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Big tobacco focuses on the facts to hide the truth: an algorithmic exploration of courtroom tropes and taboos

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ABSTRACT

Objective To use methods from computational linguistics to identify differences in the rhetorical strategies deployed by defence versus plaintiffs' lawyers in cigarette litigation.

Methods From 318 closing arguments in 159 Engle progeny trials (2008–2016) archived in the Truth Tobacco Industry Documents, we calculated frequency scores and Mann-Whitney Rho scores of plaintiffs versus defence corpora to discover 'tropes' (terms used disproportionately by one side) and 'taboos' (terms scrupulously avoided by one side or the other).

Results Defence attorneys seek to place the smoker on trial, using his or her friends and family members to demonstrate that he or she must have been fully aware of the harms caused by smoking. We show that 'free choice,' 'common knowledge' and 'personal responsibility' remain key strategies in cigarette litigation, but algorithmic analysis allows us to understand how such strategies can be deployed without actually using these expressions. Industry attorneys rarely mention personal responsibility, for example, but invoke that concept indirectly, by talking about 'decisions' made by the individual smoker and 'risks' they assumed.

Conclusions Quantitative analysis can reveal heretofore hidden patterns in courtroom rhetoric, including the weaponisation of pronouns and the systematic avoidance of certain terms, such as 'profits' or 'customer.' While cigarette makers use words that focus on the individual smoker, attorneys for the plaintiffs refocus agency onto the industry. We show how even seemingly trivial parts of speech—like pronouns—along with references to family members or words like 'truth' and 'facts' have been weaponised for use in litigation.

INTRODUCTION

The language used by attorneys in tobacco litigation reveals key elements of the strategies deployed by cigarette makers and their courtroom opponents.[1–7] According to industry lawyers, for example, smokers 'passed away' but were never 'killed'; they always had the 'ability to quit' but were not 'addicted'. Jurors, tobacco attorneys claim, should focus on the individual 'facts' of the case but not on the larger 'truth' about the industry. Language is, per Bolinger, 'a loaded weapon,' which means that words are not innocent conveyers of meaning.[8] There is a subtle micropolitics in human speech, expressed in the kinds of words chosen by one side or another to deploy or to avoid.[9–11]

To explore this divergent use of words and phrases, we analysed closing arguments in 159 Engle progeny trials from 2008 through 2016. Using methods from corpus linguistics, we constructed tables of 'tropes' (frequent terms that one side uses disproportionately) and 'taboos' (rare terms that one side avoids scrupulously), identifying heretofore hidden rhetorical strategies of the industry while also casting light on strategies used by plaintiffs.[12 13] While cigarette makers use words or phrases that tend to focus agency on the individual smoker, attorneys working for the plaintiffs (ie, injured smokers) tend to use words that refocus agency onto the industry.

To identify terms that are distinctive for plaintiffs or defendants, we used corpus comparison methods that, while originally developed in computational linguistics, have recently become popular in the field of digital humanities.[14–16] Conducting a 'distant', quantitative reading of a corpus of texts can be used for many different purposes. Connelly, for example, has used statistical methods to identify patterns of document destruction in State Department communications, while Underwood has used 'distant reading' to explore how time elapses in novels and how literary prestige leaves linguistic traces.[17–19]

Scholars have shown how cigarette makers use rhetorics of freedom, choice and personal responsibility to blame smokers for their injuries.[1 3–7 20–24] A broad scholarly literature also details how cigarette makers falsely claim that smoking's harm and addictiveness have long been 'common knowledge'.[3–5 7 25–27] Computational methods offer an important complement to this literature, allowing us to show, for example, that it is family members—the husband who warned his wife about smoking, the daughter who asked her father to give up cigarettes—who put the common in the 'common knowledge' defence. Another strength of these new methods is that they allow us to investigate what is not said: the verbal taboos that only become visible by comparing large bodies of defence rhetoric against arguments deployed by plaintiffs. Tobacco defence teams will not talk about the companies' 'customers', for example, but rather only about 'smokers.' They may acknowledge that someone has 'passed away' but will never use the word 'killed'. Computational techniques allow detection of broad, sometimes subtle, patterns of language that might otherwise escape notice—like divergent usage of pronouns—patterns that help us better understand the industry's courtroom strategy.

METHODS AND DATA

Howard Engle versus RJ Reynolds et al was filed in Florida in 1994, following discovery of internal

industry documents demonstrating a decades-long conspiracy to hide the hazards of cigarettes and to deny manipulation of nicotine to create and sustain addiction.[24 28] The case went to trial in Miami in 1998, and in 2000 the jury reached a verdict, awarding $145 billion in damages to Florida smokers. Cigarette makers appealed to the Florida Supreme Court, however, and in 2006 managed to have the Engle class decertified, meaning that nothing would be awarded to smokers as a group.[29] Instead, individual smokers would have to petition to come before the court and plead for justice. As of 2019, only about 250 Engle cases have been brought to court, with a number of others settled out of court. The industry has effectively reduced its legal exposure from 800 000 claims to only a handful.

The closing arguments examined here are from those preserved on the Truth Tobacco Industry Documents website, which collects trial testimony as part of a broader effort to preserve records from cigarette litigation.[30] For our study, we included only trials for which both plaintiff and defendant closings were available and which did not end in a mistrial. Three hundred eighteen transcribed closings from 159 individual trials were obtained as full-text searchable documents, yielding a plaintiffs' corpus consisting of 10 577 683 words and a defence corpus of 10 715 122 words.

We used an 'open-vocabulary' approach, analysing individual terms and phrases instead of predefined psychometric categories tracking, say, specific emotions or the temporal orientation of speech.[31] Our interest here was not so much in broader affective characteristics of our corpora but rather in how courtroom adversaries deploy different rhetorical strategies. For those interested in other distinguishing linguistic features, we provide a supplementary analysis using Linguistic Inquiry and Word Count (LIWC) categories (see online supplementary file 1, 'LIWC Categories in Engle Trial Closing Arguments').[32 33]

Vectorisation

To facilitate numerical analysis, we stripped out formatting details, including line numbers, timestamps and names of stenographic services (eg, Veritext) to retain only the transcribed verbal proceedings of the actual closings. We also removed discussions between lawyers and the judges (at sidebars, for example). We then turned this collection into a document-term matrix of the 50 000 most frequent 1- to 10-grams (unique word strings), including only those terms or phrases that appear at least 33 times in the dataset. We did not use a stemmer or lemmatiser during preprocessing, but we did lower case all terms and split contractions. We also added several synthetic tokens, combining terms of identical cognate form into singular terms ('decision' and 'decisions' became 'decision/s,' for example). We also combined 'he' and 'she' into a single term ('s/he') to avoid the idiosyncrasies of any particular trial—whether the smoker was male or female, for example.

Divergent terms

We used two different algorithms in our analysis—a frequency score (FS) and the Mann-Whitney Rho (MWR) score—each of which captures a different facet of how best to understand rhetorical distinctiveness (or divergence) between two different textual corpora.

The FS indicates how often a given term appears in plaintiffs' as opposed to defence closings.[34 35] The score ranges from 0 (when only defence attorneys use the term) to 1 (only plaintiffs use the term). A score of 0.8, for example, means

that 80% of all instances of the term occur in plaintiffs' closings, that is, it appears four times more often in plaintiffs' than in defence closings. To account for the fact that the defence corpus contains slightly more words, we normalised scores by using relative frequencies rather than absolute counts. FSs are useful for identifying taboos: terms generally avoided by one side or the other. Some of these are trivial and uninteresting: names of attorneys score high by this metric ('Cofer' or 'Gdanski'), for example, as do legal expressions like 'her burden (of proof)'. We often find, however, that dramatically divergent FSs (close to 1 or 0) can reveal significant taboos.[36] Cigarette industry lawyers will almost never use terms such as 'profits' or 'replacement smokers', for example, or 'addictive drugs', just as plaintiffs' lawyers are not likely to say that the smoker in question 'had the ability to quit' or that 'every pack' carried a warning.

One drawback of using Frequency Scores is that they compare the entire plaintiffs' corpus against the entire defence corpus, which means that we cannot tell how consistently a divergence appears throughout such closings—because a strongly divergent term might simply be due to idiosyncrasies of an individual trial, such as the name of a testifying witness or the verbal tic of a particular lawyer (only Steve Hammer and Alex Alvarez say 'Objection Judge', for example, instead of the more usual 'Objection Your Honor').

To obtain a measurement for consistency across all closings we used the MWR statistic, which ranks all documents by the frequency with which any given term appears in every closing.[15 37] Normalised to produce scores between 0 and 1, MWR indicates whether most plaintiff or defence closings are clustered at the top or bottom of this ranking. The term 'they', for example, has an MWR score of 0.96, which means that, given a randomly selected plaintiff's closing and a randomly selected closing by the defence, there is a 96% chance that 'they' will appear more often in the plaintiff's closing. MWR is efficient at identifying general patterns that remain consistent across all documents, because it gives less weight to terms that appear in only a few trials. Such terms generally have nothing to do with strategy but rather only with the particulars of a given trial—such as who is trying the case or on whose behalf.

The two measures are complementary. The FS produces immediately interpretable results, telling us how much more often plaintiffs or defendants use a term. Terms scoring highest (or lowest) by this metric tell us about the taboos of each side, which one can imagine as imperatives or injunctions: "Whatever you do, don't mention 'profits', or 'replacement smokers'." MWR scores allow us to identify subtler patterns that might otherwise escape notice: the interestingly divergent use of pronouns, for example. By FS the word 'they' is not particularly remarkable—plaintiffs' lawyers use it only about twice as often as defence teams. MWR, however, reveals that this is an extremely important term for the plaintiffs, who almost invariably use it more often than defence attorneys as a way of drawing attention to misdeeds 'they' (the cigarette makers) have perpetrated. By contrast, smoker-focused terms such as 'he' or 'she' are deployed consistently more often by the defence. In this way, MWR helps us identify rhetorical strategies that, in the pre-algorithmic age, managed to hide in plain sight. Who would have thought that pronoun usage would be of strategic legal significance?[38]

Table 1 Tropes: maximally divergent terms by Mann-Whitney Rho (MWR) score. An MWR score close to 0 means that a term is used consistently more often by the defence, a score close to 1 means the term is consistently used more often by plaintiffs.

Defence attorneys will often say:				Plaintiffs' attorneys will often say:			
	Defence	Plaintiffs	MWR		Defence	Plaintiffs	MWR
plaintiff	4306	536	0.06	they knew	148	2239	0.96
quit smoking	2975	435	0.07	they	43 562	19 444	0.96
quit	11 668	3922	0.08	what they did	57	774	0.95
s/he never	1915	236	0.09	their	4193	9240	0.91
Mr/Mrs/Ms	32 912	15 514	0.10	doubt	411	1550	0.89
decision/s	2857	761	0.12	drug	128	945	0.88
smoking	19 707	11 419	0.13	they were	1616	3875	0.88
smoking is/was dangerous	23	631	0.13	product	599	2232	0.87
risk/s	2580	791	0.14	our	1168	3125	0.87
warning/s	2864	813	0.14	truth	1501	292	0.87

P values <0.0001 for all MWR values.
This table excludes highly similar terms: 'plaintiff' is included, for example, but 'the plaintiff' and 'plaintiff has' are excluded.
MWR, Mann-Whitney Rho.

RESULTS

The most divergent terms by both FS and MWR capture many of the patterns we would expect to see in such trials (tables 1 and 2). Defence attorneys reference the plaintiffs, the risks taken by the smoker, the decisions he or she made and his or her ability to quit. (NB: Here and for the remainder of this paper, we have underlined terms if they are significantly divergent.) The plaintiffs, by contrast, discuss what they knew—that is, the cigarette companies—how they manufactured doubt to sell an addictive drug. As mentioned above, terms scoring highest (or lowest) by FS tend to be taboo terms, like replacement smokers (taboo for the industry), while MWR identifies terms that are subtler or of broader strategic significance—like doubt, or addictive (strategic terms deployed by the plaintiffs).

In the following section, we focus only on the highlights—word strings that are either clear expressions of the tobacco industry's legal strategy or aspects thereof that have been overlooked by scholars. To enable other researchers to conduct their own investigations, we have created an online platform making this dataset available at www.tobacco-analytics.org/litigation. In addition, all closing arguments as well as the code used to calculate FS and MWR scores are available in a GitHub repository.[39]

Pronoun politics: putting the smoker on trial (while making the industry invisible)

In 1983 or 1984, lawyers from Shook, Hardy & Bacon were running mock trials to develop strategies for upcoming litigation, notably *Cipollone*.[40] They concluded that to counter plaintiffs' attacks, the best strategy would be to focus on the individual smoker:

> Research has indicated that to the extent the jury focuses on issues including the safety of cigarettes, corporate misconduct, sending a message to the tobacco companies, the plaintiff's chances are enhanced. Conversely, if the jury focuses on the individual plaintiff, his choices, his actions, his environment and history, a defense verdict is more likely. In essence, the well-prepared plaintiff tries us; we try the plaintiff.[40]

In virtually every trial since the 1980s, the goal of both sides has been to emphasise the agency of the opposing side, while diminishing or hiding their own agency (see table 3, where terms are ranked by frequency of use). Algorithmic analysis shows that this strategic divergence has left its imprint on the pronouns used in courtroom rhetoric. MWR, which rates terms highly if they consistently appear more often in plaintiffs' or defence documents, identifies he and she, as well as

Table 2 Rhetorical taboos: highly divergent terms by frequency score (FS)

Plaintiffs' attorneys will rarely say:				Defence attorneys will rarely say:			
	Defence	Plaintiffs	FS		Defence	Plaintiffs	FS
had the ability to quit	241	2	0.01	their product	5	527	0.99
(nothing the defendants) said or did	220	4	0.02	nicotine is not addictive*	2	405	1.00
plaintiff has to prove	175	3	0.02	they lied	3	262	0.99
(if you, the jury) get this far (in the verdict form)	176	1	0.01	addictive drug	2	208	0.99
smoking decisions	137	2	0.01	profits	1	204	1.00
her burden	132	1	0.01	their customers	3	199	0.99
warnings from	108	1	0.01	replacement smokers	0	173	1.00
chose to continue	103	1	0.01	own documents	0	164	1.00
knew that smoking was dangerous	95	1	0.01	would rely	2	137	0.99
decision to quit	89	1	0.01	more likely right than wrong	0	124	1.00

P values <0.0001 for all FS.
This table contains expressions appearing at least 50 times more often in plaintiffs' than in defence closings or vice versa, sorted by term frequencies. If scores for very similar expressions appeared in close proximity we selected the more expressive ones (eg, 'had the ability to quit' instead of 'had the ability to'). Names of attorneys are excluded ('Mr Bigger', for example).
A score of 0.99 means that 99% of all instances of a given term will be in plaintiffs' documents, with corpora normalised to have the same number of words.
* Plaintiffs' attorneys often bring up the testimony of the seven cigarette CEOs in the 1994 Waxman hearings, where all seven maintained that 'nicotine is not addictive'.

Table 3	Putting the smoker on trial (while keeping the industry invisible)				
Defence attorneys will often say:					
	Defence	**Plaintiff**	**FS**	**MWR**	**Example, from defence closing**
he (or she)…	63 386	41 104	0.40	0.16	"when <u>she</u> heard her own husband say it is going to kill you, <u>she</u> did not try to quit."[61]
…did not	3563	1570	0.31	0.17	"She made the choice not to quit. <u>She did not</u> want to quit."[62]
…never	1679	236	0.13	0.09	"<u>He never</u> asked for help, <u>he never</u> threw away his cigarettes, <u>he never</u> said, I'm going to stop smoking."[47]
…knew	1255	497	0.29	0.29	"<u>She knew</u> from the beginning, and her husband confirms, <u>she knew</u> the risks."[56]
…wanted	972	199	0.18	0.16	"He knew smoking was dangerous and addictive long before May 5th, 1982, and he did what <u>he wanted</u> to do."[42]
…admitted	333	71	0.18	0.30	"<u>She admitted</u> that she already knew the danger before she switched to Kent."[63]
Mr/Ms/Mrs	32 912	15 514	0.33	0.10	"<u>Mr</u>. Gelep knew that smoking was risky."[64]
warning/s	2864	813	0.23	0.14	"He received many <u>warnings</u> over the years. And he smoked in the face of those <u>warnings</u>. And he had every right to make that choice."[65]
decision/s	2857	761	0.22	0.12	"These episodes are proof that his smoking <u>decisions</u> were based on what he wanted to do and not based on addiction."[66]
risk/s	2580	791	0.24	0.14	"As adults, it is our right to choose to balance the <u>risk</u> and benefits of the things we enjoy."[50]

P values <0.0001 for all FS and MWR score.
FS, frequency score; MWR, Mann-Whitney Rho.

<u>Mr</u>, <u>Mrs</u> and <u>Ms</u>, as among the most distinctive terms for the defence. Such terms almost always refer to the smoker or his or her family. By contrast, we found that <u>they</u> (usually referring to the industry, see again table 1) is the second most distinctive term for the plaintiffs by MWR.

The main actor in the industry's narrative is the smoker: what he or she heard, saw or did and what his or her family members remember. This basic story has remained the same ever since the industry developed its 'common knowledge' defence, which holds that smokers have only themselves to blame for any harms they may have suffered:[4 5 25] "If <u>Mr</u>. Barbose (the smoker) had to assign responsibility, would <u>he</u>? Nobody made <u>Mr</u>. Barbose's <u>decisions</u> for him."[41] The industry's lawyers try to highlight what the smoker in question knew and how he or she failed to act: "<u>He knew</u> that smoking was dangerous…. <u>He</u> chose to smoke and <u>he never</u> tried to quit and the reason <u>he never</u> tried to quit was through no fault of RJR."[42] But also: "<u>she</u> quit when <u>she</u> had a heart attack, <u>she never</u> smoked again, never smoked again."[43] Industry attorneys want juries to believe that smoking is a free choice: when a smoker wants to quit, they can.

Tobacco's lawyers also work hard to ignore or even to erase the very existence of the industry by using carefully crafted terms. Consider the difference between the terms <u>smoker</u> (FS 0.44) and <u>customer</u> (FS 0.94). <u>Customer</u> and its plural are taboo terms for the industry—plaintiffs use them almost 20 times more often than the defense—because such terms link the smoker to the industry. This same pattern holds true for <u>killed</u> (by someone or something, FS 0.85) versus <u>passed away</u> (FS 0.17), or <u>product</u> (of the industry, FS 0.79) versus <u>cigarettes</u> (FS 0.53). Defence attorneys use terms that draw attention away from the fact that the cigarettes smoked by the plaintiff were manufactured by large corporations bonded in conspiracy.[25 27]

Attorneys working for the plaintiffs, of course, use different rhetoric. Plaintiffs centre their case around what the <u>industry</u> did and what <u>they</u> need to be punished for: "Are we going to stand for liars and companies that treat people like that just because <u>they</u>'re a corporation in America, just in the name of <u>profits</u>? That's going to be for you to decide."[44]

Putting the 'common' in 'common knowledge'—by blaming family members

Cigarette makers claim that smokers have known about the dangers inherent in smoking since at least 1966, when caution labels were first placed on packs.[4 5 25] To buttress this argument, industry lawyers have often hired historians to testify that everyone knew about such harms, thanks to a purported 'deluge' of publicity.[5 24 27] These historians never look at cigarette ads or the industry's own documents, focusing instead on warnings in articles that give this impression of an 'avalanche' of warnings, with the industry itself essentially impotent and invisible. As Louis Kyriakoudes summarises: "From the testimony of industry historians, one would never understand how it came to be that anyone ever smoked."[5]

In recent Engle progeny trials, instead of historians, the industry often uses the plaintiff and his or her family to put on its common knowledge defence (table 4). <u>Husbands</u> and <u>wives</u>, <u>brothers</u> and <u>sisters</u>, <u>mothers</u> and <u>fathers</u> are all brought in to testify that the smoker must have known that smoking was dangerous: "Ladies and Gentlemen, I submit to you that the evidence demonstrates that Ellen Tate knew that smoking was dangerous to her. And she knew it when her <u>sister</u> Marcia knew it. She knew it when her <u>husband</u> Mr. Fazio knew it. She knew it when her <u>friend</u> Mona knew it. She knew it when the warnings went on the packages, and she saw them every day."[45] Family members are used to suggest that a smoker must have been aware of the harms caused by smoking; he or she made an informed decision when starting and continuing to smoke.

Cigarette industry lawyers learnt how important family members can be to their cause in the 1980s, in the course of running mock trials in preparation for the *Cipollone* case. To the surprise of these lawyers, family members turned out to be the industry's best assets: mock jurors "rated Rose (Cipollone) and her family as plaintiffs worst witness (by far) and defendants best (by far)." (p128)[40] In fact, the family's evidence "was so powerful that nothing much could be added." To harness the power of this testimony, it was essential to establish that the smoker had been told repeatedly, even as a child, about the dangers of smoking, and that in later life he or she had been warned by his or her spouse and children. It was through these witnesses that the industry could establish 'awareness'. This same strategy continues today.

Table 4 Exculpating the industry by weaponising the smoker's friends and family

Defence attorneys will often say:

	Defence	Plaintiff	FS	MWR	Example
relatives*	5342	2375	0.32	0.23	"When people told him that they wanted him to quit smoking, like his <u>wife</u>, for example, he told them to mind their own business. He told his <u>daughter</u>, 'I'm grown.'"[67]
father/mother	1670	567	0.26	0.27	"He didn't quit when his <u>father</u> … was diagnosed or died of lung cancer."[68]
husband/wife	1614	895	0.37	0.39†	"His <u>wife</u>, the plaintiff in this case, and his daughters warned him over and over and over again."[69]
brother/sister	705	216	0.24	0.32	"You heard from her <u>brother</u> and <u>sister</u> that smoking was forbidden when they were kids…"[50]
friend/s	755	317	0.30	0.31	"We heard from a couple of his co-workers and <u>friends</u> he enjoyed smoking."[70]
common knowledge	72	10	0.13	0.43†	"All the plaintiffs' experts admitted that the dangers and addictive nature of cigarettes were <u>common knowledge</u>."[71]

P values <0.0001 for all FS and MWR score unless otherwise noted.

*Relatives include the terms wife, husband, mother, father, grandmother, grandfather, sister/s, brother/s, daughter/s, son/s, granddaughter/s, grandson/s, uncle/s and aunt/s.

†P value <0.001.

FS, frequency score; MWR, Mann-Whitney Rho.

Care and concern by family members are weaponised by industry lawyers in a number of different ways. Warnings from relatives are used to portray the smoker as a rational actor: "His <u>wife</u>, his <u>stepdaughter</u>, his own doctors told him many times over the years, 'Smoking is dangerous. You should quit.' … But William Starbuck enjoyed smoking cigarettes and had no real interest in quitting."[46] Family care and concern can also be used to paint the smoker as reckless: "He is responsible for the decision to continue smoking and to not even try to quit in the face of begging and encouragement from his children and from his <u>wife</u>."[47] <u>Parents</u> who were smokers can also be blamed for passing on the habit to their children: "Mrs. Cohen stole her first cigarette from her <u>father</u>. Mrs. Cohen started smoking because her <u>friends</u> smoked. And that is the greatest predictive factor …if you have got a <u>parent</u> who smokes, you have got <u>friends</u> who smoke, chances are you will become a smoker, not (from) seeing cartoons on TV with ads…"[48]

Talking about 'free choice' while avoiding the term 'free choice'

One of our more surprising discoveries is that <u>free choice</u> is a highly distinctive term for plaintiffs, appearing 450 times in plaintiffs' closings but only 32 times in defence closings (table 5). This is surprising, because the industry for many years has claimed that smoking is a free choice.[3 7 20] In court, however, attorneys for the plaintiffs have appropriated the term. They often cite a 1980 Tobacco Institute document,

which concludes that "We can't defend continued smoking as 'free choice' if the person was 'addicted.'"[49] They will ask: How could anyone claim that smoking was a completely free choice? As plaintiffs lawyer William Wichmann put it in *Campbell* (2013): "This poor woman—no one has disputed the fact that when she was in the hospital and sedated, begging her husband for cigarettes going through withdrawal symptoms, that is how she was able to quit. … Make up your own mind whether this is a woman who did all of this as a matter of lifestyle <u>free choice</u> or whether this was a woman who was addicted to nicotine."[50]

Cigarette industry lawyers try to avoid this conundrum by accepting that while smoking may be addictive in principle, it never is for any actual smoker confronting them in court: "Nicotine is addictive. Cigarettes are addictive.… What you have to decide is whether or not Mrs. Lloyd was addicted."[51] To discredit the plaintiffs, the industry deploys a Catch-22: If you managed to quit, you were never addicted. And if you were not able to quit, you probably were not sufficiently motivated. Big Tobacco lawyers will question whether any smoker was ever really addicted: "Mr. Barbose was not addicted. He was in control over his smoking choices and he was not significantly impaired or distressed. He was not <u>motivated</u> to even try to quit for decades. And when he was <u>motivated</u> to <u>quit</u>, he was successful."[52] Again, the claim is that the smoker in question must have made an informed decision: "The evidence is that Mr. O'Hara knew the <u>risks</u>, saw the <u>warnings</u> on the packs,

Table 5 Talking about 'free choice' while avoiding the term 'free choice'

Defence attorneys will often say:

	Defence	Plaintiff	FS	MWR	Example
quit smoking	3410	435	0.13	0.07	"You heard the evidence that over 60 million people have <u>quit smoking</u>."[72] "And she <u>quit smoking</u> in 1996. And she did not go back. She did not relapse."[50]
motivated	487	114	0.20	0.27	"Was he himself truly <u>motivated</u> to quit during the history of his smoking?"[73]
enjoyed smoking	307	50	0.14	0.29	"He <u>enjoyed smoking</u>. He knew the risks. He made an adult choice."[74]
had the ability to quit	241	2	0.01	0.23	"Ms. Lennox <u>had the ability to quit</u> smoking whenever she was truly motivated to do so"[75]
did not want to quit	215	16	0.07	0.34	"She simply <u>did not want to quit</u> smoking until it was too late to avoid her lung cancer and her COPD."[76]
Plaintiffs' attorneys will often say:					
free choice	32	450	0.94	0.86	"Once addicted, it is no longer an unconstrained <u>free choice</u> for the smoker because of the physiological and psychological need for cigarettes containing nicotine."[77]

Table 6 Weaponising facts versus exposing the truth

Defence attorneys are more likely to say:

	Defence	Plaintiff	FS	MWR	Example
case	8058	5510	0.42	0.27	"This case is about John Paul Alexander. And neither their experts nor their fact witnesses have connected anything that Reynolds did to him."[67]
facts	1234	555	0.32	0.31	"Dr. Kyriakoudes came in here, and he tells the same historical advertising story about tobacco, no matter what the facts are of a specific smoker."[78]
specific/ally	875	436	0.34	0.32	"…but they did not say anything about addiction specific to Mr. Buonomo."[79]
mad	124	21	0.15	0.37	"They were here to get you mad so that you would decide this case based on emotion rather than on the facts of the case of Betty Owens."[80]
angry	69	17	0.20	0.41	"….as opposed to these broad, general arguments that the plaintiffs have made (to) make you angry with the tobacco companies."[81]

Plaintiffs' attorneys are more likely to talk about:

	Defence	Plaintiff	FS	MWR	Example
doubt	1550	411	0.80	0.89	"Remember, they said, 'We still have to create doubt.'"[82]
truth	1501	292	0.84	0.87	"Did the conspiracy hide the truth about death-causing traits of cigarettes? You better believe it."[83]
conspiracy	1259	335	0.80	0.79	"They engaged, the defendants did, in a conspiracy to create doubt about the health risks and addictive nature of smoking."[84]

P value <0.0001 for all FS and MWR score.

FS, Frequency Score; MWR, Mann-Whitney Rho.

made the decision to smoke."[53] People smoke, according to this argument, because they enjoy it: "She was warned for 39 years. There's no evidence that anybody saw her try to quit smoking…. What she told people is that she enjoyed smoking and did not want to quit."[54] This strategy can be traced back to a 1985 Jones, Day, Reavis & Pogue report (for RJ Reynolds) which suggests, perversely in light of the common knowledge defence, that "if a plaintiff in 1964, 1966, etc. weighed the alleged risks and decided he was not convinced the risks were real, then addiction is … irrelevant as the smoker had no reason to quit."(p232)[40]

Ignore the truth, focus only on the facts

Another surprising rhetorical divergence is truth versus facts. The plaintiffs focus on documenting the truth about the industry and its misconduct, including its decades of casting doubt on research linking cigarettes and disease. The defendants do not so much deny this history as simply ignore it, while insisting that the jury focus on the facts of the specific case, which shifts all agency away from the industry.[55] This strategy, too, can be found in the industry's 1980s litigation training manuals: "our great strength is the particular plaintiff—her specific disease and her personal option to quit. Our potential weakness surfaces at the 'universal' level: general causation, failure to warn the public, and alleged deception: advertising, industry research, lobbying."(p96)[40]

Focusing on individual facts isolates a particular trial from its larger context and allows the industry to appear calm and rational, presenting 'just the facts' while claiming that plaintiffs want to arouse emotions. Defence attorneys sometimes even suggest that plaintiffs are using scare tactics (table 6): "I submit you heard those things (from the plaintiffs) to make you angry, to get you mad, to distract you from the facts of Mr. Ahrens' case…. Dr. Proctor talked to you for 4 days in the hopes of getting you so mad that you would decide the case based on emotion…. If you keep your eye on the ball, and focus on Mr. Ahrens and the facts of his life, Mrs. Ahrens loses."[47]

By contrast, truth—about the tobacco industry and its conduct—is a crucial weapon in the plaintiffs' rhetorical armamentarium, along with doubt and conspiracy. Their argument is that for decades, the tobacco industry has been engaged in a conspiracy to create doubt and hide the truth: "So when (the smoker) started way back in that other time and place, they were years into conspiracy, hiding addiction, hiding the truth (while offering) false, fraudulent, safe-seeming fixes."[56] The plaintiffs' lawyers claim they do not need to show how the industry's disinformation campaign affected their client in particular: "You do not have to put anything particular directly in the man's hands, because there was nothing personal about the public doubt campaign, there was nothing personal about the Traveling Truth Squad, the College of Tobacco Knowledge, Anne Browder, and all these different folks that went around the country saying that it is an open controversy … meant for the population in whole, of which Mr. Banks was a part."[57]

This radical divergence between general 'truths' and specific 'facts' shows that it is wrong to think of a denialist enterprise like Big Tobacco having some kind of antipathy towards facts.[58] The broader truth is that compartmentalised facts, suitably framed, can be harnessed to serve a vital purpose in the industry's efforts to thwart justice. Cigarette makers are very good at creating macromyths out of microfacts, which also helps explain why they have such an aversion to any mention of the 'truth', both as a concept and a linguistic expression.

LIMITATIONS

Our results reflect the demands of Engle progeny cases: Engle plaintiffs are required to show that addiction was a 'legal cause' of the smoker's illness or death, for example, which requires showing that he or she was addicted. This means that disputes over addiction and related concepts will feature prominently in all such trials, even if they are of lesser import in other tobacco trials.[3 24]

Our algorithms are best at capturing patterns that remain consistent from trial to trial. For example, the industry will consistently blame non-tobacco causes for a smoker's disease, but those causes will vary from trial to trial. If a smoker died from oesophageal cancer, defence attorneys will postulate non-tobacco causes like alcohol or the human papillomavirus: "The plaintiff must prove in this case that smoking was the cause of esophageal cancer. I suggest to you that it was alcohol. That's the evidence."[59] Our algorithms do not capture these disputations of specific causation because they are usually

tailored to the individual case and do not produce consistent patterns we could identify.

DISCUSSION

The closing arguments analysed in this study help us better understand the world that cigarette industry lawyers want jurors to imagine. In this alternate reality, all agency lies with the individual consumer and none with the producer. And every smoker has always been fully informed, weighing costs and benefits before taking up or continuing to smoke.[60] In this alternate universe conjured by the defence, the specific facts of an individual case weigh heavier than larger truths about the industry's deception or the pharmacological grip of nicotine. And inconspicuous black-and-white warnings on the sides of packs deliver a bigger punch than colourful and ubiquitous ads for cigarettes.

Put in these blunt terms, the alternate reality created by the industry is grotesque and myopic. Industry lawyers have known since the 1980s that they need to blame without appearing to blame, to say without saying. 'Free choice' is a good example. Cigarette makers claim that smokers weigh the risks and benefits of smoking and then make an informed decision to smoke. Advancing this argument, however, requires carefully avoiding the term 'free choice' itself—since cigarette makers have always had choices that are clearly freer than those of an addicted smoker. Instead, the industry's lawyers focus on what <u>he</u> or <u>she</u> (the smoker) <u>knew</u>, <u>wanted</u>, <u>did</u> or <u>did not do</u>; they renarrate the smoker's life—and only the smoker's life—as filled with conscious decisions, creating the appearance of a life replete with choices.

Tobacco control scholars are familiar with myriad forms of deceptive language used by cigarette makers: code words like 'Zephyr' for cancer or 'Borstal' for benzpyrene or 'Compound W' for nicotine; we know about the industry's many euphemisms: 'smoking and health' for cigarettes and death, 'young adult' for teens, or 'tar and nicotine' for cancer and addiction.[27] Computational methods open up new ways to explore the industry's strategic rhetoric, helping us understand how even seemingly trivial lexical items like pronouns or references to family members have become legal weapons. The methods developed here could be fruitfully applied to other courtroom documents, including expert witness testimony. By comparing the language of opposing experts, we may be able to reverse engineer whatever lawyerly coaching may have occurred. And by comparing rhetorical patterns against trial outcomes, it might even be possible to discover winning strategies previously undetected.

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What this paper adds

► Florida's Engle progeny trials represent the most active forum for litigation against U.S. cigarette makers in recent years. Here, we present the first quantitative analysis of the rhetoric used to exonerate or indict cigarette makers in such trials.

► Defence attorneys rely on 'assumption of risk' strategies developed in the 1980s, which seek to blame individual smoking behaviour for whatever harms may be caused by cigarettes.

► 'Free choice', 'common knowledge' and 'personal responsibility' remain key strategies in cigarette litigation, but computational methods allow us to understand how these strategies can be deployed without actually using these terms. The industry no longer uses the term 'common knowledge', for example, but achieves a similar goal by having friends and family members testify that they had warned the smoker in question. And while the industry has long claimed that smoking is a 'free choice', that phrase is actually more likely to be used by plaintiffs, who use it to show that smoking is not simply a matter of free choice.

► Computational methods also allow us to identify subtle, micro-rhetorical strategies previously undetected: in seemingly innocuous parts of speech, for example, but also in terms such as 'smoker' (vs 'customer'), 'cigarettes' (vs 'product' of the industry) and 'passed away' (vs 'killed'), all of which are used by cigarette company lawyers to invisibilise the industry.

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