On the creativity of negation
The case of negative sarcasm

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Based on

1. He is particularly bright
2. He is not particularly bright

in a context in which
the guy is a complete idiot.

Which of the 2 sarcastic utterances is
easier to derive
the affirmative or the negative?
Whose creativity is faster to come by?
Experiments 1-9 and Study 1 focus on Affirmative Sarcasm and the Graded Salience Hypothesis Giora (1997, 2003)

Experiments 10-16 and Study 2 focus on Negative Sarcasm and the View of Default Nonliteral Interpretations Giora et al. (2010, 2013)
Default sarcastic interpretations
Default sarcastic interpretations

Predictions related to default sarcastic interpretations which follow from the view of default nonliteral interpretations conflict with those of the Graded Salience Hypothesis, according to which default interpretations are salience-based.
What are salience-based interpretations?

According to the Graded Salience Hypothesis, salience-based interpretations are utterance interpretations not listed in the mental lexicon but constructed based on the salient – coded and prominent - meanings of the utterance components, regardless of degree of (non)literalness.

(Giora, 1997, 2003; Giora et al., 2007)
Predictions wrt salience-based interpretations

• Given that lexical processes are stimulus-driven, salient meanings and salience-based interpretations will not be blocked by a strong context, even when incompatible.

• Instead, they will be facilitated unconditionally even when context-based interpretations are expected.

• (For a different view see, Burgers et al. 2013; Campbell & Katz, 2012; Gibbs, 1994, 2002)
Examples of salience-based interpretations

What is the salience-based interpretation of 1 and 2:

1. He is particularly bright
   He is highly intelligent

2. He is not particularly bright
   He is intelligent but others are more intelligent than him.

According to the Graded Salience Hypothesis, these interpretations will be activated immediately even in a context in which the guy is a complete idiot.
What are context-based interpretations?

Context-based interpretations (e.g., novel sarcasm) are noncoded, nonsalient interpretations, derived on the basis of contextual information, often regardless of the salient meanings of the utterance components.
Nonsalient Sarcasm Interpretation
Are they easy to derive?

According to the Graded Salience Hypothesis sarcasm is hard to come by since salient meanings and salience-based interpretations enjoy priority over nonsalient creative ones.

According to the view of Default Nonliteral Interpretations creativity may be easy to come by. Some nonsalient creative interpretations enjoy priority over salience-based ones.
On the priority of salience-based interpretations of Affirmative Sarcasm
(He is particularly bright)

Experiments 1-9 aim to show that, as predicted by the Graded Salience Hypothesis, affirmative sarcastic utterances activate their salience-based (often literal) interpretation unconditionally, i.e., regardless of contextual bias to the contrary (Fein et al., 2013; but see Gibbs, 1986)
Experiments 1-9
Affirmative sarcasm
Specific Predictions

1. Shorter reading times of targets biased toward the salience-based sarcastic interpretation than toward context-based sarcastic interpretation

2. Shorter response times to probes related to salience-based (literal) interpretations than to sarcastic interpretations
Experiments 1-3 use dialogues similar to Giora et al.’s (2007), strengthened by additional **sarcasm**tic cues.

The aim here is to show that even when contextual expectation for a **sarcasm**tic utterance is **strengthened**, salience-based (often literal) interpretations are not blocked, but facilitated unconditionally.
Sarcastically biased context + a sarcastic speaker + cues

B: I finish work early today.
S: So, do you want to go to the movies?
B: I don't really feel like seeing a movie
S: So maybe we could go dancing?
B: No, at the end of the night my feet will hurt and I'll be tired.
S (derisively): You're a really active guy...
B: Sorry but I've had a rough week
S: So what are you going to do tonight?
B: I think I'll stay home, read a magazine, and go to bed early.
S (derisively): Sounds like you are going to have a really interesting evening.
B: I was invited to a film by Amos Gitai.
S: That's fun. He is my favorite director.
B: I know, I thought we’ll go together.
S: Great. When is it on?
B: Tomorrow. We will have to be in Metulla in the afternoon.
S (happily): I see they found a place that is really nice.
B: I want to leave early in the morning.
S: I can't, I'm studying in the morning.
B: Well, I'm going anyway.
S (approvingly): Sounds like you are going to have a really interesting evening.

Probes: salience-based -- exciting; sarcastic-- dull; unrelated -- young; non-words
3 pretests controlled for

(a) the **sarcastic bias** of the sarcastically biased dialogues, which induced a significantly **stronger expectation for a sarcastic utterance** compared to the **nonsarcastic** dialogues;

(b) the **similar salience** status of the 3 types of probe words, which were measured **online** in terms of response times, following a neutral context;

(c) the **equivalent relatedness** of the related probes to the **interpretation** of their relevant target utterances in their respective contexts, and the **unrelatedness** of the unrelated probes.
Measures were

1. Reading times of target utterances.
2. Response times to probes:

- at 750 ms ISI (Experiment 1)
- at 1500 ms ISI (Experiment 2)
- at 2000 ms ISI (Experiment 3)
Results - Experiments 1-3 (combined analysis)

Reading Times

*Salience-based biased targets took less time to read than the nonsalient, sarcastically biased ones*
Results - Experiments 1-3 (combined analysis)

Response Times to Probes

*Salience-based probes took less time to respond to than nonsalient sarcastic probes and marginally so than unrelated probes*

*No context-type X probe-type interaction*
Results from reading times and response times support the **Graded Salience Hypothesis**. They show that only **salience-based** interpretations are facilitated initially. **Nonsalient sarcastic interpretations are difficult to derive.**
Experiments 4-9 use Giora et al.’s (2007) items, while strengthening them further by disclosing that we are testing sarcasm interpretation

The aim here is to show that even when contextual expectation for a sarcastic utterance is strengthened, salience-based interpretations are facilitated unconditionally, while sarcastic interpretations lag behind.
Predictions

Shorter response times to salience-based related probes compared to nonsalient sarcastically related and unrelated probes, regardless of contextual bias.
John was a basketball coach. For the past week he was feeling restless, worrying about the upcoming game. It was yet unclear how the two teams matched up, and he was anxious even on the day of the game. When he got a call telling him that the three lead players on the opposing team will not be able to play that night, John wiped the sweat off of his forehead and said to his friend: this is really terrific news!
John was a basketball coach. For the past week he was feeling restless, worrying about the upcoming game. It was yet unclear how the two teams matched up, and he was anxious even on the day of the game. When he got a call telling him that the three lead players on his team will not be able to play that night, John wiped the sweat off of his forehead and said to his friend: this is really terrific news!

Probes: Salience-based related – winning; sarcastically related – losses; unrelated – meals; non-words
4 pretests

a) the **sarcastic bias** of the sarcastically biased contexts and the **salience-based bias** of the literally biased contexts;

b) the **salience** status of the 3 types of probe words, which were measured **online**; Given that **sarcastically related** probes were faster, results served as **baseline means**.

c) the **equivalent relatedness** of the related probes to the interpretation of their relevant target utterances in their respective contexts, and the **unrelatedness** of the unrelated probes.

d) probes’ **relatedness** to the target utterance in context rather than to the context itself.
Experiments 4-9 (Fein et al., 2013)

As in Giora et al. (2007), expectation for a sarcastic utterance was first manipulated via the design of the experiment.

+ Expectation condition, participants were presented items, all of which ended in a sarcastic utterance.

- Expectation condition, participants were presented items, half of which ended in a sarcastic utterance and half in a salience-based (often) literally biased utterance.
Experiments 4-9 (Fein et al., 2013)

- Here, in addition, contextual expectancy was further strengthened.
- In the **+Expectation condition** participants were informed that we were examining sarcasm interpretation.
- Furthermore, longer processing times were allowed, with ISIs ranging between 750-3000ms
- Here too we expected to replicate previous results, demonstrating the priority of salience-based interpretations
Measures were

Response times to probes at:

750 ms ISI (Experiment 4)
1000 ms ISI (Experiment 5)
1500 ms ISI (Experiment 6)
2000 ms ISI (Experiment 7)
2500 ms ISI (Experiment 8)
3000 ms ISI (Experiment 9)
Salience-based probes took less time to respond to than nonsalient sarcastic probes.

Salience-based probes took less time to respond to than unrelated probes.

No expectancy X probe-type interaction.

Experiments 4-9 (combined analysis)
Mean response times at all ISIs (after subtraction of baseline means)
Summary
Experiments 1-9 support the priority of salience-based interpretations of affirmative sarcasm.

As predicted by the Graded Salience Hypothesis, results from 9 experiments looking at affirmative sarcasm provide support for the priority of salience-based interpretations over nonsalient (sarcastic) ones.
Conclusions

Nonsalient interpretations of affirmative sarcasm don’t come easy. They are difficult to activate probably because they are derived indirectly.
Study 1  
Corpus-based study of Discourse Resonance  
The Graded Salience Hypothesis  
Predictions  
Given that salience-based interpretations are expected to be facilitated immediately the context of a **sarcastic** utterance will resonate with its salience-based interpretation more often than with its **nonsalient** sarcastic one.
What is Discourse Resonance?

According to Du Bois (2002), resonance pertains to the activation of relational *affinities* between utterances. Neighboring utterances of a *sarcastic* statement may therefore resonate either with its *salience-based* and/or *nonsalient* *sarcastic* interpretation.
Resonating with salience-based interpretations of affirmative sarcasm

“Hooray to the Israeli Air Force pilots doing a splendid job” effused Brigadier General Avi Benayahu, the IDF spokesperson, talking to Yonit Levy - white turtleneck against a background of tanks, vis à vis hundreds of funerals in Gaza - a token of the ‘splendid job’ of our fine pilots (Levy 2008b).
Resonating with nonsalient sarcastic interpretations of affirmative sarcasm

The man [Olmert] who made a number of courageous statements about peace late in his tenure has orchestrated no fewer than two wars. Talking peace and making war, the "moderate" and "enlightened" Prime Minister [Olmert] has been revealed as one of our greatest fomenters of war (Levy 2009b).
Discourse Resonance
Affirmative Sarcasm
(Giora, Raphaely, Fein, Livnat, 2013)

Predictions
According to the Graded Salience Hypothesis, the environment of a sarcastic utterance will resonate with its salience-based rather than with its nonsalient sarcastic interpretation.
Findings

(In 0.7% cases, a sarcastic utterance was classified twice, since it was addressed both via its sarcastic interpretation and its salience-based interpretation when later developed into an extended sarcastic irony)

<table>
<thead>
<tr>
<th>Type of Contextual Resonance with Irony Interpretations</th>
<th>Quantity (percentage out of 1612)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No resonance</td>
<td>689 (42.7%)</td>
<td></td>
</tr>
<tr>
<td>With both sarcastic and salience-based interpretations</td>
<td>64 (3.9%)</td>
<td></td>
</tr>
<tr>
<td>Extended sarcastic ironies</td>
<td>160 (9.9%)</td>
<td>p&lt;.0001</td>
</tr>
<tr>
<td>Only salience-based interpretations</td>
<td>589 (36.5%)</td>
<td></td>
</tr>
<tr>
<td>Only sarcastic interpretations</td>
<td>122 (7.5%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1624</td>
<td></td>
</tr>
</tbody>
</table>
Conclusions

The environment of affirmative sarcasm reflects its salience-based interpretations, thus supporting the view that nonsalient interpretations are difficult to activate.
On the priority of nonsalient nonliteral interpretations of negative utterances
He is not particularly bright
On the priority of nonsalient nonliteral interpretations of negative utterances

He is not particularly bright

The view of default nonliteral interpretations predicts the priority of novel, nonsalient interpretations of creative (sarcastic) utterances over salience-based (literal) interpretations (Giora et al., 2013a, b)
What does it take to be a default *nonliteral* interpretation?
What does it take to be a default nonliteral interpretation?

For a nonliteral interpretation to be favored by default, utterances have to meet the conditions for default nonliteral interpretations which guarantee that potential ambiguity between literal and nonliteral interpretations is allowed a priori:
How do we guarantee potential ambiguity?
How do we guarantee potential ambiguity?

For utterances to be potentially ambiguous

a) **Familiarity** should be avoided.

b) **Semantic anomaly** or **internal incongruity** should be avoided.

c) **Specific and informative contextual information** should be avoided.
(a) Familiarity should be avoided so that salient/coded nonliteral meanings of expressions and collocations (e.g., the coded nonliteral meanings of familiar idiomatic, metaphorical, sarcastic, or any formulaic expression, see Giora 2003), prefabs (Erman & Warren 2001), or conventionalized, ritualistic, situation bound utterances, such that occur in standardized communicative situations, (Kecskés 1999, 2000) should be excluded;
If negative items are considered, they should not be Negative Polarity Items but should have an acceptable and meaningful affirmative counterpart, so that conventionality may be avoided.
Semantic anomaly should be avoided (since it’s known to trigger metaphoricalness, e.g., Beardsley 1958) or any kind of internal incongruency, any opposition between two elements of the phrase itself (known to trigger an ironic/sarcastic reading, see Partington 2010) should not be involved so that both literal and nonliteral interpretations would be permissible;
(c) Specific and informative contextual information should be avoided so that pragmatic incongruity - a breach of pragmatic maxims or contextual misfit (e.g., Grice 1975) - on the one hand, and supportive biasing information (including explicit marking, intonation/prosodic cues, gestures, facial expressions, etc.), on the other, may not invite or block a nonliteral interpretation (e.g., Gibbs 1994, 2002; Katz 2009; Katz, Blasko, & Kazmerski 2004)
In this part of the talk the focus is on default sarcastic interpretations.

More broadly, on the priority of novel, nonsalient, creative interpretations of negative utterances over their equally novel, salience-based interpretations.
Experiments 10-16: test the following constructions:

X s/he is not
X is not her forte
X is not her distinctive feature
Novel negative items of the form *X s/he is not, X is not her forte, X is not her distinctive feature* will be

(a) interpreted sarcastically by default,
(b) rated as more sarcastic than their novel affirmative counterparts, and will be
(c) read faster in sarcastically than in salience-based literally biasing contexts.
Experiments 10-11: Default sarcastic interpretations

X s/he is not
Meticulous she is not
Ambitious she is not

I told my ma I was doing Nanowrimo: her reaction: "Oh, God, not again!"

Basically, I pay her no attention during November, except to ask very, very obscure questions at all hours of the day and night. Supportive she ain't.

Experiment 10: Predictions

When presented in isolation, novel negative items will be
(a) interpreted sarcastically by default
and will be
(b) rated as more sarcastic
than their novel affirmative counterparts
Items were 18 Hebrew utterances of the form

X s/he is yes
X s/he is not

potentially ambiguous between literal and nonliteral interpretations
Sample items

Quick he is yes/is not
Focused he is yes/is not
Exciting she is yes/is not
Novelty ratings were collected from 22 Hebrew speakers. Results showed that both the negative items $M=2.34$ $SD=0.48$ and their affirmative counterparts $M=1.89$ $SD=0.46$ were unfamiliar, scoring significantly lower than 3 on a 7-point familiarity scale:

**Negative** $t(17)=5.91$, $p<.0001$

**Affirmative** $t(17)=10.23$, $p<.0001$
(a) Default interpretations of negative items

19 participants were asked to rate, on a 7-point scale (whose ends randomly instantiated either a literal (=1) or a sarcastic (=7) interpretation of each item) the proximity of the interpretation of the items to any of those instantiations at the scale’s ends.
(a) Default sarcastic interpretations of negative items

Supportive she is not

She’s disparaging and undermining  She has some reservations
(a) Default interpretations of negative items: Results

Results showed that outside of a specific context, the interpretations of the novel negative items were **sarcastic**, scoring **high** on sarcasm. 

M= 5.59, SD=0.54

Significantly higher than 5 on a 7-point **sarcasm** scale:

\[ t(17)=4.65, \ p<.005 \]
(b) Sarcasm rating of negative and affirmative items

- 43 Hebrew speakers were asked to rate degree of sarcasm on a 7 point sarcasm scale.
Stimuli

Supportive she is yes/not

Not sarcastic at all  Highly sarcastic
(b) Conscious sarcasm rating of negative and affirmative items

• Results showed that novel negative utterances were rated as more sarcastic than their novel affirmative counterparts

M = 5.92, SD = 0.94
M = 2.67, SD = 1.33

\[ t_{1(42)} = 11.53, \ p < .0001 \]
\[ t_{2(17)} = 45.55, \ p < .0001 \]
Sarcasm ratings

The diagram shows the sarcasm ratings for negative and affirmative statements. The sarcasm rating for negative statements is approximately 5.92, while for affirmative statements, it is around 2.67.
Experiment 11: Reading times of novel negative items

Prediction: Novel negative items of the form X s/he is not will be read faster in sarcastically than in literally biasing contexts.
Examples

• Rotem will never amount to anything with the way she conducts herself, slouched all day in front of the TV, or chatting away for hours on her cell phone. If she ever shows any concentration it’s when she catches up on the latest gossip. And if she ever moves her butt, it’s only in order to buy her stinking cigarettes. **Ambitious she is not. As far as she's concerned...**

• When Rotem has her mind set on achieving something, she usually does, but it’s never a far-reaching objective. Her goals are respectable, but rather banal. **Ambitious she is not. As far as she's concerned...**
Pretest: Establishing similar contextual bias

To establish contextual bias, 44 Hebrew speakers were presented the 18 negative targets in contexts either biasing them toward the literal (mitigated) interpretation or toward the (creative) sarcastic interpretation. They had to rate the targets on a 7 point sarcasm scale.
Results: Similar contextual bias

Results showed that negative items embedded in sarcastically biasing contexts scored as high on sarcasm as did their counterparts on literalness when embedded in literally biasing contexts:

(M = 6.02 SD = 0.37)
(M = 5.92 SD = 0.30)

\( t(17) = 1.42, p = .17 \) (two-tail)

We thus confirmed that both contexts were equally constraining.
44 participants read the passages segment by segment, advancing the texts by pressing a key. And the computer measured the reading times of the target utterances and the next 2 words that followed (for spill-over effects). The texts were followed by a comprehension question.
Results showed that sarcastically biased targets were read faster than their salience-based literally biased versions

\[ M = 883 \text{ ms (SD=183)} \]
\[ M = 949 \text{ ms (SD=234)} \]

\[ t_{1(43)} = 1.75, p < .05; \ t_{2(17)} = 1.20, p = .12 \]

No spillover effects:
\[ M = 787 \text{ ms (SD=204)}; \]
\[ M = 811 \text{ (SD=211)} \]
\[ t_{1(43)} < 1, \text{ n.s.}; \ t_{2(15)} < 1, \text{ n.s.} \]
Default sarcastic interpretations of (X s/he is not) items

Mean reading times (ms)

<table>
<thead>
<tr>
<th>Reading Time</th>
<th>Literal</th>
<th>Sarcastic</th>
</tr>
</thead>
<tbody>
<tr>
<td>949</td>
<td></td>
<td>883</td>
</tr>
</tbody>
</table>
Experiments 10-11: Summary

As predicted, when presented in isolation, novel negative items are

(a) interpreted sarcastically by default are

(b) rated as more sarcastic than their novel affirmative counterparts, and are therefore

(c) read faster in sarcastically than in salience-based biased contexts
Experiments 12-15
Default sarcastic interpretations

Exp. 12-13: Punctuality is not his forte
Exp. 14-15: Hospitality is not his best attribute

Tom's wait is currently 3 years, more-or-less. Punctuality is not his forte.

http://test.woodwind.org/oboe/BBoard/read.html?f=10&i=8736&t=18711
Experiments 12-13
Predictions

Novel negative items of the form *X is not her forte* will be

(a) interpreted sarcastically by default,

(b) rated as more sarcastic than their novel affirmative counterparts, and will be

(c) read faster in sarcastically than in literally biasing contexts
Experiment 12: Predictions

When presented in isolation

novel negative items
will be

(a) interpreted sarcastically by default
and will be

(b) rated as more sarcastic
than their novel affirmative counterparts
Items were 14 Hebrew utterances of the form X is/is not her forte potentially ambiguous between literal and nonliteral interpretations
Pretest: Establishing novelty of the items

Novelty ratings of 14 pairs of items were collected from 24 Hebrew speakers. Results showed that both the **negative items**

*M*=2.09  *SD*=0.49

and their **affirmative counterparts**

*M*=2.04  *SD*=0.46

were similarly novel  \( t(13) < 1, \text{ n.s.} \)

Scoring **significantly lower than 2.5** on a 7 point familiarity scale:

**Negative**  \( t(13) = 3.12, p < .005 \) (one-sample t-test)

**Affirmative**  \( t(13) = 3.81, p < .005 \) (one-sample t-test)
(a) Default interpretations of negative items

20 participants were asked to rate, on a 7 point scale (whose ends randomly instantiated either a literal (=1) or a sarcastic (=7) interpretation of each item) the proximity of the interpretation of the items to any of those instantiations at the scale’s ends.
(a) Default sarcastic interpretations of negative items

Punctuality is not his forte

He is fairly punctual but there are other things he is better at

He is not punctual at all
(a) Default interpretations of negative items: Results

Results showed that outside of a specific context, the interpretations of the novel negative items were **sarcastic**, scoring **high** on sarcasm

M=5.51, SD=0.35

**Significantly higher than 5** on a 7-point **sarcasm** scale:

\[ t(13) = 5.44, \ p < .0001 \]
(b) Sarcasm rating of negative and affirmative items

- 40 Hebrew speakers were asked to rate degree of sarcasm on a 7 point sarcasm scale.
- Results showed that novel negative utterances were rated as more sarcastic than their novel affirmative counterparts

\[ M = 6.02, \ SD = 0.78 \]
\[ M = 2.67, \ SD = 1.01 \]
\[ t_1(39) = 15.43, \ p < .0001 \]
\[ t_2(13) = 22.07, \ p < .0001 \]
Sarcasm ratings

![Bar chart showing sarcasm ratings]

- Negative: 6.02
- Affirmative: 2.69
Experiment 13:  
Reading times of novel negative items

Prediction:  
**Novel** negative items of the form *X is not his forte* will be **read faster in sarcastically** than in salience-based literally biasing contexts
Examples

• Shay had to take his father to the dentist. Although his father reminded him time and again that he must be there at precisely 10:00 because he hates being late, Shay was half an hour late, arriving at 10:30. Later, while having dinner, Shay’s father complained to his wife about Shay’s behavior, embarrassing him in front of the dentist. “Well, what did you expect?” answered his wife, “we know him well enough, don’t we? And this is not the first time he has given you a lift. **Punctuality is not his forte.** He has received ...”

• Shay had to take his father to the dentist at 10:00. He was a few minutes early and waited for his father outside his place. During the dental treatment, Shay’s father could not stop bragging about his son, telling the dentist how successful he is, and responsible, and what a lovely girlfriend he has and a great career too... The dentist reciprocated: “Yeah, and I’ve noticed that he knows an appointment is an appointment. Most of my patients act like time is insignificant”. The father agreed while adding: “Yes, he is usually on time, albeit **punctuality is not his forte.** He has received...”
To establish contextual bias, 34 participants were presented the 14 negative targets in contexts either biasing them toward the literal (mitigated) interpretation or toward the (creative) sarcastic interpretation. They had to rate the targets on a 7 point sarcasm scale.
Results: Similar contextual bias

Results show that the negative items embedded in sarcastically biasing contexts scored as high on sarcasm as did their counterparts on literalness when embedded in literally biasing contexts:

$(M=5.66 \ SD=0.32)$  $(M=5.58 \ SD=0.39)$

$t(13)=0.52, p=.61$ (two-tail)

We thus established that both contexts were equally constraining.
44 participants read the passages segment by segment, advancing the text by pressing a key. And the computer measured the reading times of the target utterances and the next 2 words that followed (for spill-over effects). The texts were followed by a comprehension question.
Results showed that **sarcastically biased** targets were read **faster** than their **literally biased** versions:

\[
\begin{align*}
M &= 1349 \text{ ms} \ (SD=401) \\
M &= 1790 \text{ ms} \ (SD=579) \\
t_1(43) &= 4.69, \ p < .0001 \\
t_2(13) &= 4.48, \ p < .0005
\end{align*}
\]

Spillover effects:

\[
\begin{align*}
M &= 647 \text{ ms} \ (SD=192) \\
M &= 739 \text{ ms} \ (SD=196) \\
t_1(43) &= 2.90, \ p < .0005; \ t_2(13) &= 1.94, \ p < .05
\end{align*}
\]
Default sarcastic interpretations of \((X \text{ is not his forte})\) items

Mean reading times (ms)

<table>
<thead>
<tr>
<th>Reading Time</th>
<th>Literal</th>
<th>Sarcastic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1349</td>
<td></td>
<td>1790</td>
</tr>
</tbody>
</table>

Bar chart showing reading times for literal and sarcastic interpretations.
Experiments 12-13: summary

As predicted, novel negative items of the form *X is not her forte*

are

(a) interpreted sarcastically by default;
(b) rated as sarcastic when presented in isolation;

and are

(c) understood faster in sarcastically than in salience-based literal biasing contexts.
Experiments 14-15
(replication of 12-13)
Default sarcastic interpretations

Agility is not her most distinctive feature
Supportiveness is not what she excels at

... a new species of humanity fighting for their share of the world? Either way it is a historical fact: Sharing the world has never been humanity’s defining attribute.

http://www.imdb.com/title/tt0290334/
Experiments 14-15

Predictions

**Novel** negative items of the form *X is not her best attribute* will be

(a) interpreted sarcastically by default,

(b) rated as more sarcastic than their novel affirmative counterparts, and will be

(c) read faster in sarcastically than in literally biasing contexts
Experiment 14: Predictions

When presented in isolation, novel negative items will be:

(a) interpreted sarcastically by default and will be

(b) rated as more sarcastic than their novel affirmative counterparts
Items were 12 pairs of utterances of the form X is/is not her best attribute potentially ambiguous between literal and nonliteral interpretations
Novelty ratings of 12 pairs of items were collected from 40 Hebrew speakers. Results showed that:

- both the negative items: $M=1.47$ $SD=0.36$
- and their affirmative counterparts: $M=1.30$ $SD=0.15$

were similarly novel $t(11)=1.86$, $p=.09$ (two-tail).

Scoring significantly lower than 2 on a 7 point familiarity scale:

- Negative: $t(11)=5.11$, $p<.0005$
- Affirmative: $t(11)=15.60$, $p<.0001$
(a) Default sarcastic interpretations of negative items

Punctuality is not his best attribute

He is fairly punctual but there are other things he is better at

He is not punctual at all
(a) Default interpretations of negative items

20 participants were asked to rate, on a 7 point scale (whose ends [randomly] instantiated either a literal (=1) or a sarcastic (=7) interpretation of each item) the proximity of the interpretation of the items to any of those instantiations at the scale’s ends.
Results showed that outside of a specific context, the interpretations of the novel negative items were sarcastic, scoring high on sarcasm: $M=5.55$, $SD=0.29$.

Significantly higher than 5 on a 7-point sarcasm scale: $t(11)=5.52$, $p<.0001$.
(b) Sarcasm rating of negative and affirmative items

- 40 Hebrew speakers were asked to rate degree of sarcasm of the utterances on a 7 point sarcasm scale.
- Results showed that novel negative utterances were rated as more sarcastic than their novel affirmative counterparts.

- **M** = 5.96, **SD** = 0.76
- **M** = 3.29, **SD** = 1.06
- \( t_1(39) = 12.72, p < .0001 \)
- \( t_2(11) = 13.95, p < .0001 \)
Sarcasm ratings

5.96

3.29

Negative

Affirmative
Experiment 15: Reading times of novel negative items

Prediction: Novel negative items will be read faster in sarcastically than in salience-based literally biasing contexts.
Examples

• Shay had to take his father to the dentist. Although his father reminded him time and again that he must be there at precisely 10:00 because he hates being late, Shay was half an hour late, arriving at 10:30. Later, while having dinner, Shay’s father complained to his wife about Shay’s behavior, embarrassing him in front of the dentist. “Well, what did you expect?” answered his wife disparagingly, “we know him well enough, don’t we? And this is not the first time he gives you a lift. Punctuality is not his best attribute”. He has ...

• Shay had to take his father to the dentist at 10:00. He was a few minutes early and waited for his father outside his place. During the dental treatment, Shay’s father could not stop bragging about his son, telling the dentist how successful he is, and responsible, and what a lovely girlfriend he has and a great career too... The dentist reciprocated: “Yeah, and I’ve noticed that he knows an appointment is an appointment. Most of my patients act like time is insignificant”. The father agreed while adding: “Yes, he is usually on time, albeit punctuality is not his best attribute”. He has...
To establish contextual bias, 44 participants were presented the 12 negative targets in contexts either biasing them toward the literal (mitigated) interpretation or toward the (creative) sarcastic interpretation. They had to rate the targets on a 7 point sarcasm scale.
Results showed that the negative items embedded in sarcastically biasing contexts scored as high on sarcasm as did their counterparts on literalness when embedded in literally biasing contexts:

\[(M=6.31 \ SD=0.21)\]
\[(M=6.14 \ SD=0.41)\]
\[t(11)=1.24, \ p=.24 \ (two\text{-}tail)\]

Each scoring significantly **higher than 5.5** on a 7 point scale:

- **sarcasm:** \[t(11)=13.12, \ p<.0001\]
- **Literal:** \[t(11)=5.47, \ p<.0001\]

We thus confirmed that both contexts were equally constraining.
Reading times

- 52 participants read the passages segment by segment, advancing the text by pressing a key. And the computer measured the reading times of the target utterances and the next 2 words that followed (for spill-over effects). The texts were followed by a comprehension question.
Results showed that sarcastically biased targets were read faster than their literally biased versions.

\[ M = 1821 \text{ ms (SD=588)} \]
\[ M = 2405 \text{ ms (SD=833)} \]
\[ t_1(51) = 6.19, p < .0001 \]
\[ t_2(11) = 2.93, p < .01 \]

Spillover effects:
\[ M = 690 \text{ ms (SD=208)}; \]
\[ M = 726 \text{ ms (SD=275)} \]
\[ t_1(51) = 1.48, p = .07 \]
\[ t_2(11) = <1, \text{ n.s.} \]
Default sarcastic interpretations of \((X \text{ is not his best attribute})\) items

Mean reading times (ms)

- Literal: 2405 ms
- Sarcastic: 1821 ms
Experiments 14-15: summary

As predicted, novel negative items of the form

\[ \text{X is not her best attribute} \]

are

(a) interpreted sarcastically by default;
(b) rated as sarcastic when presented in isolation;

and are

(c) understood faster in sarcastically than in salience-based literally biasing contexts.
Experiment 16
Negation vs. structural markedness

To further test the hypothesis that negation generates sarcastic interpretations by default, it is necessary to weigh it against an alternative assumption that it is the markedness of the fronted constructions rather than the negation marker that accounts for this effect.
Experiment 16 was designed to directly weigh degree of negation (not/yes) against degree of structural markedness (+/-fronting).
Predictions

Although structural markedness might prompt sarcasm, negation would prove to be the determinant trigger. Negative versions of utterances will always be more sarcastic than their affirmative counterparts, regardless of degree structural markedness.
Experimental items included 16 concepts (taken from Experiments 12-15) each appearing in 4 different constructions, marked and unmarked:
Stimuli

- Supportiveness is **not** her forte/best attribute

- Supportiveness is **yes** her forte/best attribute

- Her forte/best attribute is **not** supportiveness

- Her forte/best attribute is **yes** supportiveness
Participants

Participants were 60 students of Tel Aviv University and The Academic College of Tel Aviv-Yaffo. They were all native speakers of Hebrew.
Task

Participants were asked to rate the degree of sarcasm of each utterance on a 7-point sarcasm scale.
Results

Results show that the **negative versions** were always more sarcastic than their affirmative counterparts. **Markedness did not** play a role in affecting sarcasm.

Two 2-way ANOVAs showed

- a significant main effect of Negation
  \[ F_1(1,59)=128.87, \ p<.0001, \]
  \[ F_2(1,15)=799.72, \ p<.0001, \]

- no significant effect of Markedness
  \[ F_1(1,59)=1.80, \ p=.19, \ F_2(1,15)<1, \ n.s., \]

- no Negation X Markedness interaction
  \[ F_1(1,59)<1, \ n.s., \ F_2(1,15)<1, \ n.s. \]
Results

Unmarked

<table>
<thead>
<tr>
<th>Sarcasm ratings</th>
<th>Affirmative</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2</td>
<td>4.87</td>
<td>5.04</td>
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</tbody>
</table>

Marked

<table>
<thead>
<tr>
<th>Sarcasm ratings</th>
<th>Affirmative</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.24</td>
<td>5.04</td>
<td></td>
</tr>
</tbody>
</table>
Conclusions

Negation rather than structural markedness plays a determinant role in affecting sarcastic interpretations by default.
Results obtained from 7 experiments show that, unlike affirmative sarcasm, negation induces nonsalient sarcastic interpretations by default: Novel negative items of the form X s/he is not, X is not her forte/best attribute are

- interpreted sarcastically by default, and are, therefore,
- understood faster in sarcastically than in salience-based literally biasing contexts,
- regardless of structural markedness.
Study 2
Resonance with negative sarcasm
(Giora et al., 2010, 2013)

The view of Default Sarcastic Interpretations

Predictions

Given that nonsalient sarcastic interpretations are expected to be facilitated immediately

The context of a sarcastic utterance will resonate with its nonsalient sarcastic interpretation more often than with its salience-based interpretation
Findings

Unlike affirmative sarcasm, the environment of negative sarcasm exhibits resonance with the nonsalient sarcastic interpretation
<table>
<thead>
<tr>
<th>Forte/most prominent characteristic constructions</th>
<th>Only sarcastic</th>
<th>Only literal</th>
<th>Both</th>
<th>None</th>
<th>Total</th>
<th>p-values</th>
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</thead>
<tbody>
<tr>
<td>Patience is not my/our/his/her forte (Hebrew)</td>
<td>7</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>17</td>
<td>p=.17</td>
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<tr>
<td>English is not my/our/his/her forte (Hebrew)</td>
<td>13</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>16</td>
<td>p&lt;.001</td>
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<tr>
<td>Humor is not my/our/his/her forte (Hebrew)</td>
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<td>0</td>
<td>2</td>
<td>2</td>
<td>13</td>
<td>p&lt;.005</td>
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<td>Patience is not my/our/his/her forte (English)</td>
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<td>4</td>
<td>9</td>
<td>0</td>
<td>28</td>
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<tr>
<td>Humor is not my/our/his/her forte (English)</td>
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<td>11</td>
<td>3</td>
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<td>p&lt;.005</td>
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<tr>
<td>X is not my/our/his/her most prominent characteristic (Hebrew)</td>
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<td>0</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>p&lt;.01</td>
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<tr>
<td>Total</td>
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<td>10</td>
<td>35</td>
<td>9</td>
<td>127</td>
<td>p&lt;.0001</td>
</tr>
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</table>
Conclusions

Nonsalient interpretations of negative sarcasm do come easy. They are easy to activate probably because they are processed directly.
Taken together, Experiments 1-16 and Studies 1-2 report some unprecedented results supporting the priority of:

- Nonsalient interpretations over salience-based interpretations of negative utterances,
- Sarcastic interpretations over nonsarcastic interpretations of negative utterances,
- Negative sarcasm over affirmative sarcasm (the former interpreted directly),
- Negatives over affirmatives (the former understood faster).
Thank you!