

HOW TO DESIGN AN ACADEMIC POSTER

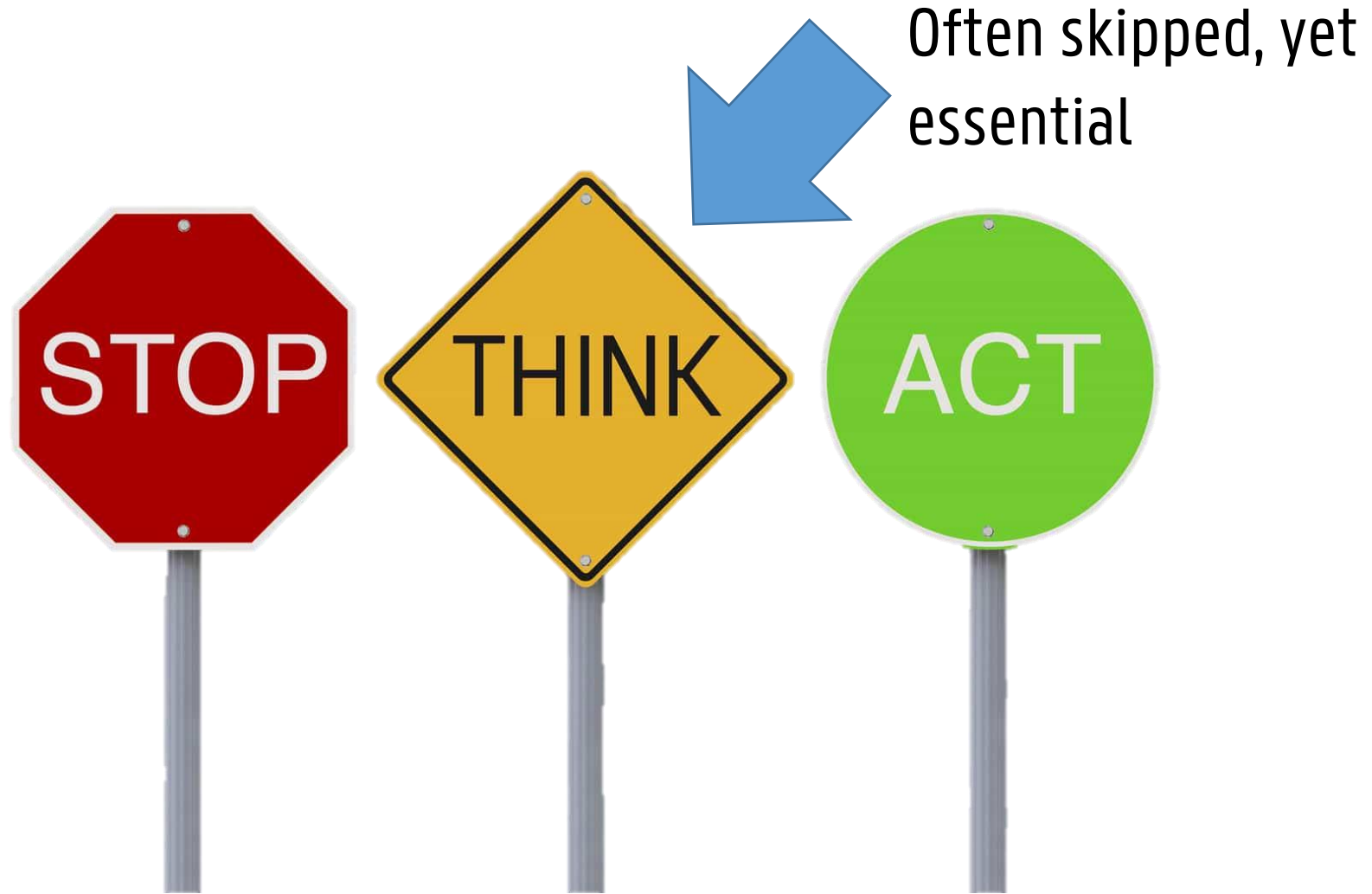
SSHT topics

Evelynn Devos

POSTER SESSIONS: WHAT TO EXPECT?



POSTER DESIGN PROCESS





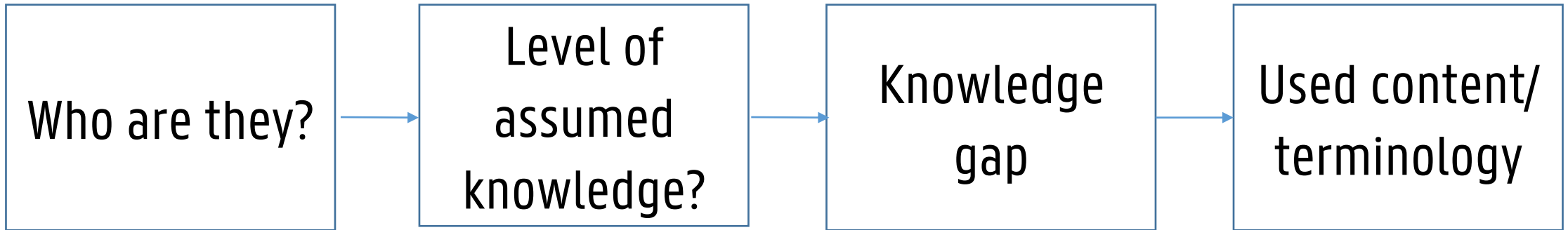
1. Conference instructions
2. Audience
3. Poster functions

1. READ POSTER INSTRUCTIONS

- Specific requirements for posters:
 - Dimensions, orientation, font, logo, handouts, photos, etc.
- Where is it happening?
 - Schedule, location, etc.
- Judging criteria if available
 - Best poster award



2. AUDIENCE



SAME FIELD



OTHER FIELD



BUSINESS



GOVERNMENT



INDIVIDUAL

3. FUNCTIONS OF A POSTER?



?

3. FUNCTIONS OF A POSTER:



Grab attention

Inform

Network



GRAB ATTENTION

FIRST FUNCTION

ATTENDEE'S EXPERIENCE



WHICH POSTER DO YOU PREFER?

A

A Healthy Cold-Colored Restaurant: The Impact of “Cold Ambient Color = Healthy” Intuition on Food Choice

INTRODUCTION

Ambient sensory cues influence consumer choices subtly but powerfully (Lahav et al., 2020). Previous research has documented that multiple ambient factors, such as scent (Luca & Bettelhe, 2020), music (Suzuga, 2018), and lighting (Wansink & Ittersum, 2012), affect consumers' choices between healthy and unhealthy food. In this research, we focus on the role of the ambient color temperature of food outlets, such as the color temperature of a restaurant's painting color, or material type. Specifically, we study the impact of cold versus warm ambient color on consumers' choices between healthy and unhealthy food.

We propose that consumers associate cold (vs. warm) ambient color with healthy (vs. unhealthy) food (H1). Moreover, driven by the “cold ambient color = healthy” intuition, a cold-colored (vs. warm-colored) ambience will make healthy (vs. unhealthy) food mentally more accessible, which results in greater preferences for healthy (vs. unhealthy) options (H2). We conducted four behavioural experiments to test our hypotheses. Study 1 provided initial evidence for H1. Study 2 further tested the bidirectionality of the intuition by manipulating the painting color of the restaurant's interior; Study 3 and 4 explored the downstream consequences of the proposed intuition on healthy food choices (Study 3: painting color of a restaurant; Study 4: interior's material with different color temperature).

STUDY 1

2.1 Method

100 United Kingdom (UK)-based Prolific workers (33.22 ± 11.22 years, 72.0% female) participated in the study and were asked to indicate their opinion regarding the following two statements: “I believe that cold color (e.g., blue, cyan, green) is more suitable for restaurants specializing in: (1 = healthy food, 7 = unhealthy food); “I believe that warm color (e.g., red, orange, yellow) is more suitable for restaurants specializing in: (1 = healthy food, 7 = unhealthy food).” To better illustrate the color temperature, the example colors in the two statements were presented in their corresponding colors. For instance, the word “blue” in the first statement is highlighted in blue.

2.2 Results and Discussion

A paired sample *t* test revealed that participants believed that cold (vs. warm) color tone was more suitable for healthy (vs. unhealthy) food ($M_{cold} = 2.61, SD = 1.22$ vs. $M_{warm} = 4.93, SD = 1.22; t(99) = 10.52, p < .001, Cohen's d = 1.05$).

Study 1's results suggest that consumers associate cold (vs. warm) color with healthy (vs. unhealthy) food.

STUDY 2

3.1 Method

258 Chinese Seijung workers (27.95.22 ± 7.44 years, 60.9% female) were randomly assigned to one of the two 2-cell subsamples (i.e., a restaurant with cold ambient color ($H = 230, S = 80, L = 80$), a restaurant with warm ambient color ($H = 40, S = 80, L = 80$), a restaurant specializing in healthy food (i.e., salad and light dishes), and a restaurant specializing in unhealthy food (i.e., hamburgers and fried chicken)). In the two ambient-color-given conditions ($luc = 40, saturation = 80, lightness = 80$), we asked participants to indicate to what extent the restaurant was more likely to specialize in salad and light dishes (healthy food) or hamburgers and fried chicken (unhealthy food). In the two food-healthiness-given conditions, participants were asked to indicate to what extent an orange (warm ambient color) or a blue (cold ambient color) interior was more suitable for the restaurant.

2.2 Results and Discussion

In the two ambient-color-given conditions, a chi-squared test revealed that compared with the warm-colored interior (66.7%), the restaurant

with a cold-colored interior (85.2%) was more likely to be regarded as a healthy-positioned restaurant ($\chi^2 = 5.432, p = .020, Cohen's d = 2.1$). In the two food-healthiness-given conditions, participants thought the restaurant specializing in healthy food (48.5%) was more likely to use a cold-colored interior, compared with the restaurant specializing in unhealthy food (9.7%) ($\chi^2 = 23.07, p < .001, Cohen's d = .42$).

STUDY 3

3.1 Method

129 China-based workers (28.23 ± 7.36 years, female = 65.9%) were randomly assigned to either the cold-colored or warm-colored ambient condition, which used the same manipulation method of ambient color temperature as the replication study of study 2. Participants were informed to imagine that they were ordering food in the restaurant. Participants were asked to make three rounds of food choices between healthy (Round 1: egg avocado sandwich, Round 2: vegetable salad; Round 3: fruit salad) and unhealthy options (Round 1: double cheese and beef burger; Round 2: meat meat; Round 3: Orleans grilled chicken wings).

3.2 Results and Discussion

We calculated the total number of healthy options participants chose in the food choice task. An independent *t* test revealed that participants were more likely to select the healthy options when the restaurant applied a cold-colored (vs. warm-colored) ambience ($M_{cold} = 1.67, SD = 1.05$ vs. $M_{warm} = 1.24, SD = 1.01, t(127) = 2.33, p = .021, Cohen's d = .42$).

By manipulating the painting color temperature of a restaurant, Study 3 demonstrates a downstream consequence of the “cold ambient color = healthy” intuition: cold-colored (vs. warm-colored) ambience increases consumers' preferences for healthy food.

STUDY 4

4.1 Method

100 UK-based Prolific workers (28.23 ± 7.36 years, female = 65.9%) were randomly assigned to either the cold ambient color (i.e., blue ceramic tile and blue marble) or warm ambient color (i.e., wood and brick) condition. The experimental procedures were identical to those in Study 3, except for the food stimuli (for healthy options: R1: cod salad, R2: avocado quinoa salad, R3: low-calorie coconut torte; for unhealthy options: R1: honey butter fried chicken, R2: double cheese and beef burger, R3: fudge brownie).

4.2 Results and Discussion

Replicating the results of previous studies, an independent *t* test showed that cold (vs. warm) ambient color marginally increased consumers' preferences for the healthy option ($M_{cold} = 1.43, SD = 1.24$ vs. $M_{warm} = .98, SD = 1.11; t(98) = 1.92, p = .058, Cohen's d = .38$).

Study 4 provides further support for the effect of the “cold ambient color = healthy” intuition on consumers' food choices. Moreover, Study 4 increases the generalizability of the effect by using the manipulation of the material's color temperature, which is ubiquitous in real-life marketing scenarios.

CONCLUSION

Across four studies, the current research demonstrates that consumers have learned to associate cold (vs. warm) ambient color with healthy (vs. unhealthy) food. Using various manipulations of ambient color temperature, we further demonstrate that the “cold ambient color = healthy” intuition impacts consumers' food choices.

CONTACT US

B

BOGO Frees Consumers: Free Options Lead to Adventurous Product Choices

THE OHIO STATE UNIVERSITY
FISHER COLLEGE OF BUSINESS

Research Question: BOGO (buy one get one) Free is a frequent promotional strategy that increases demand (Khanuja et al. 2020). Does the promotion also change what consumers choose to buy? How it affect consumer decision processing?

“Choose 6 yogurts” (of the following)

- Strawberry
- Peach
- Blueberry
- Raspberry
- Honey
- Vanilla
- Pumpkin
- Jalapeño
- Sriracha
- Carrot Ginger

Study 1: Main effect

Study 2: Direction of the effect

*Adventurous options are in red, according to a pre-test.

BOGO Promotions leads consumers to choose more adventurous options. “Free” leads to affective processing.

The effect is driven by affective processing: Free leads consumers to engage in affective processing. When forced to process cognitively, the effect is eliminated.

Study 3: Cognitive processing

Interaction: $p = .020$

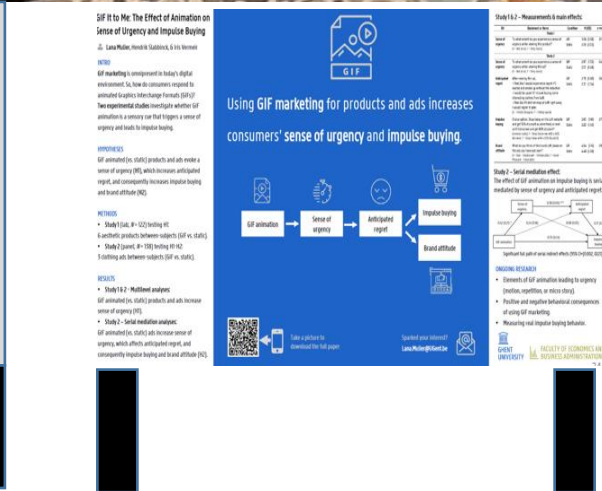
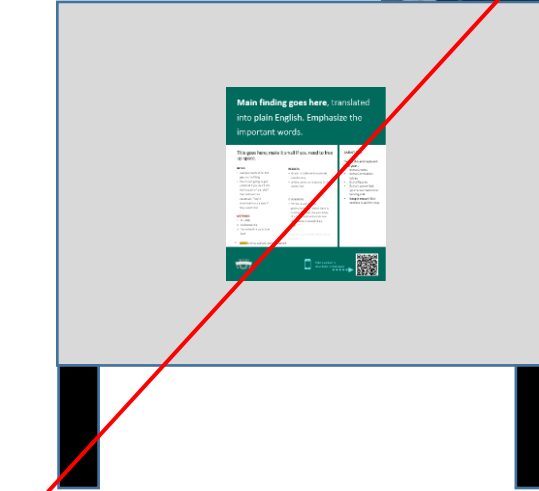
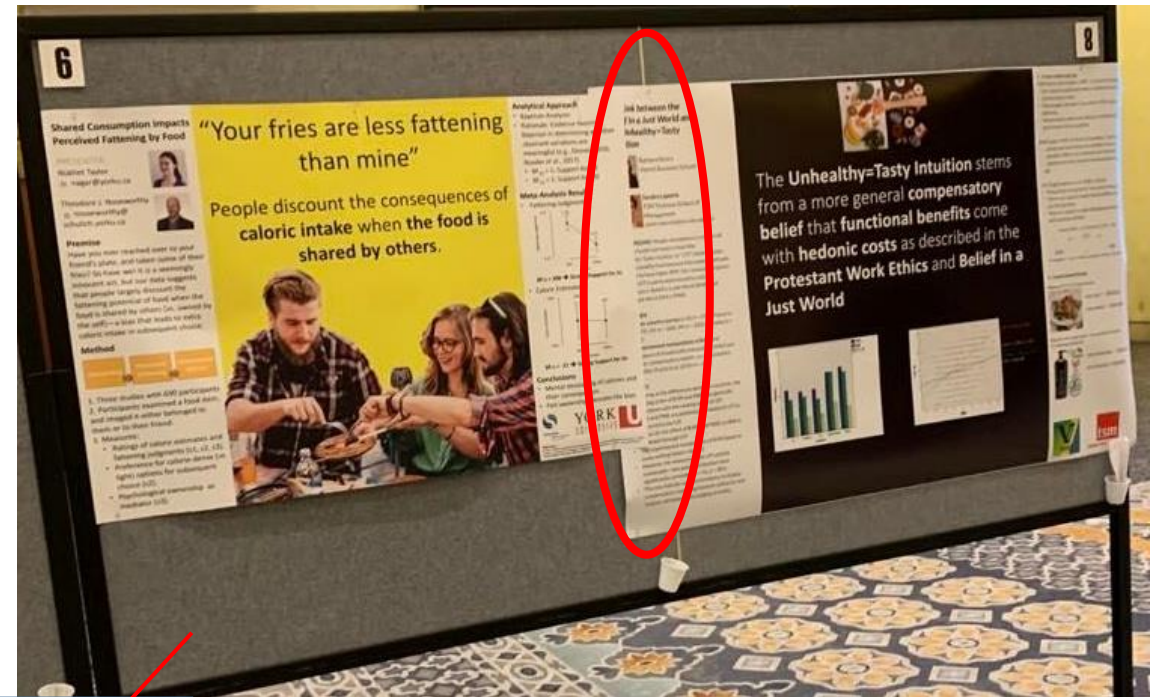
ROBUSTNESS: Replicates with small (5) & large (25) assortments and when opportunity costs are salient

Study 4: Assortment size

Study 5: Opportunity cost salience

POSTER SIZE

- Follow poster size restrictions:
 - Not too small
 - Not too big



FONTS

- Everything readable from 1.5m
 - Font sizes as large as possible (within reason)
 - Recommended minimum sizes for A0 poster:
 - 72 points for titles
 - 48 points for headings
 - 24 points for body copy
- Fonts: easy-to-read, sans-serif fonts
 - Arial, Helvetica, Ugent Panno, Calibri
 - Emphasize by putting words in bold
 - Avoid using too many different **formats, sizes** *and colors*

FONT SIZES:

24 32 48 60 72

Is this easy to read?

Is this easy to read?

TITLE/ KEY TAKE-AWAY = SELLING POINT

- Visible from 5m
- Concise
- Catchy
- To-the-point: keywords!
- Can be a question or summarize main finding



BOGO Frees Consumers:
Free Options Lead to
Adventurous Product
Choices

(When) Are Online
Friendships Real and
Influential? An Evaluative
Context Model

COLORS

- Simple & pleasing to the eye
 - Contrasting colors work well
 - Light colored background, dark font
 - Do not use an image as background
- Avoid multiple (3+), vibrant, gradient, transparent & pale colors
- Consider blindness!
<http://www.vischeck.com/vischeck/vischeckImage.php>
- Use the UGent template



IMAGES

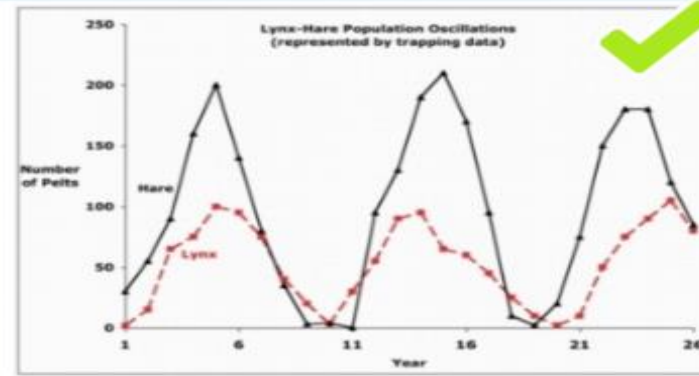
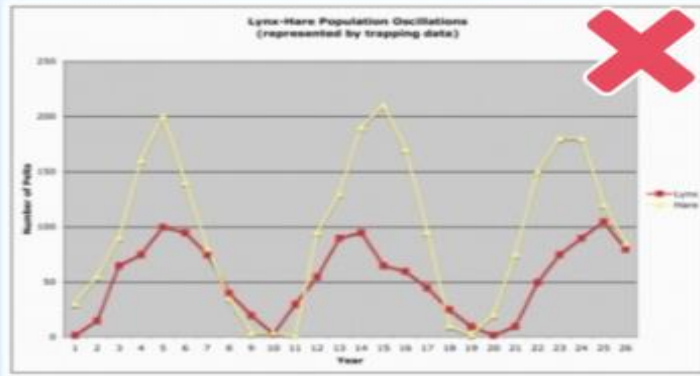
- Ensure images are of high enough resolution (300-600px/inch)!
- Number and label all tables and figures
- Link the figure to the text (e.g., see Table 1)
- Remove all unnecessary information/detail
- Represent as much as possible visually
- Lock aspect ratio – no distortions



A0 is 8x A4, the same as 1/4 of this image being magnified 4x.



GRAPHS & CHARTS

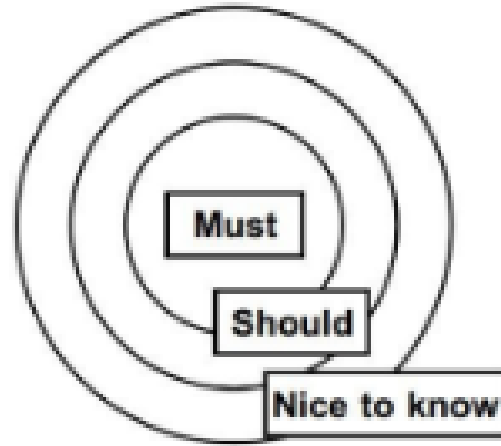
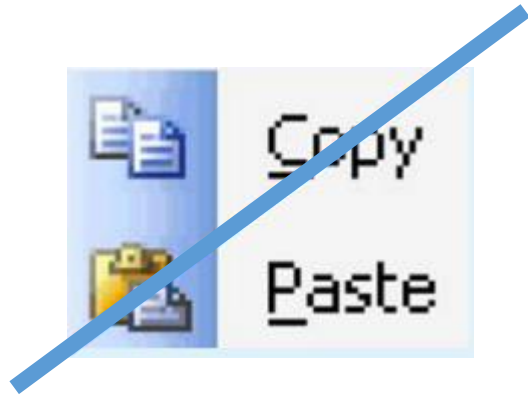


Source: <http://www.ncsu.edu/project/posters/CreatePosterGraphics.html>

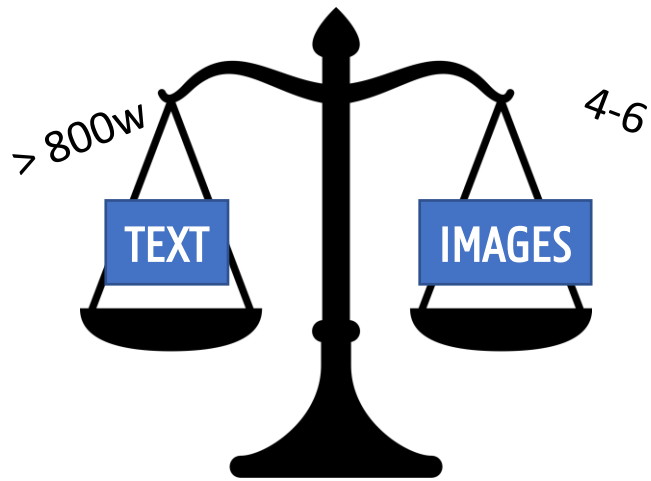
- Always include a descriptive title.
- Make sure each axis has a legible label.
- Avoid including gridlines.
- Label the data instead of using legends.
- Use colour and formatting to distinguish data.

INFORM

SECOND FUNCTION



GOOD POSTER PRACTICES



Every line & image is both relevant & necessary

CONTENT: TEXT



The Do's

1

Use bullet points & emphasize words with bold font

2

Pictures = 1000 words

3

Plain language: no jargon, abbreviations

Study: Sushi Eating ASMR

- Design: ASMR video (audio on vs. audio off)
- N: 180 from Amazon Mturk
- DVs:
 - I. Number of sushi pieces desired (SUSHI)
 - II. Willingness to pay (WTP)
 - III. Intention to eat at restaurant (NARE)



Sushi ASMR Stimuli

- Procedure:
 - A. Measure DVs after watching 30 second video
 - B. Report a physical reaction (i.e., tingling sensations) along with other feelings

A POSTER SHOULD INCLUDE MOST ITEMS:

- Title + authors and affiliations (+ contact info)
- Main message/take-away
- Introduction + objectives
- Methods
- Data and Results
- Conclusions and Future Work:
- (Reference and Acknowledgements)











INTRODUCTION + OBJECTIVES

Section should clarify:

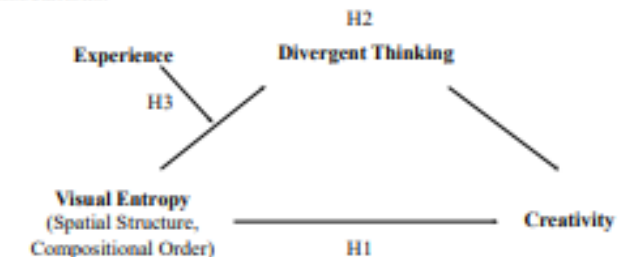
- Research question
- Significance of study (so what?)
- Previous work on similar lines
- May have hypotheses embedded
- Maximum 200 words

Theoretical Framework

- **Creativity:** novel/unique, appropriate/effective (Sternberg & Lubart, 1991)
- **Visual Entropy:** information intensity, amount of uncertainty within a visual field (Kittaneh et al. 2016; Tsai, Lee, and Matsuyama 2008)
 - Computer-vision-based measure: permutation entropy

	Spatial Structure Entropy	Compositional Entropy			
	layout orientations of objects (diversified vs. homogenous)	compositional breadth	compositional depth	compositional distribution	compositional order
Low Entropy					
High Entropy					

- **Honing Theory of Creativity** (Gabora 2017): Creativity starts with humans' recognition of high psychological entropy material (e.g., an inconsistency), which challenges one's prior beliefs/expectations and generate uncertainty, motivating individuals to seek creative restructure (divergent thinking) until the mental entropy is minimized and the uncertainty is dissipated.
- **Moderation Role of Experience:** only experienced ones have readily available nodes in the territory of the individual's mind to construct restructured associations.



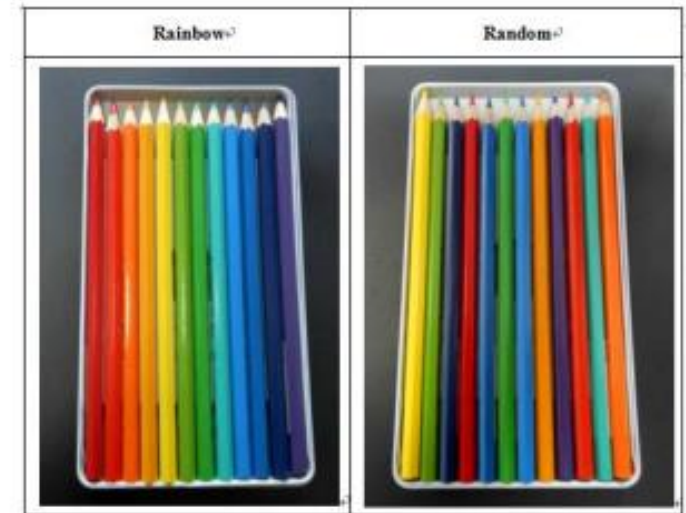
METHOD SECTION

Section should include:

- Basic parameters:
 - Study design, target sample, setting, key interventions, variables, data source,
- Do not get lost in the details!
- Use visual elements
 - Flowcharts, photos, ...

Experiment 3 (lab study)

- **Scenario:** drawing a birthday card with colored pencils
- **Study design:** compositional order entropy (high – random vs. low – rainbow) * drawing experience between-subjects design
- **Measures:** self-report creativity, expert-rated creativity, layout attractiveness (control)

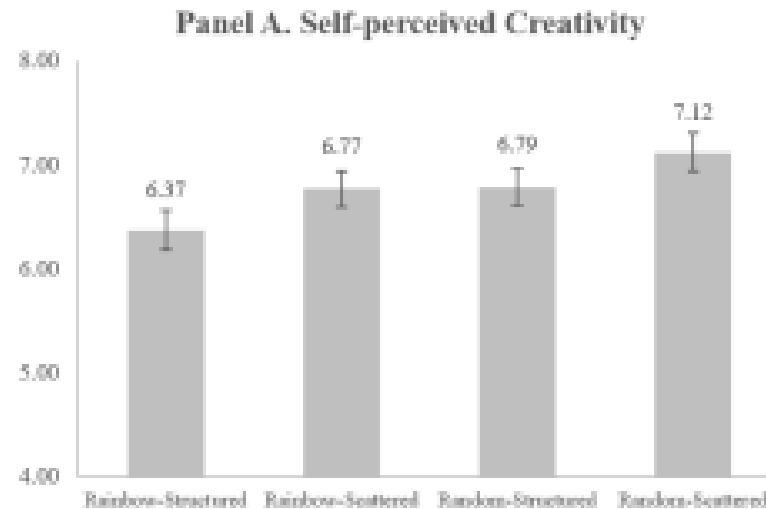


Panel D. Estimated Values of Objective Creativity

DATA AND RESULTS

= findings presented in figures/table, highlights key findings, links to hypotheses

- **Results** both compositional order entropy and spatial structure entropy increases consumer creativity, which is mediated by divergent thinking



CONCLUSIONS AND FUTURE WORK

- = summary of findings, implications for research & directions for future research

REFERENCE AND ACKNOWLEDGEMENTS

References:

- Most crucial ones in-tekst and/or full references at the bottom
- Often disclaimer (“references available upon requests”) -> preferred

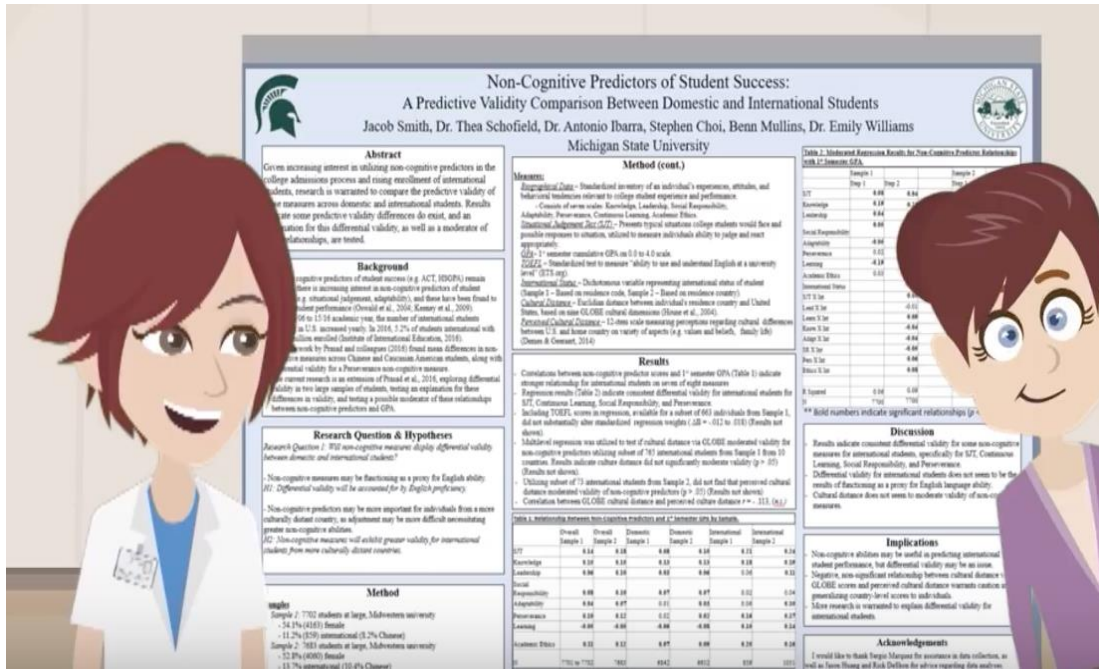
Acknowledgements:

- Funding: FWO, BOF, ... -> show the logo
- Acknowledge others who was helping out with your research -> rare

POSTER STRUCTURE

From this...

To this!



Check out the YouTube [#betterposter](#) [video](#)

POSTER STRUCTURE (CONT.)

Anatomy of a #betterposter.

Silent Presenter Bar

Concentrated summary of your intro, methods, and results that can be skimmed in 1-5 minutes. Located intentionally far away from the presenter's personal space. For when an attendee wants more detail but the presenter is busy (or they just don't feel like interacting).

WHY: Centralizing and succinctly summarizing the study details in a single column is fast & easy to scan without having to hunt around the poster for each section.

Title

Authors

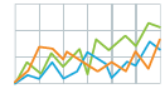
Intro



Methods



Results



Discussion



Main finding goes here, translated into **plain english**.
Emphasize the important words.



Take a picture to download the full paper

QR Code to full paper

Point your phone camera at this and instantly download the full paper, a copy of the poster, the presenter's contact details...and/or even the data-set powering the study.

Main finding

The key 'takeaway' of the study is central, translated into plain english. Research on usability writing suggests that casual language is interpreted faster than formal language.

Focus area

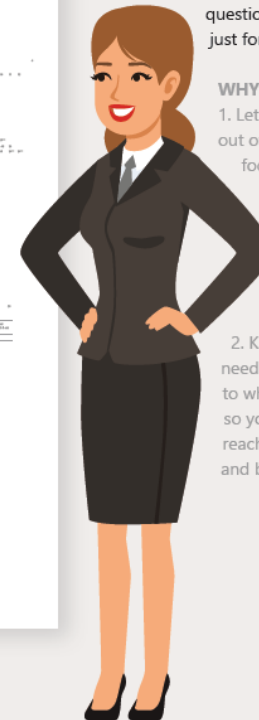
Hardly "wasted", negative space maximizes signal-to-noise ratio and helps attendees quickly find the takeaway.

Ammo Bar

For all the figures and tables that you feel like you need to be able to point to if somebody asks you a hard question. Leave it messy! It's just for you to reference.

WHY:

1. Lets you get the worries out of the way, so you can focus the rest of the poster on clearly communicating the need-to-know info to attendees.
2. Keeps the detail you need for questions closest to where you're standing, so you don't have to reach across the poster and block the view.



Extra Tables & Figures



GIF It to Me: The Effect of Animation on Sense of Urgency and Impulse Buying

Lana Mulier, Hendrik Slabbinck, & Iris Vermeir

INTRO

GIF marketing is omnipresent in today's digital environment. So, how do consumers respond to animated Graphics Interchange Formats (GIFs)? Two experimental studies investigate whether GIF animation is a sensory cue that triggers a sense of urgency and leads to impulse buying.

HYPOTHESES

GIF animated (vs. static) products and ads evoke a sense of urgency (H1), which increases anticipated regret, and consequently increases impulse buying and brand attitude (H2).

METHODS

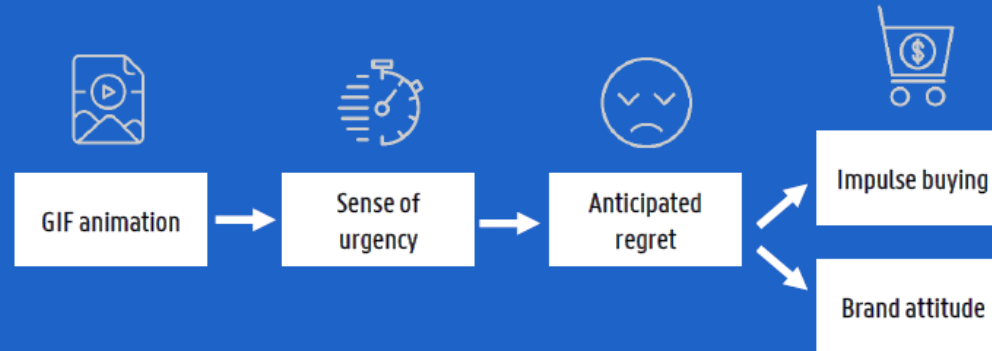
- Study 1 (lab; $N=122$) testing H1: 6 aesthetic products between-subjects (GIF vs. static).
- Study 2 (panel; $N=138$) testing H1-H2: 3 clothing ads between-subjects (GIF vs. static).

RESULTS

- Study 1 & 2 - Multilevel analyses: GIF animated (vs. static) products and ads increase sense of urgency (H1).
- Study 2 - Serial mediation analyses: GIF animated (vs. static) ads increase sense of urgency, which affects anticipated regret, and consequently impulse buying and brand attitude (H2).



Using GIF marketing for products and ads increases consumers' sense of urgency and impulse buying.



Take a picture to download the full paper

Sparked your interest?
Lana.Mulier@UGent.be

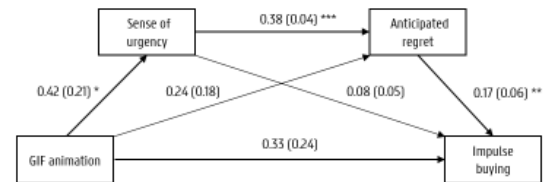


Study 1 & 2 - Measurements & main effects:

DV	Statement or Items	Condition	M (SD)	p-value
Study 1				
Sense of urgency	To what extent do you experience a sense of urgency while viewing this product? (1 = Not at all; 7 = Very much)	GIF	3.06 (1.08)	.015
		Static	2.59 (1.03)	
Study 2				
Sense of urgency	To what extent do you experience a sense of urgency while viewing this ad? (1 = Not at all; 7 = Very much)	GIF	2.97 (1.35)	.048
		Static	2.57 (1.48)	
Anticipated regret	After viewing this ad... -I feel like I would experience regret if I waited and ended up without the reduction. -I would be upset if I missed buying some interesting clothes from Loft. -I feel like if I did not shop at Loft right away, I would regret it later. (1 = Totally disagree; 7 = Totally agree)	GIF	2.78 (1.40)	.062
		Static	2.37 (1.34)	
Impulse buying	Choice option: Shop today on the Loft website and get 50% discount as advertised, or wait until tomorrow and get 60% discount? (reverse-coded; 1 = Shop tomorrow with a 60% discount; 7 = Shop today with a 50% discount)	GIF	2.63 (1.61)	.079
		Static	2.20 (1.45)	
Brand attitude	What do you think of the brand Loft, based on the ads you have just seen? (1 = Bad - Unpleasant - Unfavorable; 7 = Good - Pleasant - Favorable)	GIF	4.84 (1.16)	.092
		Static	4.48 (1.28)	

Study 2 - Serial mediation effect:

The effect of GIF animation on impulse buying is serially mediated by sense of urgency and anticipated regret.



Significant full path of serial indirect effects (95% CI=[0.002; 0.221])

ONGOING RESEARCH

- Elements of GIF animation leading to urgency (motion, repetition, or micro story).
- Positive and negative behavioral consequences of using GIF marketing.
- Measuring real impulse buying behavior.



Ghent University



Faculty of Economics and Business Administration

NETWORK

THIRD FUNCTION

INCREASE INTERACTION!

Slower responses are perceived as less sincere.

Slow Lies: Sincerity Perceptions Generated by Speed of Response

INTRO

- Speed of response in social contexts (e.g., conversation, job interview) is everywhere and easy to observe.
- What is its effect on perceptions of sincerity?

METHODS

- 12 experiments (MTurk, Prolific, French students, N = 7418)
- Audio, video, scenario stimuli with male and female actors
- IV: speed of response (from min. 0 secs to max. 15 secs)
- DVs: sincerity (1-7 scale), guilt judgment (Y/N)
- Mediators: thought suppression inferences, perceived memory effort (1-7 scale)

RESULTS

Study	Sample size	Result
1	1,188 (MTurk)	Slower responses are perceived less sincere (scale 0-7, not shown)
2	4,000 (MTurk)	Thought suppression mediates the effect
3	800 (MTurk)	Fast of retrieval mediates the effect
4	588 (MTurk)	Audio response mediates effect
5	400 (MTurk)	Perception to ignore speed mediates the effect (audio stimuli, not shown)
6	400 (MTurk)	Slower responses are perceived less sincere and judged guilty more when false stimuli, not shown
7	302 (Prolific)	Control video study: thought suppression increases sincerity judgments
8	272 (Prolific)	Control video study: L with different emotional valences
9	404 (MTurk)	Scenario, speed of response, and with different emotional valences
10	535 (MTurk)	Control video study: L with stronger verbal fluency
11	400 (MTurk)	Scenario video study: does not mediate the effect
12	302 (Prolific)	Audio video study: thought suppression increases sincerity judgments

DISCUSSION

- We build a theory of sincerity perceptions generated by speed of responses. We show that people have very rich, contextual lay theories about it, mirroring the actual workings of the human mind.
- We highlight the practical implication, especially in high-stakes context (e.g., law). Sometimes it may be desirable to subtract speed of response or instruct people to ignore it.

Ignazio Ziano, Grenoble Ecole de Management
Deming (Adam) Wang, James Cook University Singapore

Take a picture to download the preprint

ENVIRONMENTAL IDENTITY AND PRO-ENVIRONMENTAL CONSUMPTION

Want to help consumers to engage more in pro-environmental behaviors? How often consumers think about their connection to nature matters more than how strongly they feel connected to nature

Conceptual development

Consumer environmental identity is a self-concept, in which the applicable environmental benefit (Chen, 2008; Zhou et al., 2008)

We need to know more about the dimensions of consumer identity, especially environmental behavior (Shiu et al., 2016; Clayton, 2012)

We investigate the effect of identity dimensions, environmental identity, and their interaction on pro-environmental behavior and intention (Pavlou, 2016)

Definitions

Environmental identity: self-referential perception of environmental identity

Environmental identity centrality: the degree to which an individual identifies himself/herself with the environment

Environmental identity salience: the degree to which an individual is aware of his/her environmental identity

Model

Study 1 results

Study	Sample size	Result
1	4,000	Environmental identity centrality mediates the effect
2	4,000	Environmental identity salience mediates the effect

Study 2 results

Study	Sample size	Result
1	4,000	Environmental identity centrality mediates the effect
2	4,000	Environmental identity salience mediates the effect

Study 3 results

Study	Sample size	Result
1	4,000	Environmental identity centrality mediates the effect
2	4,000	Environmental identity salience mediates the effect

PLEASE POST YOUR COMMENT HERE!

How about English below?

Could be Cool to compare it with other studies that use only environmental.

Opening the door to the student experience

Aim

The poster shows preliminary findings of evaluating the innovative method of setting up dialogue between personal tutors and personal students. This is part of a pilot study that is also aiming to learn about the student experience by using emotional touchpoints and photoelicitation. Ethical approval has been granted for this project by the School of Health, Nursing and Midwifery Ethics Committee, UWS.

What is emotional touchpoints?

Emotional touchpoints is a key concept in the experience design field. It refers to any point of contact between a customer and a brand that has the potential to create an emotional connection. Emotional touchpoints can be used to create a positive customer experience and to build a strong relationship with the customer.

What is photoelicitation?

Photoelicitation is a research method that involves using photographs to elicit and explore participants' experiences and feelings. It is a powerful tool for understanding the lived experience of participants and for exploring the meaning of their experiences.

Student Evaluations

Students rated the experience as being helpful and enjoyable. They also reported feeling more connected to their personal tutors and more engaged in their learning.

Lecturer Evaluations

Lecturers reported that the process of using emotional touchpoints was helpful and enjoyable. They also reported feeling more connected to their students and more engaged in their teaching.

Conclusions and next steps

The findings suggest that the use of emotional touchpoints and photoelicitation is a valuable method for understanding the student experience and for building a strong relationship with students. The next steps are to evaluate the effectiveness of the method in a larger scale study and to explore the potential for using the method in other contexts.

References

Author: Sarah McBride, Laura Macdonald, Linda Macdonald, Emma-Jane Macdonald, School of Health, Nursing and Midwifery

LWS UNIVERSITY OF THE WEST OF SCOTLAND

↑ Only when relevant!

QR-CODE

- <https://me-qr.com/>



Many more options (image, videos, etc...)

Technology may change cognition without necessarily harming it

Abstract and Research Question

What is the long-term impact of technological advances on cognitive abilities?

We critically examine relevant findings and argue that there is no clear evidence for detrimental lasting effects of digital technology on cognitive abilities. But we also suggest how digital technology may be changing predominant ways of cognition.

Are digital devices making cognition worse?



We challenge two key assumptions about the argument that digital devices worsen cognitive abilities:

- (1) Long-term abilities are affected.
- (2) Changes are cognitive in nature.

With regards to 1) experimental evidence oft used in support of these claims actually suggests that the demonstrated effects have been temporary, not long-term. In reference to 2) their nature is also unclear; they may be about cognitive processes or about motivational factors that turn on the cognitive processes in the first place.

Consider an oft-cited series of experiments that demonstrated people's tendency to think of and rely on digital technology as a form of external memory.

When participants were presented with hard (vs easy) questions, technology-related words became more mentally accessible. And when participants expected information to later be accessible (vs not accessible) on the computer, they were less likely to remember what its content was, but more likely to remember where it could be found.

These effects were temporary—they emerged when access to digital technology or information stored therein was available, not when access was unavailable.

Want more details on the empirical evidence? Scan the QR code with your smartphone to see the full article



How digital technology may be changing cognition

By construing cognition as a dynamic interplay between internal processes and external tools, digital technology does not necessarily compete with cognition, but complements it.

Smart devices are external tools specialized in performing tasks that free up mental capacity for other goals. As such, technology changes cognition, and may even improve it.

Box 1 Highlights some of these predicted changes.

Predictions

Box 1 | Predictions about how digital technology may be changing predominant ways of cognition as a dynamic interplay of internal processes and external tools

- Complexity:** Digital technology may be increasing the effectiveness (e.g., accuracy) and efficiency (e.g., speed) of performing tasks that are too complex to be handled by internal processes alone (e.g., statistical analyses, data visualization, financial accounting).
- Reliance and Skill:** Because of the advantages in #1, people may be (a) increasingly reliant on digital technology for computationally demanding tasks and (b) increasingly skilled at transforming information and enacting the iterative back-and-forth between internal processes and digital technology (e.g., writing code, interpreting results), skills that appear rewarded in the job market.
- External access — Freed capacity:** Digital technology may be expanding the scope of where and how people find information (as opposed to remembering the information itself), such as when they use apps that rely on machine learning to offer personalized recommendations based on their past behaviour or when they simply use Google to search for facts and GPS for driving navigation (as opposed to remembering the facts or routes), thereby freeing up their internal capacity for other cognitive tasks (e.g., intentional mind wandering, creative idea generation, learning new information).
- Flexibility:** People may be enjoying more flexibility in choosing what information to process internally (e.g., remembering phone numbers of significant others, remembering future intentions) and what information to rely on a smartphone for (e.g., looking up phone numbers of colleagues, using calendar reminders).
- Self-insights and Self-control:** People may be facing an increasing need for (a) self-insights into which cognitive activities they actually want to offload (e.g., for efficiency) and which ones they want to perform themselves (e.g., to train the internal processes they value, to retain information intrinsic to their learning goals) and (b) self-control for guarding against cognitive laziness, which is made all too easy by digital technology thanks to its provision of fingertip access to large amounts of motivationally rewarding information (e.g., reading newsfeed for hours on end).

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AI PROMPTS

Credits to Ehab Hamed

Prompt:

- As a scientific editor, produce text for a scientific poster for an imminent academic event. Ensure the content is scientific, clear, and concise. Stick to these guidelines:
- Context:** *[insert conference focus or theme]*.
- Development Guidelines:** *[insert specific guidelines for the conference abstract]*. You can use academic language and cite relevant research as necessary.
- Example:** *[insert example if provided by the conference]* A top-tier scientific poster typically starts with a clear introduction to the research question, followed by a detailed methodology and significant results.
- Note:** The task involves distilling complex research insights into a format appropriate for a scientific poster.
- Start:** Ask for the content to use for the scientific abstract development.

Credits to Eposter:

<https://eposterslive.com/node/673>

- **Prompt to generate possible fonts/color schemes for the poster:**

Generate design ideas for an ePoster on the topic of XXXX. Provide me with a color palette and typography suggestions that would convey the seriousness of the topic while also being visually appealing to a wide audience. Please include at least three different color options and two typography options

- **Prompt: Catchy Titles**

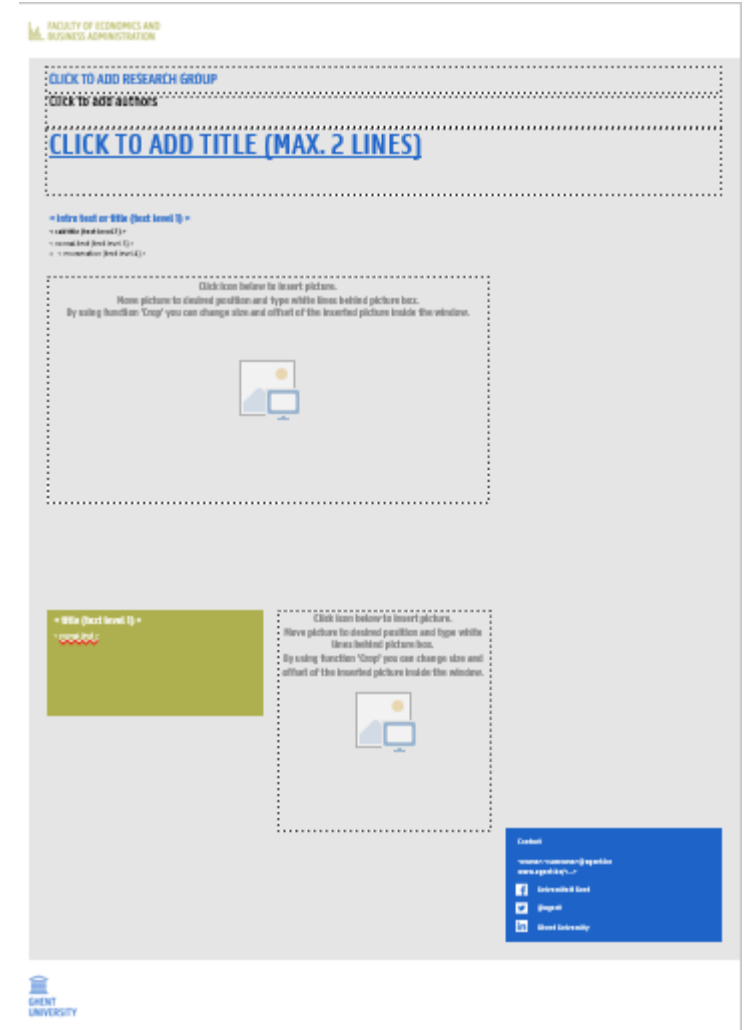
“Generate a catchy title for a research poster about [insert jargon-ridden subject matter here].”

BETTER POSTER TEMPLATES

CREDITS TO Mike Morrison

U-GENT TEMPLATE

- <https://styleguide.ugent.be/templates/print.html#poster>
- Adjust the template according to the conference's guidelines!



Title:
Subtitle



PRESENTER:
Leeroy Jenkins

BACKGROUND: Who cares? Explain why your study matters in the fastest, most brutal way possible (feel free to add graphics!).

METHODS

1. Collected [what] from [population]
2. Tested it with X process.
3. Illustrate your methods if you can.
4. Try a flowchart!

RESULTS

- Graph/table with **essential results only**.
- All the other correlations in the ammo bar.

Main finding goes here, translated into plain English. Emphasize the important words.



Visualize your findings with an image, graphic, or a key figure.

AMMO BAR

Delete this and replace it with your...

- Extra Graphs
- Extra Correlation tables
- Extra Figures
- Extra nuance that you're worried about leaving out.
- **Keep it messy!** This section is just for you.



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Leeroy Jenkins, author2, author3, author4, author5, author6, author7, author42



Title:
Subtitle



PRESENTER:
Leeroy Jenkins

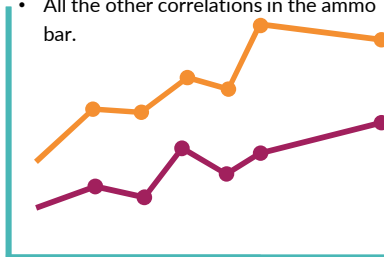
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Leeroy Jenkins, author2, author3, author4, author5, author6, author7, author42



Main finding goes here, translated into plain English. Emphasize the important words.

Title goes here; make it small if you need to free up space.

INTRO

- Just give context for the gap you're filling
- You're not going to get yelled at if you don't cite the 5 papers from 1937 that defined this construct. They'll download your paper if they want that.

METHODS

1. N = ###,
2. Collected this
3. Tested with X statistical test

RESULTS

- Graph or table with essential results only.
- All the other correlations in the ammo bar.

DISCUSSION

- "If this result actually generalized and I didn't have to humbly disclaim the possibility of a thousand confounds and limitations, it would imply that...."

Keep font size as high above 28 as possible.

 Leeroy Jenkins, author2, author3, author4

AMMO BAR

Delete this and replace it with your...

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- Extra Figures
- Extra nuance that you're worried about leaving out.
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