

**Optimal Innovation
Creative Interpretations of
Literal and Non-Literal
Language**

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Based on

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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:

10-23



nobody



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

10-23

nobody



yesbody



Nobody - Yesbody

<http://thecrazyteacher.altervista.org/wp-content/uploads/2013/10/nobody-yesbody.jpg>



Lorenzo Gatti's example



“Oil on canvas”

“Hopefully we can clean it”

Save our soles

Save our souls



Curl up and dye

Curl up and die



**No to
ART for
apARTheid's
Sake**

**Protesting the Israel Philharmonic Orchestra in NY
(Oct 29 2013)**

<http://adalahny.org/photo-gallery/1094/pictures-israel-philharmonic-orchestra-protest-oct-29-2013>



Protesting the Israel Philharmonic Orchestra in NY (Oct 29 2013)

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Swan Lake ballet parody

Les Ballets du Trockadero

<http://www.youtube.com/watch?v=MfKdC6SYcnM>





MEZZO

**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

<http://www.economist.com/news/middle-east-and-africa/21576151-vexed-question-mixed-football-kick-out-racism>

Which is more pleasing?

Know Pinkwashing

<https://www.facebook.com/kNOwPinkwashing>

No Pinkwashing

No whitewashing

PASSOVER

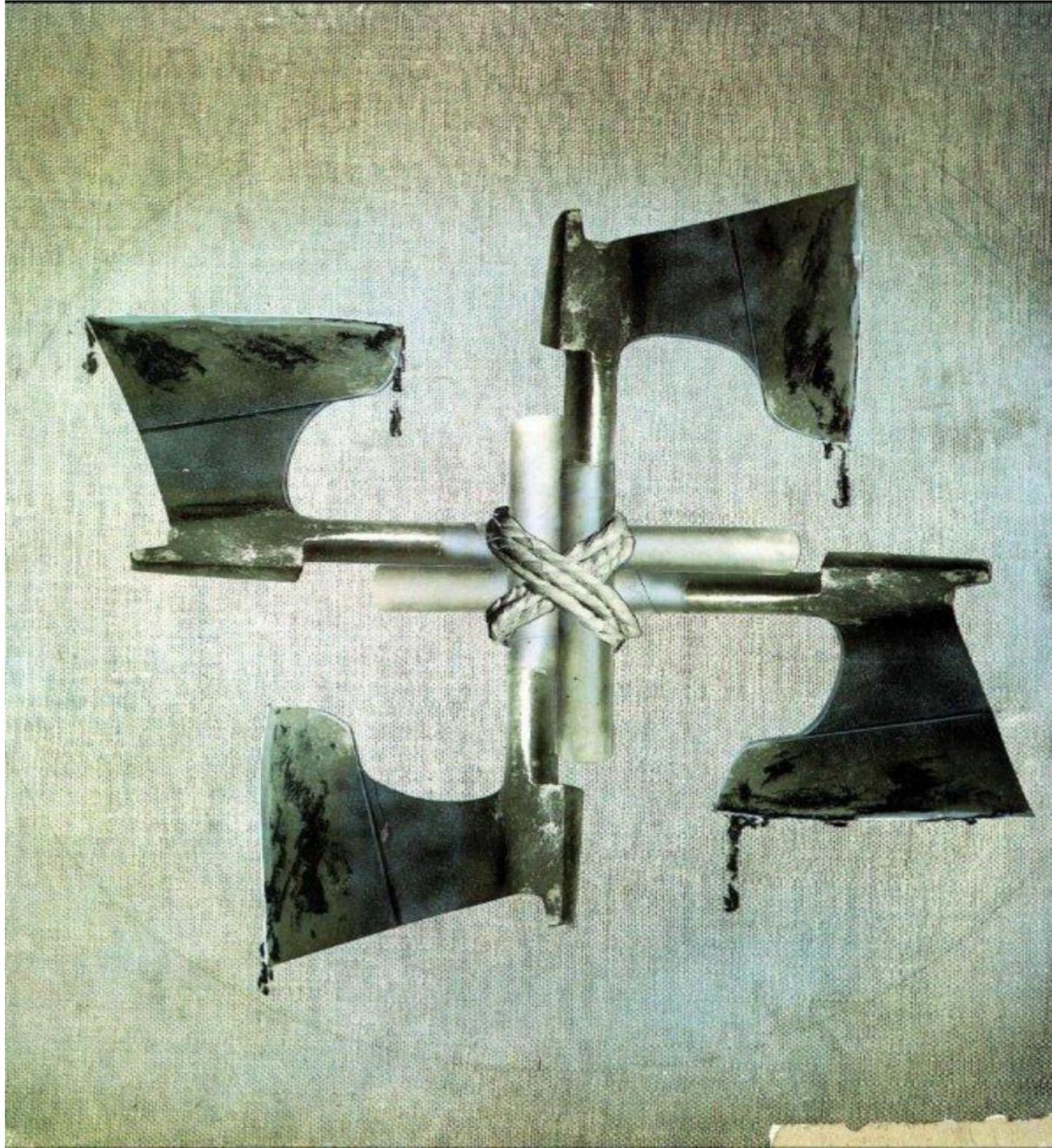
PASS OVER

Amnon Illuz (2004)

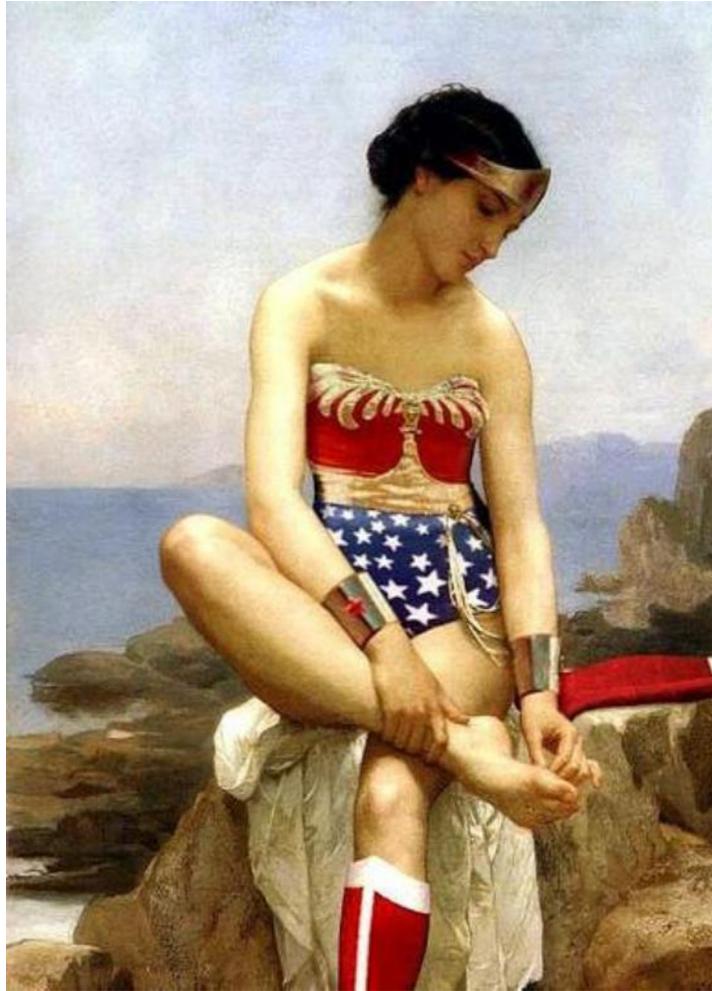


Iron and blood

(Heartfield, 1934)

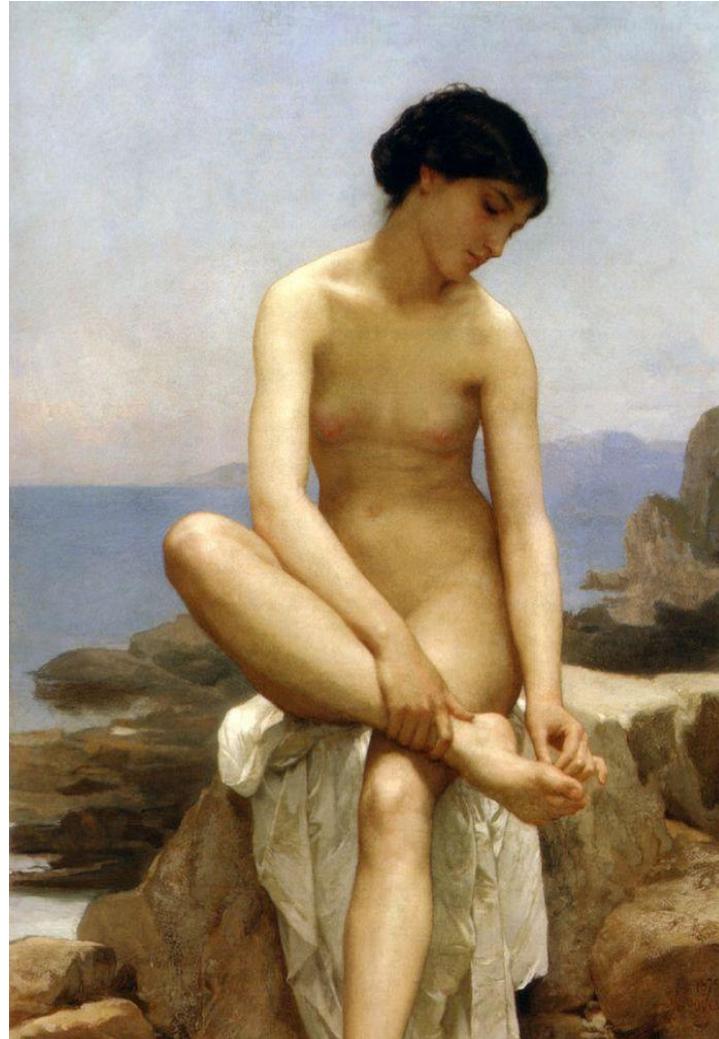


Wonder Woman



Bather

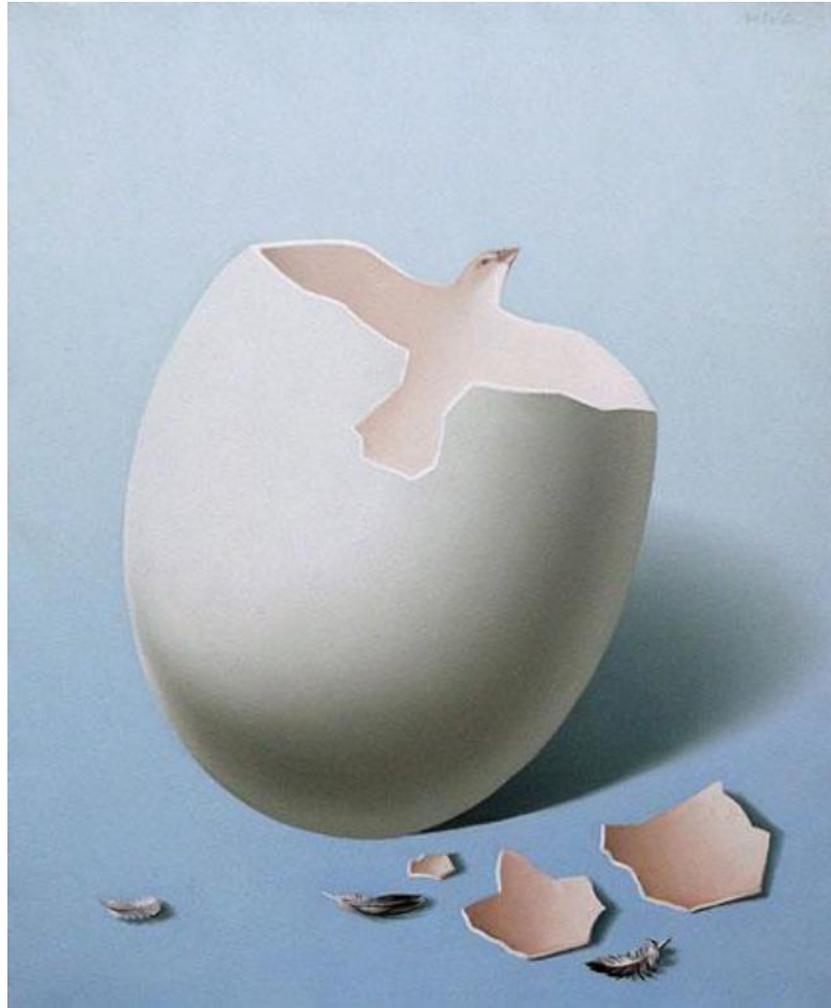
William Bouguereau (1879)



Peace dove



Peace dove



<http://www.chemamadoz.com/a.html>



**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

According to the Graded Salience Hypothesis (Giora 1997, 1999, 2003)

- 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)

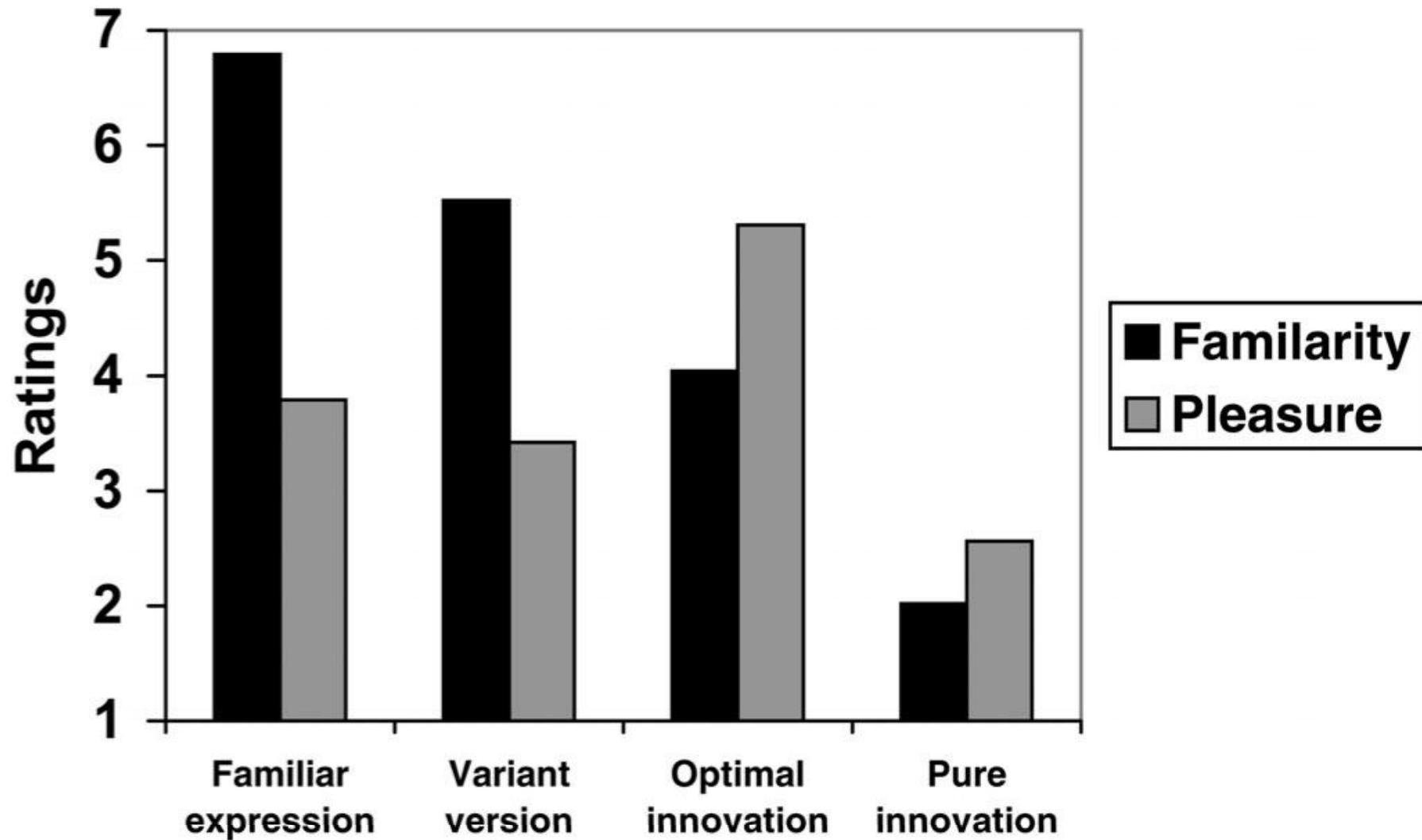
Different

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

Procedure

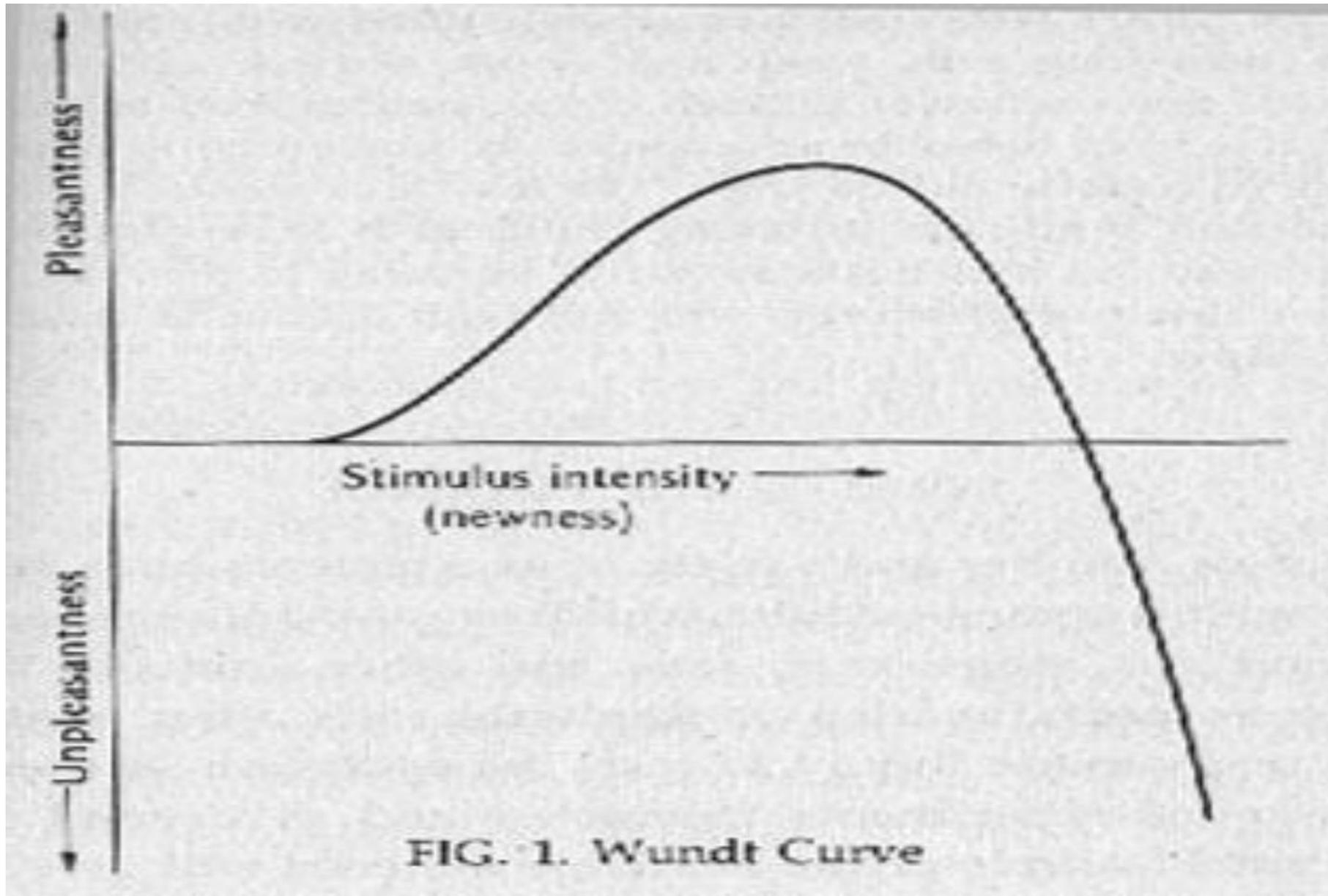
- **Participants were presented the various items and were asked to rate their degree of pleasurability and degree of familiarity.**

Results



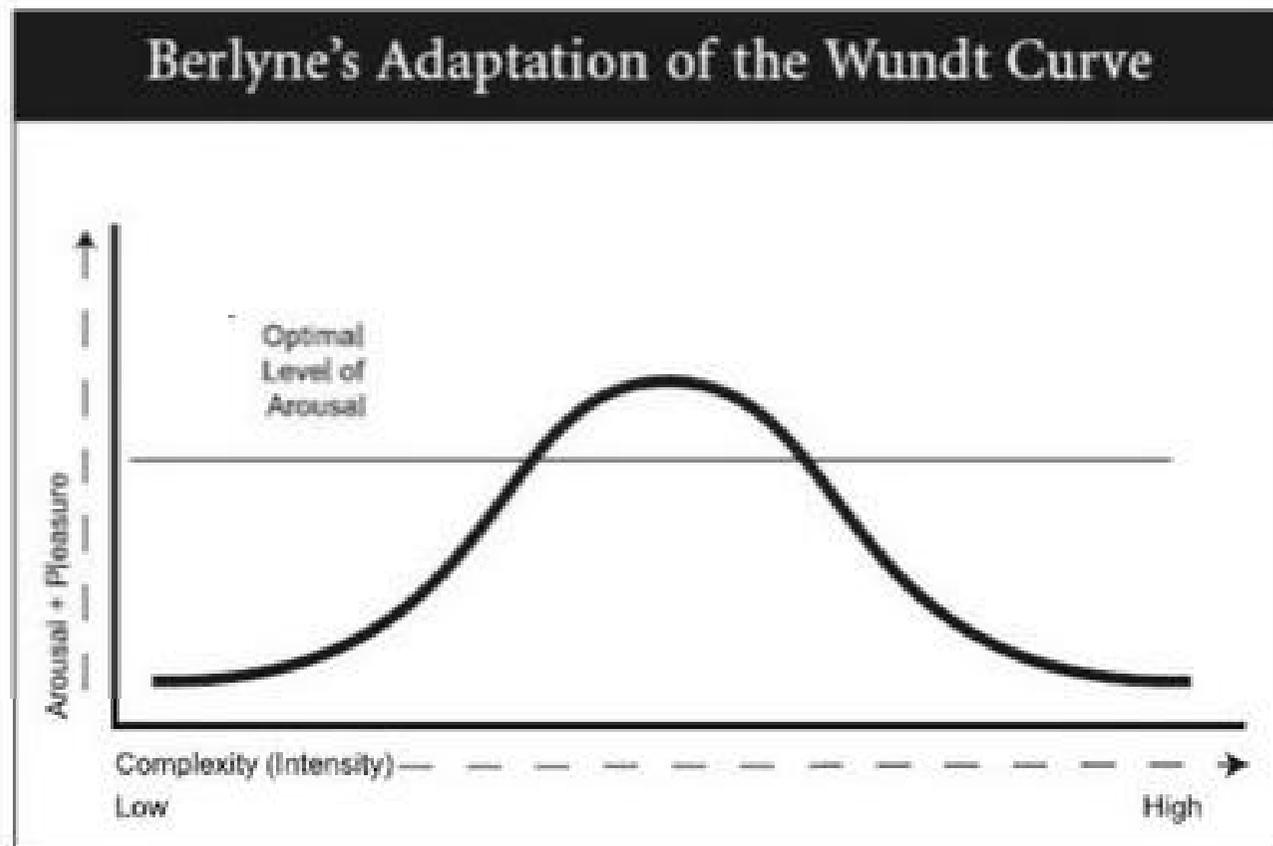
Wundt's Curve (1874)

Monotonic increase of pleasure



The Arousal model/The-effect-of-mere-exposure model
(Berlyne, 1971; Bornstein & D'Agostino, 1992; Harrison, 1977;
Kunst-Wilson & Zajonc, 1980; Zajonc, 1968, 1980, 2000)

Monotonic increase of pleasure



Complexity and Beauty

**The effect of complexity on
judgements of beauty and
creativity**

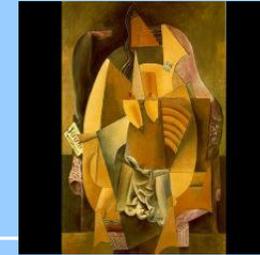
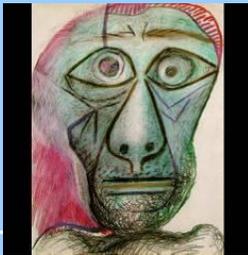
**Bo T. Christensen, Linden J.
Ball & Rolf Reber (in prep.)**

Degree of complexity

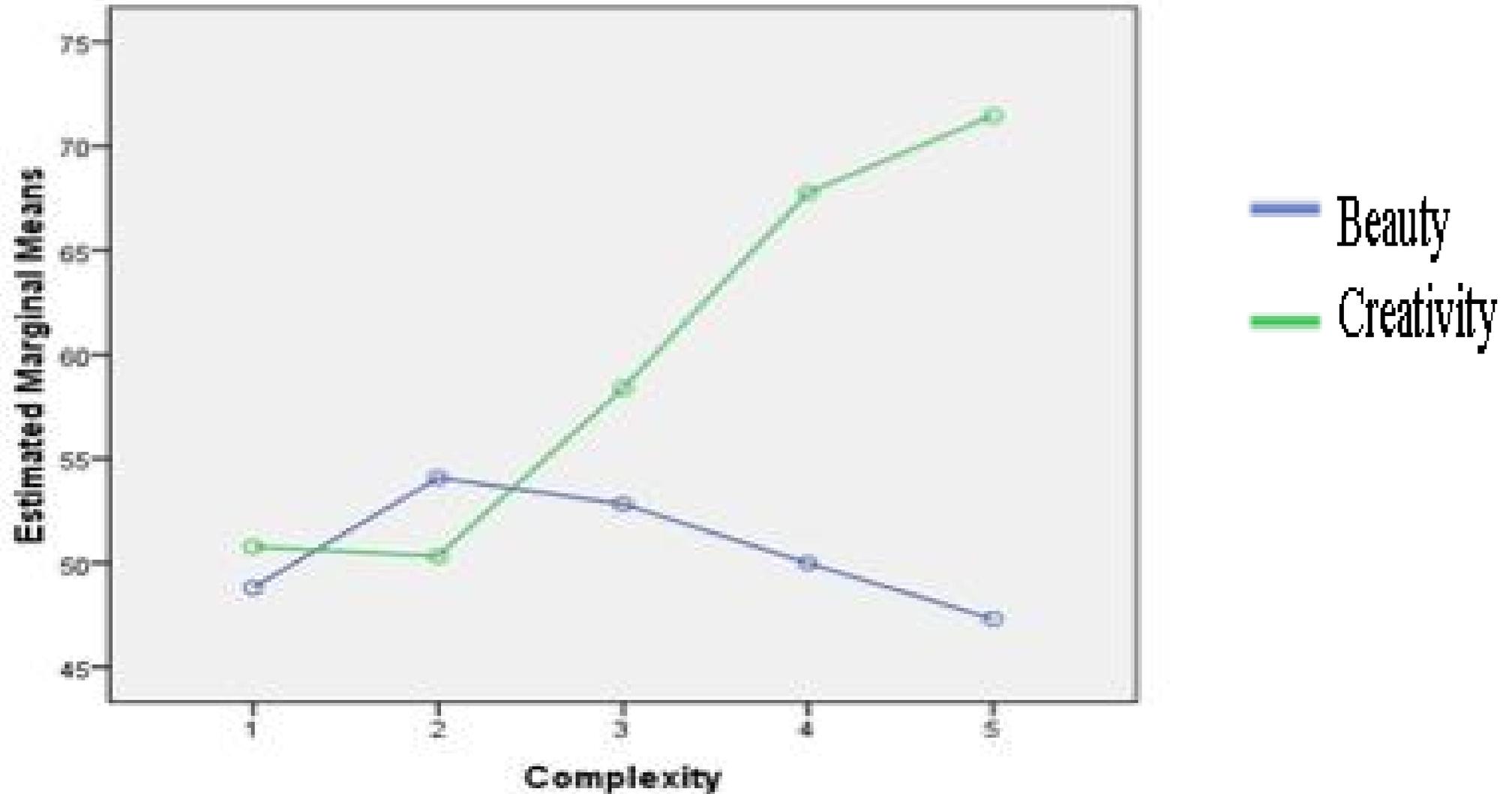
Low Complexity

Medium Complexity

High Complexity

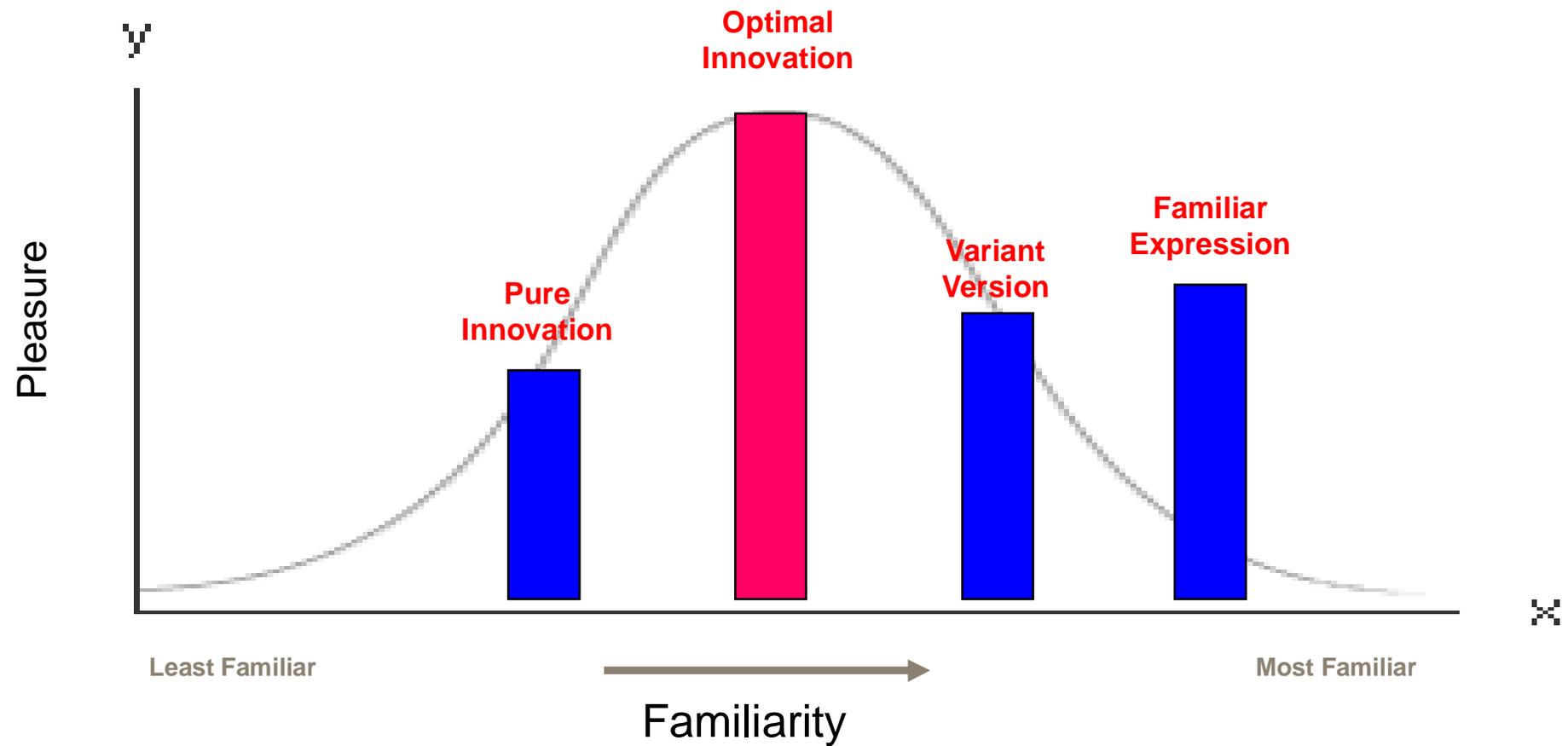


Complexity beauty and creativity



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)

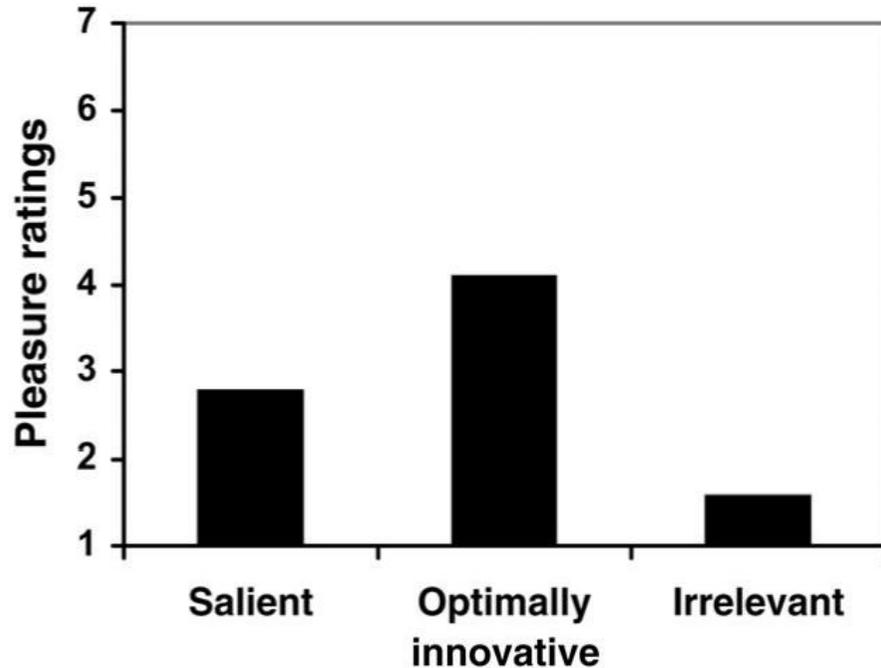
Procedure

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

Results:

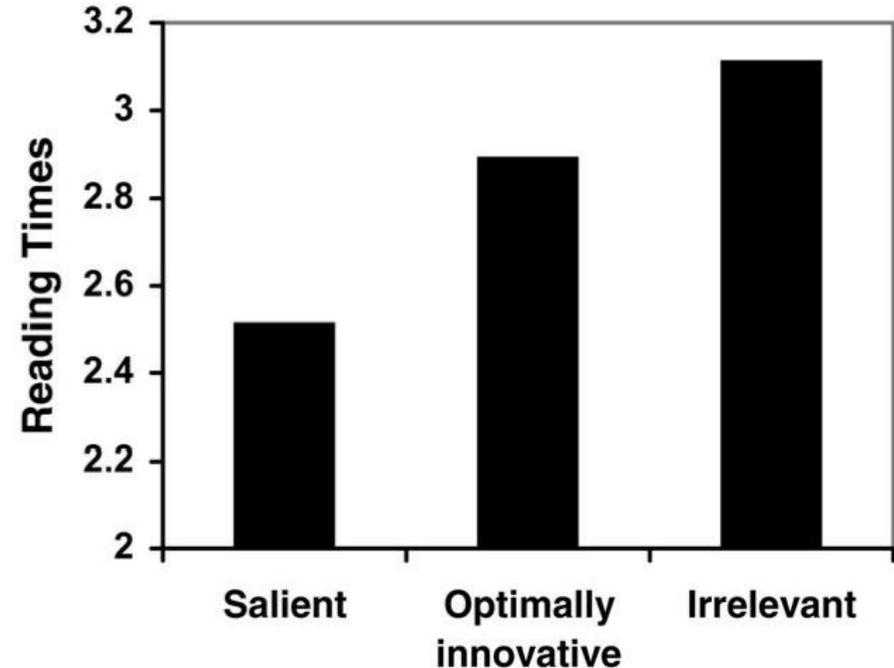
Pleasure ratings

Effects



Reading times

Costs



**How will metaphors
fare with regard to
pleasurability 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?”

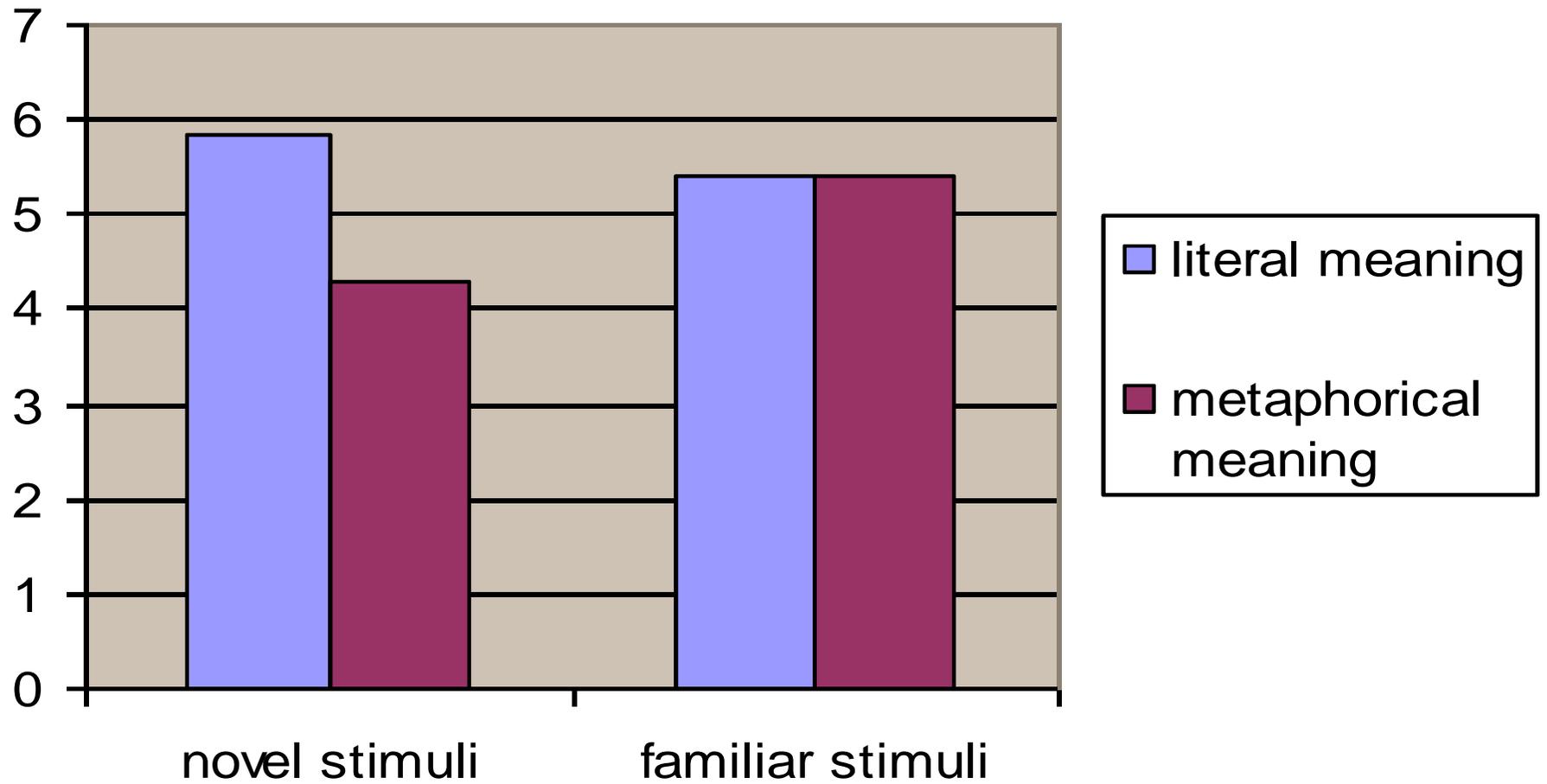
Literals

After tasting Barak’s pita bread, Keren said:

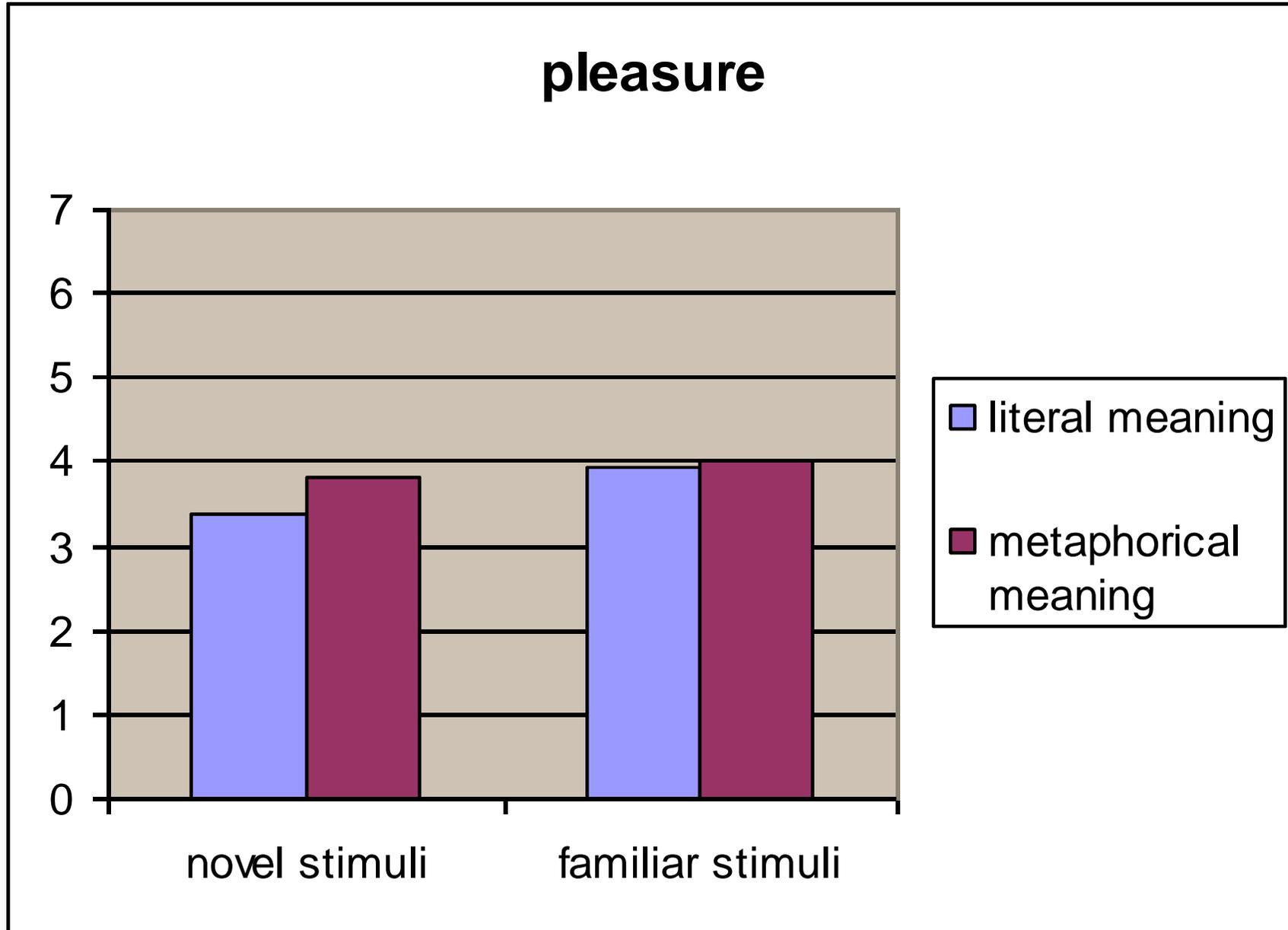
“Why do you always have to add Tabasco to everything?”

Coherence ratings

Coherence



Pleasure ratings



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

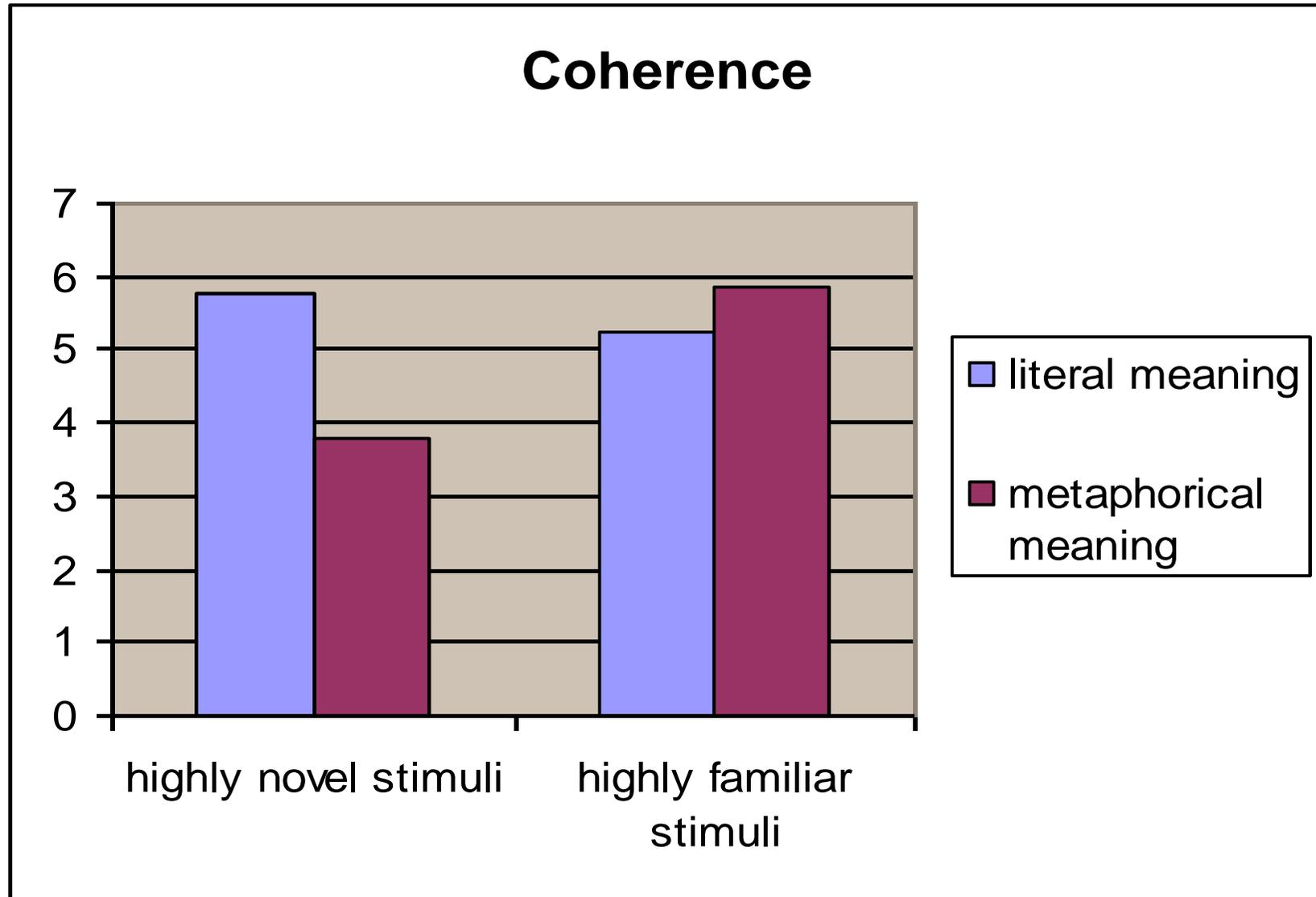
Sharon finished renovating her house. She put a lot of thought into designing the different rooms. She says she's very pleased, but the only thing that is still missing for the living room to look perfect is

a geometrical abstract painting.

Coherence ratings of high familiar and high novel metaphors

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

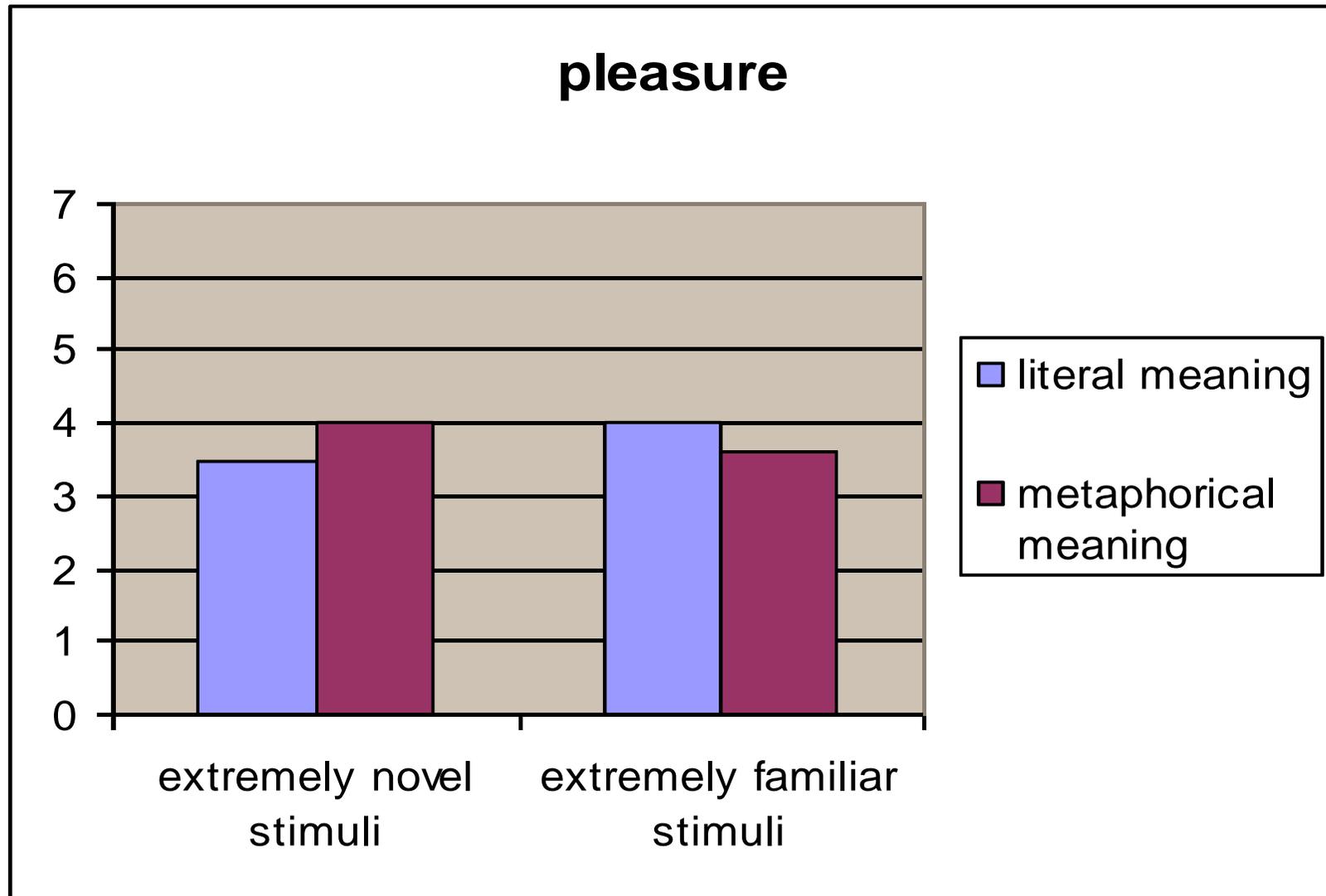
$(t_1(57) = 15.60, p < .0001, t_2(19) = -7.37, p < .0001)$



Pleasure ratings of the 10 most familiar and the 10 most novel Metaphors

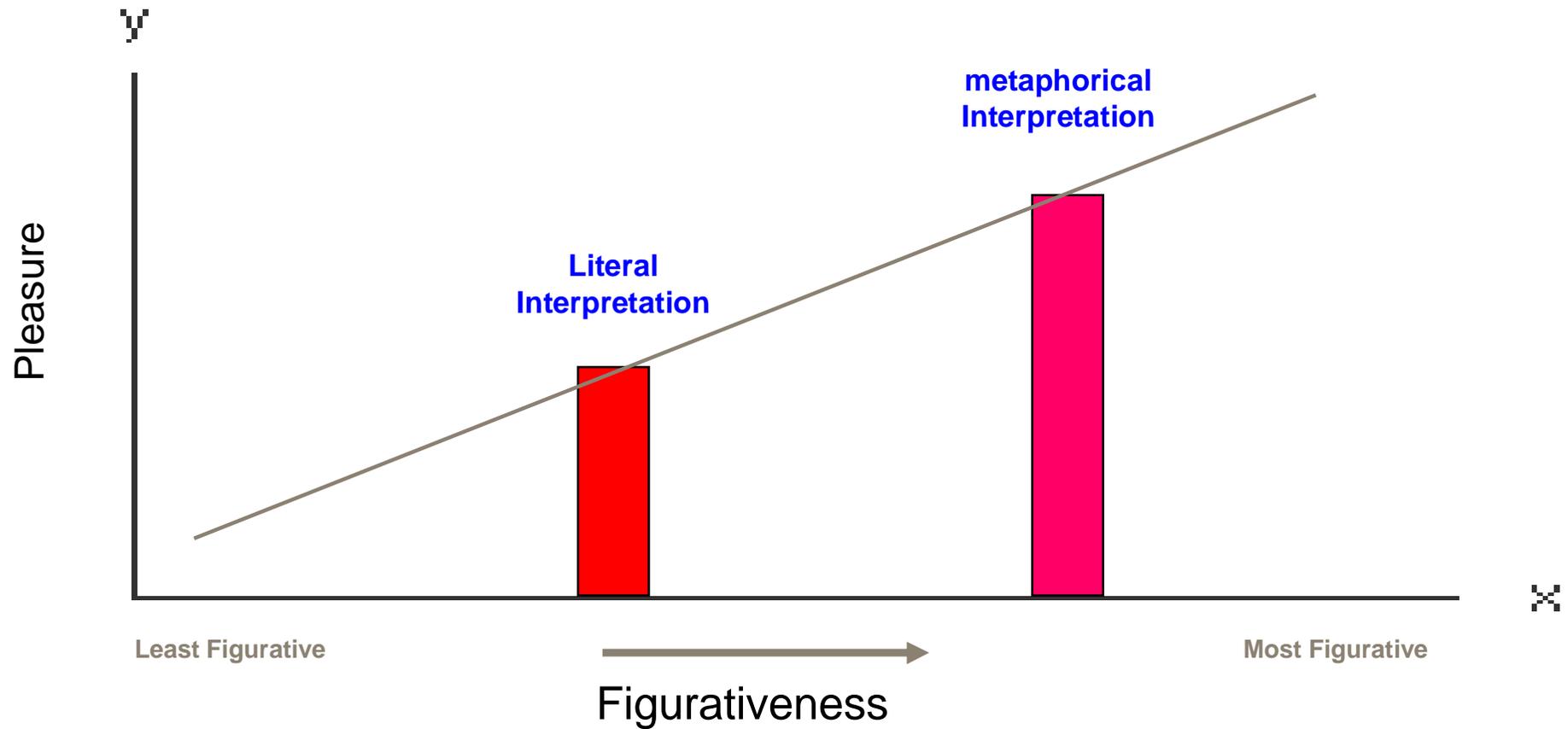
$(t_1(53) = 2.31, p < .05, t_2(9) = 2.35, p < .05)$

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



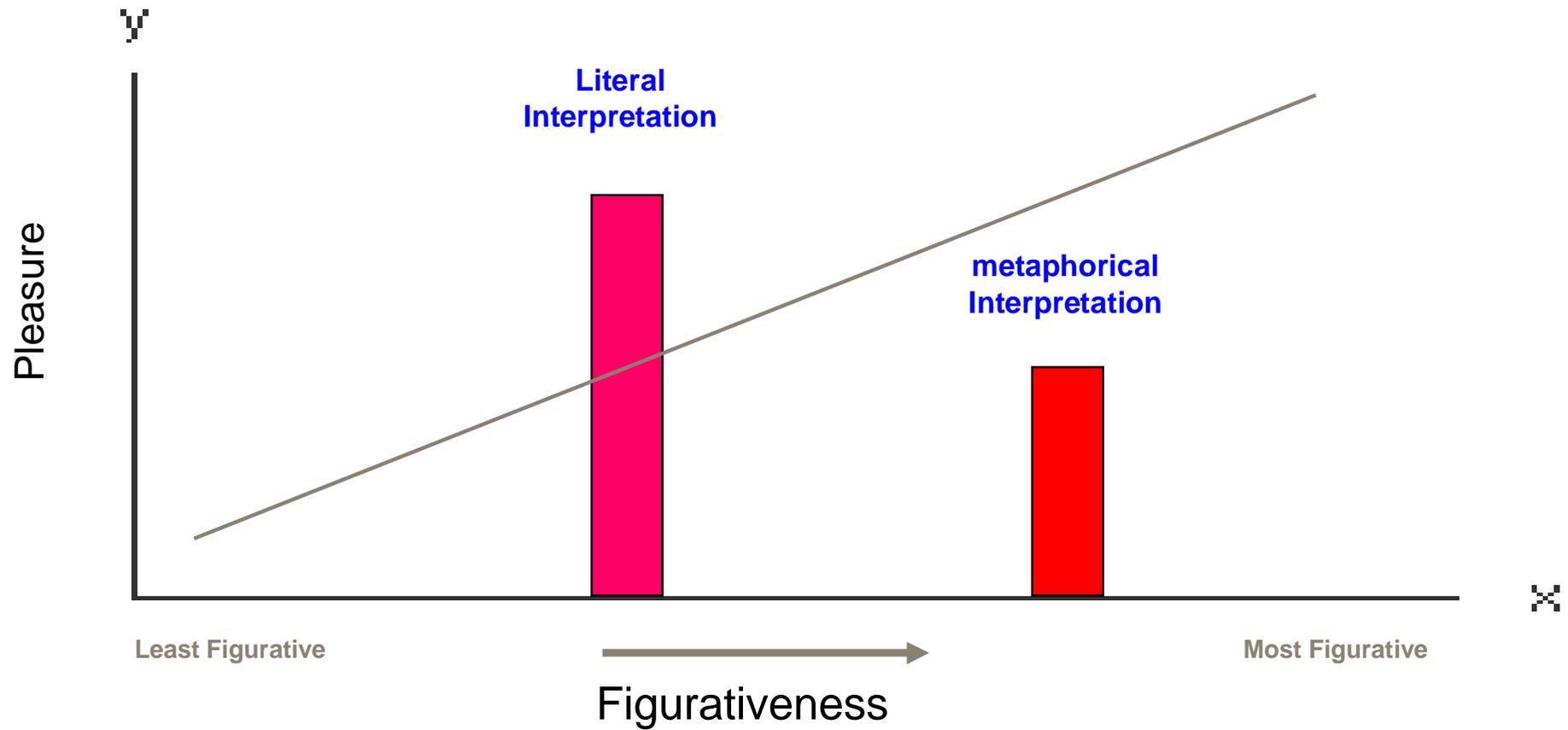
Figurativeness effect?

Highly Novel
Metaphors



Figurativeness effect?

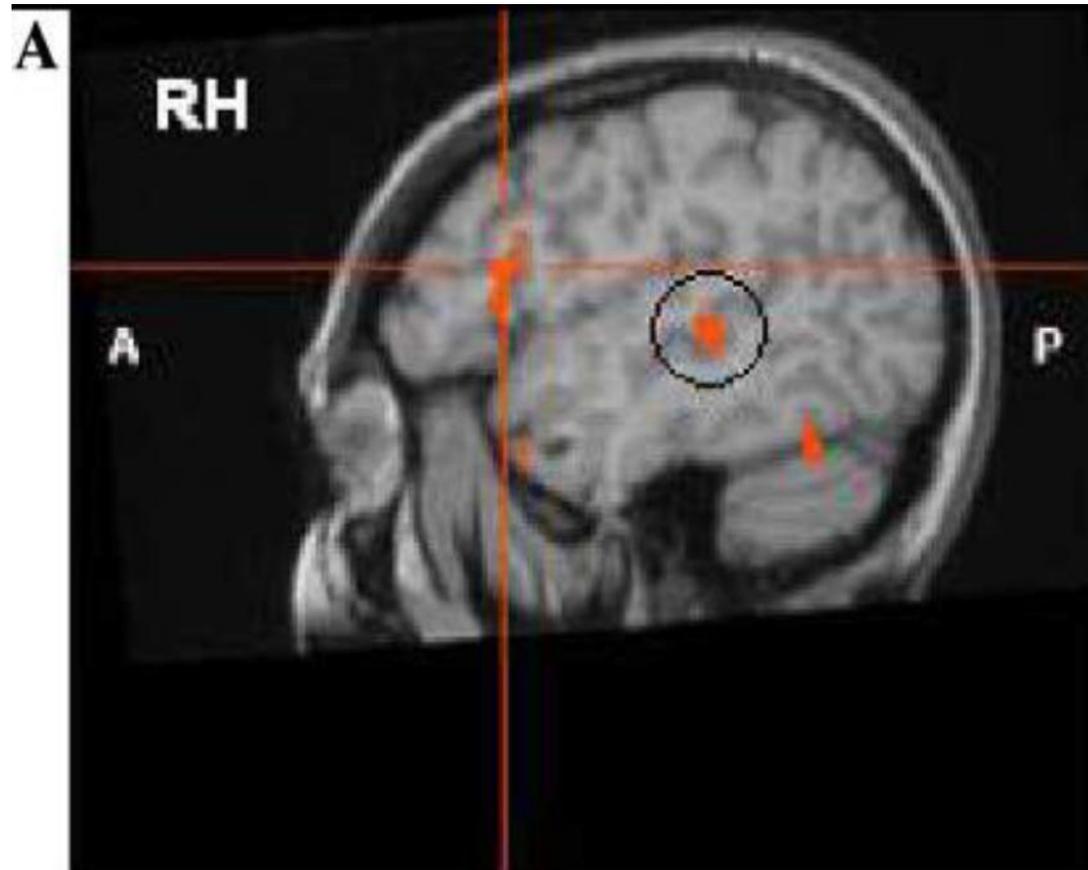
Highly Familiar
Metaphors



**Pleasurability is
sensitive to
Optimal Innovation
rather than to
figurativeness**

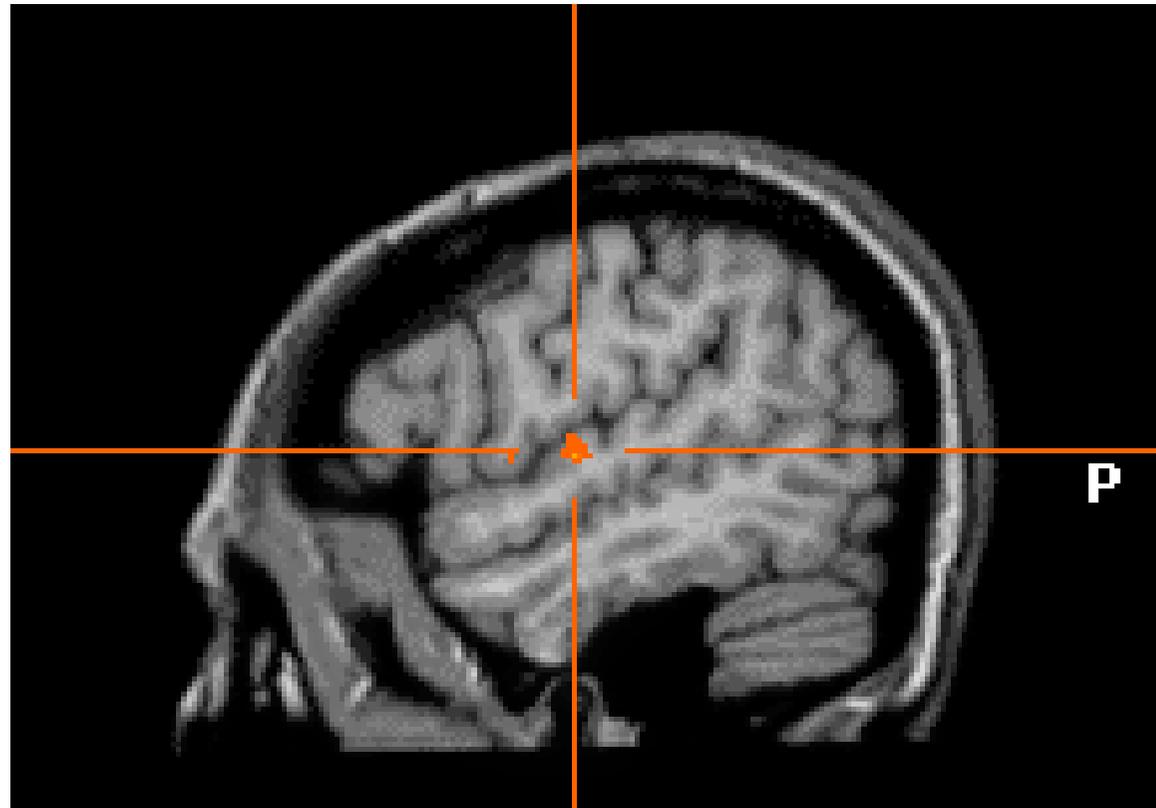
Metaphorical interpretations of novel metaphors are processed in RH areas

(Mashal et al., 2005, 2007)



Literal interpretations of familiar idioms are processed in RH areas

(Mashal et al., 2008)



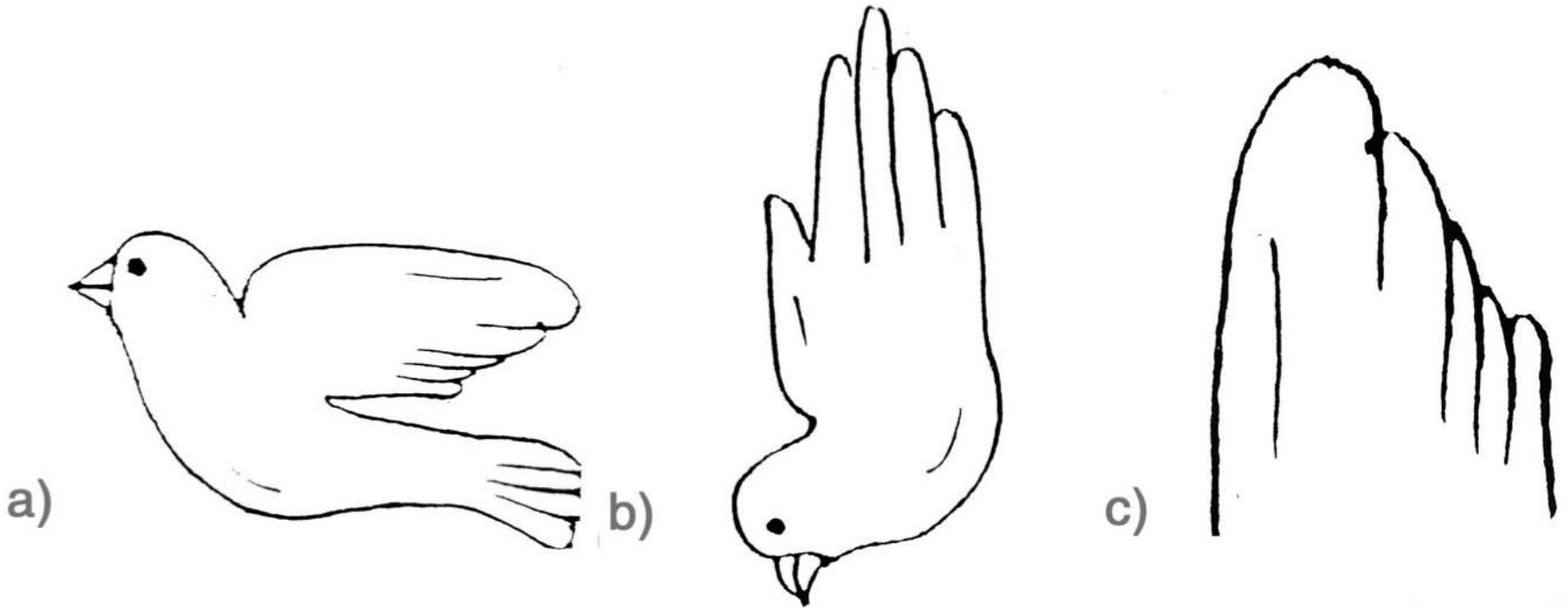
**What matters, then,
is not figurativeness or
lack of it**

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?

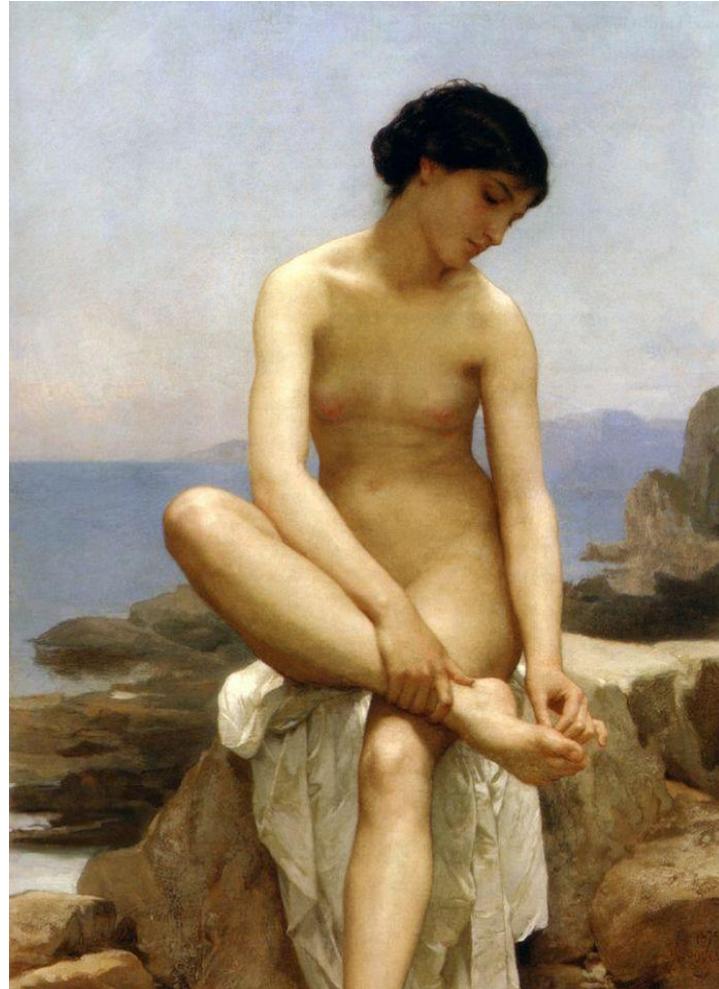
Affect and Pleasure

Wonder Woman



Bather

William Bouguereau (1879)

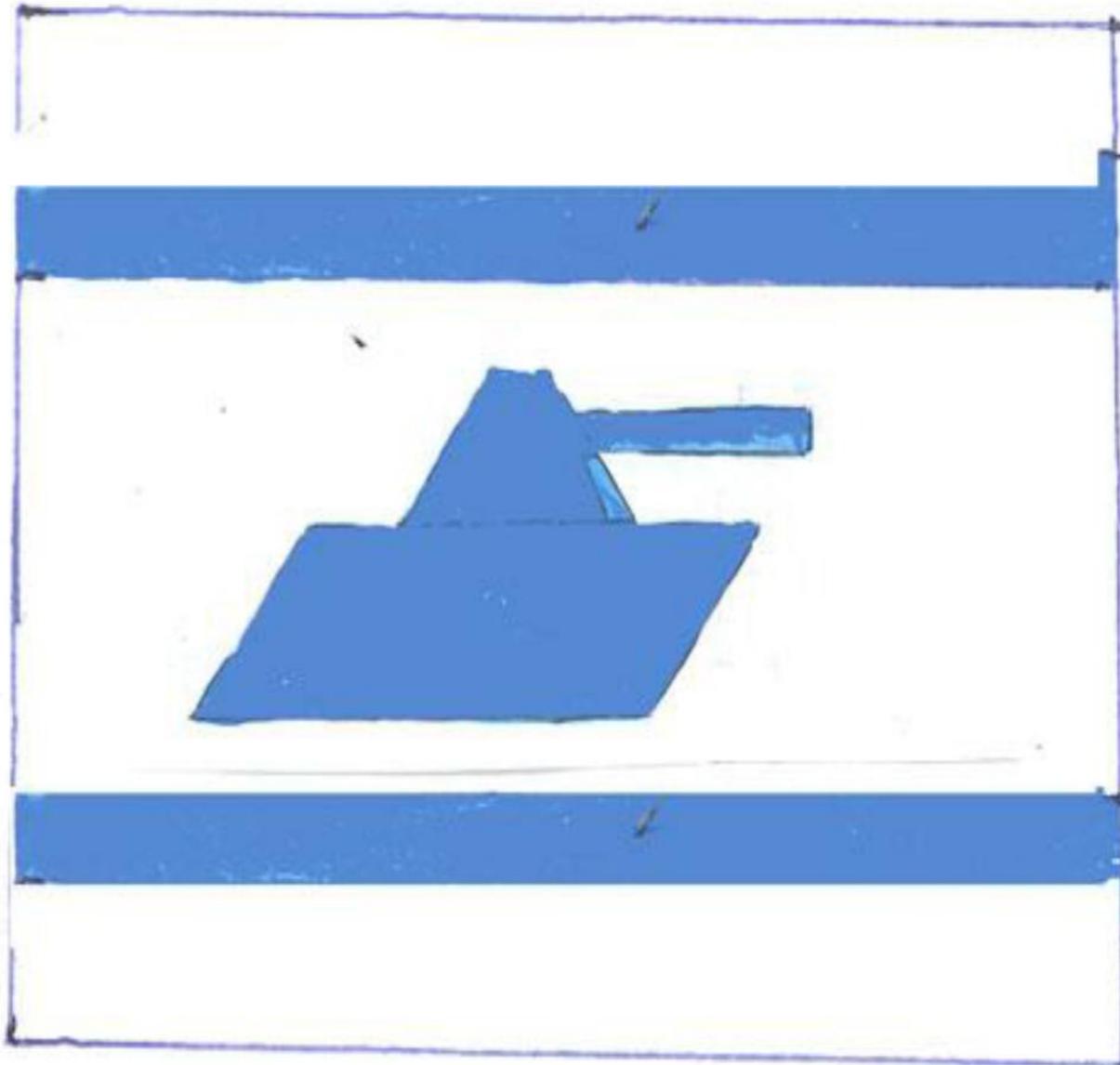


Lahav Halevy's (2002)



A new design for the flag of the state of Israel

Shimon Tzabar 2002 <http://oznik.com/art/gallery/020902.html>



The flag of the state of Israel



Thank you!

