

Sentiment driven behaviors; sentiment driven decisions

The elusive relationship
between sentiment and
business decisions

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Our need to make sense of things

The gene that makes you lean to the Left

POLITICAL bias could be a matter of genetics, say scientists.

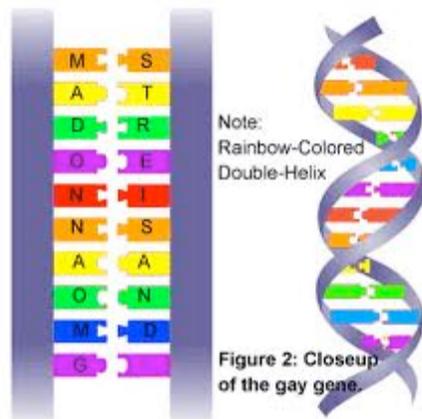
They have identified a so-called 'Liberal Gene' that makes people more likely to seek out less conventional political views.

The gene, a neurotransmitter in the brain called DRD4, could even be stimulated by the novelty value

Daily Mail Reporter

conventional political viewpoints as adults.

The research by scientists from the University of California and Harvard, published in the UK-based Journal Of Politics, looked at 2,000 Americans.



April 13, 2007

'Fat' gene found by scientists



Mark Henderson, Science Editor

A gene that contributes to obesity has been identified for the first time, promising to explain why some people easily put on weight while others with similar lifestyles stay slim.



We yearn for it in business too

**NEGATIVE SENTIMENT PREDICTS
CONSUMER RE-TARGETING
EFFORT**

Positive sentiment brings back old recipe

**Neutral sentiment calls for spiced up marketing
campaign**

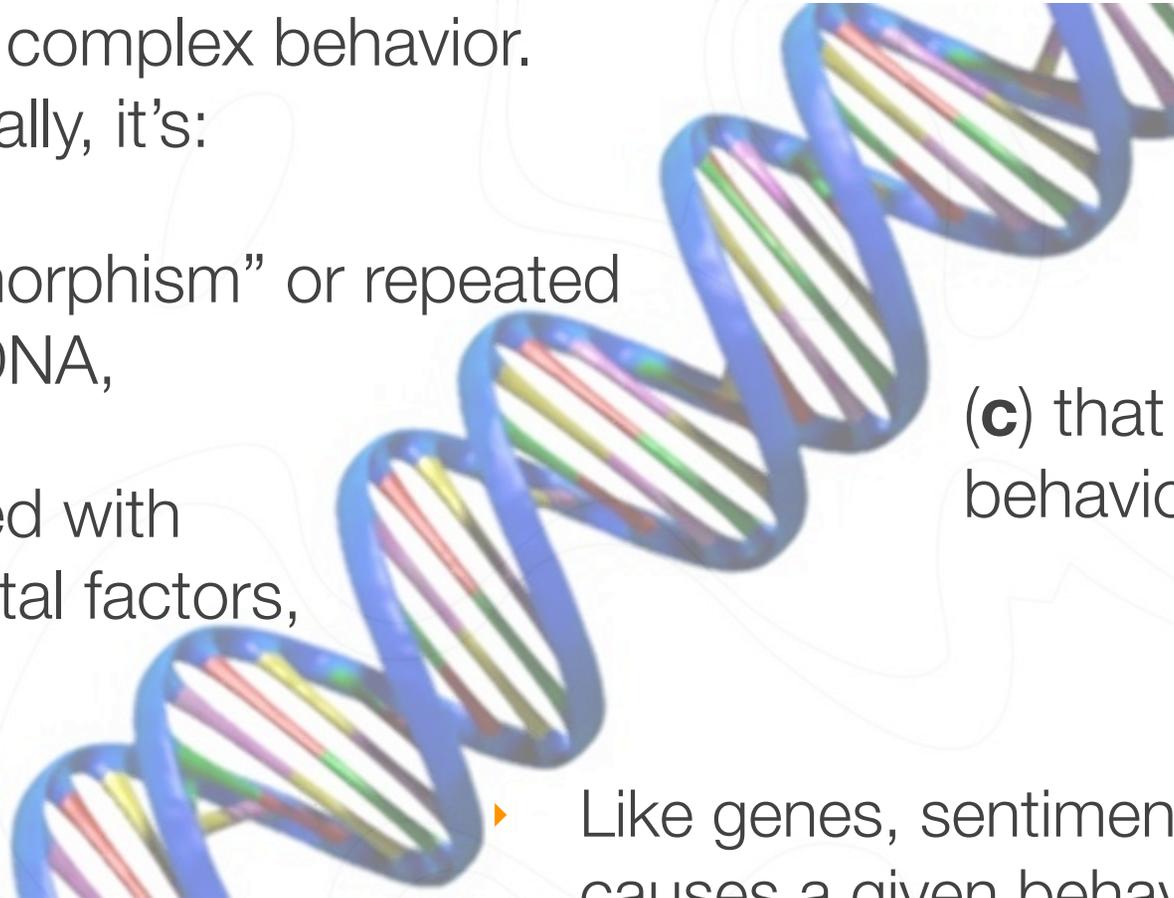
Sentiment is like DNA

- ▶ Everyone wants to link genes to complex behavior. But typically, it's:

(a) a “polymorphism” or repeated pattern of DNA,

(b) combined with environmental factors,

(c) that *helps* explains behavior.



- ▶ Like genes, sentiment alone rarely causes a given behavior, thus, alone, rarely leads to a business decision.

Keynote Goals

1. To **tell the story** of how **sentiment is like DNA** through examples from business and academia.
2. Identify **boundary conditions** to facilitate ease of sentiment-based decisions in future.
3. Encourage **data immersion** over ideas of sentiment as a silver bullet-- or from a vendor perspective, encourage making it easier for customers to do so.

Chapter 1: The promise

- ▶ Sentiment makes surveys redundant, providing a **barometer** for public perception.
- ▶ Stand-alone metric to act like robust investment measure telling marketers to **go/no go: be bullish or bearish.**
- ▶ Amidst unstructured data, sentiment is easier to grok than topics, more **contextualized**/ less criticized than volume.

Current chapter: the blame game

- ▶ Sentiment being added to marketing dashboards as a **KPI**
- ▶ Primarily by **social enthusiasts** wanting to move from social media marketing to social business
- ▶ Standard focus/attack is **methodology**-- Automated vs. manual, model-based vs. linguistic, entity vs. document

And it's relation to business decisions?

“I'll be very candid and say that we haven't utilized formal sentiment analysis to make business decisions. The key contributing factor is that we **haven't had the time/resources to fine tune our tools** to reflect what I think is close enough to **true sentiment** that I would use it as a main basis for decision making, particularly for critical decision making that I would try to advocate throughout the organization... I don't think the tools that are out there today are able to determine sentiment without a lot of **initial and ongoing work to make them accurate reflections of sentiment.**”

- *Client, National Retailer*



Current
story
seems OK.
But it's not
that
simple.

Story highlights thus far

- ▶ A “polymorphism” or repeated **pattern** of DNA predicts complex behavior
- ▶ *True too for sentiment: pattern over time, pattern in conjunction with volume, segments, topics.*
- ▶ **Combined** with environmental factors
- ▶ Business environment and investment in social dictates whether reports are paid attention to and require validation via traditional routes (CS, Prod).
- ▶ **Helps** explains behavior
- ▶ Sentiment alone rarely causes a given behavior, thus alone rarely leads to a business decision.



Let me remind
you: Purchase
intent and
buying
behavior are
complex
behaviors

Break this down

1.



2.



3.



1. Sentiment as a Polymorphism



1. Polymorphism = segmented passion

- ▶ **Sentiment:** Sentiment was trending down from baseline
- ▶ **Normal circumstances:** 27k mentions/day monitored mainly for tech support, marketing communications, and a little R&D
- ▶ **The situation:** Alienware computer release for the uber passionate gamers. Complaints of overheating. Social Media team shared with R&D, engineers couldn't replicate error. Back and forth with gamers (incl. video) revealed 30in monitors completely flat; exhaust fans behind monitors, covered up.
- ▶ **Business decision:** Hardware fix - new chassis built. Would have never been detected via testing. Idiosyncrasy of power users.
- ▶ **Winning mix:** Listening by segment, "drivers" analysis, trained human eye for real problem; business process of disseminating findings with R&D, culture of company to legitimize through interaction with complainers in public.

2. Combined with environment



2. Environment = belief in social

- ▶ **Sentiment:** New wireless device launch yielding negativity
- ▶ **Situation:** Weekly reports demonstrating negativity about the device. Tried to validate the insight with product team; unaware. Eventually repair and CS reps hearing the same thing. With needed validation in hand, product team started to believe the issue and began to resolve.
- ▶ **Normal circumstances:** Threshold levels on “normal” channels (i.e volume of Call Center complaints, In-Store maintenance, Refund reports)
- ▶ **Business decision:** Resolution of tech issue, normally requiring much longer and potentially more cost.
- ▶ **Assessment:** Realistic environment wherein social evangelist persists in belief with passion to make a case for social media. Her team, immersed enough in data to know it was a real issue and how it could play out.

3. Sometimes explains behavior

- ▶ “It's a little more complicated because we usually **won't make a business decision based on one source of data**, like social sentiment. If a thing is true, it will show up everywhere... There are for sure **times when we have negative sentiment on a topic where we don't change what we're doing.**”

- *Client, B2C Financial Product Company*

Does sentiment explain behavior?



3. Does sentiment explain behavior?

- ▶ Academic literature is peppered with findings on what sentiment is related to.
- ▶ Emotion words important cues to thought processes, emotional states, intentions, motivations, but **not necessarily behaviors.**
 - ▶ FB Likes are correlated with stock price (O’Conner, 2012)
 - ▶ Sentiment (on Twitter) is correlated with circadian rhythm and known effects of sleep (Golder & Macy, 2011)
 - ▶ In IM, positive emotion words predict couples staying together; negative emotions predict break ups. In naturalistic language, no relation (Slatcher, Ireland, Pennebaker, in press)

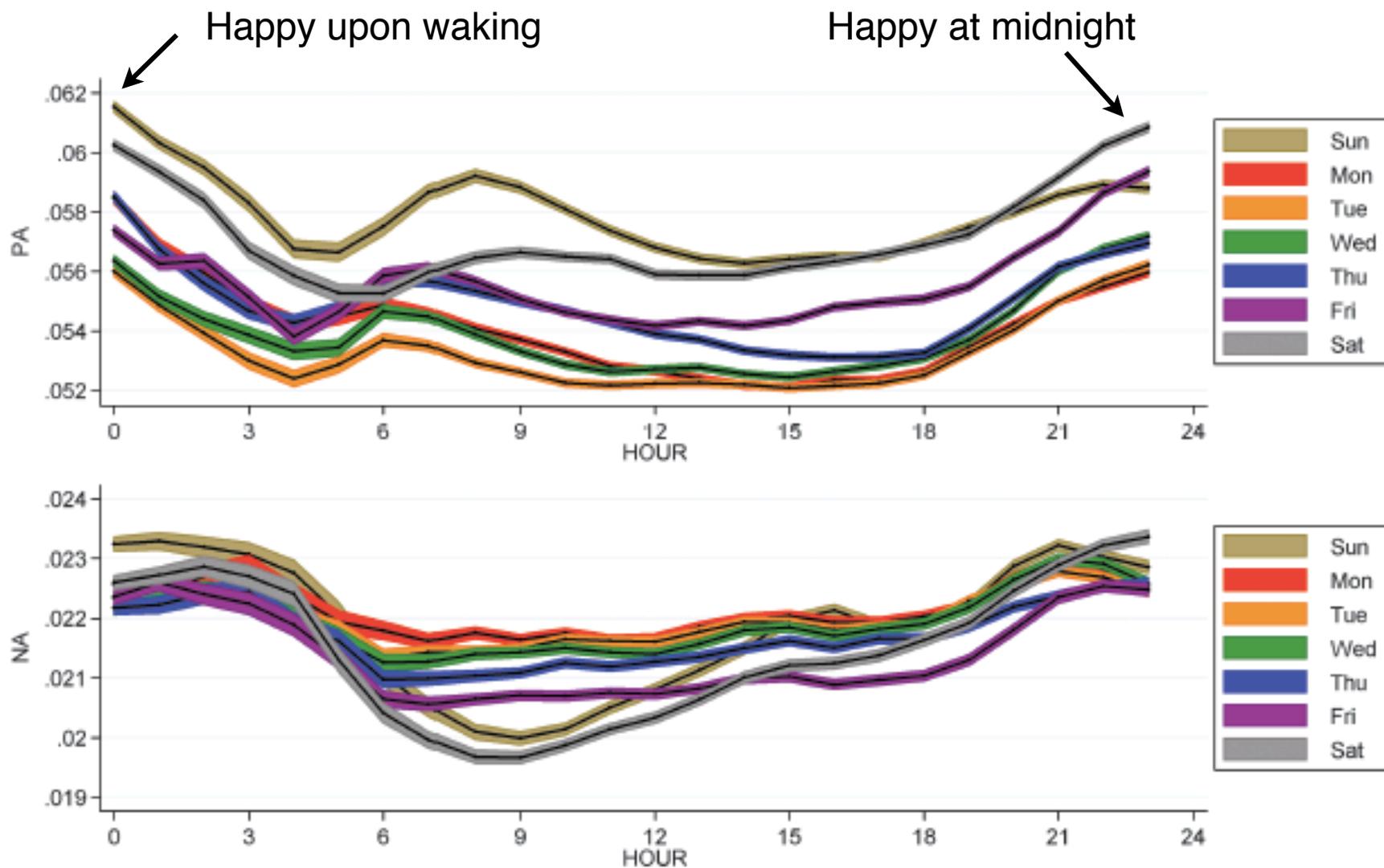


Fig. 1. Hourly changes in individual affect broken down by day of the week (top, PA; bottom, NA). Each series shows mean affect (black lines) and 95% confidence interval (colored regions).



Synthesis

Known unknowns

- ▶ Anecdotes and academia leave us with many questions we would hope to be true to link sentiment and business decisions.
 - ▶ Sentiment captures expression and experience of affect
 - ▶ Sentiment predicts actual buying behavior
 - ▶ Sample is set of people of interest (buyers, potentials)
 - ▶ Executives believe in sentiment (and social media more generally)
 - ▶ Other data complements, or social proves a leading indicator

Next Chapter

- ▶ On academic side, much to be done about what affect/sentiment predicts, directly looking at social media samples and buying behavior.
- ▶ On business side, we need a “de-hyping.” People are reluctant to throw social under the bus, yet most typically use social as confirmatory.
- ▶ Business decisions in re: consumer sentiment is a tricky endeavor, regardless of extent to which ‘consumers are in control’.
 - ▶ "It's really hard to design products by focus groups. A lot of times, people don't know what they want until you show it to them." - Steve Jobs

A few things we can do

- ▶ In order to facilitate decisions based on sentiment, the following criteria should be met:
 1. Ensure methodology is transparent
 2. Explore sample characteristics through entity extraction (e.g. buying history, purchase intent)
 3. Substantiate sentiment metric (standardize/weight according to events, or influence^{**})
 4. Link sentiment and behavior - partner with academics.

Penultimate page

1. Let's move away from calibration and focus on the relationship to behaviors. Incremental improvements in accuracy play little role in helping executives make decisions.
 - Academia meet business. Business, academia.
2. Sentiment is contagious and full of trickery. Interpretative insight is imperative. Can only gain this from being immersed in the data.
 - Encourage immersion via simplicity with your platforms.
3. Promote Sentiment as DNA.
 - Generate case studies on “polymorphisms” so that executives can better identify common patterns and create the infrastructure to make sentiment based decisions.



Thank you.
Ask me anything.

I'm immersed in the
data

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