Weapons of mass distraction: Optimal innovation and pleasure ratings
Giora et al. (2004)

Beyond figurativeness
Shuval & Giora (2005)

Metaphor, coherence, optimal innovation, and pleasure
Giora et al. (in press)

Literal vs. nonliteral language - novelty matters.
Giora (in press).
Pleasure, Processing, and Nonliteral Language
Pleasure:
What do we find agreeable or uplifting?

“Strange words simply puzzle us; ordinary words convey only what we know already; it is from metaphor that we can best get hold of something fresh.“ (Aristotle, Rhetoric)
Is it really the metaphorical that is fresh, aesthetic, agreeable - inducing affect?
KNOW HOPE

No hope
Write the word that's the opposite of the following words:

nobody
Write the word that's the opposite of the following words:
nobody

yesbody
Write the word that's the opposite of the following words:

nobody

yesbody
Lorenzo Gatti’s example

“Oil on canvas”

“Hopefully we can clean it”
Save our soles
Save our souls

GASWORKS THEATRE & GALLERIES
www.gasworks.org.au Ph. 8606 4200

SAVE OUR SOLES

These are the surviving shoes of 'dog poo incidents'. To stop innocent shoes being cut down in their prime, please pick up after your dog.
Curl up and dye
Curl up and die
No to ART for apARTh eid’s Sake
Protesting the Israel Philharmonic Orchestra in NY (Oct 29 2013)
Protesting the Israel Philharmonic Orchestra in NY (Oct 29 2013)
http://adalahnyny.org/photo-gallery/1094/pictures-israel-philharmonic-orchestra-protest-oct-29-2013
Swan Lake ballet parody
Les Ballets du Trockadero
http://www.youtube.com/watch?v=MfKdC6SYcnM
Is it really
the metaphorical then
that is
fresh, aesthetic,
agreeable - inducing
affect?

Not necessarily
What about metaphors? Are metaphors pleasing?
Some metaphors are!
Some aren’t!
Kick out
Kick out = Get rid of
Kick out racism
Kick out racism =
Get rid of racism
Compare

Kick out racism
to

Israelis, Palestinians, and football

Kick out racism


Which is more pleasing?
Know Pinkwashing

https://www.facebook.com/kNOWPinkwashing

No Pinkwashing

No whitewashing
PASSOVER
PASS OVER
Amnon Illuz (2004)
Iron and blood
(Heartfield, 1934)
Wonder Woman
Bather
William Bouguereau (1879)
Peace dove
Peace dove
What makes stimuli pleasurable, aesthetic?
What makes stimuli pleasurable, aesthetic?
It is Optimal Innovativeness that is pleasing rather than metaphor.
The Graded Salience Hypothesis
Salient, less-salient, nonsalient meanings/interpretations


• A meaning is salient if it is coded in the mental lexicon and enjoys prominence due to cognitive factors (e.g., prototypicality) or exposure (e.g., familiarity, frequency, conventionality), regardless of degree of literalness;

• A meaning is less-salient if it is coded but is less familiar, frequent, etc., regardless of degree of literalness;

• A meaning or an interpretation that is not coded is nonsalient; it is novel or derived, regardless of degree of literalness.
The Optimal Innovation Hypothesis (Giora, 2003; Giora et al., 2004)

Pleasurability is sensitive to Optimal Innovation (rather than to figurativeness)
Optimal Innovation
A stimulus is optimally innovative if it evokes
(a) a novel - less or nonsalient - response *(Yesbody)* alongside
(b) a *coded* salient response *(Nobody)* from which, however, it differs (both quantitatively and qualitatively), so that both can be weighed against each other.
In 8 experiments (which were run in Hebrew) we tested the Optimal Innovation Hypothesis. 6 are reported here.
The Optimal Innovation Hypothesis

Experiments 1-6

Predictions

Pleasure and Processing

(Effects and Costs)

1. Items that meet the criteria for Optimal Innovation (being novel yet evoking coded salient but distinct enough meanings such as Body and sole) will be rated as most pleasing but will be harder to process compared to salient meanings.
2. Highly familiar items (Body and soul) will rank next in pleasurability because we assume that it is the familiar in the novel that accounts for pleasure (Freud, 1960). Processing-wise, however, they will be least effortful.
3. Pure innovations (Bobby and Saul) will be least pleasing because they lack in familiarity which will also make them most difficult to process.
Testing **pleasure** predictions

**Experiment 1**

1. Items that meet the criteria for Optimal Innovation (being **novel** yet evoking **salient** but distinct enough meanings) (Body and sole) will be rated as **most pleasing**
2. Highly familiar items (Body and soul) will rank next in pleasurability because we assume that it is the familiar in the novel that accounts for pleasurability (Freud, 1960).
3. Pure innovations (Bobby and Saul) will be least pleasing because they lack in familiarity.
Pretest 1:
Items – differing in terms of degree of familiarity

Body and soul (familiar expression) > Bodies and souls (variant version) > Body and sole (optimal innovation) > Bobby and Saul (pure innovation)
Pretest 2: Establishing quantitative differences on a 7 point similarity scale

Significant gradual differences were found between the variations:

Body and soul (familiar expression) [7.00]
Bodies and souls (variant version) (5.98) >
Body and sole (optimal innovation) (3.76) >
Bobby and Saul (pure innovation) (1.41)
Pretest 3: Establishing qualitative (meaning) differences on a yes/no difference scale

**Not different**
- **Body and soul** (familiar expression)
- **Bodies and souls** (variant version)

**Different**
- **Body and sole** (optimal innovation)
- **Bobby and Saul** (pure innovation)
Procedure

• Participants were presented the various items and were asked to rate their degree of **pleasurability** and degree of **familiarity**.
Results
Wundt’s Curve (1874)
Monotonic increase of pleasure
The Arousal model/The-effect-of-mere-exposure model

Monotonic increase of pleasure
Complexity and Beauty

The effect of complexity on judgements of beauty and creativity

Bo T. Christensen, Linden J. Ball & Rolf Reber (in prep.)
# Degree of complexity

<table>
<thead>
<tr>
<th>Low Complexity</th>
<th>Medium Complexity</th>
<th>High Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
<tr>
<td><img src="image4.png" alt="Image" /></td>
<td><img src="image5.png" alt="Image" /></td>
<td><img src="image6.png" alt="Image" /></td>
</tr>
</tbody>
</table>
Complexity beauty and creativity

![Graph showing the relationship between complexity and estimated marginal means for beauty and creativity. The graph indicates that beauty decreases as complexity increases, while creativity increases as complexity increases.]
Compared to effect-of-mere-exposure model

No monotonic increase of pleasure
Testing processing predictions

Experiment 2

Aimed to show that optimally innovative most pleasing stimuli indeed involve processing their salient but different meanings.
Prediction:

Optimal Innovations will prime their salient response
Body and soul will be faster to read following Body and sole than following Bobby and Saul
Results
Reading times of familiar targets following optimal innovations were significantly shorter (1.12 sec, SD = 0.41) than following pure innovations (1.21 sec, SD = 0.44),
\[ t_1(1,39) = 4.69, \ p < .001, \]
\[ t_2(1,19) = 3.18, \ p < .005. \]

Optimal Innovations indeed involve processing salient meanings of familiar stimuli
Testing processing predictions

Experiment 3

Aimed
to demonstrate the assumed
costs
of the benefits of
Optimal Innovativeness
Predictions: Processing

1. Processing Optimal Innovations will be more difficult (e.g., take longer to read) than familiar stimuli (albeit faster than irrelevant stimuli)

but

2. will be rated as more pleasing than familiar stimuli (and irrelevant stimuli)
Procedure

• Participants read the targets and had to rate them on a 7 point pleasure scale. Reading times were measured by the computer.
Results:

Pleasure ratings

Effects

Reading times

Costs

Pleasure ratings

Salient  Optimally innovative  Irrelevant

Reading Times

Salient  Optimally innovative  Irrelevant
How will metaphors fare with regard to pleasurable and processing?
Recall that according to the Optimal Innovation Hypothesis it is not metaphor that is most pleasing and costly but Optimal Innovation
Experiments 4-5

Weigh benefit (pleasure)
Against cost (coherence)
of novel and familiar metaphors
Experiments 4-5
Coherence: predictions

1. (Highly) novel metaphors $<$
   their familiar literal interpretations

2. Familiar metaphors $=$
   their familiar literal interpretations

3. Highly familiar metaphors $>$
   their low familiar literal interpretations.
Experiments 4-5
Pleasure: predictions

1. (Highly) novel metaphors >
   their familiar literal interpretations

2. Familiar metaphors =
   their familiar literal interpretations

3. Highly familiar metaphors <
   their low familiar literal interpretations.
Experiment 4
(Giora et al. in press)
Tests predictions 1 - 2
of Coherence and Pleasure:
1. **Novel metaphors** will be less coherent but more pleasing than their salience-based literal interpretations
2. **Familiar metaphors** will be as coherent and as pleasing as their familiar literal interpretations
Experiment 4

Materials

Materials were taken from Giora & Fein (1999) which were controlled for degree of familiarity.
Familiar items

Metaphors
He tells me that he’s lost my phone number.
I don’t buy it.

Literals
It’s too expensive.
I don’t buy it.
Novel items

Metaphors
Shahar told Barak that he looks good, and that his few extra pounds really suit him.
To this Barak replied:
“Why do you always have to add Tabasco to everything?”

Literals
After tasting Barak’s pita bread, Keren said:
“Why do you always have to add Tabasco to everything?”
Coherence ratings

Coherence

![Bar chart showing coherence ratings for novel and familiar stimuli. The chart compares literal meaning and metaphorical meaning.](chart)

- **Coherence Ratings**: 0, 1, 2, 3, 4, 5, 6, 7
- **Novel Stimuli**: Higher coherence for literal meaning compared to metaphorical meaning.
- **Familiar Stimuli**: Similar coherence for both literal and metaphorical meanings.
Pleasure ratings

- Pleasure ratings for novel and familiar stimuli, categorized by literal and metaphorical meaning.
Experiment 5
(Giora et al. 2004)
Tests predictions 1 and 3
of Coherence and Pleasure:

1. **Highly novel metaphors** will be **less coherent** but **more pleasing** than their **more familiar literal interpretations**.

3. **Highly familiar metaphors** will be **more coherent** but **less pleasing** than their **less familiar literal interpretations**.
Experiments 5
Materials

200 items presented as metaphorical (albeit with plausible literal interpretation) were rated for familiarity, of which the 20 most familiar and the 20 least familiar were used as experimental materials.
Highly familiar items

Metaphors

Danny was afraid of flying. After years of therapy he finally managed to grab the bull by the horns.

Literals

Danny won the rodeo after using his hands to grab the bull by the horns.
Highly novel items

Metaphors

Sharon went to sleep very late. In the morning she was supposed to have a very important meeting. At a certain point she almost thought about canceling it because she hates waking up in the morning, looking in the mirror, and seeing a geometrical abstract painting.

Literals

Sharon finished renovating her house. She put a lot of thought into designing the different rooms. She says she’s very pleased, but the only thing that is still missing for the living room to look perfect is a geometrical abstract painting.
Coherence ratings of high familiar and high novel metaphors

\( t_1(57)=5.31, p<.0001; \) \( t_2(19)=2.42, p<.05 \)

\( t_1(57) = 15.60, p < .0001, t_2(19) = –7.37, p < .0001 \)

<table>
<thead>
<tr>
<th>Coherence</th>
<th>literal meaning</th>
<th>metaphorical meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>highly novel stimuli</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>highly familiar stimuli</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
Pleasure ratings of the 10 most familiar and the 10 most novel Metaphors

\((t_1(53) = 2.31, p < .05, t_2(9) = 2.35, p < .05)\)

\((t_1(53) = 2.31, p < .05, t_2(9) = 2.35, p < .05)\)
Figurativeness effect?

Highly Novel Metaphors

Literal Interpretation

metaphorical Interpretation

Pleasure

Least Figurative

Most Figurative

Figurativeness

y
Figurativeness effect?

Highly Familiar Metaphors

Literal Interpretation

metaphorical Interpretation

Pleasure

Figurativeness

Least Figurative

Most Figurative
Pleasurability is sensitive to Optimal Innovation rather than to figurativeness
Metaphorical interpretations of novel metaphors are processed in RH areas

(Mashal et al., 2005, 2007)
Literal interpretations of familiar idioms are processed in RH areas (Mashal et al., 2008)
What matters, then, is not figurativeness or lack of it but Optimal innovativeness
Experiment 6

Pictorial stimuli
Revising Aristotle?
We all naturally find it agreeable to get hold of new ideas easily...
Strange words simply puzzle us; ordinary words convey only what we know already [?]; it is from metaphor Optimal Innovation that we can best get hold of something fresh.
Optimal Innovations
vis à vis non/ literalness

Body and sole/ Body and soul (L-L)
Know hope/ No hope (L-L)
Curl up and dye/ Curl up and die (L-M)
A peace of paper/ a piece of paper (M-L)
Weapons of mass distraction/ (M-L)
Weapons of mass destruction/ (L)
Weapons of mass construction (M-L-M)
Conclusions

Pleasurability is sensitive to 
Optimal Innovation 
(rather than to figurativeness)
Food for future thought: Are optimal innovations always more pleasing?

Affect and Pleasure
Bather
William Bouguereau (1879)
A new design for the flag of the state of Israel
The flag of the state of Israel
Thank you!