

“I Want to Talk About, Again, My Record
On Energy...”

Modeling Agendas and Framing in Political Debates and Other Conversations

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University of Maryland

Workshop on Language Technologies and
Computational Social Science
Baltimore, Maryland, USA
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- Tim Jurka
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- Justin Gross
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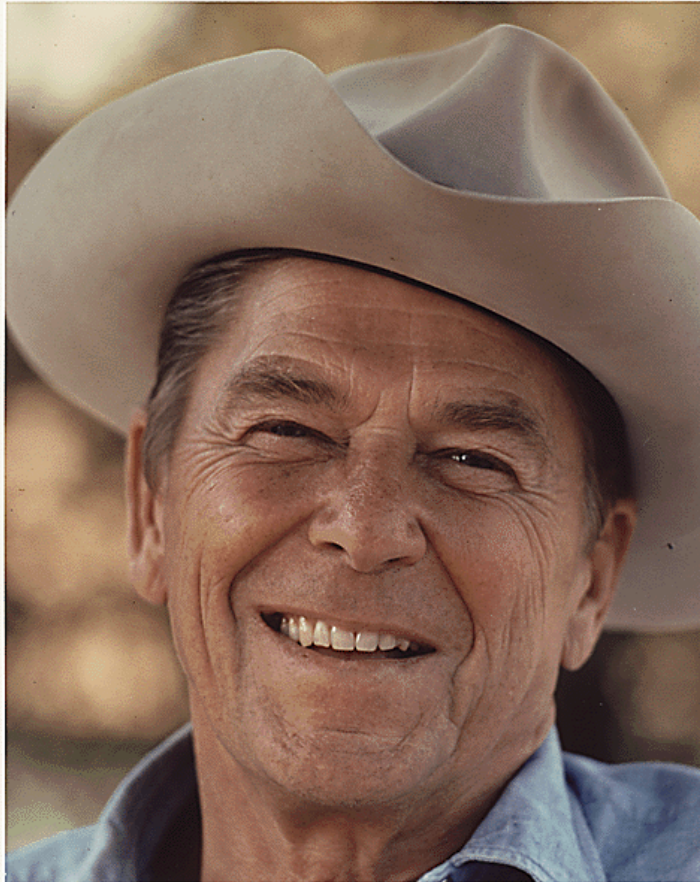


“Magic is a rich and largely untapped source of insight into perception and awareness. Insofar as the understanding of behaviour and perception goes, there are specific cases in which the magician's intuitive knowledge is superior to that of the neuroscientist.”

Syntactic framing

“Mistakes were made.”

Ronald Reagan, January 27, 1987

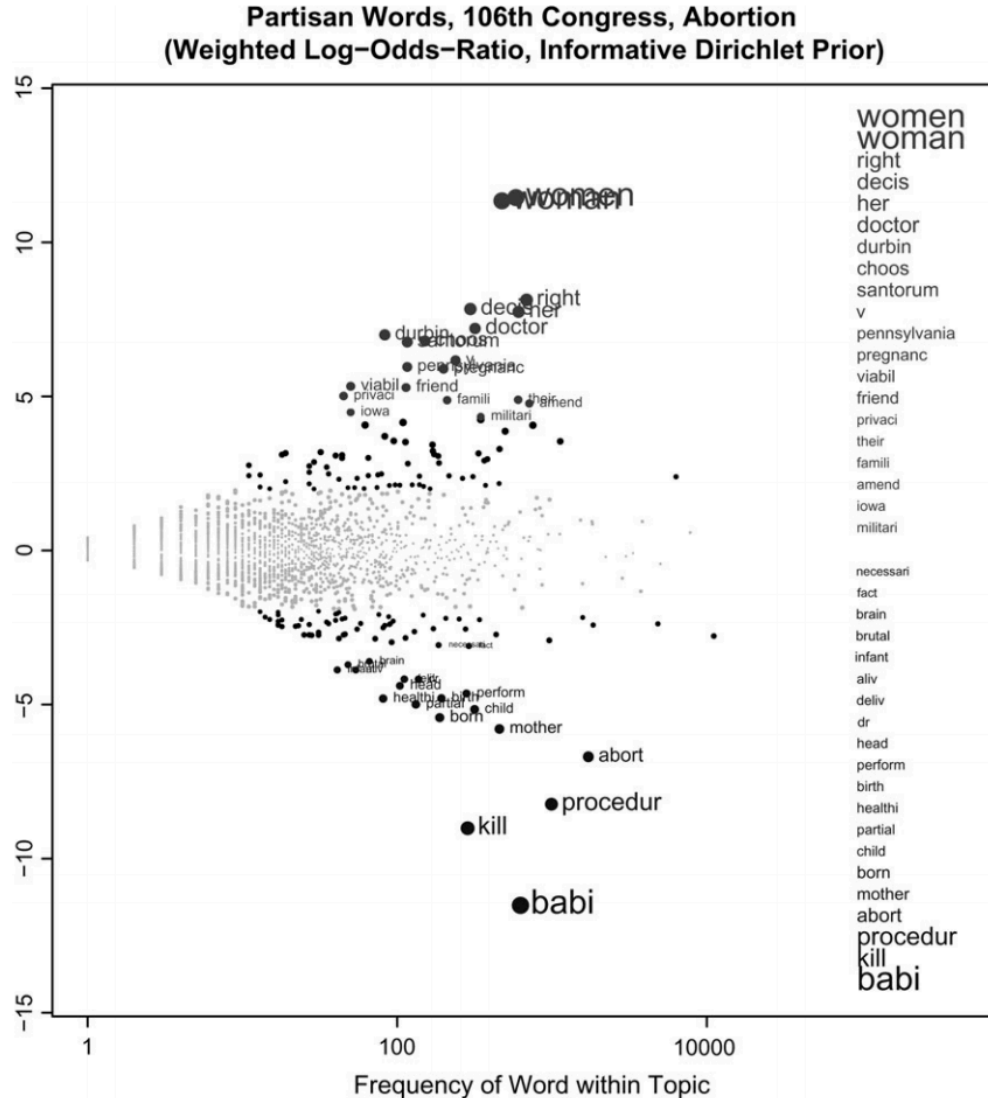


“My toy broke.”

Jay Resnik, frequently



Lexical framing



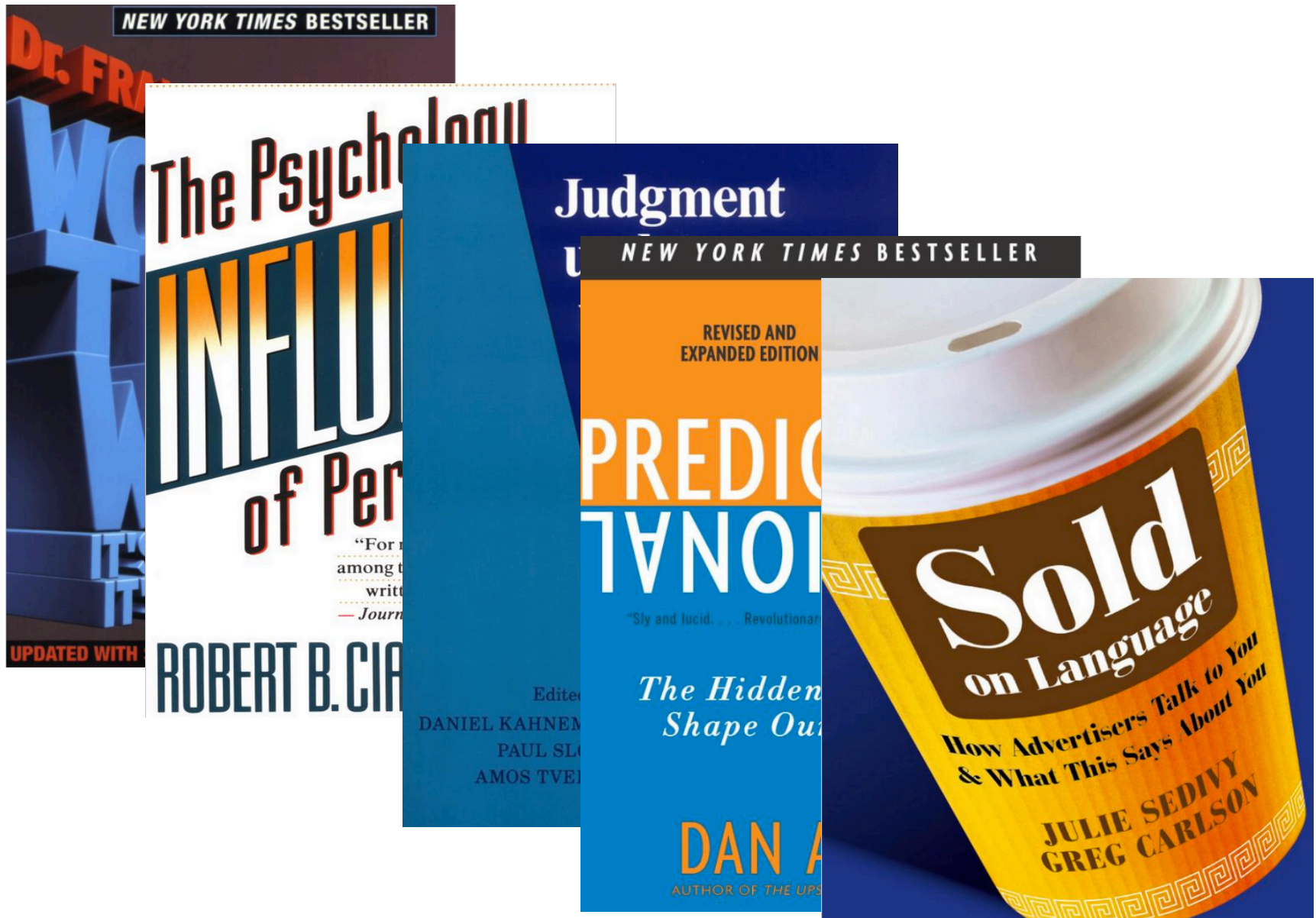
“pro-choice”

“pro-life”

What framing does is to **"select some aspects of a perceived reality and make them more salient in a communicating text**, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation for the item described."

Entman, R.M. (1993). "Framing: Toward clarification of a fractured paradigm". *Journal of Communication* 43 (4): 51–58.

Framing language → Thought processes



Syntactic framing

Suffocation kills 24-year-old woman
Man suffocates 24-year-old woman

Dowty Proto-Role Property	Hopper and Thompson Component
Volitional involvement in the event or state	<i>Volition</i>
<i>Sentience (and/or Perception)</i>	
<i>Cause change of state in object</i>	<i>Agency</i>
<i>Cause event</i>	<i>Agency</i>
<i>Movement relative to the position of another participant</i>	<i>Kinesis</i>
<i>Exists independently of the event</i>	
<i>Undergoes change of state, Causally effected by another participant</i>	<i>Affectedness of Object</i>
<i>Does not exist independently of the event</i>	
<i>Stationary relative to movement of another participant</i>	<i>Kinesis</i>
	<i>Object individuation</i>
<i>(Exists independently of the event?)</i>	<i>Subject-object individuation</i>
<i>(Incremental Theme?)</i>	<i>Punctuality</i>
	<i>Aspect (Telicity)</i>

- +

+ +

- +

+ +

+ +

+ +

Semantic ratings: averaged across 18 subjects

Sympathy ratings: averaged across 31 subjects

Strong correlations

- Volition: $r = -.78$

- Sentience: $r = -.76$

- Kinesis/movement: $r = -.75$

Syntax → Semantics → Sympathy

**Janyce Wiebe and Lingjia Deng (2014).
 An Account of Opinion Implicatures .
 arXiv:1404.6491 [cs.CL].**

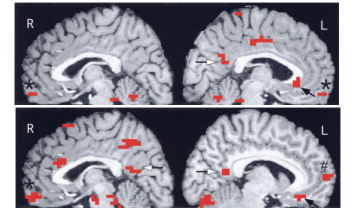
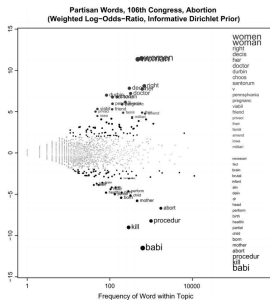
Corpus-level modeling

Richer modeling at the language level

Eliciting judgments using psycholinguistic methods

Neurolinguistics

Capturing real-time reactions to language



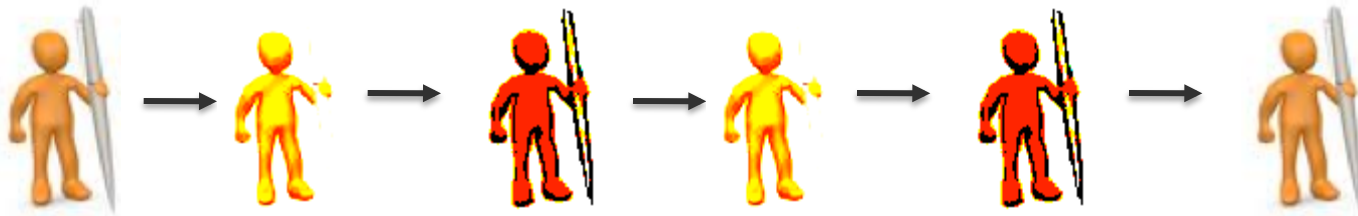
Language

Cognition

Agenda setting and influence

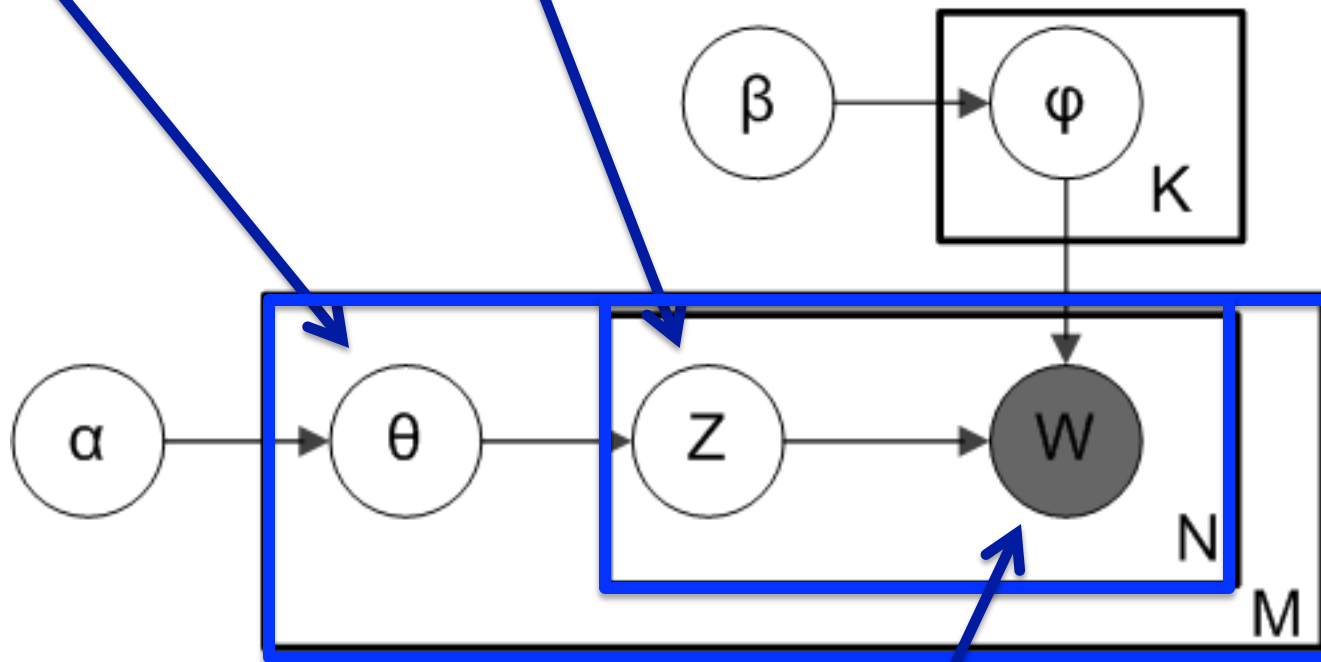
“The ability to change topical focus, especially given strong cultural and social pressure to be relevant, means having enough interpersonal power to take charge of the agenda.”

Palmer MT (1989) Controlling conversations: Turns, topics and interpersonal control. *Communication Monographs* 56(1):1–18



For every document, pick the mixture of topics that will be used.

For every word position, pick a topic for that word.



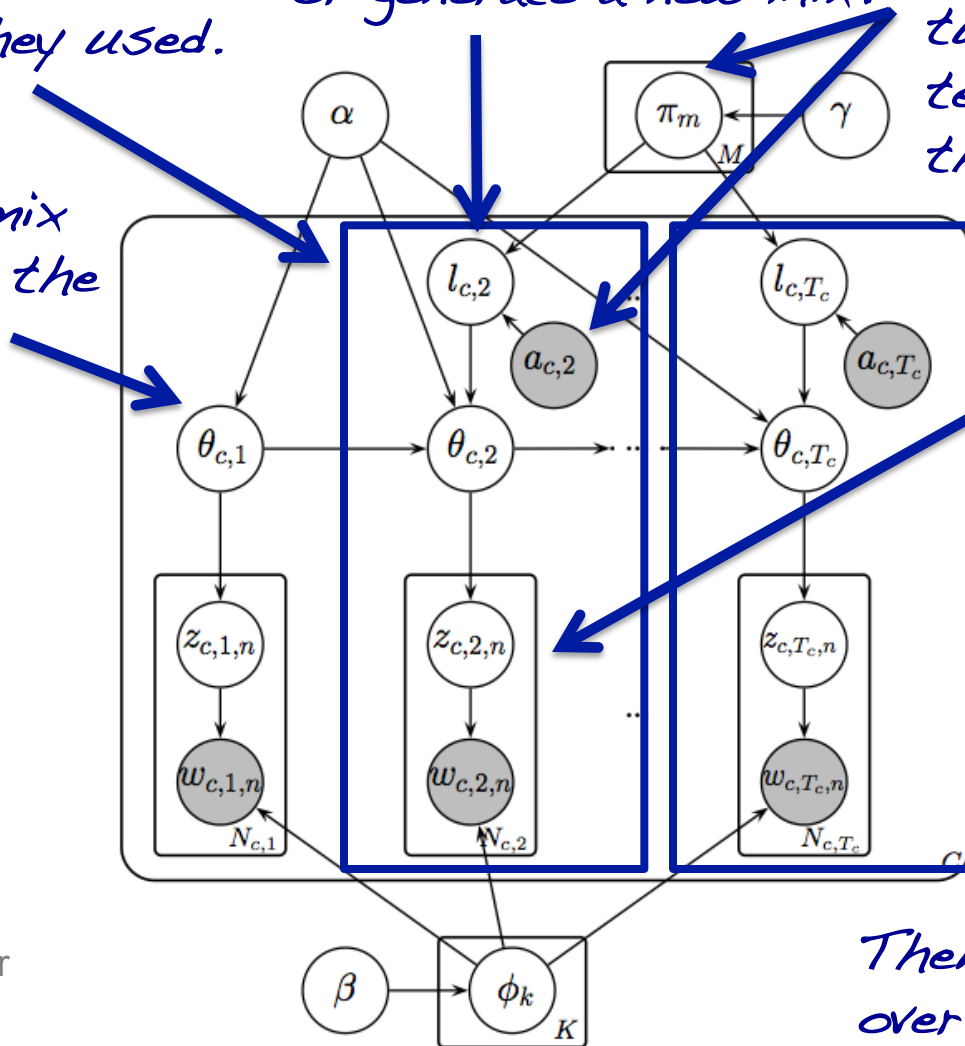
Generate a word associated with that topic.

For every turn in the conversation, we know who the author is and what words they used.

For this new turn, we decide whether to keep the old mix of topics, or generate a new mix.

That choice depends on the author of this new turn and their tendency to change the topic.

We have some mix of topics from the previous turn.



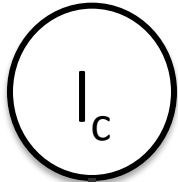
Once we have the topic mix for this turn, we generate words according to that mixture of topics.

Then we do it all over again with the next turn.

Speaker Identity for Topic Segmentation

V. Nguyen, J. Boyd-Graber, and P Resnik.
SITS: A Hierarchical Nonparametric Model using Speaker Identity for Topic Segmentation in Multiparty Conversations.
ACL 2012

Model: detecting topic shifts



The screenshot displays a transcript analysis tool with three main sections: a timeline, a transcript, and a topic cloud.

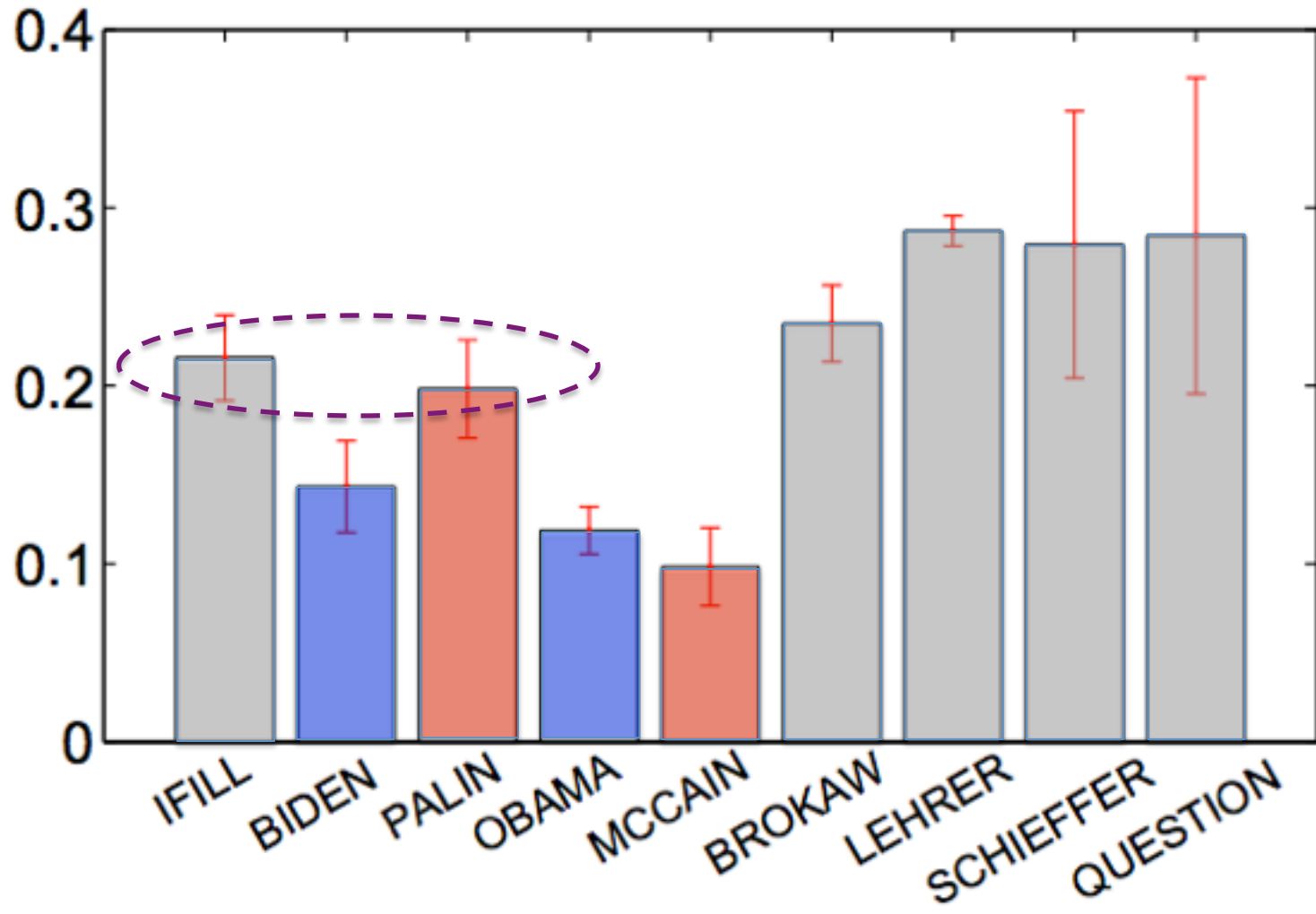
Timeline: A vertical axis on the left shows time from 44 to 73. A large blue oval highlights the period from approximately 44 to 63. A red bar is highlighted at time 48, corresponding to a topic shift.

Transcript: The transcript shows the following text:
47 IFILL: Governor Palin, is that so?
48 PALIN: That is not so, but because that's just a quick answer, I want to talk about, again, my record on energy versus your ticket's energy ticket, also. I think that this is important to come back to, with that energy policy plan again that was voted for in '05. When we talk about energy, we have to consider the need to do all that we can to allow this nation to become energy independent. It's a nonsensical position that we are in when we have domestic supplies of energy all over this great land. And East Coast politicians who don't allow energy-producing states like Alaska to produce these, to tap into them, and instead we're relying on foreign countries to produce for us. We're circulating about \$700 billion a year into foreign countries, some who do not like America -- they certainly don't have our best interests at heart -- instead of those dollars circulating here, creating tens of thousands of jobs and allowing domestic supplies of energy to be tapped into and start flowing into these very, very hungry markets. Energy independence is the key to this nation's future, to our economic future, and to our national security. So when we talk about energy plans, it's not just about who got a tax break and who didn't. And we're not giving oil companies tax breaks, but it's about a heck of a lot more than that. Energy independence is the key to America's future.
49 IFILL: Governor, I'm happy to talk to you in this next section about energy issues. Let's talk about climate change. What is true and what is false about what we have heard, read, discussed, debated about the causes of climate change?
PALIN: Yes. Well, as the nation's only Arctic state and being the governor of that state, Alaska feels and sees impacts of climate change more so than any other state. And we know that it's real. I'm not one to attribute every man -- activity of man to the changes in the climate. There is something to be said also for man's activities, but also for the cyclical temperature changes on our planet. But there are real changes going on in our climate. And I don't want to argue about

Topic Cloud: A grid of word clouds is shown below the transcript. A blue oval highlights the word cloud containing the words: energy, oil, nuclear, clean, climate, coal, alternative, power.

Word	Probability
energy	
oil	
nuclear	
clean	
climate	
coal	
alternative	
power	
technology	13
drill	

Model: topic shift tendency



OCT 2 2008, 10:45 PM ET



JAMES FALLOWS - James Fallows is a national correspondent for *The Atlantic* and has written for the magazine since the late 1970s. He has reported extensively from outside the United States, and once worked as President Carter's chief speechwriter. His latest book, *China Airborne*, will be published in May.

- **Ifill, moderator:** *Terrible.* Yes, she was constrained by the agreed debate rules. But she gave not the slightest sign of chafing against them or looking for ways to follow up the many unanswered questions or self-contradictory answers. This was the big news of the evening. Katie Couric, and for that matter

Jim Le

- **Palin**

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moder

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either

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- **Biden**

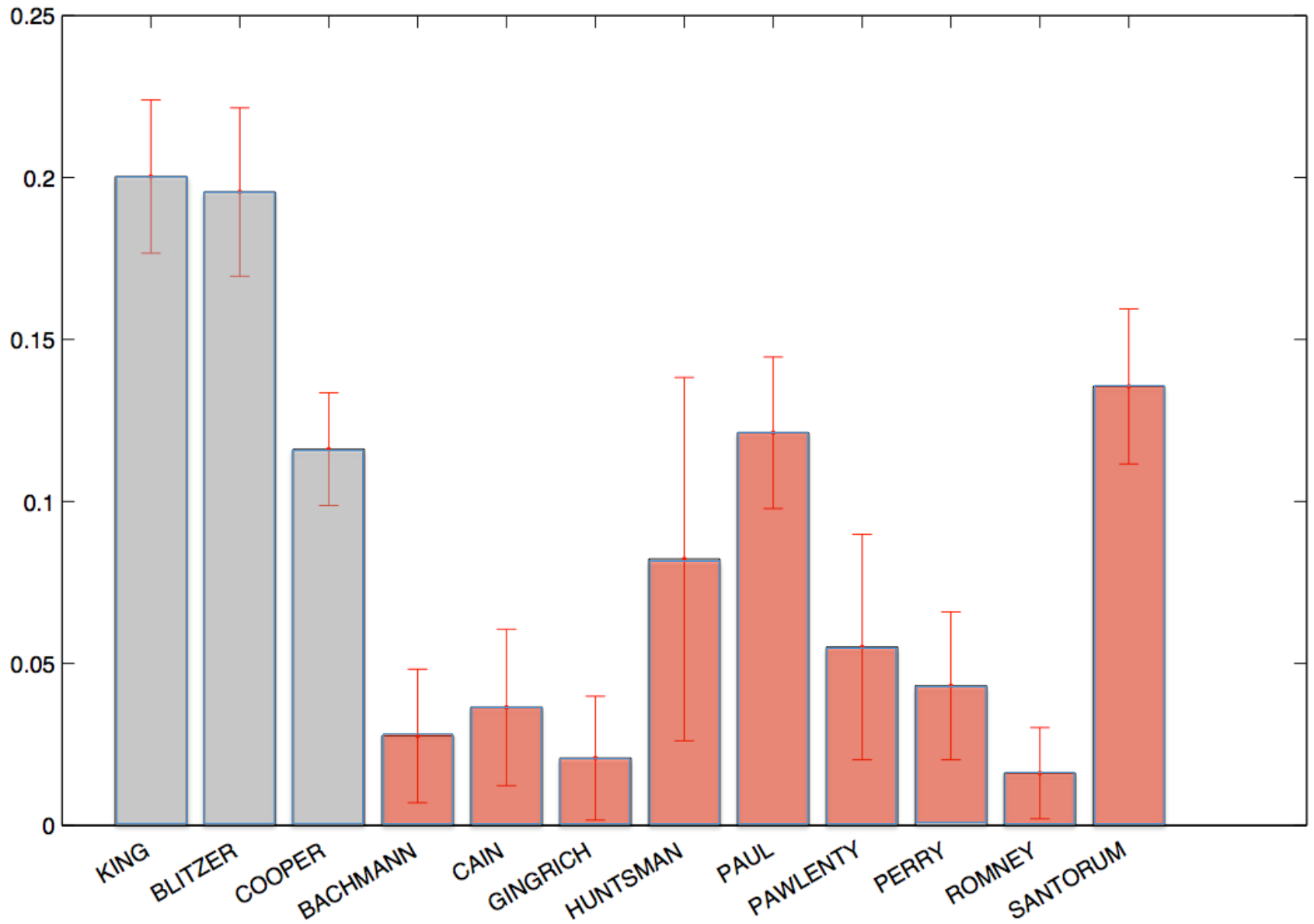
bullyin

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the beginning, he was commanding and authoritative - from his side's perspective - on issues of foreign policy and constitutional balance. And to all appearances sincere in his choking-up near the end when talking about having a child in peril. Overall, don't see how he could have balanced all the **conflicting pressures** on him much better.

- **The race:** *No fundamental change.* Which is better news for Obama than McCain.

Model: topic shift tendency



Agenda setting → Influence

	Ranking methods	F_1	AUC-ROC	AUC-PR
<i>Crossfire</i>	Num. of turns \diamond	.736	.795	.726
	Total turn lengths \diamond	.716	.782	.730
	Total topic shifts \star	.806 \pm .0122	.858 \pm .0068	.865 \pm .0063
	Weighted topic shifts \star	.828 \pm .0100	.869 \pm .0078	.873 \pm .0057
<i>Wikipedia</i>	Num. of turns \diamond	.367	.730	.291
	Total turn lengths \diamond	.306	.732	.281
	Total topic shifts \star	.552 \pm .0353	.752 \pm .0144	.377 \pm .0284
	Weighted topic shifts \star	.488 \pm .0295	.749 \pm .0149	.379 \pm .0307

Modeling Topic Control to Detect Influence in Conversations
using Nonparametric Topic Models

Viet-An Nguyen, Jordan Boyd-Graber, Philip Resnik,
Deborah A. Cai, Jennifer E. Midberry, Yuanxin Wang

Machine Learning Journal, October 2013

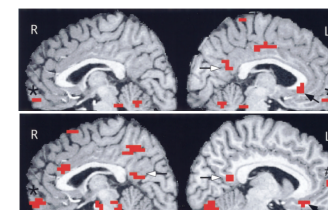
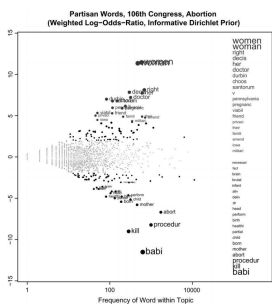
Corpus-level modeling

Richer modeling at the language level

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Language

Cognition

Agenda-setting

What gets talked about

~ **Topics**

Framing

How things get talked about

~ ??

An approach

Framing = second-level agenda setting



Swine flu surfaces at Texas-Mexico border among illegals...

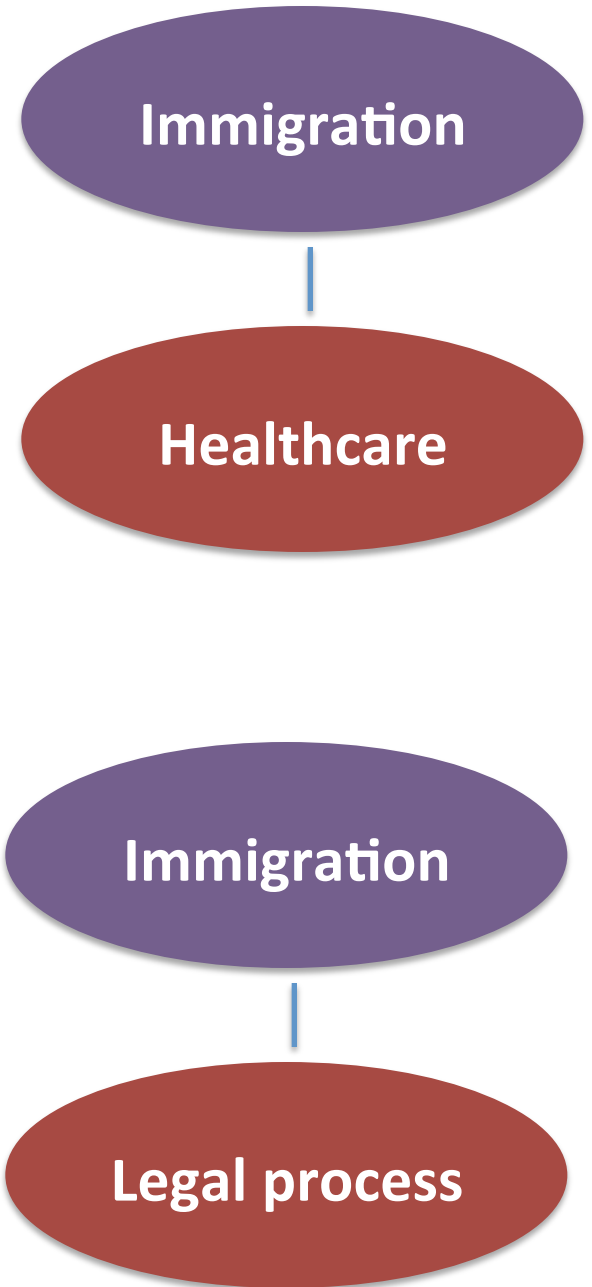
Washington Times - 10 hours ago

The first case of swine flu has been found among the scores of **illegal children** who have been crossing into America at the Texas-Mexico ...

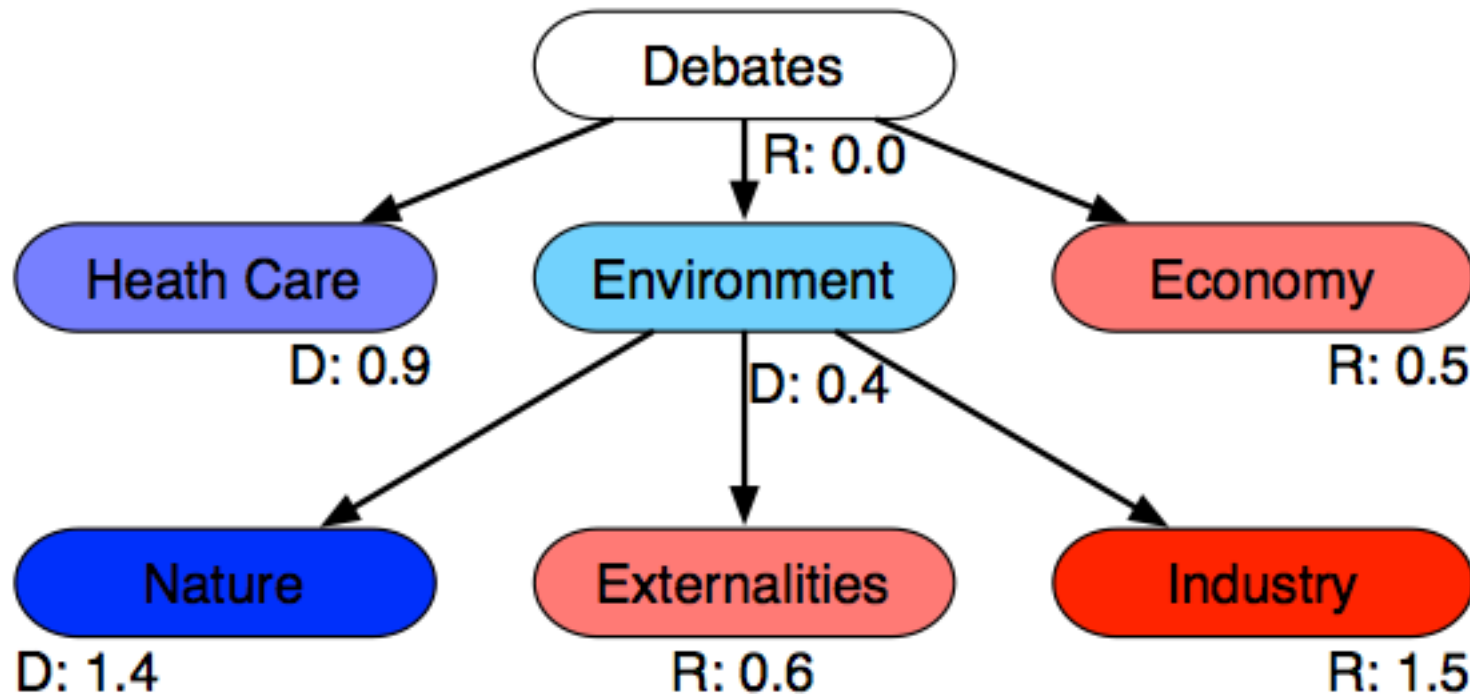
The swine flu finding only fuels fears from law enforcement along the border who say the **illegal immigrants are not being properly screened for diseases and contagious sicknesses** before moving along to other facilities for holding across the nation.

“Some of the children who have come to this country may not have a valid legal basis to remain, but some will. Yet, **it is virtually impossible for a child to assert a valid claim under immigration law in the absence of legal representation.** ... It is a fantasy to believe that unrepresented children have a fair shot in an immigration proceeding”

--Rep. Hakeem Jeffries, D-N.Y.

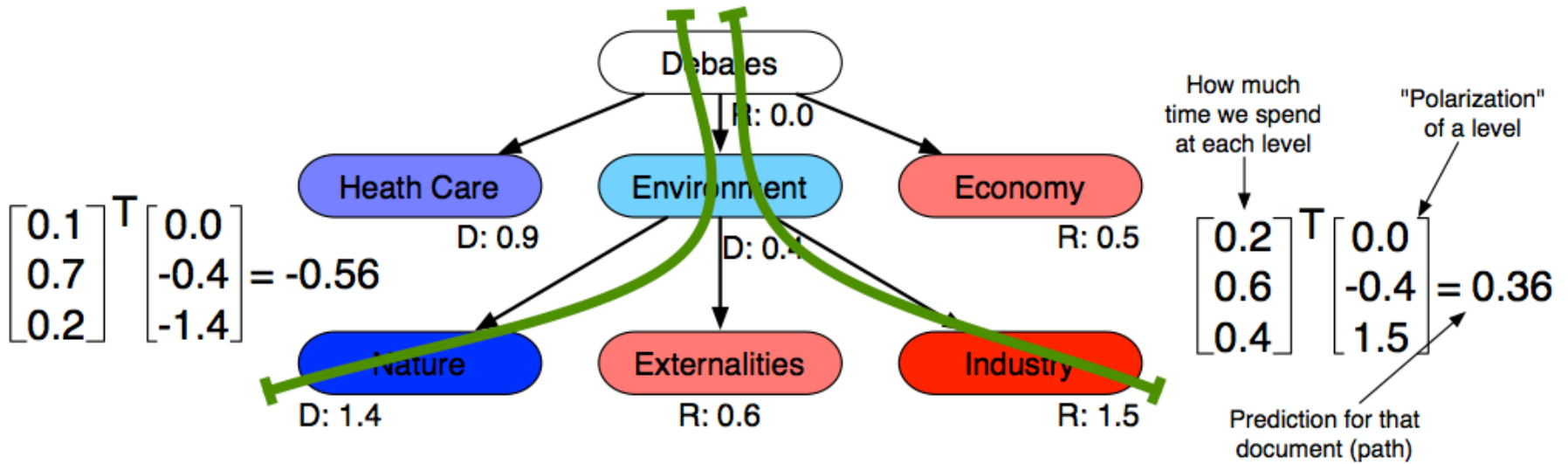


Supervised Hierarchical LDA (SHLDA)

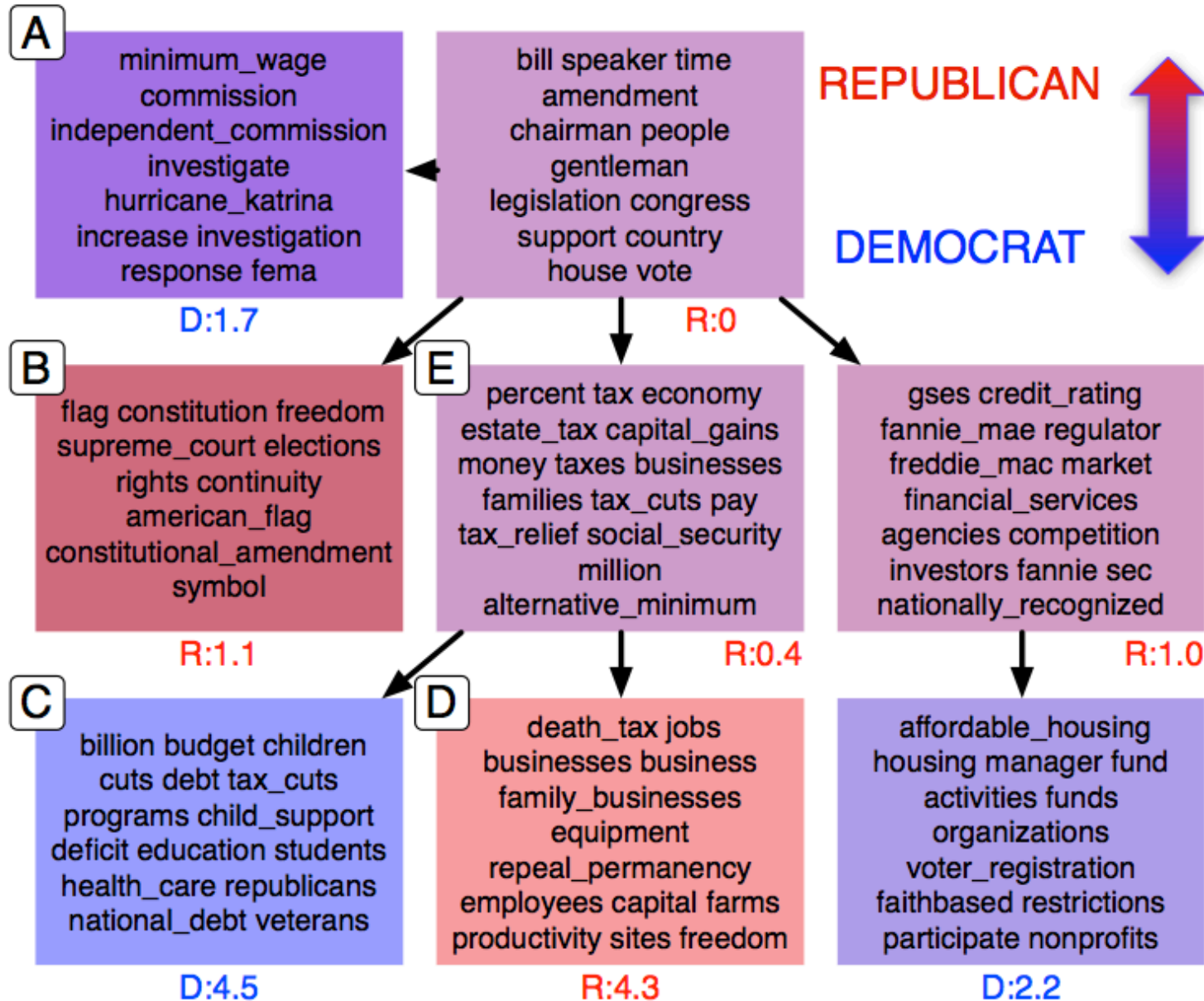


Lexical and Hierarchical Topic Regression
Viet-An Nguyen, Jordan Boyd-Graber, Philip Resnik
Advances in Neural Information Processing Systems
(NIPS 2013), Lake Tahoe, NV

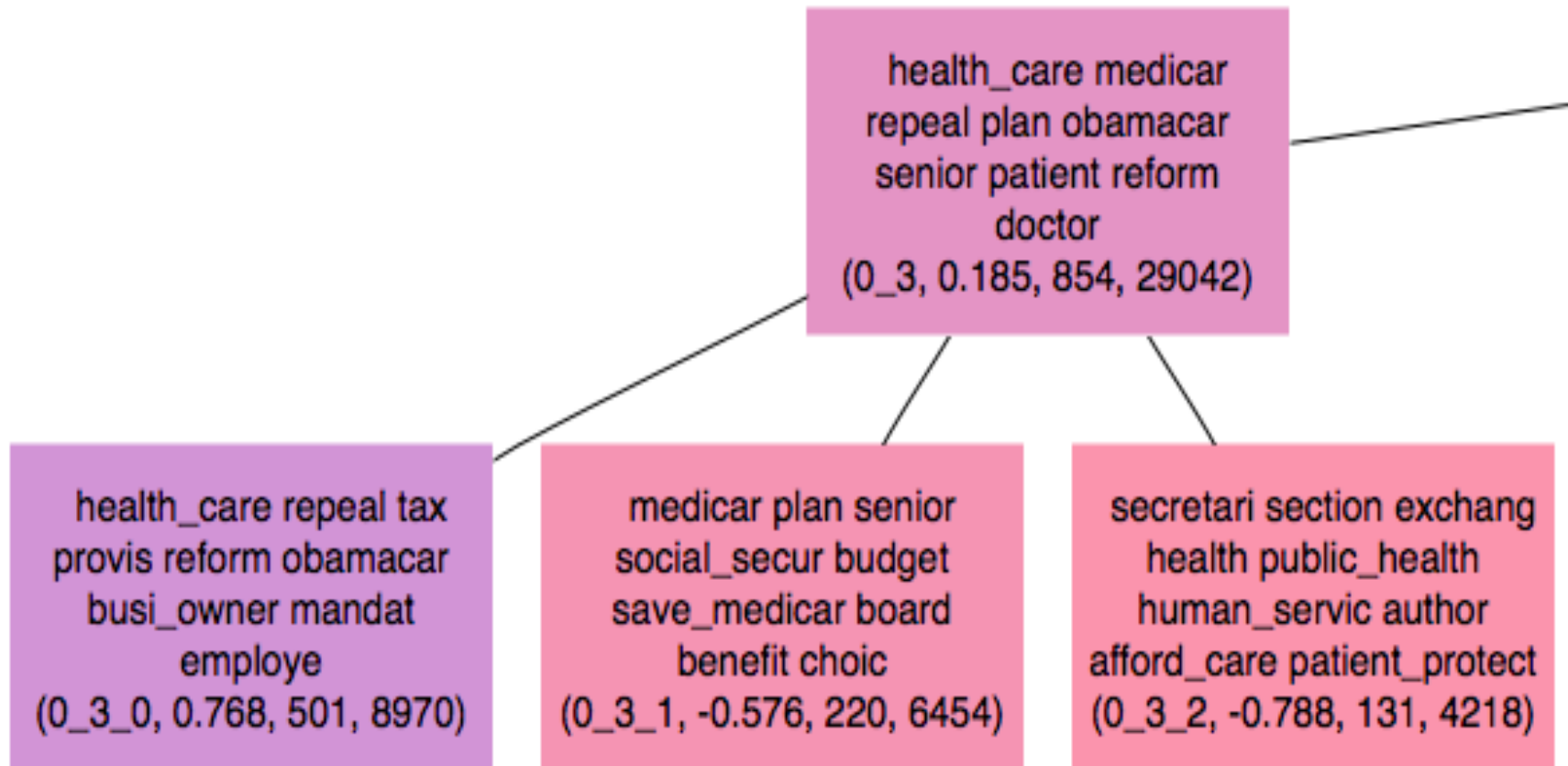
Supervised Hierarchical LDA (SHLDA)



Supervised Hierarchical LDA (SHLDA)



Tea Party example

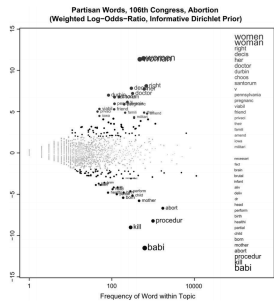


Corpus-level modeling

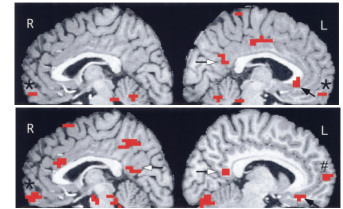
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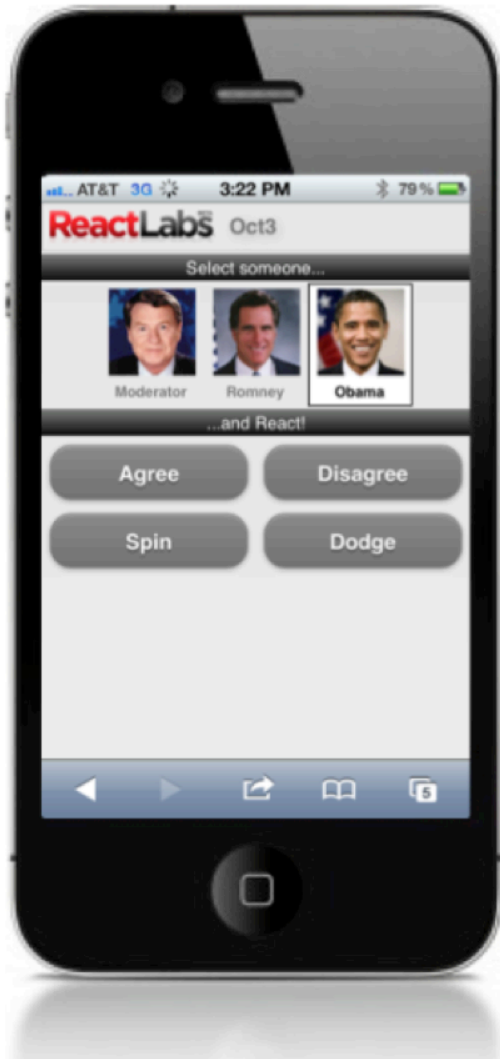
Language

Cognition

Connecting language and reactions

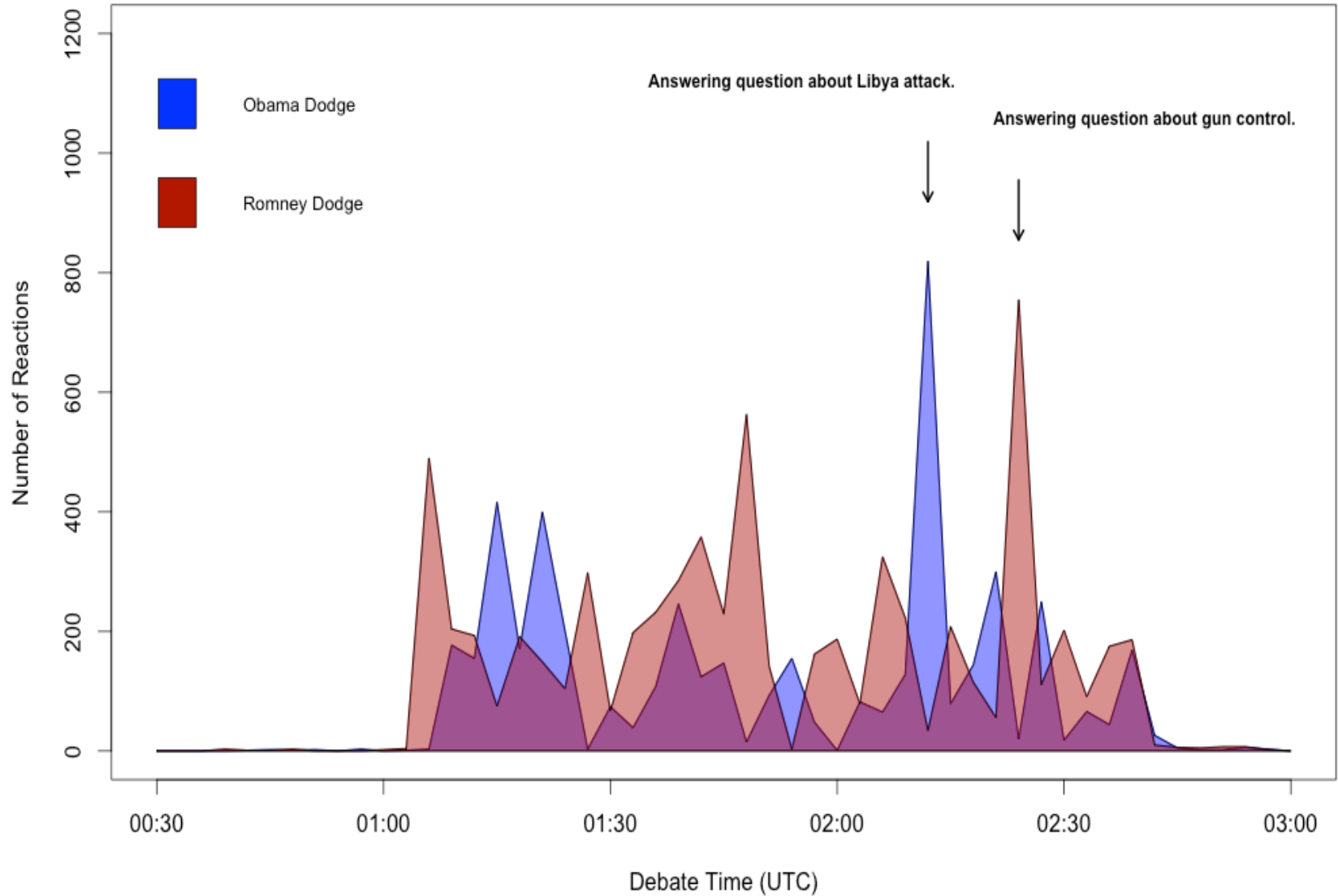
- How do we measure ***effects*** of language?
- Coding is expensive and labor intensive,
- And we would like *unmediated, interpretable reactions on a large scale*

Connecting language and reactions



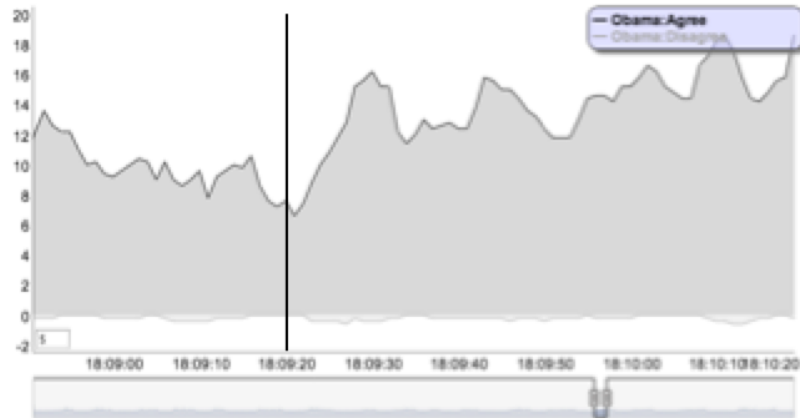
Boydston, Amber E., Rebecca A. Glazier, Matthew T. Pietryka, and Philip Resnik. In Press. "The Role of Individual Issue Priorities: Evidence from Real-Time Reactions to a 2012 Presidential Debate." *Public Opinion Quarterly*.

Who Dodges the Question?

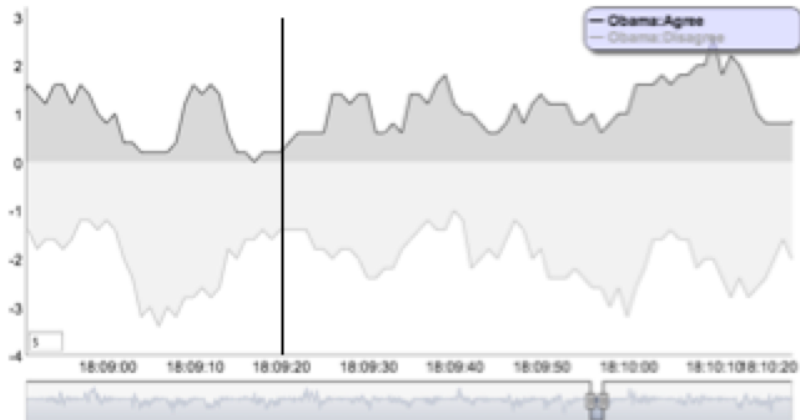


To consider: potential connections with experimental psychology approaches, e.g. Todd Rogers and Michael Norton, *The Artful Dodger: Answering the Wrong Question the Right Way*, *Journal of Experimental Psychology: Applied*, June 2011, Vol. 17 Issue 2, p139.

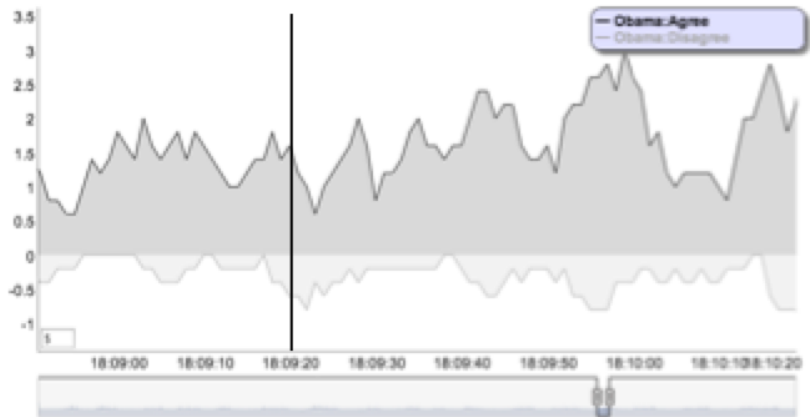
Democrats



Republicans



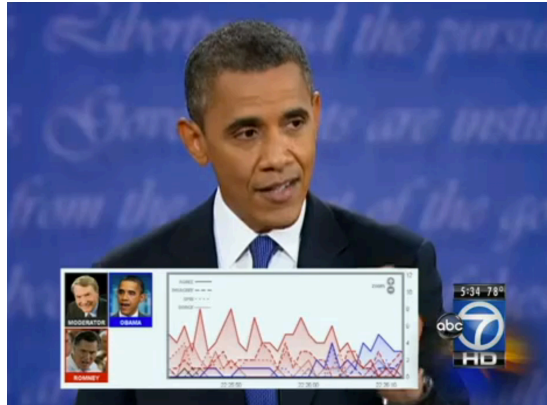
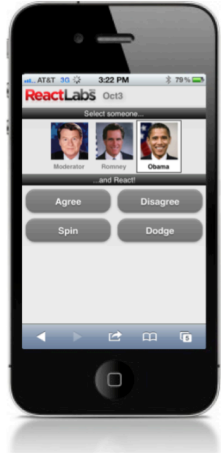
Independents



Agree and disagree clicks for Obama using a LEGAL frame, by viewer party.

“What your plan does is to duplicate what's already the law, which says if you are out of health insurance for three months, then you can end up getting continuous coverage and an insurance company can't deny you if you've -- if it's been under 90 days. But that's already the law.”

As the figure shows, the statement received much agreement and little disagreement from Democratic viewers. **Surprisingly, however, Republicans were roughly divided in their reactions, registering almost as much agreement as disagreement**—an uncommonly positive net engagement for Obama among Republicans in our data.



THE NORMAN LEAR CENTER | USC ANNENBERG
The WALTER CRONKITE AWARD
 for excellence in television political journalism

NewsChannel8/Politico/WJLA

The Washington Post PostTV Politics Opinions Local Sports National World Business

Ask The Post

Engaging readers with our journalism

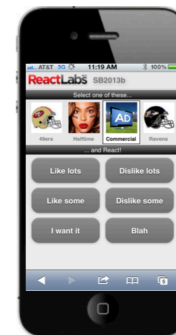
Archives f t

How to use your smartphone as a real-time reaction tool for Md. governor's race debate

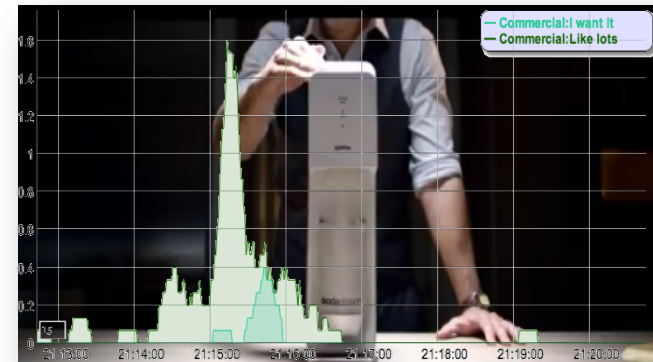
BY SARA CAROTHERS May 6 at 1:48 pm

The Post is partnering with [React Labs](#) to offer a new way for Maryland voters to respond on smartphones, tablets, or laptops as they watch the top Democratic contenders for Maryland governor debate, which starts at 7 p.m. Wednesday.

Using [React Labs](#) as a second-screen tool, you can respond moment-by-moment, letting us know what you support and don't support, what you believe and disbelieve. Just go to [post.reactlabs.com](#) to log in during the live broadcast (airing on NBC4 or Maryland Public Television).



Frank N. Magid Associates, Inc.



Closing thoughts

Framing language → Thought processes



Illegal children likely to remain in U.S. for years

Washington Times - 12 hours ago

The Obama administration acknowledged Wednesday that most of



DHS: 'Mass Exodus' of Children Illegally Crossing Bord... border

Washington Free Beacon - by Adam Kredo - Jun 24, 2014

The number of **illegal children** crossing the border has more than



CA Native Can't Cross Border While Hundreds of Illegal...

Breitbart News Network - Jun 13, 2014

Obama: The Illegal Children are Our Future

RushLimbaugh.com (subscription) - Jun 13, 2014

RUSH:

an asse



Hillary Clinton: Deport The Illegal Children Back To Ce...

Daily Caller - Jun 17, 2014

Probable Democratic presidential nominee Hillary Clinton broke with President Obama on a key policy issue Tuesday, claiming the ...

permission to
ie fact that he

Closing thoughts

Thought processes → Framing language

“It is not pleasant to experience **decay**, to find yourself exposed to the ravages of an almost **daily** rain, and to know that you are **turning into** something feeble, that **more and more of you** will blow off with the first strong wind, making you **less and less**.

— Andrew Solomon, *The Noonday Demon: An Atlas of Depression*

“[Despair], owing to some evil trick played upon the sick brain by the inhabiting psyche, comes to resemble the diabolical **discomfort** of being **imprisoned** in a fiercely **overheated** room. And because no breeze stirs this cauldron, because there is no escape from this **smothering confinement**, it is entirely natural that the victim begins to think ceaselessly of oblivion.”

— Dr. Kay Redfield Jamison, *Night Falls Fast: Understanding Suicide*

“Ptds is like being **nailed to the cross** over and over and over until each body surface, organ and area has had its countless repetitive turns at **assaults**: has been **split and punctured** wide open and then left to **fry alive** in tossed blame, and another’s abandoned shame”

— PTSD discussion board

(See ACL 2014 Workshop on Computational Linguistics and Clinical Psychology!)

Thanks!