremely common, even to the extent of exacerbating the problem by saying the word again. For instance, in the same episode, Marcus Brigstocke says "to take the packet... oh damn, packet,"[5] thus repeating a word that he had not actually previously repeated.

Strategies for avoiding repetition include synonyms, as in Clement Freud's description of eggs as *hen fruit* (Parsons 2014: 182) and meta-references like Freud's account of *slow, slow, quick, quick slow* in ballroom dancing: "there is

---

5 03.09.2007 http://just-a-minute.info/jam704.html

music to which people go slow, and that word again, quick, monosyllable repeated, and then the first one again" (Parsons 2014: 188).

2.2 *Just a Minute* as a research focus

Unlike the BBC Radio 4 soap opera *The Archers*, which even has its own academic community and annual conference,[6] little research has been conducted on JaM, despite the potential for interesting linguistic analysis. Christiansen (2008) uses a corpus of 2.68 million words from JaM transcripts to gain a snapshot of distributions of slang words in spoken English, but his aim is not to analyse JaM as such. In a later work (Christiansen 2011), he draws on JaM to illustrate a range of cohesive features in discourse, exploiting some of the peculiarities of the JaM format to demonstrate options for reinterpreting a topic to support a narrative (Christiansen 2011: 253) and for avoiding repetition (Christiansen 2011: 285). Again, though, his focus is on how JaM illustrates language rather than how it shapes it.

The only other research on JaM relates to using (aspects of) the game's format in English language teaching in India (Gayathri 2016), Indonesia (Jaelani and Utami 2020; Pertiwi and Amri 2017), Saudi Arabia (Rao 2018, 2019), and Gaza (Shaaban 2020). In these studies, practice in speaking fluently for one minute is viewed as a means of building oral confidence for English-medium employment (Jaelani and Utami 2020; Kumar 2017; Rao 2019).[7] But again, these studies do not engage with JaM as a linguistic and/or cultural phenomenon in the way attempted here.

JaM certainly should invite the linguist's attention. Language production and perception are intricate cognitive activities that often operate at the edge of our comfortable capacity (Wray 2017). Altering parameters interferes with the customary balances, and the resultant fissures can give insight into the underlying mechanisms. Most notably, in JaM, while fluency is paramount, some of the standard means of sustaining it are outlawed. How can relatively 'normal' language be sustained under the multiple pressures of keeping within the rules, particularly when also attempting to extemporise in an entertaining manner to a live audience?

---

6 http://academicarchers.net/
7 See also https://www.youtube.com/watch?v=LJwjRpMeSdM,
https://www.youtube.com/watch?v=3QHnw9XyJb8,
https://www.youtube.com/watch?v=0tuQRZNV0aw,
https://www.youtube.com/watch?v=HJjuhnGId8g

One part of the answer, of course, is that the players who participate over many years have become specialists. It is not a pursuit for the faint-hearted, and Parsons (2010, 2014) mentions that a number of players have appeared only once or twice before declining further invitations. Those who stay the course tend to develop their own techniques to help them manage the inherent pressures. Kenneth Williams was famous for elongating his words, as in Example 2.

1	Kenneth Williams	Well, of course Shakespeare uses this word quite bea-uu-utifully when he sa-a-a-ys... the sun...
2		BUZZ [Followed by loud laughter from Clement]
3	Nicholas Parsons	Barbara Castle has challenged you
4	Barbara Castle	Hesitation! Shakespeare could have written a sonnet between his words then

Example 2. Subject: Chance. 23 February 1971 (Parsons 2014: 122)

Another long-term player, Clement Freud, "was a shrewd man and knew that if he spoke at a measured pace, without actually hesitating, he was far less likely to be challenged" (Parsons 2010: 141). Current player Paul Merton, drawing on his background in live improvisation, often hijacks topics into flights of fancy that have little to do with the literal meaning. Stylistic variation between players is, Parsons notes, "essential in keeping *Just a Minute* entertaining and amusing. If all the players were the same, the show would soon become far too predictable" (Parsons 2010: 146).

In this article, two studies are reported. Study 1 (Section 3) delves into the discourse of JaM minutes (the text generated when attempting to speak for one minute on a specified subject) to establish how it differs from less constrained discourse. To achieve this, twelve of Paul Merton's complete minutes – that is, where he is unchallenged for the entire 60 seconds – are compared with twelve separate minutes from a filmed interview, during which he was not attempting to avoid hesitation, repetition, and deviation. The results of this analysis are discussed in Section 4, and four hypotheses are developed for further investigation.

Study 2 (Section 5) tests these hypotheses, using a broader range of rounds than in Study 1, delivered by different players and, in all but one case, subject to interruption, and one or more changes of speaker. Whereas Study 1 could only look at unchallenged repetitions, Study 2 is able to compare challenged and unchallenged repetitions and seeks to pin down their respective characteristics.

Section 6 looks in more detail at the results of study 2, and Section 7 steps back to look at how the language and cognition interact with the JaM rules.

3 Study 1: Merton's discourse in *Just a Minute* and in an interview

3.1 Selection of JaM minutes

Twelve complete JaM minutes by Merton (Table 1) were identified using Dean Bedford's transcripts of shows between 1967 and 2017.[8] Transcripts of broadcasts with Merton as a player were manually scanned for extended continuous text (indicating uninterrupted speech) by Merton. Where the chairman confirmed that a minute had been completed, with no additional comment about letting Merton continue despite infringements, the minute was selected for analysis. To increase the sample size, 'minutes' were also selected if there was one irrelevant interruption (usually a jokey comment) or a deviation challenge that was not upheld. Challenges about hesitation or repetition, even if not upheld by the chairman, disqualified the minute from inclusion. This process delivered twelve minutes of material, broadcast between 1990 and 2013.

The relevant audio recordings were sought online. For three (nos. 4, 6, and 10 in Table 1), no audio was available. The transcripts of the nine with audio were checked for accuracy. For the other three, a careful evaluation of the transcript was made in the light of errors found in the first nine.

Tab. 1: Twelve minutes by Paul Merton from *Just a Minute*

1	**Prompt:**	**The instructions**	Date:	29/12/08[9]	Series, episode:		54,1
	Audio source:	https://www.bbc.co.uk/programmes/p03jnht5					
	Transcript source:	http://just-a-minute.info/jam736.html	Words:			150	
2	**Prompt:**	**Funny people**	Date:	23/08/10	Series, episode:		57,4
	Audio source:	https://www.bbc.co.uk/programmes/p03jnhk3					
	Transcript source:	http://just-a-minute.info/jam828.html	Words:			187	
3	**Prompt:**	**It was just an ordinary day**	Date:	18/03/13	Series, episode:		65,2
	Audio source:	https://www.bbc.co.uk/programmes/p03jng06					
	Transcript source:	http://just-a-minute.info/jam897.html	Words:			200	
4	**Prompt:**	**Chancing my arm**	Date:	06/09/99	Series,episode:		35,10
	Audio source:	Not available					
	Transcript source:	http://just-a-minute.info/jam779.html	Words:			204	

---

8 http://just-a-minute.info/ The minutes are in the order in which they were identified, selected and coded.

9 Listed on transcript site as 290980.

Tab. 1: (Continued)

5	**Prompt:** **Sudoku**		Date:	22/08/05	Series, episode:	47,7
	Audio source:	https://www.youtube.com/watch?v=UrVlKKTTOiM				
	Transcript source:	http://just-a-minute.info/jam631.html	Words:		265	
6	**Prompt:** **Stitched up**		Date:	07/02/98	Series, episode:	32,6
	Audio source:	Not available				
	Transcript source:	http://just-a-minute.info/jam123.html	Words:		208	
7	**Prompt:** **Accents**		Date:	28/09/09	Series,episode:	55,10
	Audio source:	https://www.bbc.co.uk/programmes/p03jnh4r				
	Transcript source:	http://just-a-minute.info/jam809.html	Words:		138	
8	**Prompt:** **Animal rescue**		Date:	05/02/94	Series, episode:	27,6
	Audio source:	https://www.youtube.com/watch?v=5zJHbzPURFA				
	Transcript source:	http://just-a-minute.info/jam260.html	Words:		217	
9	**Prompt:** **Holiday insurance**		Date:	24/03/90	Series, episode:	23,2
	Audio source:	https://www.youtube.com/watch?v=BoEil-8SPhg				
	Transcript source:	http://just-a-minute.info/jam186.html	Words:		191	
10	**Prompt:** **What I keep under my mattress**		Date:	11/02/99	Series, episode:	34,6
	Audio source:	Not available				
	Transcript source:	http://just-a-minute.info/jam398.html	Words:		172	
11	**Prompt:** **Old alumni**		Date:	06/07/98	Series, episode:	33,5
	Audio source:	https://www.youtube.com/watch?v=OJ2zc1qJ9OM				
	Transcript source:	http://just-a-minute.info/jam908.html	Words:		180	
12	**Prompt:** **Ram-raiding**		Date:	06/01/96	Series, episode:	29,1
	Audio source:	https://www.mediafire.com/file/jvmnjnmiwoh				
	Transcript source:	http://just-a-minute.info/jam288.html	Words:		206	

As Table 1 indicates, the text lengths ranged from 138 to 265 words (mean 193.17, S.D. 32.82), which was attributable to noticeable differences in Merton's speech rate. A Spearman's Rho test established that there was no correlation between text length and the date of production, $r_s = -0.38246$, p (two-tailed) = 0.21983.

3.2 Selection of interview minutes

Several Paul Merton interviews available online were reviewed for suitability, including one with Michael Parkinson in 1998[10] and one with Chris Evans in 2020,[11] neither of which was usable, because Merton did not speak for complete minutes before being interrupted. For this reason, his 2017 interview

---

10 https://www.youtube.com/watch?v=tjgdtkHvwRo
11 https://www.youtube.com/watch?v=R9TcHavfI_8

at the Oxford Union was selected.[12] This interview was characterised by a very light-touch interviewing style, which left Merton able to talk for several minutes uninterrupted.

The audio from the interview was extracted and put through an online transcription programme. The transcript was then manually edited to improve accuracy and to identify the interviewer's comments. Twelve individual minutes of Merton's uninterrupted speech were selected for the analysis (Table 2). These extracts had a definable focus of content and began coherently, though it did not matter if the end of the minute failed to coincide with the end of a sentence, since in JaM too, the speaker stops when the whistle is blown, often leaving an incomplete final sentence.

Tab. 2: Twelve minutes by Paul Merton from the Oxford Union interview

	Start words:	End words	Location	Words
1	I think it was just…	…they asked for volunteers	1,14-2,14	208
2	It would've been…	…very early experience	2,27-3,27	218
3	Before the Comedy…	…easier I think probably	4,05-5,05	218
4	So I was very…	…a comic friction there	5,25-6,25	193
5	I suppose being…	…out the other side	7,42-8,42	238
6	And you can find…	… you know, riveting	10,59-11,59	242
7	I would draw…	… European audiences	12,55-13,55	216
8	He was a skilled…	…extraordinary figure	16,18-17,18	251
9	It's interesting…	…very good, isn't she	17,52-18,52	220
10	Essentially what…	…feel semi-staged	19,24-20,24	235
11	I was sitting…	…happy to talk about	21,50-22,50	235
12	I've made…	…you've made	24,14-25,14	240

The text length ranged from 193 to 251 words (mean 226.17, S.D. 16.64), making the interview minutes significantly longer in words than the JaM minutes ($t = 3.1$, $df = 22$, $p = 0.005$, two-tailed).

3.3 Analyses

The aim of the analysis was to compare the patterns of hesitation and repetition in the JaM minutes and the interview minutes, to see how much Merton was modifying his output in the former, compared to his less constrained extemporisation

---

12 https://www.youtube.com/watch?v=0fijsyWOLbw

in front of the Oxford Union audience. Deviation was not explored, because of the inherent difficulty of judging when it applies.

3.3.1 Hesitations

Hesitations were defined as (a) pauses sufficient to break the flow of speech and (b) dysfluency fillers (*uh, um*, etc). Repetitions linked to dysfluency (e.g., *but I think it's, I, I, I tend to guess*, Extract 7) were not counted as hesitations.

Not surprisingly, the JaM minutes, being successfully completed without challenge, did not contain any hesitations or fillers. In the interview minutes, the range was none (in two extracts) to 11, with a mean of 4.5 The minute in which Merton hesitated most was Extract 7, which was part of his answer to a question from the audience, and therefore constructed on the fly. In contrast, Merton had no hesitations in Extract 5, where he was talking about his career. As he has no doubt spoken on this topic before, he would have drawn on preformulated ideas, and possibly even pre-rehearsed material.[13]

A comparison of the two text types is in some senses not a fair one, in that the JaM minutes were preselected on the basis of not including any hesitations. More generally in JaM, Merton does occasionally hesitate and is then challenged for it. Of more interest here, then, is that Merton can talk for a complete minute *outside* of the rules of JaM (that is, in the interview) without hesitation. This capacity indicates that under certain conditions (e.g., familiar material) he can import an existing skill into JaM, rather than having to reinvent his speaking style.

To avoid the hesitation markers influencing the other calculations, they were removed from the transcripts for subsequent analyses (creating a version labeled *Interview Version 2* or *IntV2*), giving revised word counts (Table 3). The revised range was 189-243 words, mean 221, S.D. 18.42. The t-test comparison of JaM and Interview word counts was rerun using the revised totals and was still significant ($t = 2.56$, $df = 22$, $p = 0.018$, two-tailed; Cohen's $d = -1.05$, effect size $r = -0.46$).

---

[13] An acquaintance who, in the early 1980s, performed in an event in which Merton also appeared, recalls him telling a story about a policeman on LSD that appears to be the same one he recounts in the Oxford Union interview in 2017.

Tab. 3: Hesitations and revised word count after their removal

	Total Words (Full Text)	Hesitations (*uh*, *um*)	Revised word count (IntV2)	% hesitations (of total words)
1	208	7	201	3.37
2	218	0	218	0
3	218	6	202	2.75
4	193	4	189	2.07
5	238	0	238	0
6	242	2	242	0.83
7	216	11	205	5.09
8	251	8	243	3.19
9	220	4	216	1.82
10	235	1	234	0.43
11	235	7	228	2.98
12	240	4	236	1.67

3.3.2 Repetitions

Before comparing the profile of repetitions in the JaM and interview samples, it was necessary to distinguish two types of repetition. One was the natural repetition of words that occurs while constructing text, as in *You have **to** throw **the** dice first of all **to** get a six and **the** first one up **the** ladder gets **the** chance **to** go on **the** snakes* (text 5, *Sudoku*), where *the* occurs five times and *to* occurs three times.

The other kind of repetition was that arising from dysfluencies, as in *I think it was **just**, I **just**, the clowns at the circus **was, was the, was the** thing that really sort of first did it for me* (Interview, Extract 1). Here, the repetitions are not linguistically necessary. In this study, it is only of passing interest that Merton, when not playing JaM, sometimes repeats material in false starts like this, though it is of interest, of course, that he succeeds in *not* doing so in his complete JaM minutes. When JaM players make false start repeats, they are invariably challenged for repetition, as seen in Study 2 below. But since Merton made no such repetitions in his complete JaM minutes, the analysis here is restricted to the first type of repetition, the linguistic one.

To home in on the linguistic repetition without the repetitions caused by false starts distorting the figures, the interview transcripts were further edited, to generate versions without the latter kind of repetition (henceforth, *Interview Version 3* or *IntV3*). The edited versions were created manually, with attention to the minimum number of changes required to convey the intended meaning. Since it was only repetition that was being removed, other types of false start

were retained. Thus, the final edited version of the sentence quoted above was: *I think it was just the clowns at the circus was the thing that really sort of first did it for me*. Table 4 gives the word counts of the two versions. The bottom row gives the difference between the values in the two rows above – the *false start repeats*. Henceforth, the analyses of the interview texts refer to IntV3.

Tab. 4: Word counts for Interview texts: full (without hesitations) and edited

	1	2	3	4	5	6	7	8	9	10	11	12
IntV2	201	218	202	189	238	240	205	243	216	234	228	236
IntV3	181	203	201	185	223	225	193	227	199	219	205	223
FSRs	20	15	1	4	15	15	12	16	17	15	23	13

To calculate the number of (linguistic) repetitions, the twelve JaM and twelve Interview texts were individually entered into the Altmann Quantitative Linguistics Analyzer[14] to obtain a frequency report for the word types. This software separates apostrophised words such as *you're* into two words. Such items were manually reinstated as a single unit, since in JaM the word *you're* would not be considered a repetition of either *you* or *are*. All words that occurred more than once in their text were identified, excluding, for JaM, any words that occurred in the prompt (topic on the card), since the game permits those words to be repeated.

For JaM, the total number of words repeated is given in Table 5. The *types* row gives the number of different words that were used more than once. For example, in text 7 (*Accents*), 13 words occurred more than once (*and, are, back, from, I, in, is, movie, of, that, the, this, was*). The *tokens* row is the total number of repetitions in each text, calculated as the number of occurrences of the word in the text, minus 1 (since the first mention is not a repetition). For example, in text 7 (*Accents*), the word *the* was used 15 times, so 14 of those usages were repetitions.

Table 6 gives the same information for the Interview texts (IntV3). In both tables, the figures are supplemented by percentages, to account for the differences in text length. Thus, the '% types repeated' row gives the number of types repeated divided by the total types (i.e., the number of different words in the text). The '% tokens repeated' is the number of repeated tokens divided by the total number of tokens (that is, the text word count). The profiles of these repeated tokens will be explored later.

---

14 iipopescu.com:5000

Tab. 5: Repeated words in each JaM minute

Text no	Rpt types	Total types	% types repeated	Rpt tokens	Total tokens	% tokens repeated
1	20	98	20.4	41	150	27.33
2	23	131	17.56	59	187	31.55
3	24	122	19.67	70	200	35
4	33	124	26.61	77	204	37.75
5	34	156	21.79	105	265	39.62
6	30	125	24	77	208	37.02
7	13	99	13.13	38	138	27.54
8	33	130	25.38	88	217	40.55
9	24	124	19.35	66	191	34.55
10	27	112	24.11	58	172	33.72
11	27	120	22.5	62	180	34.44
12	34	135	25.19	73	206	35.44

Tab. 6: Repeated words in each Interview (IntV3) minute

Text no	Rpt types	Total types	% Types repeated	Rpt tokens	Total tokens	% Tokens repeated
1	36	105	34.29	76	181	41.99
2	31	109	28.44	94	203	46.31
3	39	114	34.21	88	201	43.78
4	30	98	30.61	77	185	41.62
5	38	118	32.2	106	223	47.53
6	33	132	25	94	225	41.78
7	30	123	24.39	71	193	36.79
8	36	116	31.03	112	227	49.34
9	31	123	25.2	77	199	38.69
10	42	125	33.6	98	219	44.75
11	42	104	40.38	101	205	49.27
12	37	123	30.08	101	223	45.29

The mean percentage of types repeated in JaM was 21.64%, compared with 30.79% in the interview (Figure 1), $t = 5.25$, $df = 22$, $p < 0.0001$, one-tailed; Cohen's $d = 2.24$, effect-size $r = 0.75$. In terms of tokens, the mean percentage in JaM was 34.54%, compared with 43.93% in the interviews (Figure 2), $t = 5.67$, $df = 22$, $p < 0.0001$, one-tailed, Cohen's $d = 2.42$, effect-size $r = 0.77$. Calculated a different way, the total number of words that were repetitions within their minute was 821

for JaM, out of a total of 2,321 in the complete set of 12 texts, which is 35.37%. In the Interviews, 1,105 words were repetitions within their minute, out of 2,484, which is 44.48%.)
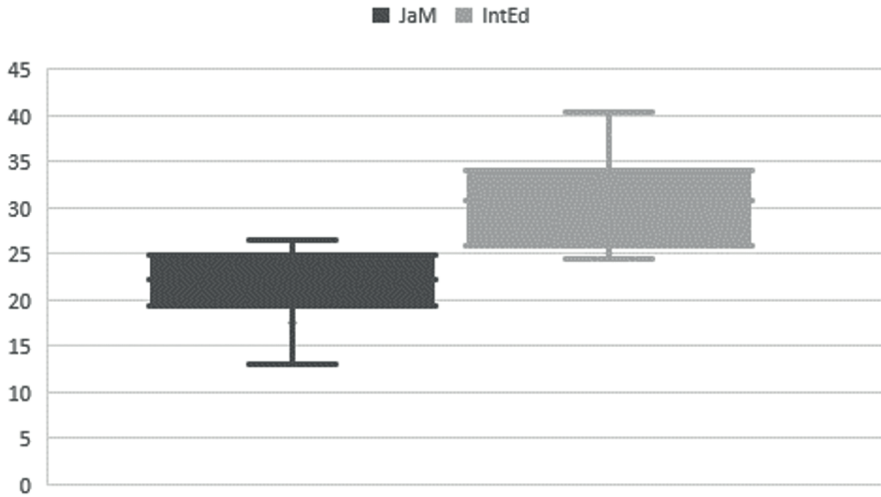

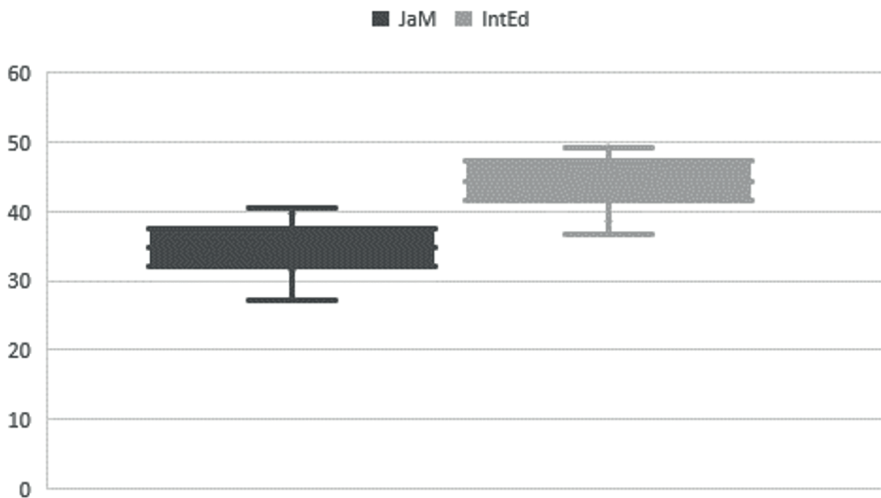**Fig. 1:** Comparison of JaM and IntV3 texts by % of types repeated

Fig. 2: Comparison of JaM and IntV3 texts by % of tokens repeated

These findings tell us, unsurprisingly, that Merton is able to reduce instances of repetition when he is trying to do so (in JaM). However, what is startling is just how many words *are* repeated in JaM. How could Merton repeat words at such a high rate without being challenged?

One explanation comes from JaM itself: "challenges based upon very common words such as *and* are generally rejected except in extreme cases,"[15] though whether it is actually their ubiquity that determines tolerance for them, or their linguistic role is a question explored later. In fact, it is difficult to find definitive statements about which words, if any, may be repeated in JaM (other than those on the topic card), and one can only collect examples of comments within games to build up a picture about where the boundaries of this tolerance lie (see Section 6.2).

However, the most obvious working assumption is that repetitions are primarily of items in the so-called *closed classes*. While the *open classes*, that is, the nouns, adjectives, verbs, and adverbs, have a large membership that is constantly changing, closed classes are relatively fixed, rarely adding new items. The closed classes are grammatical or function words, including determiners (*the, a, an, that*, etc), pronouns (*she, they, our, its*, etc), conjunctions (*but, if, and, though*, etc), prepositions (*by, in, over, through*, etc.), and numerals (*five, fifth*, etc), along with the auxiliary verbs (*have, be, get*), and, for some analysts, the modal verbs (*can, must*, etc.). The reason why we would expect greater repetition of closed class items is that they are needed often and there is relatively little scope for avoiding them, because they tend not to have synonyms.

An analysis of Merton's repetitions in JaM and the Interview showed that the majority were indeed closed class items. In lists by frequency of repetition, the first content word in JaM was position 34, and in the Interview data position 27. Within the top 50, in JaM only three were content words: *particular* (4 repetitions across 3 texts), *people* (4,3) and *first* (3,2). In the Interview (where there was no attempt to avoid repetition), there were ten content words in the top 50: *mean* (6,4), *people* (6,3), *like* (5,3), *made* (5,3), *film* (4,2), *next* (4,1), *one* (4,3), *time* (4,2), *doing* (3,1), and *Ian* (3,2). Was there anything special about the three words *particular, people*, and *first* that could account for their capacity to several times avoid challenge when repeated in JaM?[16]

Particular was repeated four times across three texts (that is, a total of seven usages). In addition, Merton used it once in three other texts, making ten uses

---

15 https://en.wikipedia.org/wiki/Just_a_Minute
16 As noted in Section 7, there are other dynamics in the game that can account for repetitions not being challenged, such as sustaining the entertainment value (Paul Merton, personal communication, 2022).

across the twelve JaM minutes. This would suggest that it is a 'favourite' word
for Merton, used in his discourse rather unconsciously and, perhaps, with little
semantic import. However, there were no occurrences at all in the twelve inter-
view minutes. It is possible, therefore, that *particular* is a device to help Merton
avoid hesitation, repetition, and deviation.[17]

People was Merton's second-most frequently repeated word in both JaM (four
repetitions across three texts, with two other texts using it once) and the Inter-
view (six repetitions across three texts, with five others using it once). *People* is
an interesting lexical item with several shades of meaning. One meaning could
be argued to sit in a buffer zone between the closed and open class items, often
being used as a pseudo-pronoun in the same way as *thing*, e.g., *People say...*
Could this rather functional role help explain why Merton was not challenged
when he repeated it? More generally, to what extent was *people* being used with
the same shade of meaning at first and second mention?

To explore this question, Table 7 lists all the occurrences of *people* in their
context. The category column allocates the broad semantics of the word as
referring to: specific individuals (whom he might be able to name), generali-
sation (unspecified agents of an action or reaction) and – arguably a subset of
generalisation – a collective (a broadly quantified mass).

Tab. 7: *People* in context

Text	Example	Category
JaM2	I started getting interested in **people** I saw on the television	Individuals
JaM5	You see various **people** trying to fit	Collective
JaM6	a very good game that lots of **people** play	Collective
	And **people** would say	Generalisation
	one of the most celebrated **people** that we have	Individuals
JaM10	Well some **people** call it Satanic	Collective
	some **people** call it evil.	Collective
JaM12	What **people** do is they ram	Generalisation
	an adequate description of the **people** that rammed you	Individuals
IntV31	adults were usually the **people** who said	Generalisation
	And three thousand **people** laughing was such a powerful feeling	Collective

---

17 In addition to *particular*, there was one instance of *particularly* in JaM and one in the Inter-
view data. In the study 2 data (from JaM), Merton uses *particular* five times, but never more than
once in a round; he also uses *particularly* four times. In total in the Study 2 data, there are 11
occurrences of the former and 12 of the latter, with the balance distributed among other players,
none used more than once by that speaker within a round.

Tab. 7: (Continued)

IntV33	we looked at sort of Peter Cook, Dudley Moore, Oxbridge **people**.	Individuals
	and the more that **people** do it,	Generalisation
	there's thousands of **people** doing it	Collective
	there are so many more **people** doing it	Collective
IntV34	there were some **people** making the drug LSD	Collective
IntV35	the **people** who spent some time getting to be successful	Individuals
	were the **people** that	Generalisation
	there are lots of **people** you know, you can rush in	Collective
IntV37	here's always been sort of making fun of powerful **people**.	Individuals
IntV38	He knew how to sort of reach out to **people**.	Generalisation
IntV39	how that **people** miss what's happening on the radio	Generalisation
IntV310	All the stuff that myself and Ian and the other **people** do	Collective

The distribution of these category types between JaM and the Interview was not significant (chi = 0.63, p = 0.73). However, it can be noted that in two of the three instances where Merton repeated *people* within a single JaM minute, the uses fell into different categories: in JaM6, one each of collective, generalisation, and individuals; in JaM12, one each of generalisation and individuals. This invites the tentative suggestion that *people* had reduced visibility as a repetition because of these different meanings. Only in JaM10 (written out in Example 3) is there a clear repetition within the same category, and indeed within the same phrase *some people call it X*, occurring adjacently as part of a rhetorical flourish (see Section 6.2 for more on this phenomenon). There is no obvious explanation for this repetition not being challenged – many similar ones are in the game (see Study 2) – other than that it was near the end of the minute and the chairman may have signaled to players not to interrupt. This is one of several 'flies in the ointment' in analysing JaM that will be discussed in Section 7.

Paul Merton   What do we do? Well **some people call it** Satanic, **some people call it** evil. But
                what we like to do is we get hold of this figurine...

Example 3. Subject: What I keep under my mattress. (JaM10)

In a similar vein, a comparison of the incidences of *first* showed that Merton used the word in several different ways. The most common was within the phrase *the first time/year* (once in JaM, without a repetition in the minute, and once each in four different Interview minutes). There were four uses of *first of all*, two in each data set, and one each of *at first* (JaM) and *thirty-first* (JaM). Only two usages directly referred to the ordinal: *the first one* (JaM) and *was first on* (Interview).

Where *first* was repeated within a minute in JaM (unchallenged, of course, since the minutes were completed without interruption), in one case there was a contrast of sub-meanings (*at first… thirty-first*, JaM3); as with *people*, it is possible to suggest that the visibility of repetitions of *first* was reduced on account of these different sub-meanings. However, the other instance of unchallenged repetition was a more direct match (*first of all … the first one… first of all*, JaM5), which cannot be explained that way.

In sum, Study 1 shows that although Merton was able to suppress hesitation and repetition when playing JaM, repetitions still abounded. It has been tentatively suggested that while some repetition is tolerated in JaM as unavoidable, other instances might simply not be noticed. One reason could be that the same lexical item is used in different ways. Perhaps words with different semantic and functional roles cannot be matched unless phonologically, something that could restrict the distance over which they are detected.

Section 4 opens up the discussion to consider a range of potential motivations for repetitions being challenged.

4 Accounting for unchallenged repetition

Given a recognition from the outset that repetition cannot be completely avoided and that not all repetitions will be challenged, the question of interest is which words are most likely to escape challenge if repeated, and why. It has already been noted that it is difficult to avoid repeating the closed class items that have a grammatical/functional role, and this directs us to consider the role of word class more generally.

We saw in Study 1 that Merton's unchallenged repetitions were predominantly function words. Is that because of their grammatical role itself, the absence of synonyms in closed classes, or simply their ubiquity? This last possibility invites consideration of the role of word frequency. If function words escape detection because they are common, then infrequent ones should be more subject to challenge than frequent ones.

A further parameter that might help explain how well speakers can track what they have already said, and how well the other players can recall what they have already heard, is the distance between a word and its repetition. How long does one retain a memory trace of the words already spoken, and is this 'afterglow' the same for words of different classes and frequencies? Each of these parameters is briefly considered below to generate hypotheses for testing in Study 2. The hypotheses are framed in relation to two

interacting considerations: the *hiddenness* of repetition, such that it is not detected, and the *toleration* of repetition even though it has been noticed.

4.1 Word class

Word classes are best seen as a practical, rather than a deeply theoretical, taxonomy. In many respects, a more conceptually flexible alternative would be the much older concept of *part of speech* (Anward 2006: 628), which more easily accommodates multiword units as primary linguistic operators (Wray 2002). Underlying this question is the slipperiness of the concept *word* itself since the word is almost impossible to pin down definitively as an entity (Wray 2015). Indeed, the only robust definition of *word* is a string of written letters with a gap on either side – there is neither cognitive nor linguistic clarity beyond that point. It cannot be denied that we have a strong intuition of wordhood. However, Wray (2015) suggests that this intuition reflects an archetype based on the reliable form-meaning mappings for nouns, adjectives, and adverbs. She suggests that, for English at least, verbs (notably phrasal verbs, but also the wider footprint of a verb with its arguments) and function 'words' do not match the archetype well, with respect to their semantic characteristics and usage. In a similar vein, there are many multiword units that act semantically and grammatically like the 'word' archetype, which muddies the water for analyses (Wray 2002).

Linguists' preoccupation with the word as a coherent and consistent linguistic concept may have been strengthened by the convenience of searching for orthographic spaces in data, and this is a significant consideration when deciding on how to target linguistic units. However, the main justification for focusing on the 'word' as a unit here is that it reflects the JaM definition of what may not be repeated.

Of interest is whether words in different classes are hidden and/or tolerated to different degrees during JaM. It seems likely that they would be. We think of content words as semantically charged, in that they refer to entities, concepts, actions, and properties. They are items that, selected from a huge range of options, can pinpoint the speaker's precise meaning choices. As a result, the hearer is alert to content words as the primary conduit of semantics. Content words are the bricks that make up the rising wall of meaning in discourse. In contrast, function words are selected from closed classes, with relatively little overlap in meaning and function. When *of, to, his*, or *that* need to be used, they simply need to be used. Although most function words do carry meaning, it is primarily relational, in that they link other meaning units to each other. As such, they are the mortar that holds the content bricks in place (Wray 2019).

Therefore, there are two reasons why, in JaM, function words might be less noticed and/or more tolerated than content words are: they are semantically relatively weak and they are difficult to avoid using. On that basis, hypotheses 1 and 2 can be formulated for testing in the empirical study reported later.

> **Hypothesis 1:** Repetitions of function words will not be challenged in JaM because they are tolerated, as unavoidable repetitions, and/or are not noticed.
> **Hypothesis 2:** Repetitions of content words will be challenged because they could notionally be replaced with a synonym (do not need to be tolerated) and/or, having a stronger semantic and form imprint, are more noticeable.

4.2 Frequency

If every repeated word in JaM were challenged, speakers would struggle to get to the end of a sentence. Since the content of players' contributions is important, that level of interruption would, one assumes, render the game less interesting and enjoyable. The words that occur most frequently in the language are function words. However, it is not by any means the case that all function words are more frequent than all content words. If frequency, rather than word class, were determining which repetitions were challenged, then that effect should be detectable in a large enough corpus.

Word frequency is a continuous scale, giving scope for finer observations than word class analysis allows. Furthermore, it is possible to examine a word's frequency both within its own corpus (that is, how common a word is within the sample of JaM turns) and within the language more generally (that is, how common the word is in, in this case, the spoken part of the British National Corpus).

The role of frequency in determining which repeated words are challenged may not be straightforward. So far, it has been implied that high frequency would reduce the likelihood of challenge. In other words, the more one hears a word the less one notices it and/or the more one tolerates its repetition. But it is not impossible that, for some types of words, the opposite could also apply. That is, repeatedly encountering a word could heighten its noticeability, particularly in the context of a game that invites the challenging of repetitions. Therefore, there might be tension between different cognitive responses to word repetition.

Generally, however, an association between high frequency and hiddenness or tolerance is reasonable grounds for a hypothesis. Research has reliably demonstrated a processing advantage for high-frequency words (Anderson 2006: 271; Pulvermüller 2007: 122–123). On that basis, perhaps less frequent words are more noticeable because additional time is needed to retrieve and decode them.

Meanwhile priming research[18] has shown that the same word can be easier to retrieve in one semantic context than another (Blumstein 2007: 146). Thus, the likelihood of a challenge might depend on the listener's predictions about what words will come next. Unexpected items might be more noticeable. On the other hand, any word that is challenged as a repetition has presumably played some priming role in the build-up to the second mention, making it semantically predictable.

It is proposed here that the words most likely to be noticed are those that the listener least expected. As just noted, such an expectation will depend on not just frequency but also context. Nevertheless, frequency can be justified as a reasonable proxy for the otherwise intractable task of judging what a listener was expecting.

> **Hypothesis 3:** The more infrequent a word, the more likely it is that a repetition will be noticed and challenged, because infrequent words are more salient.

4.3 Distance

It stands to reason that a word is less likely to be recognised as a repetition if the previous mention was several hours ago than if it was just a few seconds ago. But over what sort of distance might a repetition remain noticeable? This question is of interest for two reasons. First, JaM speakers, their challengers, and the chairman, as arbiter, want to track repetitions across the entire contribution of a player to a given topic (which may be interrupted by contributions from others). But, second, the players do *not* want to confuse what has been said in one round with what was said by the same speaker in a previous one, so they need to be able to release the words used in previous rounds from their memory.

That there is a natural diminution of form recall over time was demonstrated almost sixty years ago by Sachs (1967). She played spoken texts to participants and then asked them to judge if certain sentences had appeared. The test sentences

---

18 In semantic priming research, participants reliably respond more quickly to a stimulus item if they have previously encountered another item (a prime) that is semantically related to it. For example, after encountering the prime *doctor*, a participant will respond more quickly to the semantically related word *nurse* than to the less closely related word *horse*. See, for instance, Vigliocco and Vinson (2007).

were either identical to the statement in the text, the same in meaning but altered in form (either incidentally with a simple word swap, or by changing from active to passive), or different in meaning. She also manipulated the amount of text that was encountered between the original and the test sentence.

Her results demonstrated that the greater the amount of intervening text, the less well participants could judge whether they had encountered the same *form* as before. However, they retained the capacity to recognise if the *meaning* had changed. Sachs concluded that in the process of understanding input, we extract the meaning for long-term retention while discarding the detail of the form in which it was presented.

Not all researchers agree that form is so easily discarded. Taylor (2012), for instance, proposes that we keep a memory trace of every single encounter with a word, pointing out that our sensitivity to word frequency could not otherwise be built up. The reality may lie between the two positions. That is, the level of retention that Taylor is referring to might not be sufficiently explicit and accessible for participants in an experiment like the one Sachs conducted to recognise whether they previously heard exactly the same words in exactly the same order, or some other configuration with the same meaning.

Of course, in JaM, players arguably have a particularly strong motivation to retain the form in memory, since it could be useful to them. But again, we can ask how long that trace might last. And is the 'afterglow' of a word – the beacon that would trigger recognition when it was repeated – equally long-lasting for items of all classes and all frequencies?

> *Hypothesis 4:* The likelihood of a repetition being noticed diminishes with time elapsed, but with different rates of diminution, based on word class and frequency.

Study 2 provides the evidence that will be used to establish whether these four hypotheses have been supported.

5 Study 2: Challenged and unchallenged repetitions in twelve *Just a Minute* episodes

A limitation of Study 1 was that it only considered repetitions that were not challenged. In Study 2, a comparison is made between words whose repetitions were, versus were not, challenged. The aim is to explore in more detail what makes certain repeated words tolerable and/or undetectable.

5.1 Selection of data

From Dean Bedford's online library of transcribed JaM episodes,[19] twelve that featured Merton were selected at random. None of the material used in Study 1 was used in Study 2. The transcripts were checked for obvious inaccuracies, using the online audio recording where available.[20] The episodes featured between six and ten rounds each, totaling 97 (Table 8), and in all but one, players were challenged at least once, with the challenger usually taking over.

Tab. 8: Selected *Just a Minute* episodes

JaM #	Date and transcription url	Players
1	16.07.2007 http://just-a-minute.info/jam705.html	Paul Merton, Pam Ayres, Maureen Lipman, Dara Ó Briain
2	03.09.2007 http://just-a-minute.info/jam704.html	Paul Merton, Pam Ayres, Marcus Brigstocke, Maureen Lipman
3	09.02.2004 http://just-a-minute.info/jam536.html	Paul Merton, Kit Hesketh-Harvey, Liza Tarbuck, Charles Collingwood
4	24.02.2003 http://just-a-minute.info/jam496.html	Paul Merton, Kit Hesketh-Harvey, Ross Noble, Steve Frost
5	14.01.2002 http://just-a-minute.info/jam442.html	Paul Merton, Kit Hesketh-Harvey, Linda Smith, Chris Neill
6	18.02.2002 http://just-a-minute.info/jam452.html	Paul Merton, Kit Hesketh-Harvey, Linda Smith, Chris Neill
7	07.09.2009 http://just-a-minute.info/jam814.html	Paul Merton, Jenny Eclair, Stephen Fry, Charles Collingwood
8	23.08.2010 http://just-a-minute.info/jam829.html	Paul Merton, Jenny Eclair, Fred Macaulay, Stephen K. Amos
9	22.02.2007 http://just-a-minute.info/jam695.html	Paul Merton, Tim Rice, Chris Neill, Alun Cochrane
10	24.08.2009 http://just-a-minute.info/jam812.html	Paul Merton, Sue Perkins, Paul Sinha, Mike McShane
11	06.12.2006 http://just-a-minute.info/jam849.html	Paul Merton, Sue Perkins, Julian Clary, Kevin Eldon
12	29.03.2012 http://just-a-minute.info/jam877.html	Paul Merton, Gyles Brandreth, Liza Tarbuck, Miles Jupp

19 http://just-a-minute.info/
20 JaM12, 29 March 2012, was televised and available to view on Youtube, https://www.youtube.com/watch?v=xTY--Jp25Xc

The speech making up the contributions to the timed minute of play for each round was extracted, creating a corpus of 18,500 tokens and 3,705 types. In the rules of JaM, players may not repeat themselves within a round, even if they make more than one contribution, separated by one or more attempts by other players. Therefore, for each round, the contributions were reorganised by player, to facilitate tracking repetition.

Each player's contributions in a given round were separately profiled for word frequency using the Altmann Quantitative Linguistics Analyzer,[21] with apostrophised words reinstated as in Study 1. Tokens that occurred more than once were listed. By manually checking the full episode transcripts, all challenges of repetition were identified and coded in the text.[22] As a result, it was possible to distinguish between repetitions that were challenged and ones that were not.[23]

5.2 The profile of unchallenged and challenged repetitions

The focus here is whether there were general differences in the profiles of unchallenged and challenged repetitions, setting the scene for specifically examining frequency (5.3), word class (5.4), and distance (5.5).

There were 273 unchallenged repeated types in the corpus (where 'repeated' refers only to two or more mentions by a given speaker within a given round). The most frequent types were closed class items, starting with *the* (447 repetitions), *I* (331), *of* (255), *and* (249), *a* (246), and *to* (227). The first open class item was *people* (10 repetitions) at position 48, followed by *time* (6 repetitions) at position 67. Of the 273 types, 135 (49%) were repeated only once.

---

21 iipopescu.com:5000

22 It is a motif of JaM that (exceptionally) *BBC* attracts a challenge for repetition of the *B*, and in this corpus there were three such challenges, along with one for the *S* in *SMS*. These items were not included in the analysis, since they are written as single words, within which repetition is not normally valid.

23 The transcripts revealed a small number of successful repetition challenges that were in fact not valid; that is, there was no repetition of that word in that speaker's contribution. There are several potential explanations. One, occasionally observable, was that the speaker had used that word in another round. Another was the use of a semantically related word, which might prime a sense of repetition (see later discussion). Finally, it is possible that there had been repetition, but it had been edited out. Although the live show is longer than the broadcast version, care is generally taken when editing to avoid removing parts of a minute, preferring instead, to remove complete rounds (Paul Merton, personal communication, 2022). Nevertheless, this explanation cannot be ruled out in all cases. Words challenged as repetition for which no antecedent was found were not included in the analysis.

In Study 1, it was noted that the most frequently repeated content words (*people* and *first*) had more than one sub-meaning. In Study 2, *people* was once more the most commonly repeated content word, followed by *time*. Since some repetitions of *people* were challenged, they were checked to see if the repetitions had the same sub-meaning. As before, the three sub-meanings were: specific (potentially nameable) individuals, generalisation (unspecified agents), and a collective (broadly quantified mass). In Example 4, all three mentions have the sub-meaning of a collective. In Example 5, both mentions refer to individuals. However, in Example 6, the first mention refers to a collective and the second is a generalisation.[24]

Paul Merton   **People** aren't so sure… Some **people** say… And **people** are amazed.

Example 4. Subject: Keats. (JaM5)

Paul Merton   the quality of the **people** I work with… it's about working with good **people**.

Example 5. Subject: The secret of my success. (JaM10)

Paul Merton   I've never been one of those **people** who… Some **people** queue up

Example 6. Subject: The January sales. (JaM9)

In two of the three cases, *people* has been challenged when the mentions shared the same sub-meaning. If this parameter is indeed important, we would anticipate the unchallenged repetitions to have different sub-meanings. Tables 9 and 10 list all the unchallenged repetitions of *people* and of *time*. *Time* was subcategorised for opportunity, instance, and period.

Tab. 9: *People* in context

JaM Text #	Example	Category
2	often with **people** like say AA Gill…	Individuals
	Between **people** like A which is followed by another alphabetical… um…	Individuals
3	an old Victorian trick that **people** used to get up to…	Generalisation
	And **people** used to	Generalisation

---

24 It was noted in Study 1 that the collective sub-meaning could be viewed as part of the generalisation sub-meaning. If the two were combined, there would be a match. However, there are differences in denotation that are worth keeping separate.

Tab. 9: (Continued)

4	**People** backstage have many different rituals	Generalisation
	people trying to watch movies	Collective
4	The **people** of Rome would…	Collective
	and bring blood out of **people**	Generalisation
6	**People** who strike me as…	Individuals
	Life is too short, **people**!	Collective
9	but **people** were flocking to go and see them	Collective
	He was one of the most popular **people**	Collective
	and **people** of course would recognise	Generalisation
10	it's seen by many **people** as one of the…	Collective
	You would see **people** wandering	Generalisation
10	where **people** like Kerry Katona	Individuals
	she chooses to get **people** who she has no connection with	Individuals
10	Many **people** have found that [	Generalisation
	who ghost writes for a number of **people**.	Individuals

Tab. 10: *Time* in context

Text	Example	Category
1	maybe now's the **time** to say	Opportunity
	when the **time** comes for	Opportunity
2	The first **time** I was on stage	Instance
	who was running that venue at the **time**	Period
3	every year at Christmas **time**	Period
	the only **time** I've made an excursion	Instance
5	around at the **time**	Period
	there was a **time** when	Instance
5	perform several tasks at the same **time**.	Instance
	watch tennis whilst drinking a cup of tea at the same **time**	Instance
	slip into a light coma at the same **time**	Instance

Based on the examples in Tables 9 and 10, it is not safe to claim that repetitions went unnoticed on account of the uses falling into different sub-meaning categories. In four out of ten opportunities for spotting repetition of *people*, the sub-meaning was the same. For *time*, it was three out of six. The samples are, of course small, but it would be sensible to look for other explanations.

As for challenged repetitions, excluding letters within acronyms and abbreviations (e.g., BBC), there were 134 instances featuring 116 types.[25] The small set of types challenged more than once was: *I* (challenged four times); *and, Nicholas, people* (three times); and *have, like, magnificent, many, or, to, up, way, you* (twice each). The remaining 103 types were repeated only once.[26] What might explain why these repetitions were detected when so many others were not? In line with the hypotheses presented in Section 4, three possibilities were considered: frequency, word class, and distance between the first occurrence of the word and its repetition.

5.3 Word frequency and the likelihood of repetitions being challenged

It had been hypothesised that words of high frequency might be filtered out when players were listening for repetitions. That would mean that repetitions of infrequent words would be relatively likely to be noticed and challenged. To explore this question, the 343 types that were repeated (within a single speaker's contribution to a round) were listed by their frequency within the corpus as a whole (that is, the 18,500 words that derived from the timed contributions within 97 rounds of JaM that were under investigation).

The list was then divided into bands (Table 11). The top band contained the types with a frequency of 200 or more in the corpus (range: *the* 865 to *was* 216). The bottom band contained only those types that occurred twice in the entire corpus. Since the list only consisted of types that were repeated, no types that occurred only once in the corpus were relevant. Furthermore, if there were only two mentions, they were always in the same round and spoken by the same player; otherwise, they would not feature in the list of repeated types.

Because of the much greater number of types that did not occur often, the bands were not equal in frequency span. The bands were kept as equal in size

---

25 The total number of types that were repeated in the corpus was 343. The reason the number of unchallenged repeat types (273) and challenged repeat types (116) totals more than 343 is that a type can appear in both lists, if in one round it is an unchallenged repeat and in another it is a challenged one.

26 As a reminder, 'repeated' here means by a given speaker within their contribution to a given minute. It does not mean that these words did not occur elsewhere, as singles, in the corpus.

as possible, without splitting items that had the same frequency in the corpus. The highest frequency bands, which already had the greatest range, were kept smaller than the others, so as not to obscure too many effects that might occur within those ranges.

The total number of repetitions (tokens) within that band was calculated (R), as was the number of those repetitions that were challenged (C). The percentage of repeated tokens that were challenged was calculated for each band (C/R x 100). These values are listed in Table 11 and plotted in Fig. 3.

Tab. 11: Frequency bands (from the study corpus of 18500 words) and proportion of challenged repetitions

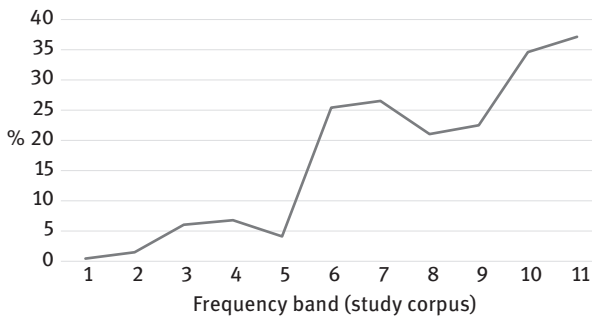| Band	Frequency in study corpus	No. types in band	Total repeats (R)	No of challenged repeats (C)	Percentage of repeats that were challenged (C/R x 100)
1	865-216	12	2470	11	0.4453
2	154-81	18	470	7	1.489
3	79-52	22	248	15	6.048
4	49-30	37	250	17	6.8
5	29-20	29	73	3	4.11
6	19-14	35	59	15	25.424
7	13-10	30	49	13	26.531
8	9-7	39	57	12	21.053
9	6-5	35	40	9	22.5
10	4-3	51	52	18	34.615
11	2	35	35	13	37.143

Fig. 3: Percentage of repeated tokens that were challenged in each frequency band (study corpus)

Figure 3 shows that the likelihood of a repeated word being challenged increased as the frequency of the word decreased. The bump in the middle of the graph will be discussed in Section 6.4.

The observed effect could have been a product of the particular corpus. Although it made sense to map the patterns of repetitions against the actual words used in the games, the small size of the corpus impeded fine-grained observations and risked magnifying small effects. For this reason, the calculation was repeated using the frequency values from the BNC spoken corpus (10.4 million words). These values, deriving from the analysis by Leech, Rayson and Wilson (2001), were retrieved from the Lancaster University UCREL site.[27] Sixty-four of the types on the list did not feature in the BNC spoken corpus and so were not included in this analysis. They included apostrophised words and many infrequent words. As a consequence, the results of this analysis somewhat under-represent the effect at the low-frequency end.

Because the frequency figures were much higher, it was possible to band the frequencies more evenly, with 20 items in each band, unless there was a clear rationale to shift an item up or down a band because of a large gap in frequency. Again, the range was greater for the more frequent words (Table 12 and Figure 4).

Tab. 12: Frequency bands (from BNC spoken corpus) and proportion of challenged repetitions

Band	Frequency in study corpus	No. types in band	Total repeats (R)	No of challenged repeats (C)	Percentage of repeats that were challenged (C/R x 100)
A	39605-6950	20	2644	15	0.56732
B	6366-3460	21	29	8	2.6756
C	3368-2359	19	176	10	5.6818
D	2278-1721	21	191	9	4.712
E	1663-1196	19	103	4	3.8835
F	1173-880	20	45	7	15.5556
G	863-531	20	50	10	20
H	529-371	20	28	10	35.7143
I	363-255	20	34	3	14.7059
J	246-175	20	32	5	15.625
K	166-105	20	22	4	18.1818
L	95-49	20	24	6	25
M	48-27	20	21	5	23.8095
N	26-10	20	20	8	40

---

27 https://ucrel.lancs.ac.uk/bncfreq/lists/2_2_spokenvwritten.txt
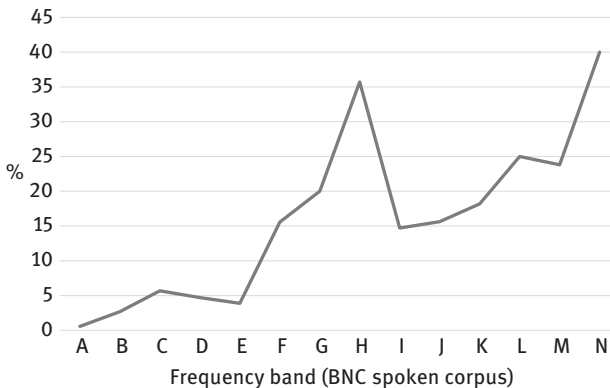
Fig. 4: Percentage of repeated tokens that were challenged in each frequency band (BNC spoken corpus)

This second analysis, using a much larger reference corpus, enables us to ask whether players were generally more likely to challenge repetitions of words that were less frequent in the language as a whole (as opposed to just less frequent in games of JaM). The answer is that they were. Again, there is a bump in the middle, which will be discussed in Section 6.4, when the different potential explanations for noticing and challenging repetitions are brought together.

5.4 Word class and the likelihood of repetitions being challenged

The focus of interest here is whether word class played a role in how likely a word was to be challenged if repeated. It has already been suggested that function words might be less subject to challenge, and we have seen that the most frequent words, which were function words, were least challenged. But the bigger picture of word class remains to be ascertained.

The 343 types that were repeated in the JaM corpus were categorised for word class. In the first instance, this was achieved by looking up each item in the BNC spoken corpus and identifying which class or classes it fell into. Words that were not listed in the BNC spoken corpus were manually categorised. Words that could fall into more than one word class were individually checked in the corpus to determine the relative distribution of each class within challenged and

unchallenged repetitions.[28] This examination revealed that while most repetitions were of the same word class, a substantial proportion involved two different grammatical functions (e.g., *when the rain came* **down** *[Adverb]... landed* **down** *[Preposition] on the castle*; *No-one* **will** *[Modal Verb] ever buy... I hate determinism and free* **will** *[Noun]*).

From this information, the total number of challenged and unchallenged repetitions in each word class was derived. The proportion of unchallenged to challenged repetitions was calculated (Table 13) and plotted (Figure 5). Note that in Table 13 some words fall into one or more additional categories. One 'class' in the list is the apostrophised words. Clearly, this is not a word class as such, but their repetitions constituted a sizeable group (14 types, 53 tokens), making it useful to include them.

Tab. 13: Proportions of unchallenged to challenged repetitions by word class

Word class (ordered by frequency)	Examples	% Unchallenged repeats	% Challenged repeats
Determiners & Pronominal determiners	*a, all, my, that, which*	99.161	0.839
Preposition	*in, like, of*	99.223	0.777
Pronoun	*her, I, myself*	98.47	1.528

28 For each repetition (i.e., two or more mentions by the same speaker in the same round), the word class of each instance of the word was checked. Since both instances had to be categorised, it meant that for every repetition, there were two word classes, which might or might not match. As a result, the totals for the word classes (WCT) were higher than the totals for the number of repetitions (RT). To correctly allocate the repetitions to appropriate word classes, the following calculation was done for each word: WCT divided by sum of WCTs to get the proportion in each word class (WCP). The calculation WCP x repetitions (R), separately calculated for challenged and unchallenged repetitions, converted the repetition counts into proportions of the word classes (RWC). The RWC values were rounded up and down to the nearest 0.5 (or, exceptionally, 0.67 and 0.33), keeping the total R. For example, the word *up* had a total of 8 repetitions (6 unchallenged, 2 challenged). Seventeen words were involved in these repetitions, distributed as the following WCTs: 14 instances of *up* as an adverb (unchallenged), two as an adverb (challenged), and one as a preposition (unchallenged). The word class proportions (WCPs) were calculated as 14/17 = 0.824, 2/17 = 0.118 and 1/17 = 0.059. The Repetition word counts (RWC) were calculated as WCP x R (which here is 8), giving Unchallenged *up* as adverb 0.824 x 8 = 6.588; Challenged *up* as adverb 0.118 x 8 = 0.941; Unchallenged *up* as preposition 0.059 x 8 = 0.471. Rounded up, the values ascribed were 6.5, 1, and 0.5, respectively. The 0.5 value indicates that there was less than one repetition involving the preposition *up*, and that is indeed the case because that instance of repetition involved one preposition and one adverb.

Tab. 13: (Continued)

Verb	*end, get, was*	94.236	5.764
Conjunction	*and, that, when*	98.565	1.435
Noun	*bit, people, years*	78.862	21.138
Adv	*all, how, just*	90.4	9.6
apostrophised	*don't, it's, I've*	96.226	3.774
Modal V	*can, should, used*	96.04	3.960
Adj	*all, French, old*	60.492	39.508
Numbers and Ordinals	*eight, first, three*	90	10
Proper noun	*Cliff, Nicholas, Paris*	35.294	64.706
Existential *there*	*there*	100	0
Interjections	*ah, well, yum*	80	20
Negatives	*not*	100	0
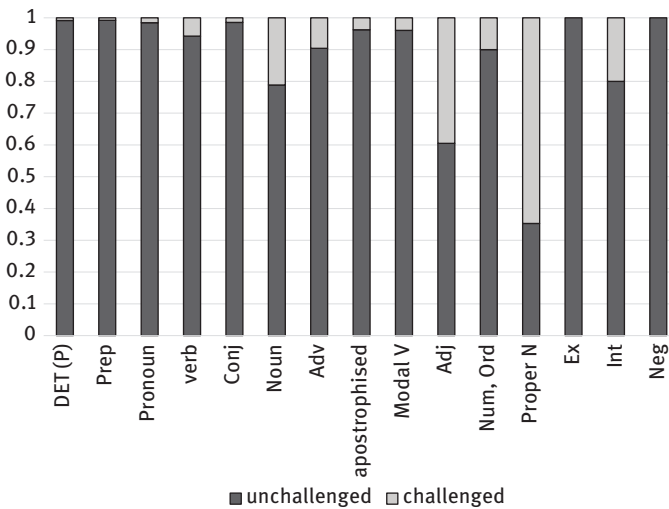
Fig. 5: Proportions of unchallenged to challenged repetitions by word class

In Figure 5, which is ordered by the frequency of the word class, it is clear that it is not this aspect of frequency that determines how likely a repetition is to be challenged. Figure 6 re-orders the word classes by how likely they were to be challenged. From this, we see that proper nouns are the most likely to be challenged – as Figure 5 shows, it is the only class in which a repetition is more likely to be challenged than not challenged. With the exception of the interjections, which

were challenged when immediately adjacent (see Section 5.5), the left side of the graph features content words, while the right features function words. This confirms that word class is playing a role in the likelihood of challenge. The gradation across the graph indicates that the effect distinguishes more than just the binary divide of content versus function.
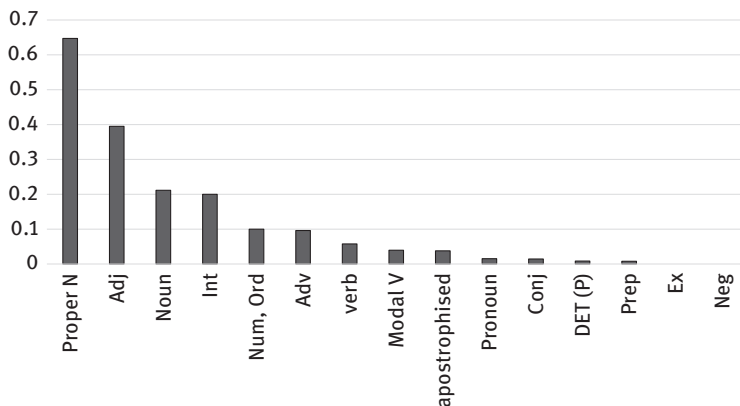

Fig. 6: Word classes by likelihood of being challenged

Finally, in Section 4 the question was posed about the function words: was it their *role* or their *frequency* that made them relatively immune to challenge? That is, would less frequent function words be more subject to challenge than frequent ones? To establish this, the repeated function words were ordered by frequency.

There was no significant correlation between frequency order and the distribution of unchallenged to challenged repetitions when using the raw scores (r_s = 0.13345, p = 0.09, one-tailed). However, using proportions (that is, the percentage of repetitions that were unchallenged versus challenged) the correlation was highly significant, r_s = –1, p = 0. Although this finding might appear to signal a frequency effect on the likelihood of function words being challenged, it should be noted that while, not surprisingly, frequency was directly reflected in the number of unchallenged repetitions of function words (range 447 to 0), the quantity of challenged repetitions barely changed by frequency. The highest values were 4 and 3, both in the top four. All other values were 2, 1, or 0. Of course, this did mean that, proportionately, less frequent items were more likely to be challenged. But an equally plausible explanation is that function words were, irrespective of frequency, only challenged when some other consideration came into play.

5.5 Distance and the likelihood of repetition being challenged

We turn now to the distance between the first mention and its repetition. The working hypothesis was that a repetition was more likely to be noticed if it occurred soon after the first mention. However, it was also hypothesised that the distance effect might interact with word class.

To investigate the role of distance, all words were selected from the corpus that had at least one instance of a challenged repetition and at least one of an unchallenged repetition. There were 39 such words: 1 adjective, 7 adverbs, 3 conjunctions, 5 determiners, 3 nouns, 3 prepositions, 6 pronouns, 7 verbs, 2 auxiliary verbs, 1 interjection, and 1 ordinal. The interjection (*ah*) was excluded because it had occurred, in both challenged and unchallenged instances, in the string (*ah-ah-ah*). The ordinal (*first*) was excluded because it was in a group of its own, consisting of only one challenged and one unchallenged repetition. (In other analyses, it was combined with the cardinals, but there were no cardinal numbers that had both a challenged and an unchallenged repetition.)

The quantity of words between the first and second mention (including any intervening challenges and turns) was counted for each challenged repetition and up to 20 unchallenged repetitions, when available. In many cases, particularly of challenged repetitions, there was only one example, so the distance between mentions became the score. Where there was more than one instance of a repetition, the mean of the distances was used as the score.

There were only three nouns that had both a challenged and unchallenged repetition. However, there were many nouns that had one or the other. Given the semantic saliency of nouns (Hypothesis 3) and the striking distances that a single noun repetition in the corpus could span and still be challenged, it was decided to include nouns in this category by pairing each challenged item with an unchallenged one of comparable frequency. Adam Kilgarriff's online listing of frequencies in BNC written corpus[29] was used, as this gave more granularity than the much smaller spoken corpus. On this basis, 20 challenged repeated nouns and 20 unchallenged nouns were added to the analysis. However, as there was only one instance of each word, there would have been too much volatility using the individual distance scores. Instead, the distances were averaged

---

[29] https://www.kilgarriff.co.uk/BNClists/all.al.o5, compiled in 1995-1996. The mean frequency for the 20 challenged items was 11,005.8 (range 62163 to 44). The mean for the 20 unchallenged items was 11,097.8 (range 58,769 to 28). A t-test confirmed equivalence, t = 0.0183, df 38, p = 0.9855 (two-tailed).

into single values. Thus, alongside the three individual nouns, there was an entry for *Paired* which gave a single score for the challenged and another for the unchallenged items.

Across all categories, where the distance between the occurrences of an item was 100 or more words, the value was capped at 100. This was because it was extremely rare for a challenged repetition to get near 100, but there were a great many unchallenged repetitions that were more distant. The cap was a way to avoid distorting the comparison between challenged and unchallenged repetitions, as would happen by including ones that were beyond the reasonable range of recall (since these would, by definition, always be unchallenged). The effect of omitting the greatest distances was to make it harder to demonstrate a difference in distance between challenged and unchallenged, thus raising the empirical threshold.

In addition, in the function word categories, repetitions that occurred on both sides of interventions from other players were excluded, unless they were below the 100-word threshold. Again, this was a way of keeping the comparison more balanced, since there were no instances of challenges of function words repeated across an intervention.

5.5.1 Effect of distance

The question of interest was whether repetitions were more likely to be challenged if the two occurrences were close together than if they were far apart. The distances for the challenged and unchallenged repetitions for all the items, across all word classes, were compared. Distances between challenged repetitions were significantly smaller than between unchallenged repetitions, $t = 3.02$, $df = 37$, $p = 0.002$ (one-tailed).

5.5.2 Distance effect in content versus function words

The 37 individual words plus the paired noun set were divided into content words (adjective, adverb, noun, proper noun, verb) and function words (determiner, conjunction, preposition, pronoun, auxiliary verb), as shown in Tables 14 and 15. The difference in mean distance for the content words did not quite reach significance, $t = 1.53$, $df = 18$, $p = 0.07$ (one-tailed), but it was significant for the function words, $t = 3.87$, $df = 18$, $p = 0.006$ (one-tailed).

Tab. 14: Mean distance in content words

| Word | Word class | Mean distance between first and second occurrence | | U>C? |
		Unchallenged	Challenged	
then	adverb	35.5	5	Y
up[30]	adverb	49.3	13	Y
now	adverb	29.2	18	Y
very	adverb	29.5	6	Y
really	adverb	35	1	Y
actually	adverb	34	12	Y
only	adverb	24	22	Y
old	adjective	63	9	Y
understand	verb	4	25	N
comes	verb	19	6	Y
made	verb	11	26	N
used	verb	31.5	46	N
get	verb	23	9	Y
can	verb	19	9	Y
know	verb	50	10	Y
PAIRED	noun	61.25	35.4	Y
way	noun	31	4	Y
people	noun	39.75	61.52	N
Parsons	noun (proper)	5	79	N

Tab.15: Mean distance in function words

| Word | Word class | Mean distance between first and second occurrence | | U>C? |
		Unchallenged	Challenged	
because	conjunction	24.5	31	N
or	conjunction	17.71	3	Y
and	conjunction	21.6	6.33	Y
many	determiner	61	4	Y
no	determiner	50	29	Y
be	auxiliary verb	24	4.67	Y
have	auxiliary verb	28.9	14	Y
into	preposition	16	6	Y

---

30 *Up* also occurred as a preposition but only adverb uses qualified for this analysis.

Tab. 15: (Continued)

like[31]	preposition	17.29	14	Y
to	preposition	7.25	12	N
your	pronoun	6.89	6	Y
all	pronoun	24.88	14	Y
this	pronoun	21.94	8.25	Y
anything	pronoun	28	12	Y
her	pronoun	9	5	Y
they	pronoun	15.35	3	Y
we	pronoun	12.71	5	Y
you	pronoun	19.75	12	Y
I	pronoun	17	11	Y

Five content words, *understand, made, used, people*, and *Parsons*, and two function words (*because* and *to*) had a greater mean length for challenged than for unchallenged repetitions. In addition, across many of the items, where more than one repetition had been averaged, one or more challenged repetitions were more distant than one or more unchallenged ones. For instance, two of the instances of unchallenged *now* were closer than the challenged one (12 and 13 vs 18), even though the mean for the unchallenged repetitions was higher. In other words, notwithstanding the overall pattern, it was far from the case that every proximal repetition was challenged.

Furthermore, means were often subject to one particularly high score. For example, the distance for the challenged instance of *then* was 5. There were two unchallenged ones at 4 and 5, but a third at 62 caused a much higher mean. As these examples indicate, even when the overall findings confirm a hypothesis, volatility in small samples needs to be kept in mind when interpreting the result.

An examination of each word class separately revealed that while the distance effect was consistent and convincing across all the individual function word categories, in two of the content word classes, the verb class and the nouns/proper nouns, the pattern was weaker. Indeed, the verb class failed to reach statistical significance, $t = 0.48$, $df = 12$, $p = 0.32$. While only a small number of repetitions fed into these calculations, making them vulnerable to single large distances, it is of interest that distance was a more reliable predictor of challenge in some word class types than others.

---

31 *Like* also occurred as a verb but only preposition uses (e.g., *it was like a comedy*) qualified for this analysis.

5.5.3 Distance by frequency

Hypothesis 4 also proposed that any distance effect might be sensitive to word frequency. The target words were ordered by frequency (BNC written corpus), using the mean frequency of each noun pair in the paired set (Figure 7). A frequency effect on distance would mean that, as frequency reduces (towards the right of the graph), repetitions could occur across greater distances and still be challenged. In other words, the difference between challenged and unchallenged distances should narrow. This would be indicated by the dark dotted line rising, relative to the grey one, towards the right.

   As Figure 7 shows, the pattern certainly changes as frequency reduces. However, this is likely to be because of the greater volatility in the lower frequency words, where the values were derived from fewer examples. A Spearman's Rho calculation showed no significant association between the distance of unchallenged and challenged repetitions and word frequency ($r_s = 0.11$, $p = 0.53$, two-tailed).
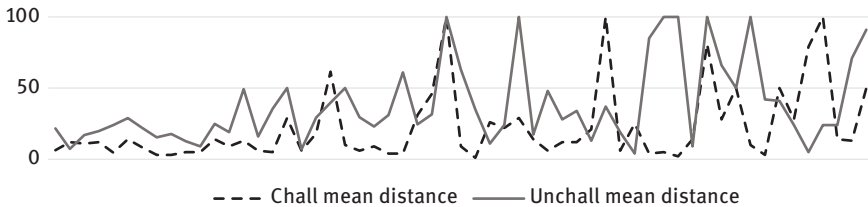
Fig. 7: Mean distance of challenged and unchallenged repetitions ordered by frequency (high to low)

6 Drilling down into the findings

6.1 Summary of findings and matters arising

Study 1, comparing Paul Merton's speech in twelve successfully completed JaM minutes and twelve individual uninterrupted minutes from an interview, showed that, notwithstanding the absence of hesitations in the JaM minutes and the reduced amount of repetition, he still repeated many words without being challenged for doing so. Study 2 examined the characteristics of words that were and were not challenged, using a sample of twelve complete episodes of JaM (97 rounds of the game). Four hypotheses were empirically tested in Section 5.

Hypothesis 1 was that repetitions of function words would not be challenged, either because they were noticed but tolerated as unavoidable repetitions, or because they were not noticed. It was not the case, in absolute terms, that function words remained unchallenged. There were challenged repetitions of eighteen function words (Table 16), contributing 25 to the total of 135 challenged repetitions (18.52%). However, these 25 challenges were just 2.27% of the total opportunities for challenging repetitions of these eighteen words, indicating that, relatively speaking, they were tolerated and/or undetected. In Section 6.2, we will examine these 25 instances for indications of what led them to be challenged.

Tab. 16: Challenged and unchallenged repetitions of function words in 12 episodes of JaM

Type	I	and	to	you	this	they	all	Like (Prp)	because	or
Chall	3	3	1	2	1	1	1	1	1	2
Unchall	331	249	228	116	25	26	13	9	9	13

Type	we	many	your	her	into	no	anything	everybody
Chall	1	2	1	1	1	1	1	1
Unchall	15	5	13	15	3	4	1	1

Hypothesis 2 predicted that repetitions of content words, being more semantically noticeable and difficult to replace with a synonym, would be challenged. Section 5.4 reported that all the content categories were more likely to be challenged than the function categories,[32] with proper nouns the most likely (64.7% challenged), followed by adjectives (39.5%), nouns (21.1%), numbers and ordinals (10%), adverbs (9.6%), verbs (5.8%), and auxiliary verbs (4%). Section 6.3 will consider why the challenge rates were not higher – why, for example, four-fifths of the repetitions of nouns did not get challenged.

Hypothesis 3 was that infrequent items would be more salient and thus more likely to be noticed and challenged. The tables and figures in Section 5.3 confirmed that infrequent items were more likely to be challenged, a pattern that was seen both when using the within-corpus frequencies and those from the BNC spoken corpus. In both cases, the graphs showed a jump in challenges midway, followed by a drop. In Section 6.4 we shall look at the characteristics of the words at those points. Furthermore, some explanation is needed once more, for why,

---

32 As mentioned already, the 'int' category for interjections had an elevated scored on account of *ah-ah-ah*.

even amongst the words that were least frequent, considerably fewer than half were challenged.

Hypothesis 4 was that repetition challenges would be determined by the distance between mentions. The analysis in Section 5.5 showed that, overall, proximity did increase the likelihood of challenge. It was also hypothesised that the distance effect might be contingent on the two other factors considered already: word class and frequency. The function words were found to be subject to a convincing distance effect, but the difference in distance for the content words did not quite reach significance. Closer examination showed that the verbs had only a small distance effect, which did not reach statistical significance. The analysis was, however, hampered by small quantities of examples, which, interacting with high distance counts, made the comparisons unreliable. Finally, no evidence was found that word frequency was a primary determiner of the distance effect. Even though, when looking specifically at the function words, there was a highly significant difference in how likely low versus high frequency items were to be challenged, it has been proposed that this was an artifact, reflecting an independently caused uniform level of challenge across all frequency levels, interacting with the inevitable high level of unchallenged repetition in the most frequently used items.

6.2 Why were function words challenged?

As predicted, repetitions of function words were very rarely challenged. However, there were 25 instances where they were (see Table 16 above). If function words are relatively invisible, or are tolerated, what explains the 25 challenges? Examining the data revealed four main patterns.

The first was where the function word was part of a repeated phrase, all of which was implicitly challenged, even though only one word was cited. For instance, *I understand* was repeated, but the challenger identified only *I* as the repeated word. Other examples are: *I have seen; Pearl **and** Dean; used **to**; **you** can get; coming towards/at **you**.*

The second pattern was excessive use of the word in a short space, as part of a rhetorical device, e.g. *I do not like, I never will, in fact I can't stand, and* [7 intervening words] *I do not like;*[33] *this woman, **this** vixen, **this** blonde-haired glasses-wearing witch; the man **or** woman **or** child **or** dog; **They** were dark, **they** were dooming, **they** were laden with rain; along with Coleridge **and** Shelley **and** Wordsworth **and** Byron [6 words] Simon Le Bon **and** Adam Ant.* Excessive use in

---

[33] Although multiple repetitions within one challenge were separately counted in the main analyses (to align with the separate counting of unchallenged repetitions), here the counts refer to instances of challenge; thus, in this example, *I* is only treated as one example of a challenged repetition.

close proximity was not always linked to a rhetorical device, however: e.g., ***All getting** **all** the things*; *There are **many** varieties [5 words], **many** of them.*

In the third pattern, the repetition was a little more distant, and not specifically marked out, suggesting that the challenger was paying close attention, e.g., *two protagonists **like** of the literary variety, often with people **like** say AA Gill*; ***Because** if I had lost something [25 words] somewhat crestfallen **because***; *kiss **everybody** on the lips [47 words] make sure that **everybody** misses your presence.*

The fourth category was where the speaker imposed the repetition in a meta-discourse. In one instance, Linda Smith describes how sulking teenagers can *put about five syllables into the word **no***. She then comments that she won't demonstrate this because it would entail repeating the word. She adds, *I'm not falling into that trap, oh **no***, and is challenged for repeating *no*. In another case (see Example 7), Merton misspeaks and, by repeating his clause as a meta-comment, creates a repetition of both *into* and *your*. As the discussion around the challenge indicates, Merton is amused by his error, repeating it once more outside the confines of his contribution to the minute. Rice chooses repetition (thus including it in this analysis) rather than deviation from the English language, an oft-used response to linguistic slips in JaM.

Paul Merton	The all day breakfast comes **into your** own when you're… comes **into your** own
Nicholas Parsons	Tim challenged.
Merton	Comes into your own?
Tim Rice	Confusion, repetition, deviation, you name it. Mainly repetition.
Parsons	You can only have one, which one do you want?
Rice	I'll have repetition.

Example 7. Subject: The all day breakfast (JaM9)

A final feature to note is that repetitions of function words were sometimes accompanied by a comment about challenges being exceptional. In Example 8, Smith concedes that challenging repetitions of *and* is rather mean, and Parsons is apologetic about accepting the challenge.

Linda Smith	Sorry, it does seem like shooting baby seals, I must admit. There were several *ands*
Nicholas Parsons	Yeah, there were four or five *ands*
Chris Neill	I was hoping that wouldn't be included, the word *and* [...]
Parsons	You see, they often let one or two *ands* go… but half a dozen… is stretching it a bit

Example 8. Subject: Dating agencies. (JaM5)

In a similar vein, when Jenny Eclair challenges Merton's *We had to confront him!* ***We*** *stood alone in 1940.* ***We*** *must never forget*, she says, "I held off until the third *we*," indicating that a single repetition would have been acceptable. In an instance described in his book, Parsons (2014: 430) quotes himself justifying accepting a challenge of four *I*s: "We let one *I* go, or two, but four, I quite agree."

In summary, it seems that the repetitions of function words are challenged when something specifically draws the listener's attention to them. Only four of the 25 examples described above (*like, because, her, everybody*) cannot be easily explained that way. This finding supports the suggestion in Section 5.5.3 that function word challenges were due to something other than a frequency effect.

6.3 Why were content words and infrequent words not challenged more?

We turn now to considering two further questions arising from the earlier discussion: why were there not more challenges of repeated content words (hypothesis 2) and infrequent words (hypothesis 3)? In this analysis, some considerations explored earlier are returned to in the context of this particular subset of the data, along with some new ones.

Among the 49 repeated words[34] with a frequency of less than 100 in the BNC spoken corpus, 15 had challenged repetitions and 34 had one or more unchallenged repetitions. No word had both a challenged and an unchallenged repetition, and only six words had more than one instance of a repetition (all in the unchallenged category). All the words bar one (*whose*) were content words. All 49 examples were examined. Four patterns were identified as promoting the likelihood of a challenge and four as reducing the likelihood. Examples are given in Table 17,[35] along with the total number of repetitions, challenged and unchallenged, falling into that category. Explanations of the patterns are presented below.

---

34 An additional four words technically fall into this category but are excluded, since their use in the data was inconsistent with the BNC corpus (e.g., *tin* occurs as a repeat in the name of the cartoon character *Tin-Tin*).

35 A larger number of examples is provided where it will help the reader to see how the category manifested. The repeated word is written in italics where it is cited (albeit with accompany words), and in bold where it is located within quoted text. It should be noted that since an example could be associated with more than one predictor, the totals exceed the number of repetitions observed.

Tab. 17: Patterns associated with likelihood of challenge

	Examples (Topic of round, where relevant). U = unchallenged, C = Challenged	Unchal	Chal
	Likely not to stimulate a challenge		
[1] Shares lemma with word on card	U: *Writing* (Ghost Writers); *Act* (Double Acts); *Tree* (Hugging Trees)	5	0
[2] Predictable in semantic space	U: *Driving* (Furry Dice); *travelling* (Strangers on a Train) C: *bird* (Cooking a Goose); *French* (My second language)	2	2
[3] Distant	U: a morose **film** [over 100 words, intervening turns] I had directed a **film**	13	1
[4] Different uses	U: to build a **bridge**... in the Millennium **Bridge** scenario; a **blood** clot... a **blood** test; the **east** coast... the **East** Riding; you **draw** the listener in... I better **draw** a bit closer; **fall** to bits... **fall** off C: **French** teacher... **French** markets	5	1
	Likely to stimulate a challenge		
[5] High salience	U: webbed/flipper-like *feet* (The aristocracy); derogatory/ disparaging *fashion* (Every trick in the book); *exciting* moment (Bowling a maiden over); *somewhat* impatiently/crestfallen (Timbuktu); C: quite/so *upset* (Sulking); It said on the **floor**, Don't spit on the **floor** (Poetic licence); they were/he was dreadful and *terrible* (Round robins); *apparently* (Superstitions); *Graham Norton* (A dirty laugh); your/my own *ear* (Flirting with disaster)	4	5
[6] Proximity	U: a **beautiful** bird, [20 words] from its **beautiful** beak C: with many **popular** artists singing a small portion of the aforementioned **popular** entertainment	20	14
[7] Part of a noticeable repeated phrase	U: My *Uncle Arthur* C: GPs are **leaving** the profession... stop GPs **leaving** the profession	2	1
[8] Speaker meta-comment	U: a button box from an **agent agent** aunt? C: **Possibly** they mean [24 words] a view to friendship, **possibly** romance, **possibly** the idea that you've just said *possibly* about 20 times; I didn't **enjoy** it that much, I've said **enjoy** haven't I; to take the **packet**... oh damn, **packet**	1	3

6.3.1 Predicting no challenge

[1] *The word shares a lemma with a word on the card.* Since repetition of the words on the card is permitted, it was hypothesised that inflections of those words might be overlooked if the form was not well remembered

(see Section 4.2). All five instances of category [1] were indeed unchallenged, though challenges are sometimes made in JaM on that basis.

[2] *The word sits in the same semantic space as the topic.* It was hypothesised that where the mention of a word is semantically primed by the topic, the word will be less salient and thus less noticeable. Four instances of category [2] were identified, two unchallenged and two challenged.

[3] *The words repeat at too great a distance.* In line with hypothesis 4 earlier, it was anticipated that players would be less likely to notice repetitions separated by a lot of intervening material (all other things being equal). Only words that were repeated 60 or more words later were examined. Among the unchallenged set, three were under 100 words (60, 93, and 97), the remaining ten over 100. All involved interruptions and swaps of turn (included in the word count, up to 100 words). The single challenged item in this category, *bird*, was repeated after 81 words, also with intervening material.

[4] *Different grammatical, semantic, or functional uses of the word.* It was hypothesised that where a word is used differently in first and second mention, the repetition is less likely to resonate as being one. Of the six repetitions allocated to this category, five were unchallenged and one (*French*) was challenged.

In short, the four predictors of reduced likelihood of challenge were predominantly associated with unchallenged repetitions (25 versus 4). Considering the fact that there were more unchallenged items than challenged ones, these figures need to be related to the total number of categorisations attributed, which was 52 (unchallenged) and 27 (challenged), giving proportional associations of 48% and 14.8%. These percentages confirm that unchallenged repetitions were more likely than challenged repetitions to be associated with the predictors of no challenge.

6.3.2 Predicting a challenge

[5] *High salience.* It was hypothesised that certain words are particularly noticeable and memorable, including those stimulating humorous images or referring to salient individuals. A few examples were clear, such as aristocrats having webbed *feet*; *Graham* Norton, one of the panellists, having a dirty laugh. The repetition of *floor* was due to the speaker mistakenly saying 'floor' when he meant 'door' in a well-known limerick. The other examples put into this category (all are provided in Table 17) were arguably more borderline, in that the words themselves were less semantically charged overall (*fashion, exciting, upset, terrible, ear*). The distribution of four unchallenged to five

challenged may reflect this issue. However, it must be noted that one of the three clearer cases (*feet*) did not attract a challenge.

[6] *Proximity.* A counterbalance to category [3], the repetitions of interest were those that occurred without interruption from other players. The intervening words were counted for each uninterrupted repetition. Twenty unchallenged repetitions occurred without intervening material, with a mean distance of 26.52 words, range 0-75. Fourteen challenged repetitions were in this category, with a mean distance of 13.79, range 1-39. Figure 8 contrasts the challenged and unchallenged repetitions, showing that although greater distances were less likely to be challenged, there was considerable overlap, with proximal repetitions often unchallenged.
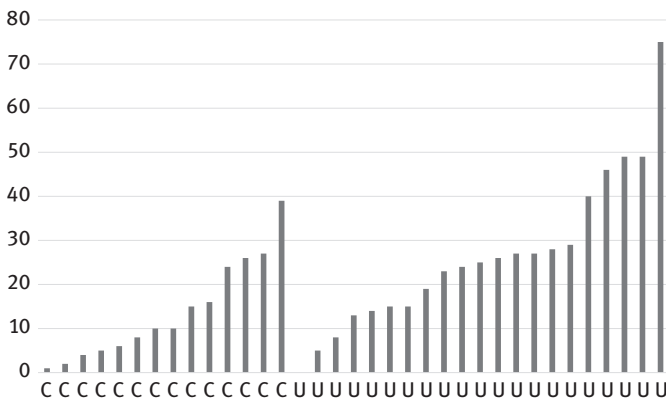
Fig. 8: Distance between mention and repetition of least frequent words, when uninterrupted by intervening material. Challenged (C) and unchallenged (U)

[7] *Location in a repeated phrase.* This category extends the idea of salience, by suggesting that a word is more visible if it is part of a larger repeated phrase (see Section 6.2). It must be noted here that the data sometimes did not lend itself to a clean analysis, in that a challenge was often, technically speaking, of just one or two of the words in the phrase, even though the entire phrase will have been heard by the challenger. In other words, since 'challenge' was strictly defined in terms of what the chairman adjudicated, it meant that some words classified as 'unchallenged' were likely intended to be included in the challenge. Among the set of least frequent types under consideration in the present discussion, there were only three examples of this category

(see Table 17 above). Both words in the phrase *Uncle Arthur* were in the low-frequency list, which explains the count of 2 in the unchallenged column. The repeated clause *GPs are leaving the profession* resulted in a challenge on *leaving*, while the words *GPs* and *profession* (too frequent in the BNC to be included in this set) were not challenged, even though a challenge of the entire phrase was feasible.[36]

[8] *Meta-commentary*. As noted in Section 6.2, a reliable way to stimulate a challenge was if the speaker him/herself drew attention to the repetition or, in drawing attention to another error, created one. There were four cases in this low frequency set, though many more occurred across the entire corpus. Of the three that resulted in a challenge (see Table 17 above), only one (*possibly*) reflected an accurate admission of a repetition. In the case of *enjoy* and *packet*, there is no evidence in the transcripts that it was a repetition (though *packets* had occurred), and it was the speaker's meta-mention of the word that created the repetition. That there was one meta-commentary instance (*agent*) that did *not* result in a challenge for repetition might seem surprising, particularly since the repetition was immediately adjacent. However, there is an explanation for this, as outlined next.

To sum up, the four predictors of a challenge were associated with a mixture of challenged and unchallenged repetitions (27 to 23). As before, we must consider the total number of unchallenged (52) versus challenged (27) repetitions, which gives proportional associations of 51.9% (unchallenged) and 85.2% (challenged). In other words, about half of the unchallenged repetitions were associated with factors that might have stimulated a challenge, while almost all the challenged ones were.

One additional categorisation was made, which falls outside of the set just reported but still played a role in the patterns observed: where a repetition was not challenged but something else was. In the unchallenged set, three opportunities for repetition were overtaken by the whistle being blown for the end of the round, one was superseded by a challenge for deviation, one by a challenge of another repeated item, and four by challenges for hesitation. Among the hesitations, it was often the case (as reflected more widely in the full data set) that the speaker's awareness of repetition caused him or her to falter, e.g. *The **lights** go down, the chocolates come out, the screen **lights** [pause] up*; *often **considered** the*

---

36 In the dataset as a whole, there were additional examples of challenges of repetitions that were within a larger repeated phrase.

*golden age of poetry [60 words] there was a time when poetry was **considered** so [pause] enriching.*

To sum up this part of the analysis, the question was why content words and infrequent words were not challenged more. It seems that several factors could play a role in increasing or reducing the likelihood of a challenge, though few categories definitively prevented the possibility of, or caused, a challenge.

6.4 Why did the proportion of challenged repetitions bulge in the middle frequency range?

Figures 3 and 4 in Section 5.3 showed that in the 20-word frequency bands H, G, and F, covering 371-529, 531-863, and 880-1173 (BNC spoken corpus frequencies) there was a bump in the percentage of challenged repetitions. Inspecting the items in these lists and the adjacent ones showed that there were marked changes in the ratios of function to content words.

Most striking was the transition from band E (1196-1663), with nine function words and ten content words, to band F (880-1173), with five function words and 15 content words. Associated with this was a shift in the balance of challenged to unchallenged items. In band E, the nine function words contributed 73 out of the 103 repetitions (71%), all unchallenged, while the content words contributed 30 repetitions, of which 4 were challenged. In short, with only four words in Band E challenged (all content words), the proportion of challenged to unchallenged was kept low by the high numbers of unchallenged function words, including 33 instances of *as* and 13 of *his*. In Band F, the five function words contributed 13 of the 45 repetitions (29%), with two of the 13 challenged. The content words contributed 32/45 repetitions (71%), with seven challenged. In other words, with fewer function words in the list, the proportion of unchallenged repetitions, though greater than that of challenged repetitions, was not as elevated.

The other end of the bulge is marked by a severe drop between Bands H and I. What makes those two bands so different? The main difference is that 8 of the 20 words (40%) in Band H are repeated only once, and that repetition is challenged. This is particularly high, matched only by the very lowest frequency band, N. Furthermore, while there is a gentle rise in the number of single, challenged repetitions across the board as frequency decreases, at 10%, Band I is lower than the Band G value would lead us to expect (Figure 9).
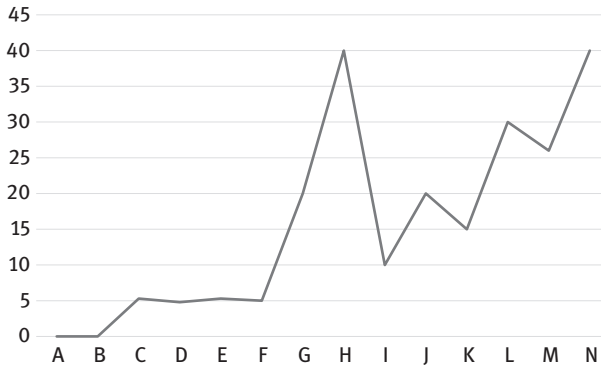
Fig. 9: Percentage of words whose repetitions were always challenged, by frequency band (highest to lowest)

An examination of the eight always-challenged items in Band H indicates why they were so noticeable. All of them have at least one of the features earlier predicted to invite a challenge: in a challenged phrase (2), in a rhetorical flourish (6), first and second use close together (5), semantic salience (1), and salience on account of a meta-comment (1). However, it is difficult to argue that these characteristics are the reason for the high number of always-challenged repetitions. At the heart of the matter is not why these words were challenged, since the characteristics noted here can apply across all words, but rather why so many of them fell into one frequency band. Given that the words in question cover several different word classes, including function words, the most likely explanation is that it is just chance.

7 Modelling the (in)visibility of repeated words

We are now able to review the findings within a broader picture: the dynamics of language itself, the wider requirements of JaM as a piece of entertainment, and the cognitive challenges of playing the game.

7.1 Why are words repeated, and what counts as a word?

As noted at the start of this article, one reason why we repeat material in our speech is to sustain fluency. It gives us something to say in lieu of hesitating, and

it reduces the rate at which new information must be presented (Giulianelli, Sinclair and Fernández 2022). But we also repeat because we have to.

How often words are repeated, and at what distance, depends on their grammatical and/or semantic role in the discourse. Any language can only create meaning with the inventory of meaningful units it possesses. Some languages have more such units than others,[37] and the particularly large vocabulary of English might suggest that repetition would be relatively easy to avoid. However, a large vocabulary does not create synonyms so much as finer semantic distinctions. Thus, although English has many words for types of boats, they are not really interchangeable, and the opportunities to avoid repetition do not diminish much.

Another parameter shaping how much repetition there must be is how a language combines units of meaning. With the definition of 'word' based on graphological representation, the typological nature of the language comes into the frame: how many morphemes are typically combined within one word? This affects whether a given 'word' will appear in an identical form each time. Highly inflected languages could have the same lemma several times without the 'word', as defined in JaM, being the same. Compare, for example, how the English word *the* would be represented in German by, variously, *der, die, das, den, dem, des, dessen*, or *deren*. In agglutinative languages, semantic units that would be separate words in English might be part of a single, larger word unlikely to be repeated much, because of the specificity of that particular configuration, e.g., Swahili *ninakupenda* 'I give you love/I love you' and Turkish *evlerde* 'in the houses' (McArthur 1998).

English, being relatively uninflected and analytic, attracts incidences of repetition because lemmas often occur in the same form in different grammatical contexts. But, as noted in Section 4.1, there are also many multiword sequences that, in many regards, function like a single lexical unit. Buerki (2020) wrestles with this issue when he attempts to work out a method for comparing how much formulaic language there is in three languages with different typological profiles – English, German, and Korean. He finds that many single words in the morphologically more complex languages map onto recognisable formulaic expressions in English.

As noted earlier, in the present studies some repeated words were certainly part of a larger, repeated phrase, e.g., *you can get, I've been doing, Pearl and Dean, coming towards/at you, gathers up, end up, I have seen, to be able*. An analysis could, in principle, attempt to accommodate such frequent strings, but, of

---

37 There are plenty of online discussions about which languages have the fewest words.

course, the JaM rules do not. What is the status of words that are, in effect, acting as bound morphemes in a multiword string with its own lexical identity? The next section considers an answer to this question.

7.2 What makes words (in)visible?

Words within a formulaic word string might be difficult to recognise as units in their own right, despite how they are written. If so, their visibility would be reduced. This notion contributes to a more general possibility, that there is a buffer zone of words that, although technically content words, have some characteristics of function words.

As noted in Section 3.3.2, *people* (the most frequently repeated content word in Study 1 and Study 2) can play a pseudo-pronominal role, something that was evident in the two analyses of its meaning (Tables 7 and 9), where only twelve of the 42 occurrences referred to individuals rather than a collective or generalisation.

Other words that might also fall into a buffer zone would be light (or bleached) verbs such as *take, give, do, make, get, have.* If these 'content' words share some function-like features, we should expect that they would be predominantly unchallenged and that the challenges would occur where the meaning was more semantically anchored. Checking the repetitions of these six words showed this to be largely true. But it also revealed how these words operate within the language.

While *have* and *get* were repeated 32 and 22 times, respectively, *do* was only repeated four times, *make* and *take* once each, and *give* not at all. This does not mean the words were not used, of course (*do* occurred 47 times in the corpus and *make* 21 times, for example), only that they were rarely used more than once by a given speaker in their contribution to the JaM minute. This reflects their role in the construction of discourse.

The unchallenged repetitions were mostly in the light verb capacity (e.g., *I do not; do an impression; get back to*), though this is to be expected since they are generally more common in that role. However, there were instances of unchallenged repetitions that were more lexical (e.g., *make a film, get somebody, have a dirty laugh*), which arguably could have been noticed and challenged. Overall, the evidence from the data does not strongly support the proposal that light verbs are less visible, though a study with a larger dataset would offer a more robust basis for testing this possibility.

So far, the approach taken has been to ask why it is so difficult for JaM players to detect repeated words and/or why they do not challenge them when detected. But perhaps this is the wrong way to look at it. Other than for stylistic reasons,

such as when editing a text, we are not really tuned into tracking repetition. JaM puts demands on its players that are, therefore, unusual. Our general priority is making and receiving meaningful discourse, and if that entails the use of some words more than once, it is not a problem. We usually have no need to track repetitions and, if we do notice them, we have every reason to tolerate them. As such, perhaps the question we should be asking is not what makes repetitions *invisible* but what makes them *visible*. To put it another way, to what extent do players actually have much agency in how many challenges they can make, given the ways in which the language impedes their ability to track repetitions?

The main parameters of (in)visibility are laid out in Figure 10. It is, of course, intrinsically difficult to distinguish between repetitions that are not noticed and those that are noticed but tolerated. For instance, to what extent are players aware that function words are being repeated and consciously choosing not to challenge them? We have seen that when function words are challenged, they have been made particularly noticeable, usually through the proximity of the repetition and, often, a rhetorical flourish. Of course, as Taylor (2012) proposes, all words must have some kind of phonological and/or semantic 'afterglow' if the second mention is to be clocked as a repetition. However, since function words have little semantic substance that is not relationally tied into the immediate context – the 'mortar' that holds the content 'bricks' together – that inherently weak glow needs to be bolstered by some kind of emphasis.
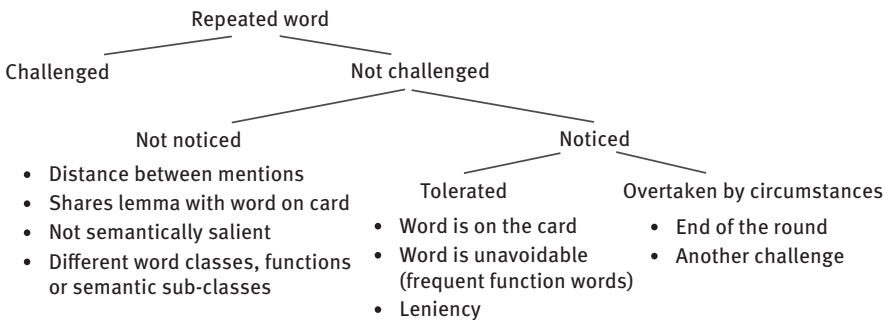

Fig. 10: Main reasons why a repetition is not challenged

Content words have more semantic content, which would give them a longer afterglow. That means they can be challenged over a longer distance. Even so, additional salience will enhance the likelihood of detection. The word *albatross* perhaps gained such salience by being suggested as an alternative to a round robin; *kidneys*, included in the description of an all-day breakfast, attracted much discussion before the repetition occurred. In Section 4.2 this salience was referred

to in terms of what was *least* expected (at first mention); the surprise might generate a strong semantic priming effect that makes the repetition noticeable.

Support for the proposal that the semantic afterglow outlives the phonological one comes from several examples in the twelve episodes of incorrect challenges, or challenges judged correct though they were not, based on the occurrence of two words that were not identical but shared a lemma or, occasionally, just a meaning: *show... showing; done... doing; he...he's; pastime... time; stories... story; destiny* [topic: 'determinism', covering the idea of destiny but not using the word]; *Thames... river* [topic: building bridges]. As noted earlier, Sachs (1967) showed that semantic information is retained longer than phonological form.

But there is one final element that plays a role in how the game is played and the extent to which players can, and do, make challenges.

7.3 The additional requirements of JaM

In Figure 10, 'leniency' is listed as a reason for tolerating a noticed repetition and not challenging it. Although we have seen that there is an unwritten rule about not challenging function words, and although it is clear from listening to episodes that first-time players get some leeway, these are not the only reasons why repetitions can remain unchallenged.

As chairperson Sue Perkins commented during a 2023 broadcast, "ultimately this is supposed to be an entertainment show"[38] and there is a fine balance to be struck between playing the game and boring the audience. Paul Merton (personal communication, 2022) considers his responsibility towards the audience (live in the studio as well as listening to the broadcast) to far outweigh winning the game (though he often does anyway). He will, at times, deliberately infringe the rules to get a laugh and thus increase the pace or lighten the mood. Managing the audience's experience of the game is an important consideration in what can become an emotionally charged atmosphere. In a letter to a JaM producer in 1973, Nicholas Parsons commented,

> I really do believe that the game is about aggro, is about anarchy, as much as it is about the contestants, and the simple rules. It is a good game simply because it has this extra ingredient, which comes from the personalities playing it. A lot of time there is the suppressed aggression against each other, but every now and then they turn like the pack of wolves they are and tear you to bits (Parsons 2014: 72).

---

38 JaM series 91, no 3, 7,43 https://www.bbc.co.uk/sounds/play/m001l25t

As Parsons' reminiscences reveal, there is a fine line between amusing an audience and alienating it, and one way to reduce the emotional tension is to hold back on how much one challenges. This was a consideration even early on in the development of JaM. Parsons (2014) describes trialing penalty rounds in which words like *and, no*, and/or *the* were not permitted. The effect on even seasoned players was "intimidating." He comments, "*Just a Minute* is a difficult enough game to play without an extra inhibiting factor... Clever and entertaining challenges, and the banter that follows them, are the core of the game; too many stops and starts, based purely on verbal errors, interrupt the flow too severely" (Parsons 2014: 43–44).

Thus, an important extra contributing factor to how much repetition is challenged is the players' sensitivity to what the game needs at that time. If a speaker is telling a good anecdote, the other players may hold back from challenging infringements so as to boost the entertainment value. In other words, as Merton clearly understands, a *top* performance may at times require, in terms of the rules of the game, an *under*performance.

8 Conclusion

This article posed two key questions. The first was what impact the JaM rules have on the language generated by players. It was shown in Study 1 that while hesitation and its accoutrements are relatively easy to suppress, repetition remains rife. The second question was what causes repetition to be undetected.

No single characteristic – word class, frequency, or distance – fully accounted for the patterns of repetition challenge in JaM, but the characteristics almost certainly interact, each augmenting or diminishing the likelihood of the repetition being noticed and/or tolerated. In the absence of significant semantic or rhetorical salience, it is inherently difficult to track the repetition of words. Thus, the language itself creates many impediments to playing the game at the level demanded by the rules.

As a result, the players must manage a significant cognitive load if they are to register the form as well as the meaning and sustain an 'afterglow' of memory sufficient to trigger the recognition of repetition. This cognitive challenge for them as listeners is interspersed with the additional pressures, when they become the speaker, of sustaining fluency without recourse to the usual discourse aids of hesitation, repetition, and deviation, while monitoring their own output to steer around avoidable rule infringements. Tracking and supporting the dynamics of the overall entertainment package would seem likely to add an extra processing

burden, insofar as it is surely more difficult to notice repetitions and decide whether to challenge them than it would be to challenge every repetition heard. But the level of that additional cognitive load may depend on the strategy of the player. Recognising that it is not helpful to try and capture every breach of the rules could take some of the pressure off. This, indeed, may be a characteristic of the most successful players.

One final observation is worth making here. The JaM rules appear very simple, yet during a show, their application is constantly under negotiation: Was that really a hesitation? Was that change of content an instance of deviation? Did that word get repeated, and if so should the challenge be upheld? It might seem a recipe for disaster for a radio panel game to be built on the unreliable foundation of underspecified definitions of its core parameters. That JaM has survived changing fashions and financial cuts for over 56 years suggests that its vagueness, in generating opportunities for entertaining tension as well as for toleration and leniency, is a facilitator of, rather than a barrier to, its success.

Of course, the datasets examined – 24 minutes of text by Merton in Study 1 and twelve complete episodes in Study 2 – constitute only a fraction of what they aim to represent, and the multiple carving up of the data into frequency bands, word classes, and challenged versus unchallenged sometimes meant that cells were sparsely populated. A future study could work with a larger dataset and thereby establish whether certain quirks in the present studies, including the profile of frequency Band H (see Sections 5.3 and 6.4) are replicated. Certainly, JaM would easily bear further linguistic research, for every question answered has generated new ones, highlighting the inherent complexity of this data type.

There is also much more to explore regarding the players' experiences in JaM. There is no denying that JaM requires a level of concentration that marks the players out as exceptional performers. What do they say about the cognitive burden? How does it affect them? How do they cope with it? However, that inquiry must wait for another day.

Acknowledgements

References

Anderson, Anne. 2006. Psycholinguistics: overview. In Keith Brown (ed.), *Encyclopedia of language and linguistics* (2nd ed., Vol. 10), 265–275. Oxford: Oxford University Press.

Anward, Jan. 2006. Word classes/parts of speech: overview. In Keith Brown (ed.), *Encyclopedia of language and linguistics* (2nd ed., Vol. 13), 628–632. Oxford: Elsevier.

Blumstein, Sheila E. 2007. Word recognition in aphasia. In M. Gareth Gaskell (ed.), *Oxford handbook of psycholinguistics*, 141–155. Oxford: Oxford University Press.

Buerki, Andreas. (2020). (How) is formulaic language universal? Insights from Korean, German and English. In Elisabeth Piirainen, Natalia Filatkina, Sören Stumpf & Christian Pfeiffer (eds.), *Formulaic language and new data:theoretical and methodological implications*, 103–134. Berlin: De Gruyter.

Christiansen, Thomas. 2008. Trends in the use of slang in the panel show *Just a Minute* in the period 1967-2006. In Susan Kermas & Maurizio Gotti (eds.), *Socially-conditioned language change: diachronic and synchronic insights*, 445–469. Lecce: Edizione del Grifo.

Christiansen, Thomas. 2011. *Cohesion: a discourse perspective*. Bern: Peter Lang.

Gayathri, S. 2016. *Just a Minute* (or JaM): a joyous communication enhancement game. *International Journal of Communication and Media Studies*, 6(1). 13–16.

Giulianelli, Mari, Arabella Sinclair & Raquel Fernández. 2022. *Construction repetition reduces information rate in dialogue*. Paper presented at the 2nd Conference of the Asia-Pacific chapter of the Association for Computational Linguistics/12th International Joint Conference on Natural Language Processing, https://arxiv.org/abs/2210.08321.

Jaelani, Alan & Imanda R. Utami. 2020. The implementation of *Just a Minute* (JaM) technique to scaffold students' speaking fluency: a case study. *English Journal* 14(1). 1–15.

Kumar, Sunita. V. 2017. *Just a Minute* sessions: a gift of the gab. *ITIHAS Journal of Indian Management*, 7(1). 44-46.

Leech, Geoffrey, Paul Rayson & Andrew Wilson. 2001. *Word frequencies in written and spoken English*. London: Routledge.

McArthur, Tom (ed.) 1998. *Concise Oxford companion to the English language*. Oxford: Oxford University Press.

Parsons, Nicholas. 2010. *My life in comedy*. Edinburgh & London: Mainstream Publishing.

Parsons, Nicholas. 2014. *Just a Minute*. Edinburgh: Canongate Books.

Pertiwi, Rinindi & Zul Amri. 2017. Using *Just a Minute* game to improve students' speaking ability in senior high school. *Journal of English Language Teaching* 6(1 E). 1–7. http://ejournal.unp.ac.id/index.php/jelt/article/view/9664.

Pulvermüller, Friedemann. 2007. Word processing in the brain as revealed by neurophysiological imaging. In M. Gareth Gaskell (ed.), *Oxford handbook of psycholinguistics*, 119–139. Oxford: Oxford University Press.

Rao, Parupalli S. 2018. The importance of JAM sessions in English classrooms. *Research Journal of English Language and Literature* 6(4). 338–346.

Rao, Parupalli S. 2019. The significance of *Just a Minute* (JAM) sessions in developing speaking skills in English language learning (ELL) environment. *Research Journal of English* 4(4). 237–248.

Sachs, Jacqueline S. 1967. Recognition memory for syntactic and semantic aspects of connected discourse. *Perception and Psychophysics* 2. 437–442.

Shaaban, Sumer S. A. 2020. The effect of *Just a Minute* on enhancing the use of grammar in oral contexts among Palestinian tenth graders and their attitudes towards it. *Journal of Al-Azhar University – Gaza (Humanities)*, 22(1, 4), https://shorturl.at/amDM8

Taylor, John. R. 2012. *The mental corpus*. Oxford: Oxford University Press.

Vigliocco, Gabriella & David P. Vinson. 2007. Semantic representation. In M. Gareth Gaskell (ed.), *Oxford handbook of psycholinguistics*, 195–215. Oxford: Oxford University Press.

Williams, K. 1985. *Just Williams*. London: J. M. Dent.

Wray, Alison. 2002. *Formulaic language and the lexicon*. Cambridge: Cambridge University Press.

Wray, Alison. 2015. Why are we so sure we know what a word is? In John Taylor (ed.), *Oxford handbook of the word*, 725–750. Oxford: Oxford University Press.

Wray, Alison. 2017. Formulaic sequences as a regulatory mechanism for cognitive perturbations during the achievement of social goals. *Topics in Cognitive Science* 9(3). 569–587.

Wray, Alison. 2019. Concluding question: Why don't second language learners more proactively target formulaic sequences? In Anna Siyanova-Chanturia & Ana Pellicer-Sanchez (eds.), *Understanding formulaic language: a second language acquisition perspective*, 248–269. New York & London: Routledge.