Deceptive language

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Linguist 287 / CS 424P: Extracting Social Meaning and Sentiment, Fall 2010

Nov 2

Overview

1. On deception
2. Cues to deception and truthfulness (drawing on the large meta-survey of DePaulo et al. (2003)).
3. Three studies:
   - Newman, Pennebaker, Berry, Richards: 'Lying Words: Predicting Deception From Linguistic Styles' (Newman et al. 2003).
   - Hancock, Toma, Ellison, Lying in online data profiles (Toma et al. 2007, 2008; Toma and Hancock 2010).
   - Enos, Shriberg, Graciarena, Hirschberg, Stolcke, The Columbia-SRI-Colorado Deception Corpus (Enos et al. 2007).
4. Hunting for publicly-available data for deception research.

On deception

DePaulo et al. (2003:74):

> *We define deception as a deliberate attempt to mislead others. Falsehoods communicated by people who are mistaken or self-deceived are not lies, but literal truths designed to mislead are lies.*

Perjury

Solan and Tiersma (2005:212–213) summarize the legal definition:

> *Perjury consists of lying under oath: having sworn to tell the truth, the witness speaks falsely. It is a serious crime, since false testimony may cause the innocent to go to prison or allow the guilty to go free.*
>
> *It is not normally a crime to lie. To commit perjury, a person must first have taken an oath to testify truthfully. Federal law also requires that the person "willfully and contrary to such oath states or subscribes any material matter which he does not believe to be true." [. . .] If the speaker did not know that the actual and asserted state of affairs were different, she would have made a mere mistake.*
>
> *Not only must the accused make a false statement, but it must be material. If the false statement relates to a minor matter or something that is unlikely to influence a trial or other official proceeding, it does not constitute perjury, even though we might still call the statement a lie.*

Lying and bullshitting

Fania Pascal, from an anecdote in Rhees (1984), cited in Frankfurt 1988:

> *I had my tonsils out and was in the Evelyn Nursing Home feeling sorry for myself. Wittgenstein called. I croaked: "I feel just like a dog chat has been run over." He was disgusted: "You don't know what a dog that has been run over feels like."*

Frankfurt (1988:125):

> *"Her statement is grounded neither in a belief that it is true nor, as a lie must be, in a belief that it is not true. It is just this lack of connection to a concern with truth — this indifference to how things really are — that I regard as of the essence of bullshit.*

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The truth: Bronston also had a Swiss bank account in the past.

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The truth: Bronston also had a Swiss bank account in the past.

The outcome: He was convicted of perjury, but the decision was reversed by the Supreme Count (9-0), on the grounds that (i) he uttered no literal falsehood; and (ii) it was the lawyer's job to pursue the whole truth.

Informativity 1

Kyle and Ellen would like to see a movie. Kyle has $20 in his pocket. Ellen has $8.

Context 1

Tickets cost $8 each.

Kyle: “I have $8.”

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Context 1	**Context 2**
Tickets cost $8 each.	Tickets cost $10 each.

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Informativity 1

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Context 1	**Context 2**
Tickets cost $8 each.	Tickets cost $10 each.

Kyle: “I have $8.”

Speakers more likely to say that Kyle was untruthful in context 2 than in context 1, though what he said is literally true in both cases.

Informativity 2

A: What is Barbara's phone number?

B: Hmm. It begins with 413.

Informativity 2

- Context 1: B knows Barbara's full number, but he doesn't want them to be able to call her.

A: What is Barbara's phone number?

B: Hmm. It begins with 413.

Informativity 2

- Context 1: B knows Barbara's full number, but he doesn't want them to be able to call her.
- Context 2: B knows Barbara's full number, but A and B both know that they can't call numbers that begin with "413".

A: What is Barbara's phone number?

B: Hmm. It begins with 413.

Kinds of deception

Where the issue of whether p is relevant:

Type	Speaker's beliefs	Speaker's public commitment
Lie	$\neg p$	p
Bullshit	(p or $\neg p$)	p

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Comments:

- The actual facts of the matter seem not to matter much:
  - If the speaker believes $\neg p$ and claims p, and p turns out to be true, we still call the speaker a liar.
  - If the speaker believes $\neg p$ and claims $\neg p$, but p turns out to be true, we say the speaker was honest (but misinformed, perhaps irresponsible).
- Bluffing is a kind of lying without social stigma.
- Withholding information can be lying if the speaker falsely commits to ignorance.

Lying is common

- DePaulo et al. (2003)76: “Lying is a fact of everyday life. Studies in which people kept daily diaries of all of their lies suggest that people tell an average of one or two lies a day. [. . .] People lie most frequently about their feelings, their preferences, and their attitudes and opinions. Less often, they lie about their actions, plans, and whereabouts. Lies about achievements and failures are also commonplace. [. . .] Interspersed among these unremarkable lies, in much smaller numbers, are lies that people regard as serious.”

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- Toma et al. (2007): “Deception was indeed frequently observed: approximately nine out of ten (81%) of the participants lied on at least one of the assessed variables.”
- (There are probably many lies in the speed-dating corpus!)

Liars on lying

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From DePaulo et al. (2003:76):

- "More than half the time, liars said that they based their lies on experiences from their own lives, altering critical details."
- "In the literature on cues to deception, as in everyday life, lies about personal feelings, facts, and attitudes are the most commonplace."
- "The results suggest that people regard their everyday lies as little lies of little consequence or regret. They do not spend much time planning them or worrying about the possibility of getting caught. Still, everyday lies do leave a smudge. Although people reported feeling only low levels of distress about their lies, they did feel a bit more uncomfortable while telling their lies, and directly afterwards, than they had felt just before lying. Also, people described the social interactions in which lies were told as more superficial and less pleasant than the interactions in which no lies were told."

Machines vs. humans

- Ekman and O'Sullivan (1991): Studies involving college students as well as trained police officers generally show chance-level performance on liar detection.
- Enos et al. (2007): "With respect to accuracy at labeling GLOBAL LIES and TRUTHS in the CSC Corpus, the topic of the present work, human judges performed even worse: on average 47.8% versus a chance baseline of 63.6%."
- Newman et al. (2003):

TABLE 5: Comparison of Human Judges' Ratings With LIWC's Prediction Equations in Three Abortion Studies

	Predicted	
	Deceptive	*Truthful*
LIWC equations		
Actual		
Deceptive ($n = 200$)	68% (135)	32% (65)
Truthful ($n = 200$)	34% (69)	66% (131)
Human judges		
Actual		
Deceptive ($n = 200$)	30% (59)	71% (141)
Truthful ($n = 200$)	27% (53)	74% (147)

NOTE: LIWC = Linguistic Inquiry and Word Count. $N = 400$ communications. The overall hit rate was 67% for LIWC and 52% for judges; these were significantly different, $z = 6.25$, $p < .001$. LIWC performed significantly better than chance, $z = 6.80$, $p < .001$, but the judges did not, $z = .80$, *ns*. See the text for an analysis of error rates.

Cues to deception

- Cues to deception (both linguistic and other) are generally assumed to be weak. There are no absolute “tells”.
- The individual cues that have been performed are all indicative of other emotional states as well.
- We might, though, hold out hope that a cluster of features reliably detects just deception.

DePaulo et al. (2003) survey

Are liars less forthcoming?

Are Liars Less Forthcoming Than Truth Tellers?

001	Response length	Length or duration of the speaker's message
002	Talking time	Proportion of the total time of the interaction that the speaker spends talking or seems talkative
003	Length of interaction	Total duration of the interaction between the speaker and the other person
004	Details	Degree to which the message includes details such as descriptions of people, places, actions, objects, events, and the timing of events; degree to which the message seemed complete, concrete, striking, or rich in details
005	Sensory information (RM)	Speakers describe sensory attributes such as sounds and colors
006	Cognitive complexity	Use of longer sentences (as indexed by mean length of the sentences), more syntactically complex sentences (those with more subordinate clauses, prepositional phrases, etc.), or sentences that includes more words that precede the verb (mean preverb length); use of the words *but* or *yet*; use of descriptions of people that are differentiating and dispositional
007	Unique words	Type–token ratio; total number of different or unique words
008	Blocks access to information	Attempts by the communicator to block access to information, including, for example, refusals to discuss certain topics or the use of unnecessary connectors (*then*, *next*, etc.) to pass over information (The volunteering of information beyond the specific information that was requested was also included, after being reversed.)
009	Response latency	Time between the end of a question and the beginning of the speaker's answer
010	Rate of speaking	Number of words or syllables per unit of time
011	Presses lips (AU 23, 24)	Lips are pressed together

DePaulo et al. (2003) survey

Are liars less compelling?

Do Liars Tell Less Compelling Tales Than Truth Tellers?

012	Plausibility	Degree to which the message seems plausible, likely, or believable
013	Logical structure (CBCA)	"Consistency and coherence of statements; collection of different and independent details that form a coherent account of a sequence of events" (Zaparniuk, Yuille, & Taylor, 1995, p. 344)
014	Discrepant, ambivalent	Speakers' communications seem internally inconsistent or discrepant; information from different sources (e.g., face vs. voice) seems contradictory; speaker seems to be ambivalent
015	Involved, expressive (overall)	Speaker seems involved, expressive, interested
016	Verbal and vocal involvement	Speakers describe personal experiences, or they describe events in a personal and revealing way; speakers seems vocally expressive and involved
017	Facial expressiveness	Speaker's face appears animated or expressive
018	Illustrators	Hand movements that accompany speech and illustrate it
019	Verbal immediacy	Linguistic variations called *verbal nonimmediacy devices*, described by Wiener and Mehrabian (1968) as indicative of speakers' efforts to distance themselves from their listener, the content of their communications, or the act of conveying those communications. Wiener and Mehrabian (1968) described 19 categories and subcategories, such as spatial nonimmediacy (e.g., "There's Johnny" is more nonimmediate than "Here's Johnny"), temporal nonimmediacy (the present tense is more immediate than other tenses), and passivity (the passive voice is more nonimmediate than the active voice).
020	Verbal immediacy, temporal	A subcategory of verbal immediacy in which speakers use the present tense instead of past or future tenses
021	Generalizing terms	Generalizing terms (sometimes called *levelers*) such as *everyone*, *no one*, *all*, *none*, and *every*; statements implying that unspecified others agree with the speaker
022	Self-references	Speakers' references to themselves or their experiences, usually indexed by the use of personal pronouns such as *I*, *me*, *mine*, and *myself*
023	Mutual and group references	Speakers' references to themselves and others, usually indexed by the use of second-person pronouns such as *we*, *us*, and *ours*

DePaulo et al. (2003) survey

Are liars less compelling?

Do Liars Tell Less Compelling Tales Than Truth Tellers? (*continued*)

024	Other references	Speakers' references to others or their experiences, usually indexed by the use of third-person pronouns such as *he*, *she*, *they*, or *them*
025	Verbal and vocal immediacy (impressions)	Speakers respond in ways that seem direct, relevant, clear, and personal rather than indirect, distancing, evasive, irrelevant, unclear, or impersonal
026	Nonverbal immediacy	Speakers are nonimmediate when they maintain a greater distance from the other person, lean away, face away, or gaze away, or when their body movements appear to be nonimmediate.
027	Eye contact	Speaker looks toward the other person's eyes, uses direct gaze
028	Gaze aversion	Speakers look away or avert their gaze
029	Eye shifts	Eye movements or shifts in the direction of focus of the speaker's eyes
030	Tentative constructions	Verbal hedges such as "may," "might," "could," "I think," "I guess," and "it seems to me" (Absolute verbs, which include all forms of the verb *to be*, were included after being reversed.)
031	Verbal and vocal uncertainty (impressions)	Speakers seem uncertain, insecure, or not very dominant, assertive, or emphatic; speakers seem to have difficulty answering the question
032	Amplitude, loudness	Intensity, amplitude, or loudness of the voice
033	Chin raise (AU 17)	Chin is raised; chin and lower lip are pushed up
034	Shrugs	Up and down movement of the shoulders; or, the palms of the hand are open and the hands are moving up and down

DePaulo et al. (2003) survey

Are liars less compelling?

035	Non-ah speech disturbances	Speech disturbances other than "ums," "ers," and "ahs," as described by Kasl and Mahl (1965); categories include grammatical errors, stuttering, false starts, incomplete sentences, slips of the tongue, and incoherent sounds
036	Word and phrase repetitions	Subcategory of non-ah speech disturbances in which words or phrases are repeated with no intervening pauses or speech errors
037	Silent pauses	Unfilled pauses; periods of silence
038	Filled pauses	Pauses filled with utterances such as "ah," "um," "er," "uh," and "hmmm"
039	Mixed pauses	Silent and filled pauses (undifferentiated)
040	Mixed disturbances (ah plus non-ah)	Non-ah speech disturbances and filled pauses (undifferentiated)
041	Ritualized speech	Vague terms and cliches such as "you know," "well," "really," and "I mean"
042	Miscellaneous dysfluencies	Miscellaneous speech disturbances; speech seems dysfluent
043	Body animation, activity	Movements of the head, arms, legs, feet, and/or postural shifts or leans
044	Postural shifts	Postural adjustments, trunk movements, or repositionings of the body
045	Head movements (undifferentiated)	Head movements (undifferentiated)
046	Hand movements (undifferentiated)	Hand movements or gestures (undifferentiated)
047	Arm movements	Movements of the arms
048	Foot or leg movements	Movements of the legs and/or feet

DePaulo et al. (2003) survey

Are liars less positive?

Are Liars Less Positive and Pleasant Than Truth Tellers?

049	Friendly, pleasant (overall)	Speaker seems friendly, pleasant, likable (Impressions of negative affect were also included after being reversed.)
050	Cooperative	Speaker seems cooperative, helpful, positive, and secure
051	Attractive	Speaker seems physically attractive
052	Negative statements and complaints	Degree to which the message seems negative or includes negative comments or complaints (Measures of positive comments were included after being reversed.)
053	Vocal pleasantness	Voice seems pleasant (e.g., positive, friendly, likable)
054	Facial pleasantness	Speaker's face appears pleasant; speakers show more positive facial expressions (such as smiles) than negative expressions (such as frowns or sneers)
055	Head nods	Affirmative head nods; vertical head movements
056	Brow lowering (AU 4)	Eyebrows are lowered
057	Sneers (AU 9, 10)	Upper lip is raised
058	Smiling (undifferentiated)	Smiling as perceived by the coders, who were given no specific definition or were given a definition not involving specific AUs (e.g., "corners of the mouth are pulled up"); laughing is sometimes included too
059	Lip corner pull (AU 12)	Corners of the lips are pulled up and back

DePaulo et al. (2003) survey

Are liars more tense?

Are Liars More Tense Than Truth Tellers?

060	Eye muscles (AU 6), not during positive emotions	Movement of the orbicularis oculi, or muscles around the eye, during emotions that are not positive
061	Nervous, tense (overall)	Speaker seems nervous, tense; speaker makes body movements that seem nervous
062	Vocal tension	Voice sounds tense, not relaxed; or, vocal stress as assessed by the Psychological Stress Evaluator, which measures vocal micro-tremors, or by the Mark II voice analyzer
063	Frequency, pitch	Voice pitch sounds high; or, fundamental frequency of the voice
064	Relaxed posture	Posture seems comfortable, relaxed; speaker is leaning forward or sideways
065	Pupil dilation	Pupil size, usually measured by a pupillometer
066	Blinking (AU 45)	Eyes open and close quickly
067	Object fidgeting	Speakers are touching or manipulating objects
068	Self-fidgeting	Speakers are touching, rubbing, or scratching their body or face
069	Facial fidgeting	Speakers are touching or rubbing their faces or playing with their hair
070	Fidgeting (undifferentiated)	Object fidgeting and/or self-fidgeting and/or facial fidgeting (undifferentiated)

Negation and negativity

Hypothesis

Liars will use more negations and negative words than truth-tellers.

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Rationale

Newman et al. (2003:666): "liars may feel guilty either about lying or about the topic they are discussing [. . .] Diary studies of small "everyday" lies suggest that people feel discomfort and guilt while lying and immediately afterward [. . .] If this state of mind is reflected in patterns of language use, then deceptive communications should be characterized by more words reflecting negative emotion."

Negation and negativity

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Liars will use more negations and negative words than truth-tellers.

Concerns

DePaulo et al. (2003:75): "Liars' feelings about lying are not necessarily negative ones. Ekman (1985/1992) suggested that liars sometimes experience 'duping delight,' which could include excitement about the challenge of lying or pride in succeeding at the lie. [. . .] The duping delight hypothesis has not yet been tested."

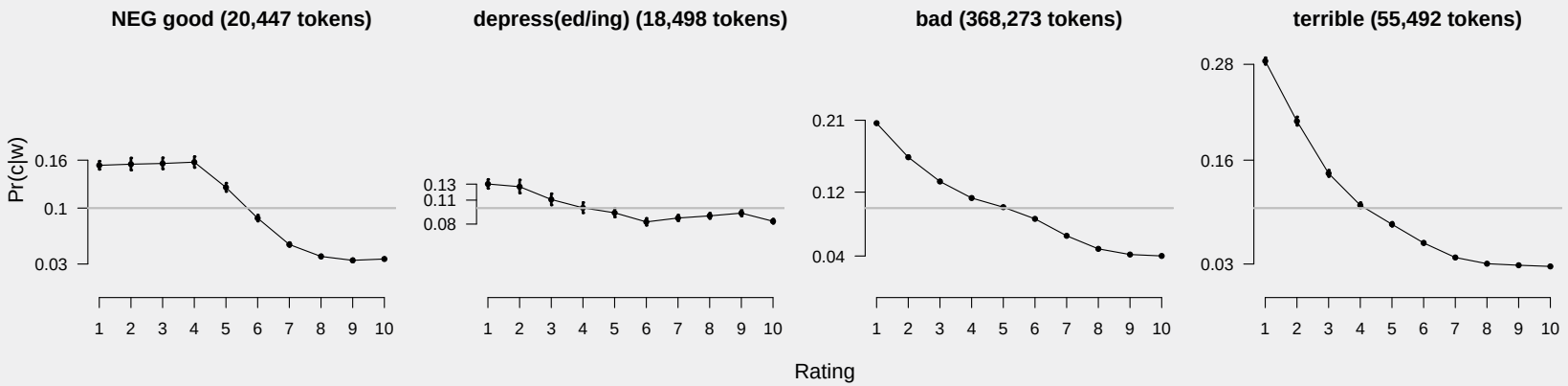
DePaulo et al. (2003:81): "Yet those who tell the truth about their transgressions or failings may feel even greater guilt and shame than those whose shortcomings remain hidden by their lies."

Negation and negativity

Hypothesis

Liars will use more negations and negative words than truth-tellers.

Increased use of negative words could signal negativity.



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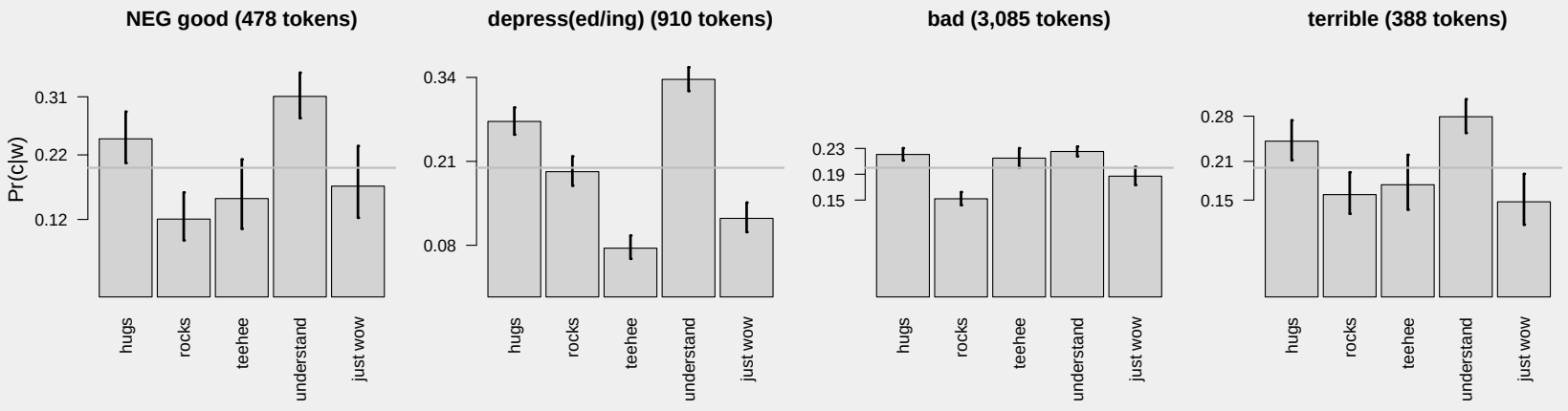

Negation and negativity

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Liars will use more negations and negative words than truth-tellers.

Increased use of negative words could signal sympathy.

Similar to the finding of Ranganath et al. (2009) that flirtatious people use more negative words to express sympathy.

Complexity

Hypothesis

Liars speech will be less complex than truth-tellers speech:

1. Newman et al. (2003:667): Fewer exclusive words. ("individuals who use a higher number of "exclusive" words [. . .] are generally healthier than those who do not")
2. Newman et al. (2003:667): More simple-past tense verbs of motion: "When people are attempting to construct a false story, we argue that simple, concrete actions are easier to string together than false evaluations."
3. Shorter sentences, shorter turns.

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Rationale

Lying imposes an extra cognitive load.

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Concerns

This might not distinguish lying from storytelling, or from any situation in which the speaker feels rushed, anxious, etc.

Pronouns

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Liars will use fewer 1st-person pronouns and more 3rd-person pronouns.

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Rationale

Newman et al. (2003:666): “the use of the first-person singular is a subtle proclamation of one’s ownership of a statement.”

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Concern: Other correlations

Pennebaker and colleagues have shown that increased use of first-person pronouns correlates with lots of other things. For example, Chung and Pennebaker (2007) report on patterns suggesting that 1st person pronoun use is negatively correlated with status and positively correlated with individualism.

Pronouns

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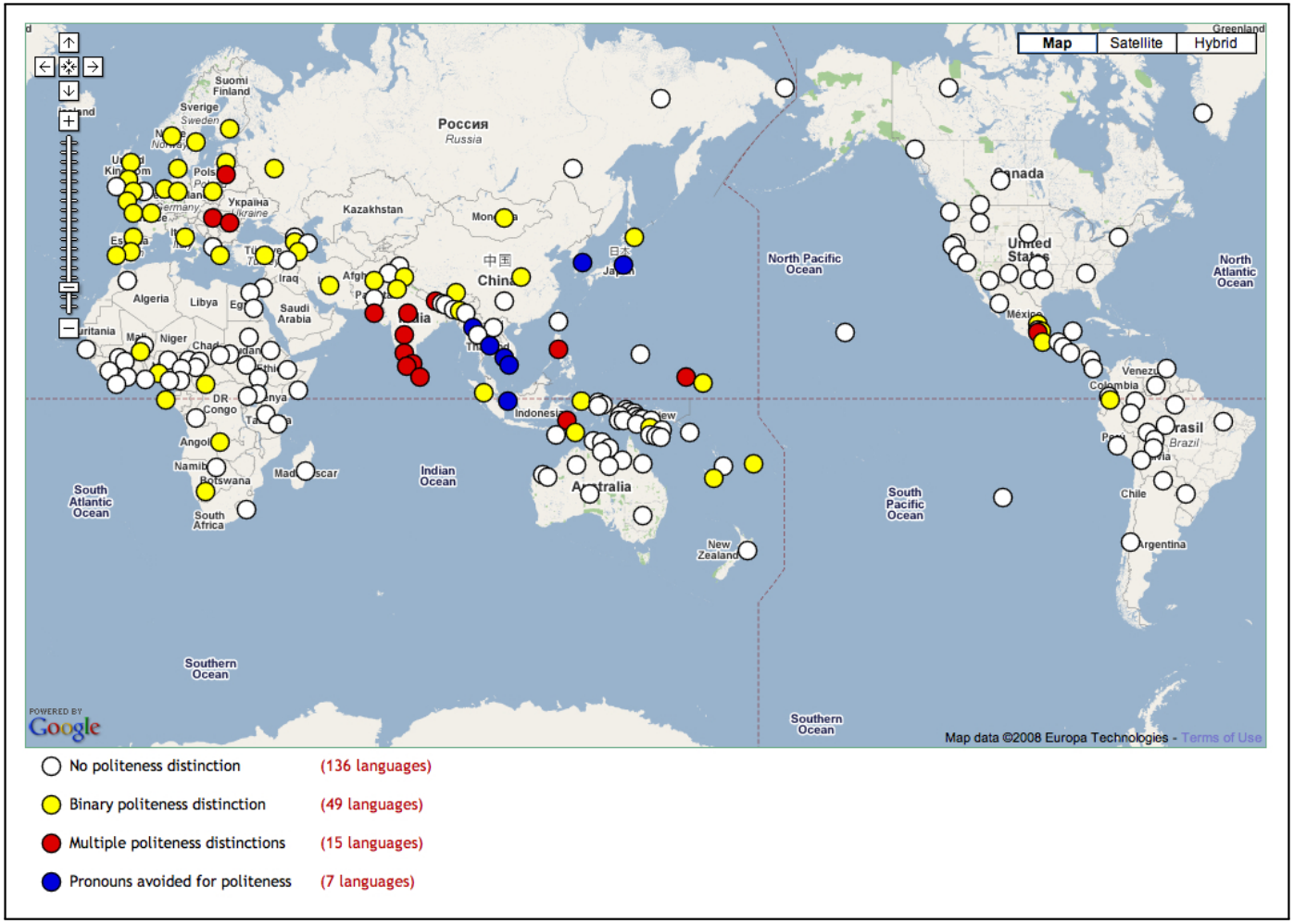
Concern: Definitely not universal

Pronoun use is heavily conditioned by the nature of the pronominal paradigm, which can often include null pronouns. In addition, not all pronominal paradigms divide up in a way that easily feeds into this hypothesis.

Pronouns in WALS Online



http://wals.info/

Disfluencies

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Rationale

Liars are more uncertain, and will thus require more time to sort out what they want to say.

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Concerns

- DePaulo et al. (2003:94): "Results of the fluency indices suggest that speech disturbances have little predictive power as cues to deceit. [. . .] Only one type of speech disturbance, the repetition of words and phrases, produced a statistically reliable effect"
- Levels of disfluency are highly speaker and context specific. To measure a change for a specific person, we need to know what the baseline is.

Acoustic features

- DePaulo et al. (2003): According to Ekman (1985), “the cues indicative of detection apprehension are fear cues. These include higher pitch, faster and louder speech, pauses, speech errors, and indirect speech. The greater the liars’ detection apprehension, the more evident these fear cues should be.”
- Enos et al. (2007): “extreme values for energy — either high or low — correlate with deception.”

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- Larcker and Zakolyukina (2010): Deceptive CEOs in conference calls make fewer references to “shareholders value and value creation”.
- Toma and Hancock (2010): “liars produced fewer, rather than more, negative emotion words. This could be due to the fact that people who lied more were more eager to make a good impression, and thus avoided sounding negative — which is usually a turnoff in dating situations. Future work is needed to clarify the nature of this indicator.”

Difficult-to-extract features: Your ideas

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2. Plausibility: "Degree to which the message seems plausible, likely, or believable"
3. Ritualized speech: "Vague terms and cliches such as 'you know,' 'well,' 'really,' and 'I mean'."
4. Vocal tension: "Voice sounds tense, not relaxed; or, vocal stress as assessed by the Psychological Stress Evaluator, which measures vocal micro-tremors, or by the Mark II voice analyzer."

Newman et al. (2003)'s experiments

Abortion attitudes

Within-subjects accurate/inaccurate reporting of attitudes on abortion, taped (Study 1), typed (S2), and handwritten (S3).

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Feelings about friends: 3-min videotaped monologues

	Friend 1	Friend 2	Friend 3	Friend 4
Truth	Like	Like	Dislike	Dislike
Story	Like	Dislike	Like	Dislike

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Mock crime

One group was told to wait, while the other was told to "steal" a dollar. Both participant-types were then accused of theft, after prior instruction to deny it. They were then hooked-up to what they were told was a lie-detector (it actually took various physiological measurements) and given a systematic 2-min interview in which they denied wrong-doing.

Predictive models

1. Data preparation: Transcribe data as necessary and remove content words, low-frequency words, and disfluencies.
2. Categorization into 29 LIWC categories.
3. Model-building: begin from a null model and add predictors stepwise, keeping only those that are significant.
4. For each study S, fit a model trained on the other four studies and then use that model to make predictions about S.

Results

This model was built using just the predictors that were significant in at least two studies:

General prediction equation:	
All 5 studies combined	
First-person pronouns	.260
Third-person pronouns	.250
Negative emotion	–.217
Exclusive words	.419
Motion verbs	–.259

Table: Newman et al. (2003). A negative coefficient means that the variable correlates with lying. A positive one means that the variable correlates with truth-telling.

Deception in online dating profiles

Toma et al. (2007, 2008); Toma and Hancock (2010):

- 80 participants (40 men, 40 women)
- When they came into the lab, they were given copies of their own profiles and asked to assess their accuracy on a scale, 1 (least accurate) to 5 (most accurate).
- Objective measures: participants' height, weight, and age were measured by the experimenters.
- Deception index: standardized mean deviance from the truth in three categories (with some tolerances built in to account for measurement error).

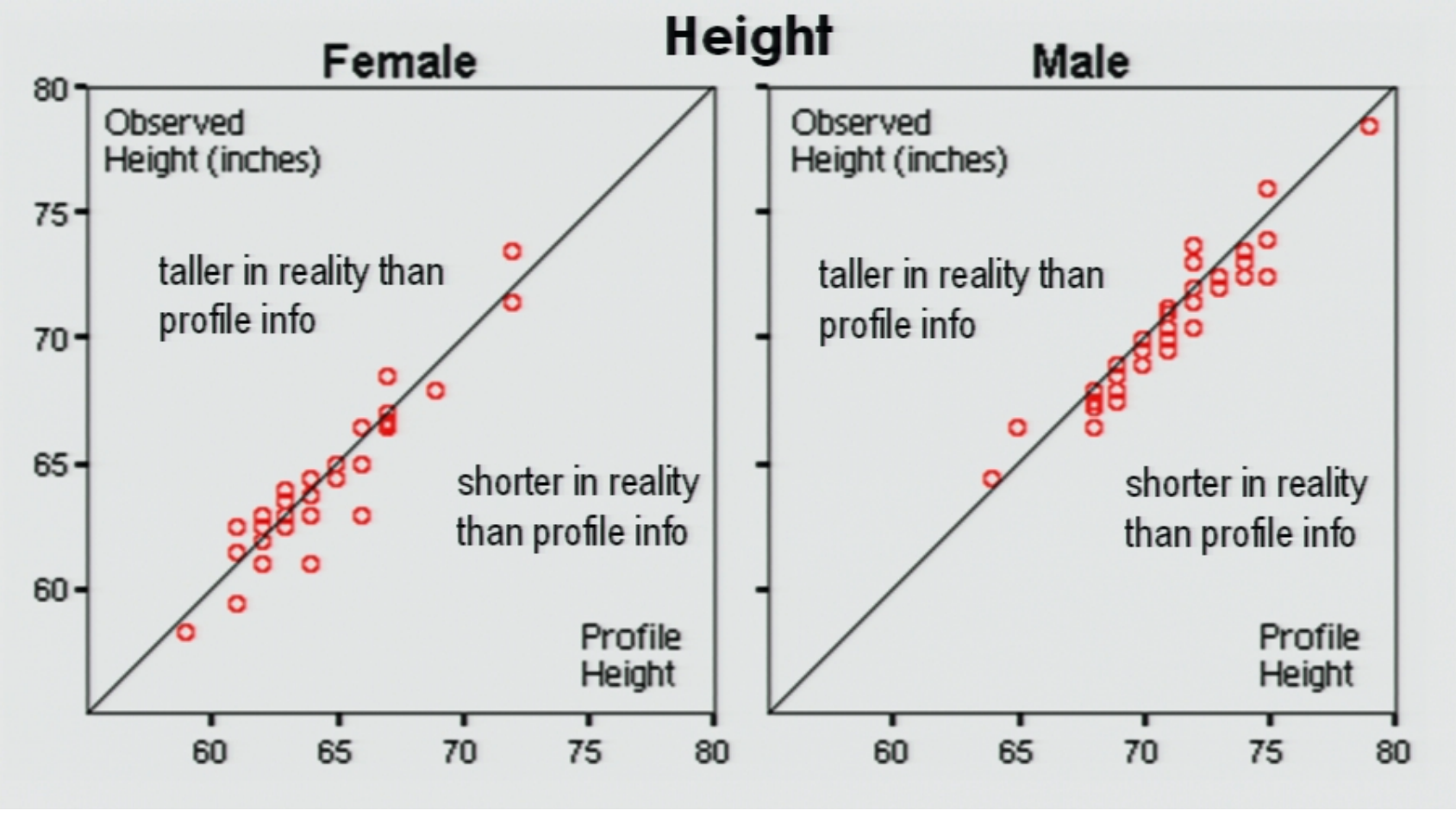
Degrees of deceptiveness

"Participants rated their self-descriptions as very accurate. On the 1 (extremely inaccurate) to 5 (extremely accurate) scale used, self-descriptions were rated as 4.79 (SD = 0.41, min = 4.00, max = 5.00), suggesting that daters considered them to be almost free of deceptions."

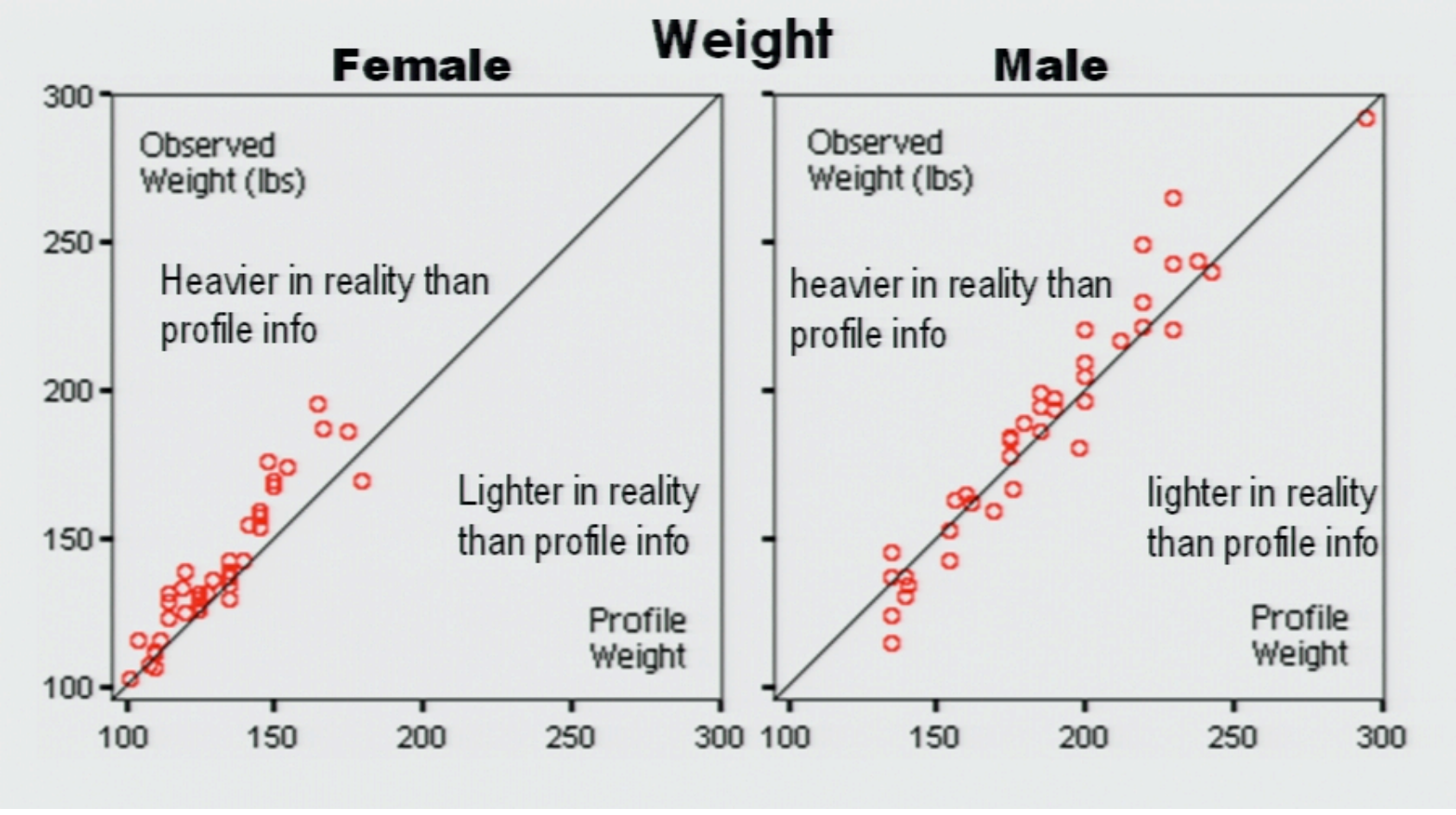
	Overall	Males	Females
Lied about height	48.10	55.30	41.50
Lied about weight	59.70	60.50	59.00
Lied about age	18.70	24.30	13.20
Lied in any category	81.30	87.20	75.60

Table: People lied a lot.

Deceptiveness by gender and category



Deceptiveness by gender and category



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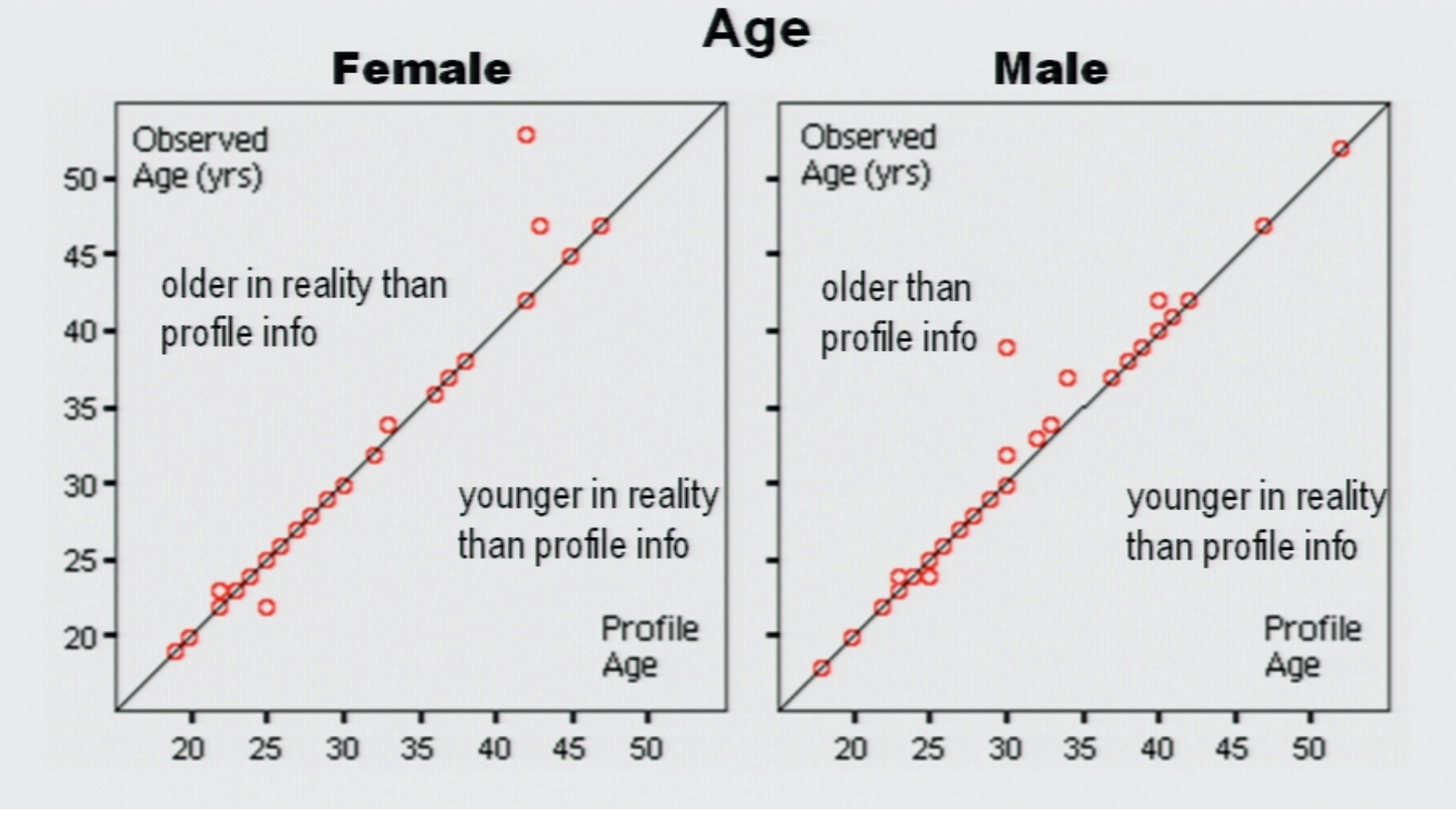

Hypotheses

H1: Highly deceptive online dating profiles will have fewer self-references but more negations and negative emotion words than less deceptive profiles.

H2: Highly deceptive profiles will have fewer exclusive words and increased motion words, but a lower overall word count than less deceptive profiles.

H3: Emotionally-related linguistic cues to deception should account for more variance in deception scores than cognitively-related linguistic cues in online dating profiles.

Predictive model

A linear model predicting the deception index. Negative coefficients ≈ deception, positive coefficients ≈ truthfulness. The combined model accounts for 23% of the deception index variance.

	LIWC category	**Std. β**	**p**
Emotional cues			
	I-pronouns	-0.254	0.02
	Negations	0.281	0.01
	Neg. emotions	-0.296	0.008
Cognitive cues			
Original model			
	Word count	-0.228	0.06
	Exclusive words	0.005	0.97
	Motion words	0.024	0.84
Revised model			
	Word count	-0.228	0.04
Overall model			
	Word count	-0.291	0.005
	I-pronouns	-0.279	0.008
	Negations	0.321	0.003
	Neg. emotions	-0.293	0.006

Table 2. Standardized regression coefficients for linguistic indicators of deception.

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Enos et al. (2007): CSC Deception Corpus

1. Subjects answered six questions. These were manipulated so they underperformed relative to a target on two questions, overperformed on two, and matched the target on two.

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3. During these interviews (25-50 min), subjects used a foot pedal to indicate whether their current statement was true or false.
4. The corpus includes high-quality audio and was transcribed.

Data selection

Extracting probable hot spots

1. "Include segments that are responses to questions that directly ask the subject for his or her score on a particular section."
2. "Include segments that respond to immediate follow-up questions requesting a justification of the claimed score, when such a question is posed by the interviewer."
3. "Omit everything else."

Subsets

- **Critical**: 465 sentence-like units (SUs) based on rule 1. Feature selection yields 22 features.
- **Critical-Plus**: 675 SUs based on rules 1 and 2. Feature selection yields 56 features.

Results

Decision-tree classifier

Dataset	*Relative Improvement*	*Accuracy*	*Baseline*
Critical-Plus	5.8%	65.6	62.0
Critical	1.6%	68.6	67.5
Critical-Plus / Under-sampled	22.2%	61.1	50.0
Critical / Under-sampled	23.8%	61.9	50.0

Comments

- 'Under-sampled': average over 100 random balanced selections.
- The baselines reflect the class distributions.
- Performance is better for the **Critical** class. "We suspect that this difference is due to the increased cognitive and emotional stakes of the questions involved."

Features

Generalizations based on inspection of the models:

Truthfulness

- Positive emotion words.
- Direct denials of lying.
- Filled pauses.
- Self-repairs.

Deception

- Assertive terms' ('yes', 'no').
- Qualifiers ('absolutely' or 'really').
- "extreme values for energy — either high or low"

"A difference between our two datasets is that the presence of past tense verbs appears to correlate with deception in the Critical-Plus dataset, while it is not employed in the Critical set."

Looking for new data

All the deception studies I've seen involve private collections of data. The reasons for this are clear, but it's an obstacle to research. Might we be able to develop deception corpora from publicly available data?

Perjurers

I have textual data for all of the following:

1. Michael Brown (U.S. Senate; Katrina response)
2. Roland Burris (Illinois House; contacts with Blagojevich)
3. Roger Clemens (U.S. House; steroid use)
4. Bill Clinton (deposition; Paula Jones)
5. Mark Fuhrman (court transcript; use of racial epithets)
6. Scooter Libby (Grand Jury testimony; Plame affair)
7. Bernie Madoff (Courtroom transcript; Ponzi scheme)
8. Ernie Sosa (U.S. House; steroid use)
9. Tobacco execs (Waxman hearings; tobacco addiction)

Politfact's Truth-o-meter

http://politifact.com/

Politfact's Truth-o-meter

The Truth-O-Meter Says:

"Scientists have shown us (that) the greater possibilities, the real science movement, has been with adult stem cell research. It has not been with embryonic."

Scott Walker on Tuesday, October 12th, 2010 in a news conference with reporters

Scott Walker says scientists agree that adult stem cell research holds greater promise than embryonic stem cell research

Stem cell research has emerged as a bright line separating the 2010 candidates for governor in Wisconsin.

Share this story:

Recommend 57

Tweet 1

Democrat Tom Barrett supports both adult and embryonic stem cell research and sought to portray Republican rival Scott Walker as extreme with a TV ad that claimed Walker wants to ban stem cell research.

We rated that claim False, since it made no distinction between adult stem cell research, which Walker supports, and embryonic stem cell research, which he opposes.

In the wake of the ad, Walker refused to say whether he supports an outright ban on embryonic stem cell research, though he told a pro-life group in the spring he would sign such a bill. In explaining his views at an Oct. 12, 2010 news conference, Walker made this pronouncement about stem cell research:

"Scientists have shown us (that) the greater possibilities, the real science movement, has been with adult stem cell research. It has not been with embryonic," Walker said.

He then added for emphasis: "That's not a political statement; that's a statement of scientific fact out there."

We went to the lab -- and several experts on stem cell research -- to see if Walker's claim on the

http://politifact.com/wisconsin/statements/2010/oct/21/scott-walker/scott-walker-says-scientists-agree-adult-stem-cell/

Politfact data

Joe Lieberman: In the U.S. Senate, Barack Obama "has not reached across party lines to get anything significant done." [False]

Category	Texts
True	334
Mostly True	246
Half-True	298
Barely True	214
False	309
Pants on Fire	121
Total	1,522

21,391 quote tokens; 3,782 types; mean quote length: 14

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