At the Linguistics & Law Lab at Northeastern University we investigate issues at the intersection of language and law, where linguistic analysis can provide insight and tools for understanding language in legal contexts. Our goal, across all of our work, is to improve justice through linguistic research. In what follows, I will discuss a project which is one focus of our lab. We are open to collaborations of many kinds, but this should give you the flavor of some of our current work.

1. The jury instruction project

Our project on jury instructions began when the Massachusetts Bar Association asked me, a linguistics professor, to help them rewrite the state's jury instructions. The MBA was addressing a growing problem confronting US courtrooms: jury instructions are often incomprehensible to jurors, especially those with little education or rudimentary English.¹ This excludes many jurors from equal participation but worse, it has led to misinformed verdicts and wrongful convictions.²

Massachusetts' interest in working with a linguist was inspired by California, which rewrote its instructions in 2003, and its team crucially included linguists. An excerpt of one of their original instructions is in (1).

1. Failure of recollection is common. Innocent misrecollection is not uncommon.³

Though the judges or lawyers who wrote this obviously had no problem with it, most of us would probably prefer the version in (2), from the 2003 revision.

2. People often forget things or make mistakes in what they remember.⁴

And this version would certainly benefit jurors whose native language is not English or who have lower levels of education than others. But why **exactly** do we prefer the new version? Below we'll look at some of the linguistic factors that make excerpt (1), above, difficult to parse and excerpt (2) so much easier. But first, a little background.

1.1 Background

California started its jury instruction project in 1997, as part of a larger movement across the US. But it was not an easy path to take; the movement faced many barriers. The first is, of course, ordinary inertia. But there is also active resistance. Some members of the legal profession consider jury instructions "sacred texts" that should inspire in jurors a sense of awe & respect for the court. Some have claimed that the empirical studies showing their comprehension difficulties were simply wrong. Others, who acknowledge the difficulties, think that revising the instructions wouldn't get jurors to listen anyway. A large number of judges

¹ Charrow & Charrow 1979; Elwork, et. al. 1982; Diamond 2003; Diamond, Murphy & Rose 2012; Tiersma 2009.

² Benson 1985; Solan 2001; Marder 2006.

³ California Book of Approved Jury Instructions (BAJI), 2.21.

⁴ Judicial Council of California Civil Jury Instruction (CACI, 2003) http://www.courts.ca.gov/partners/documents/caci_2012_edtion.pdf

oppose changing the instructions because they fear that it will lead to past decisions being challenged, and more appeals. And many legal professionals think that there's really nothing wrong with them. So unless and until it's been accepted that jurors can't understand the instructions, there will be no motivation to change them.

But the MBA was not among the resistors and, serendipitously, just at the time that they contacted me, the Linguistic Society of America (my professional organization) had started an effort of public outreach, urging its members "to engage the public in learning about linguistics and its broader value to society." The coalescence of these two things was too much to ignore and so I agreed to jump in. But knowing about the resistance -- and being a researcher -- it was clear to me that we couldn't just start rewriting. We had no funding, we had no staff, and there were two other prerequisites. First, we had to establish that the reported confusion holds for **Massachusetts** jurors hearing **Massachusetts** instructions. Second, we needed to know what makes them that way. Only if we know that our instructions are confusing will the judiciary agree to a rewriting effort. And only if we know what specific linguistic elements cause the confusion will we know how to rewrite them effectively.

1.2 A Linguistic look at Jury Instructions: a preview

To get the flavor of what kinds of problems plague instructions, let's go back to (1) and (2):

- 1. Failure of recollection is common. Innocent misrecollection is not uncommon.
- 2. People often forget things or make mistakes in what they remember.

This snippet in (1), just 10 words long, previews three problems that we will see in more depth below: a) vocabulary, b) negatives and c) nominals.

1.2.1 Vocabulary

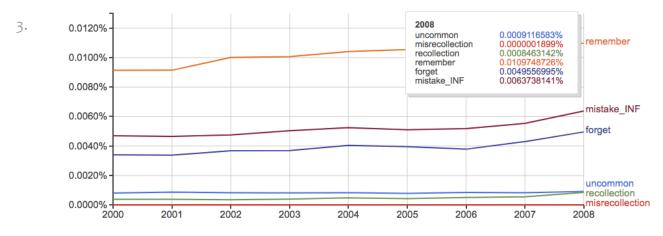
Often, legal writing is thick with the specialized vocabulary of the law, what lay-people sometimes call "legalese." These terms are not in general parlance outside the legal profession and studies have shown that the general population is often clueless about what they mean. One study of jurors who had served on a trial found that more than 25% could not define *admissible evidence, impeach,* or *burden of proof.* And more than 50% thought "a preponderance of the evidence" meant either "a slow, careful, pondering of the evidence" or "looking at the exhibits in the jury room".⁵

But you might have noticed that (1) doesn't contain any legalese *per se*. So is vocabulary a problem here? Yes. The same study showed that these jurors also had trouble with non-legal vocabulary. More than 25% could not define *inference* and more than 50% could not define *speculate*. The problem is that these are "low-frequency" words. And this is the problem with several words in (1): *uncommon*, *recollection* and *misrecollection*. The chart in (3), computed by Google's N-Gram Viewer,⁶ compares the relative frequencies of those words with the

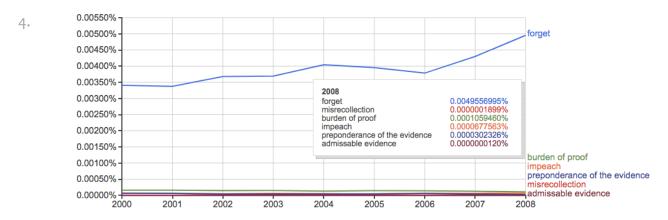
⁵ as reported in Tiersma (1993)

⁶ An N-gram is a contiguous sequence of *n* items from a given sample of text or speech. The Google Ngram Viewer or Google Books Ngram Viewer is an online search engine that charts frequencies of any set of comma-delimited search strings using a yearly count of n-grams found in sources printed between 1500 and 2008. See https://books.google.com/ngrams.

frequencies of the replacement terms in (2): forget, remember and mistakes.⁷ The former, unsurprisingly, cluster at the low end.



And though no one has tested juror's comprehension of these six words, we can estimate their comprehension by comparing them to words of the same frequency counts that **were** tested, as shown in (4):



(4) shows the word forget at the top; mistake and remember, given their place on (3), would be higher still. All of these words sit quite a distance above misrecollection, which clusters with the legal terms that fewer than 25% of the jurors understood, and where the other infrequent terms (recollection and uncommon, omitted for clarity) would also cluster.

1.2.2 Negatives

Strikingly, of the ten words in (1), four are negative expressions, which are known to be harder to process than positive statements.⁸ There is one overt negative, [not], two prefixes, [mis-] and [un-]. and an "inherent" negative, [failure]. Even more challenging is the more complex expression [**not** [**un**common]] which contains two negatives with one embedded inside the other. The outer negative has scope over the inner one, which makes this combination harder to parse than two negatives whose scope does not interact, as in "Sally did [**not**] catch the 8:00 train so she is [**un**]likely to be on time."

⁷ To better estimate the frequency of *mistakes*, the INF function is used, which gives the combined frequency for a word and its inflected forms.

⁸ Wason 1972, Just and Carpenter 1976, Just and Clark 1973.

1.2.3 Nominals

A third challenge in these ten words are the many **nominals**, shown in boldface.

1. **Fail**ure of **recollect**ion is common. Innocent **misrecollect**ion is not uncommon.

Nominals are complex nouns built from verbs and this excerpt contains three: *failure* from *fail; recollection* from *recollect* and *misrecollection* from *misrecollect*. Research has demonstrated that a nominal is more difficult to process than its corresponding verb, especially for poor readers.⁹ Why is this? When a verb turns into a nominal, the process eliminates one or more of the verb's *arguments*, which are the central pieces of the verb's meaning. As shown in (5a), the verb *fail* takes one argument, the subject. This argument is not expressed in *failure*, though the nominal nevertheless entails that "someone" or "something" failed. *Recollect* and *misrecollect* each take two arguments, a subject and an object. And just like the verb, though the arguments are not expressed, the nominals *recollection* and *misrecollection* both entail that "someone" had a recollection or a misrecollected of "something".

5.	a.	[someone] fails	b.	fail ure
		[someone] recollects [something]		recollect ion
		[someone] misrecollects [something]		misrecollect ion

When we parse sentence (1) and try to assemble the components into a meaning, we relate the nominals back to their verbs and look for the verbs' arguments. And when we don't find them, we must mentally put them back in, an operation that has a cost. Recognizing this, California's new version in (2) replaced the nominals with verbs (*forget, make, remember*) along with all their subjects and objects, and the sentence turns out to be much more understandable:

•	[subject People] often	forget	[_{object} things]	or
		make	[object mistakes]	in
	[object what] ¹⁰ [subject they]	remember		

1.3 A recap and a roadmap

6.

Our preview of legal language identified three problems with the two-line snippet in (1): Though the sentences are short, (a) they contain many low-frequency words; (b) the message is framed in negatives, including the very challenging "embedded" negative, [not uncommon], and (c) the verbs have been nominalized, their subjects and objects deleted. But this is the tip of the iceberg. The instructions that jurors hear are much longer than this snippet. In the next section we turn to one of those instructions and the challenges that it poses. Following that, we look at how those challenges can be overcome. We begin, in section 2 with a full length version of a Massachusetts instruction, Standard of Proof, and the additional linguistic challenges it poses. Section 3 introduces a Plain English version of the instruction, written by our team of lawyers, judges, and linguists. In section 4, we look at data from a series of experiments that tested whether the new versions lead to better comprehension. In section 5, we conclude with our future plans and goals.

⁹ Duffelmeyer 1979; Spyridakis and Isakson 1998.

¹⁰ The object of *remember*, [what], is fronted in this relative clause construction.

2. Standard of Proof

A common instruction given to jurors is Standard of Proof in (7).

7. Standard of Proof, Massachusetts current instruction

I. The standard of proof in a civil case is that a plaintiff must prove (his/her) case by a

- 2. preponderance of the evidence. This is a less stringent standard than [is applied] in a
- 3. criminal case, where the prosecution must prove its case beyond a reasonable <u>doubt</u>.

4. By contrast, in a civil case such as this one, the plaintiff [is not required] to prove

5. (his/her) case beyond a reasonable <u>doubt</u>. In a civil case, the party bearing the burden of

6. proof meets the burden when (he/she) shows it to be true by a preponderance of the

7. evidence.

8. The standard of a preponderance of the evidence means the greater weight of the

9. evidence. A preponderance of the evidence is such evidence which, WHEN [CONSIDERED]

10. AND [COMPARED] WITH ANY OPPOSED TO IT, has more convincing force and produces in your 11. minds a <u>belief</u> that what [is sought] [to be proved] is more probably true than *not* 12. true.

13. A proposition [is proved] by a preponderance of the evidence if, AFTER YOU HAVE WEIGHED 14. THE EVIDENCE, that proposition [is made] to appear more likely or probable in the sense

15. that there exists in your minds an actual <u>belief</u> in the truth of that proposition

16. [**derived**] from the evidence, *notwithstanding* any <u>doubts</u> that may still linger in your 17. minds.

18. Simply [stated], a matter has [been proved] by a preponderance of the evidence if 19. you determine, AFTER YOU HAVE WEIGHED ALL OF THE EVIDENCE, that that matter is more

20. probably true than *not* true.

The linguistic challenges that plague sentence (1) can also be seen here. Leaving aside vocabulary for now, the other two -- *negatives* (italicized) and <u>nominals</u> (underlined) -- are both syntactic – related to the structure of the sentences. But this instruction poses other serious syntactic challenges as well.

2.1 Syntactic challenges

2.1.1 Passive verbs

First, the instruction is filled with [**passive verbs**] -- 11 in 21 lines -- which are much more challenging to process than their active counterparts.¹¹ The reason is clear in (8), with the two-argument (transitive) verb consider. In the active sentence, (8a), the arguments are in the canonical English order, subject – verb -- object. The *passive* in (8b) disrupts the order: the

¹¹ Olson and Filby 1972, Ferreira 2003, among others.

object is in subject position and the subject is in a by-phrase, following the verb. In (8c), the "truncated passive," the subject is eliminated altogether.

- a. Active [subject The jury] must consider [object all the evidence].
 - b. Passive [object All the evidence] must be considered [by [subject the jury]].
 - c. Truncated Passive [object All the evidence] must be considered.

In Standard of Proof all of the passives are truncated passives, missing their logical subjects. But even more confusing is that a different kind of by-phrase, [by a preponderance of the evidence], appears after two of these and tempts the listener to think that this is a passive by-phrase that contains the logical subject. However, as is clear from lines 1-2 of the instruction, [a plaintiff must prove (his/her) case by a preponderance of the evidence], the subject is [a plaintiff] and it's missing.

2.1.2 Interjections

8.

Another syntactic obstacle in this instruction are three INTERJECTED PHRASES, shown in (7) in small caps, that break the flow of their sentences by splitting them in two. To understand the sentences, we have to mentally reassemble the two parts, while omitting the [INTERJECTIONS]. To see what this requires, consider a simpler case, (9a). When an interjection is jammed into the middle, separating the subject from the verb, the result is (9b), which certainly feels harder to process. Compare this to (9c) and (9d), where the same clause is not interjected, but tacked on either before or after. The message is the same, but the processing is much easier.

- 9. a. [The jurors must agree on a decision]
 - b. [The jurors] after considering all of the evidence [must agree on a decision]
 - c. After considering all of the evidence [the jurors must agree on a decision.]
 - d. [The jurors must agree on a decision] after considering all of the evidence.

2.1.3 Multiple embeddings

Above, we saw an embedded negative [**not** [**un**common]]. But embedding can also involve sentences. And the embedding process can be repeated, the embedded sentence embedding another sentence inside of **it**, and so on, like a set of nested Russian dolls. This instruction has sentences with 3-, 4-, and 5- levels of embedding. (10) shows the "deconstructed" 4-level sentence, which begins on line 9. And notice that clause 2 is broken up by an interjection (in **bold**), which as we just saw, adds one more parsing problem.

10. [1 A preponderance of the evidence is such evidence

[2 which,

[when considered and compared with any opposed to it],

has more convincing force and produces in your minds a belief
[3 that what is sought
[4 to be proved 4]

is more probably true than not true 3] 2] 1]

But even without the interjection, the sentence would be extremely challenging to listeners. If there is one solid result in the psycholinguistic,¹² neurolinguistic,¹³ and readability literature,¹⁴ it is that embedded structures are more difficult to process than "flat" structures with little or no embedding.

2.2 Semantic challenges

A separate set of challenges come from the instruction's words and phrases. As shown in (11), using a fresh version of the instruction, four of these expressions (in bold) are **low-frequency**: *stringent, sought, such evidence,* and *notwithstanding*. Nineteen (in small caps) are "LEGALESE," also known to make processing more difficult.¹⁵ Expressions that are both **low-frequency** and LEGALESE appear in **BOLD SMALL CAPS**.

11. Standard of Proof, Massachusetts current instruction: LEGALESE and LOW-FREQUENCY WORDS

I. The **STANDARD OF PROOF** in a CIVIL CASE is that **A PLAINTIFF** must prove (his/her) case by **A**

2. PREPONDERANCE OF THE EVIDENCE. This is a less stringent standard than is applied in A

3. CRIMINAL CASE, where THE PROSECUTION must prove its case BEYOND A REASONABLE DOUBT.

4. By contrast, in a CIVIL CASE such as this one, the **PLAINTIFF** is not required to prove (his/her)

5. case **BEYOND A REASONABLE DOUBT.** In a CIVIL CASE, the PARTY BEARING THE BURDEN OF PROOF

6. MEETS THE BURDEN when (he/she) shows it to be true by **A PREPONDERANCE OF THE EVIDENCE**.

7. The standard of **A PREPONDERANCE OF THE EVIDENCE** means the greater weight of the

8. evidence. A **PREPONDERANCE OF THE EVIDENCE** is **such evidence** which, when considered

9. and compared with any opposed to it, has more convincing force and produces in your minds

10. a belief that what is **sought** to be proved is more probably true than not true.

11. A **PROPOSITION** is proved by **A PREPONDERANCE OF THE EVIDENCE** if, after you have

12. weighed the evidence, that **PROPOSITION** is made to appear more likely or probable in

- 13. the sense that there exists in your minds an actual belief in the truth of that
- 14. **PROPOSITION** derived from the evidence, **notwithstanding** any doubts that may still
- 15. linger in your minds.
- 16. Simply stated, a matter has been proved by **A PREPONDERANCE OF THE EVIDENCE** if you

17. determine, after you have weighed all of the evidence that that matter is more probably true

18. than not true.

Notice that eighteen of the nineteen legalese terms are never defined. The one term that is -- **A PREPONDERANCE OF THE EVIDENCE** -- is defined only after jurors have heard it three times, too late to be of much help. But there is one more problem with some of these legal terms. The ones that are made up of familiar words like *meet* in *meet the burden* pose a potentially worse challenge than even the strictly legal expressions. A listener will access the ordinary meaning of the common word, understanding *meet* as in *meet the new neighbors*, realize that this isn't

¹² Miller and Chomsky 1963; Bever 1970

¹³ Just, et. al. 1996

¹⁴ Klare 1963

¹⁵ Diana and Reder 2006, among others.

the intended meaning, and then need to recover and figure out what the intended meaning is, all while the rest of the instruction is going by.

3. Standard of Proof: a Plain English version

Now that we have seen some of the difficulties in this instruction, consider the Plain English version in (13). It was rewritten by a team of lawyers, judges, and linguists connected with the MBA. The problematic expressions are coded as follows: **negatives**, <u>nominals</u>, *passives*, [interjections], **LEGALESE**, and LOW-FREQUENCY words.

12. Standard of Proof, Plain English instruction

- I. This is a CIVIL case. In a civil case, there are two parties, the "PLAINTIFF", and the
- 2. "DEFENDANT". The plaintiff is the one who "BRINGS THE CASE" against the defendant. And
- 3. it is the plaintiff who must convince you of his case with stronger, more believable evidence.
- 4. In other words, it is the plaintiff who bears the "BURDEN OF PROOF".
- 5. After you hear all the evidence on both sides, if you find that the greater weight of the
- 6. evidence [also called "THE PREPONDERANCE OF THE EVIDENCE"] is on the plaintiff's
- 7. side, then you should decide in favor of the plaintiff.
- 8. But if you find that the evidence is stronger on the defendant's side, or the evidence on the
- 9. two sides is equal, 50/50, then you must decide in favor of the defendant.
- 10. Now, you may have heard that in some cases, the evidence must convince you "BEYOND A
- 1. REASONABLE DOUBT." That's only true for CRIMINAL cases. For civil cases like this one, you
- 12. might still have some <u>doubts</u> after hearing the evidence, but even if you do, as long as one
- 13. side's evidence is stronger [- even slightly stronger --] than the other's, you must decide in
- 14. favor of that side. Stronger evidence does **not** mean more evidence. It is the quality or
- 15. strength of the evidence, **not** the quantity or amount, that matters.

This instruction either eliminates or minimizes all of the confusing linguistic challenges in the current instruction.

3.1 Syntax

Instead of six **negatives**, there are three. The six <u>nominals</u> have been reduced to two. All eleven *passive verbs* are gone, and so are the [interjections]. This version does contain two new [interjections], but they are there to clarify the preceding phrase, not to insert a new idea. And the multiple layers of embedding are reduced to two.

3.2 Semantics

All of the LOW-FREQUENCY words and phrases -- STRINGENT, SOUGHT, SUCH EVIDENCE, AND NOTWITHSTANDING – are now replaced by more commonplace expressions. And though most of the LEGALESE remains – STANDARD OF PROOF, PLAINTIFF, BURDEN OF PROOF, PREPONDERANCE OF THE EVIDENCE, BEYOND A REASONABLE DOUBT -- and two have been added – BRINGS THE CASE and DEFENDANT – each term is defined as soon as it appears, either explicitly or by appearing in a clear context. The question is, will this revised instruction be easier to understand?

4. Experimental Evidence: Two Studies

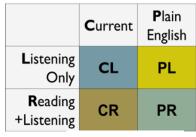
The answer is yes. Our lab has been running a series of studies, comparing comprehension of current Massachusetts jury instructions with Plain English versions, focusing on two of the linguistic factors that contribute to listeners' difficulty: passive verbs and "legalese". We also asked whether reading the texts of the instructions while listening will boost understanding. We framed our research questions as the three hypotheses in (13). Study 1 tested undergraduate students; Study 2 used a more diverse subject group, Amazon MTurk participants, who more closely match the jury pool.

- 13. H1. Plain English instructions will show better comprehension than Current instructions.
 - H2. Two linguistic factors significantly impede comprehension: **passive verbs** and **legalese**.
 - H3. Reading while listening will improve comprehension over listening only.

Below is a brief overview of some of our findings.

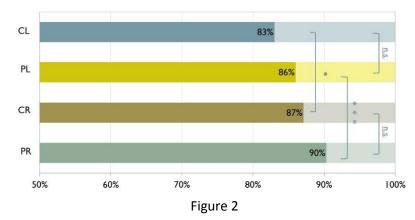
4.1 Study 1: Undergraduate student subjects

Study 1 tested 214 undergraduates randomly assigned to the four groups in Figure 1. All subjects listened to recordings of six **C**urrent jury instructions or their **P**lain English counterparts. Two of the four groups had the text to **R**ead along (**CR** & **PR**) the other two just **L**istened (**CL** & **PL**). After each recording, subjects answered a set of true/false questions to measure their comprehension.





Hypothesis 1 predicted that the comprehension scores for the Plain English instructions would



be higher than those for Current instructions and as Figure 2 shows, they were, (CL 83% vs PL 86%) and (CR 87% vs. PR 90%), though they were not large enough to be statistically significant. There was a significant boost, however, with the addition of reading, as Hypothesis 3 predicted (CL 83% vs CR 87% and PL 86% vs. PR 90%).

But to understand what happened

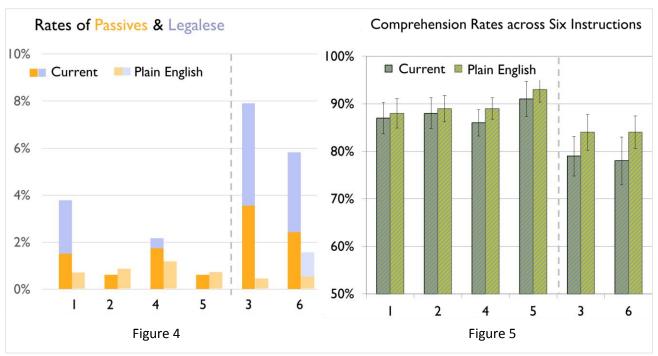
with the switch to Plain English, we need to look at the six instructions individually. As Figure 3 shows, switching to Plain English did have an effect, especially for the listening condition only, in particular for instructions 3 and 6. These showed the biggest jumps from CL to PL and from



CR to **PR**. But why did these instructions show the greatest boosts? The explanation lies in Hypothesis 2. Hypothesis 2 predicted that the instructions that posed the most linguistic challenges – containing the highest rates of passive verbs and legalese

– should be the most difficult. And that is shown in the left-hand bars in Figures 4 and 5. Instructions 3 and 6 were the worst offenders (Figure 4), with the highest rates of these two linguistic factors, and these are the same instructions that had the lowest rates of comprehension (Figure 5).

Eliminating most of the difficult language in the Plain English version improved comprehension. Over the six instructions overall, the rates of passives and legalese dropped (Figure 4, right hand bars of each pair), with the largest drop for instructions 3 and 6. And as Figure 5 shows, it is in these instructions where the changes had the greatest impact on comprehension. The



difference in the left and right bars of each pair in Figure 5 is greater for instructions 3 and 6 than the rest.

But now you may be wondering why the improvements were not larger? There is a good reason for this: comprehension of the current instructions was quite high to start with. The blue bar is at 83%. And why? These subjects were Northeastern undergraduates. And the next question is this: Would real jurors perform as well? Probably not.

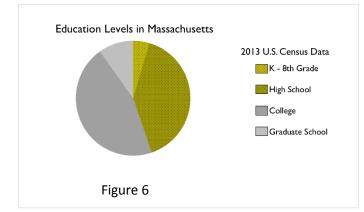
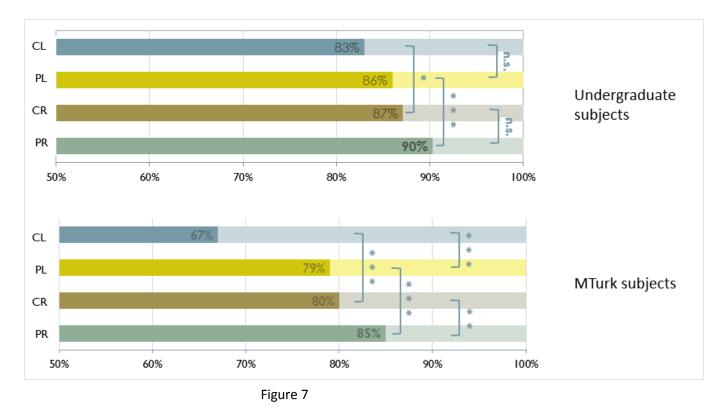


Figure 6 shows the Massachusetts jury pool, nearly half of which (the yellowgreen areas) has not gone beyond high school. If we want to approximate juror comprehension overall, we would have to find a new subject pool, people who are more like Massachusetts jurors. And that's exactly what we did.

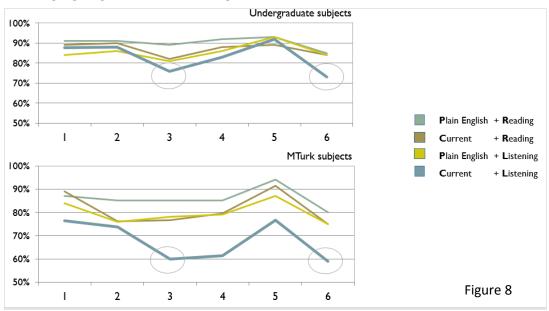
4.2 Study 2: MTurk subjects

Our next study used a more diverse subject pool, 389 subjects, in the same 4 conditions, recruited through Amazon's Mechanical Turk (MTurk) crowd-sourcing platform. The methodology, materials and experimental design were identical. And our prediction was confirmed. These results showed **striking** improvements across all four conditions, as the bottom graph in Figure 7 illustrates.



We have already discussed why. These subjects' baseline scores were much worse than the students' thus there is much more room for improvement. For the Current Listening CL condition, the blue bar, MTurk subjects scored not 83% but only 67% -- missing a full third of the questions. Those who had the advantage of reading, CR, scored 80%. Switching to Plain English raised both of these: CL 67% to PL 79% and CR 80% to PR 85%. And viewing the results the other way, the difference between just listening or listening + reading also improved scores significantly: from CL 67% to CR 80%, from PL 79% to PR 85%). Figure 8 shows the same pattern in the individual instructions. Here, the blue line dips even lower. And just like the students, these subjects found instructions 3 and 6 the most difficult, returning comprehension scores of

60% and 59%, the scores across the six instructions again correlating with their rates of challenging linguistic factors in Figure 4.



5. Conclusions and future directions

With the findings in Experiment 2, we've shown a group of subjects who understand only about 2/3 of the six current Massachusetts instructions we tested. Their comprehension dips even lower for instructions that are linguistically more challenging. But we suspect that **actual** juror comprehension is probably quite a bit worse. Here's why.

The procedure we used for both of our experiments was this: subjects listened to each instruction one at a time, and after each one they stopped to answer a set of true/false questions about it. So they had to remember each instruction only very briefly, long enough to answer the related questions, before moving on to the next instruction. In a real courtroom, the judge generally presents all the instructions together and only after they're all over does the jury go into the jury room to discuss the case. Real jurors have to remember back to the very first instruction they heard. So real jurors might have a harder time.

We are currently running another set of experiments to model this procedure – on both Northeastern students and MTurkers, to match the first two experiments. Our new methodology presents the instructions "grouped together" and **then** all the questions. Our hypothesis is that subjects in these new experiments will perform worse than their counterparts in Experiments 1 and 2. We already have preliminary results from the students, which look promising, but it's too early to tell.

Our dream study, of course, would be to use **real** jurors as our subjects, but not jurors who have sat in on a trial, since they have already been exposed to instructions. We would like to get access to jurors who are dismissed before getting on a jury. Then we might have the data that would be the **most** convincing of all.

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