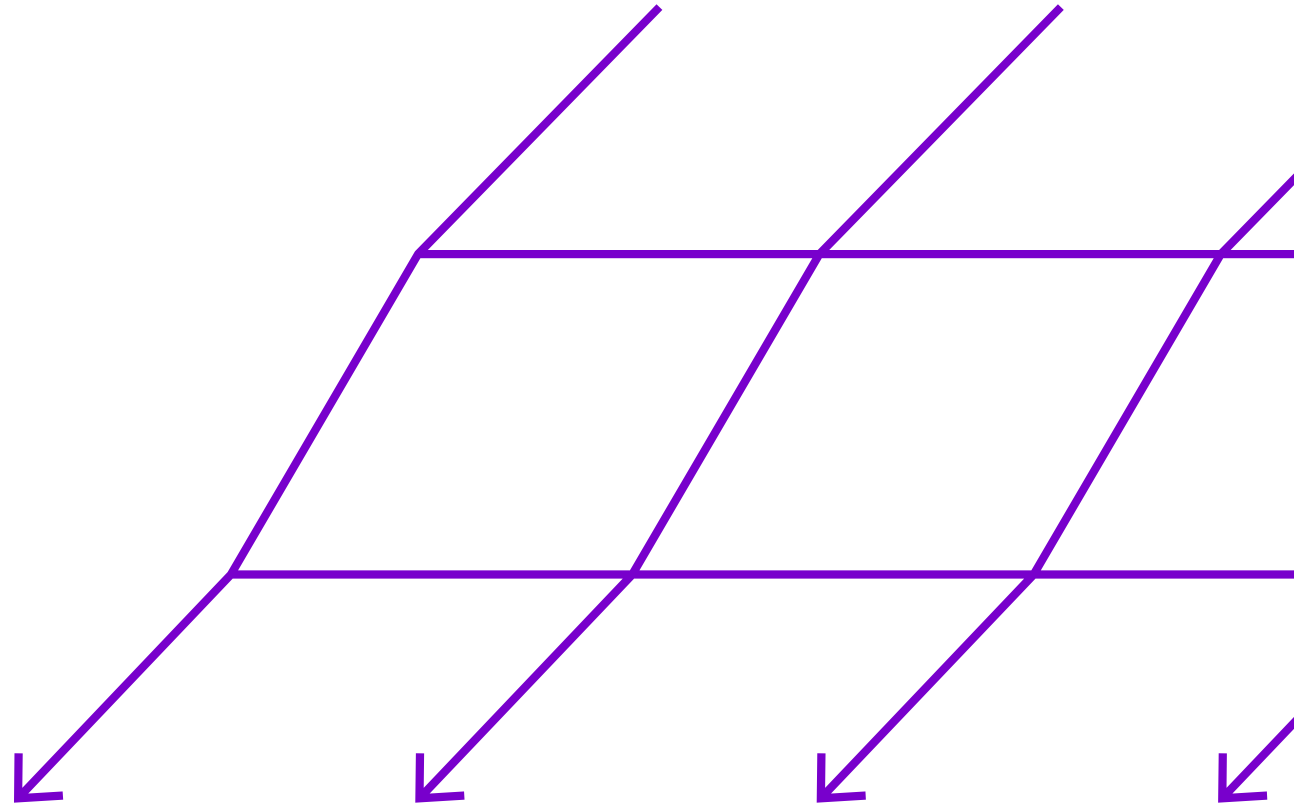


# Do Colors Have Emotions?

Featuring Domicela Jonauskaite  
01 February 2022



# Technical Group Executive Committee



**Francisco Imai**

Chair of the Color Technical Group



**Rigmor C. Baraas**

University of South-Eastern Norway



**Javier Hernandez-Andres**

Universidad de Granada

# About the Color Technical Group

**Our technical group focuses on all aspects related to the physics, physiology, and psychology of color in biological and machine vision.**

**Our mission is to connect the 900+ members of our community through technical events, webinars, networking events, and social media.**

## **Our past activities have included:**

- Special webinar on display calibration
- Vision science in times of social distancing bi-weekly coffee breaks
- Incubator meetings

# Connect with the Color Technical Group

**Join our online community to stay up to date on our group's activities. You also can share your ideas for technical group events or let us know if you're interested in presenting your research.**

## **Ways to connect with us:**

- Our website at [www.optica.org/VC](http://www.optica.org/VC)
- On Twitter at [#OSAColorTG](https://twitter.com/OSAColorTG)
- On LinkedIn at [www.linkedin.com/groups/13573604](http://www.linkedin.com/groups/13573604)
- Email us at [TGactivities@optica.org](mailto:TGactivities@optica.org)

# Upcoming Webinars

**OPTICA**

Advancing Optics and Photonics Worldwide

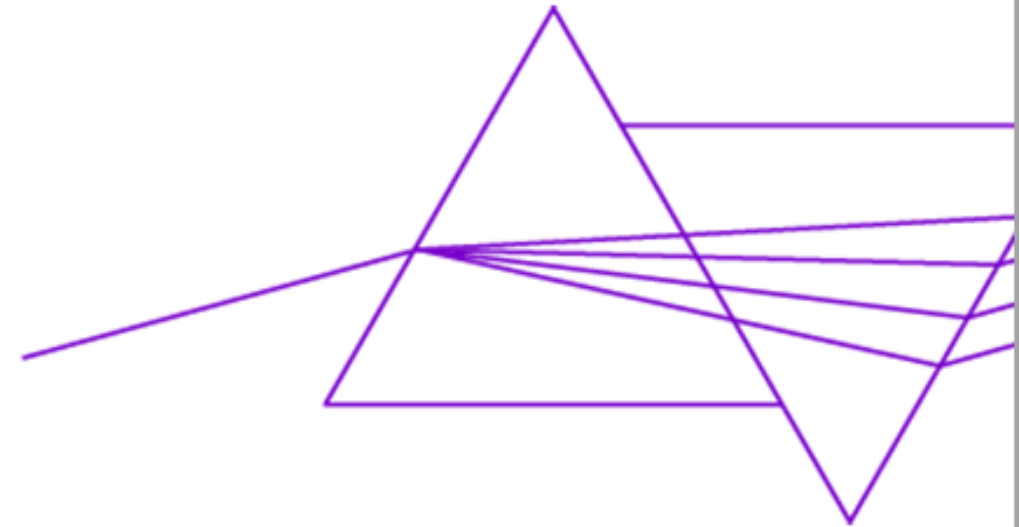
Color



**WEBINAR**

## **Measuring Light, Color, Spectrum and Personalized Light Exposure Using Wearable Light Sensors**

11 February 2022 | 11:00 – 12:30 EST (UTC-05:00)



**OPTICA** Color  
Advancing Optics and Photonics Worldwide

**WEBINAR**  
**Do Colors Have Emotions?**

01 February 2022 | 14:00 – 15:00 EST (UTC-05:00)



## Domicela Jonauskaite, University of Lausanne & University of Vienna

Dr. Domicela Jonauskaite is an experimental colour psychologist, studying cognitive and affective connotations of colour. Her studies are based on scientifically valid approaches, which allows her to validate or debunk myths in colour psychology. More recently, she has expanded her research to aesthetics and art. Domicela is currently based at the University of Vienna in Austria. Previously, she obtained a PhD degree in Psychology from the University of Lausanne, Switzerland. Her research positions have been supported by two career fellowship grants from the Swiss National Science Foundation. Together with Christine Mohr, Déborah Epicoco, and Nele Dael, they have founded the Colour Experience platform (<https://www.colourexperience.ch/>) designed to disseminate scientifically validated empirical research on psychological effects of colour. She is also co-authoring blog posts for Psychology Today ([www.psychologytoday.com/us/blog/color-psychology](http://www.psychologytoday.com/us/blog/color-psychology)).



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Science Foundation

# Do Colors Have Emotions?

## Understanding cross-cultural associations between colours and emotions

Dr Domicelė Jonauskaitė

*Colour is the most beautiful union of science and art*



# What is colour psychology?



<https://www.a-n-a.com/shop/blog/ratgeber/die-macht-der-farben-wie-farben-gefuehle-verhalten-bestimmen>

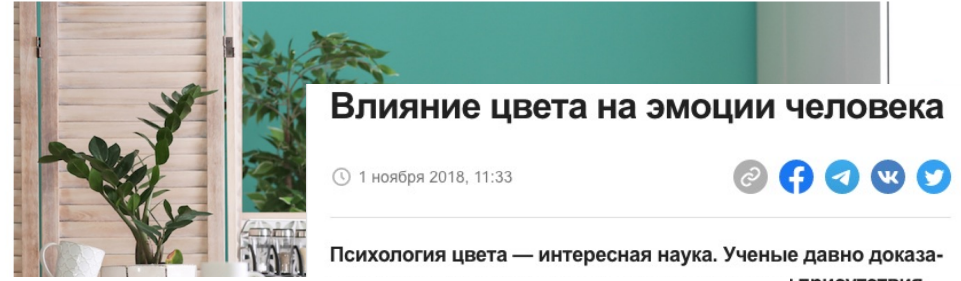


# How do colors affect mood?

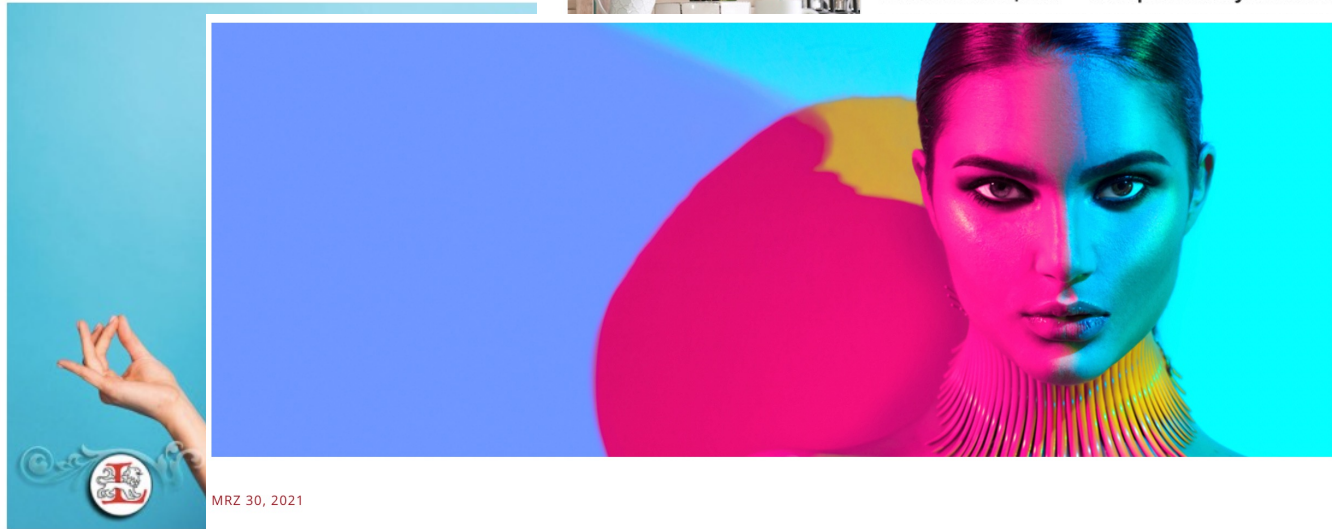
# L'INFLUENCE DES COULEURS SUR NOTRE HUMEUR

Accueil > Blog > L'influence des couleurs sur notre humeur

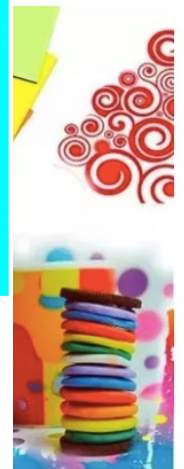
Publié le : 2017 - 08 - 03



LIFESTYLE | 8 Jan | AZ BIG



## DIE MACHT DER FARBEN. WIE FARBEN GEFÜHLE & VERHALTEN BESTIMMEN.



## How do colors affect mood?

### L'INFLUENCE DES COULEURS SUR NOTRE HUMEUR

Accueil > Blog > L'influence des couleurs sur notre humeur

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#### Color Psychology: How Do Col Emotions?

- Weak scientific basis
- Presumed universality
- Importance of perception
- Confusion of psychological constructs

LIFESTYLE | 8 Jan | AZ BIG

MRZ 30, 2021

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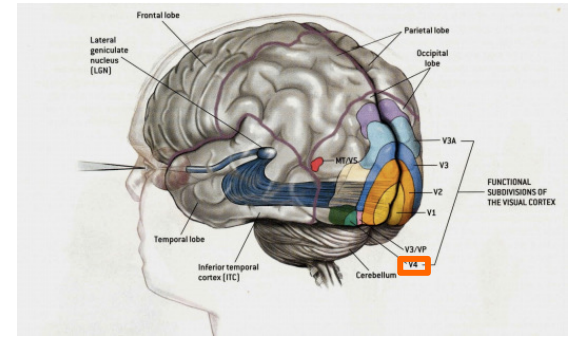
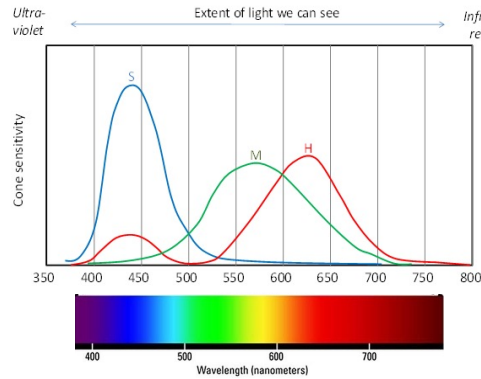
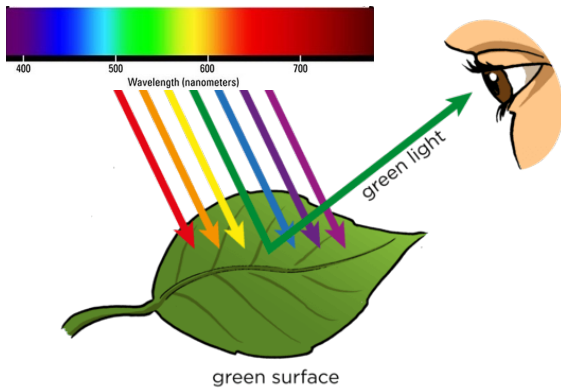
- Weak scientific basis
- Presumed **universality**
- Importance of **perception**
- Confusion of psychological constructs – **emotions**

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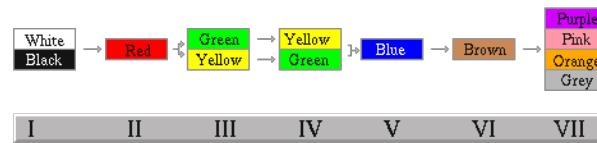
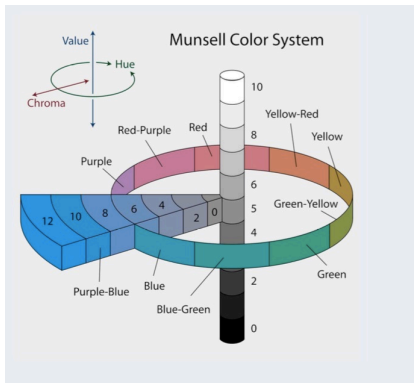
DIE MACHT DER FARBEN. WIE FARBEN GEFÜHLE &  
VERHALTEN BESTIMMEN.

# What is colour?



## Physically

## Physiologically



English

	5R	10R	5YR	10YR	5Y	10Y	5GY	10GY	5G	10G	5BG	10BG	5B	10B	5PB	10PB	5P	10P	5RP	10RP
9																				
8																				
7																				
6																				
5																				
4																				
3																				
2																				

## Perceptually

## Linguistically

## Conceptually

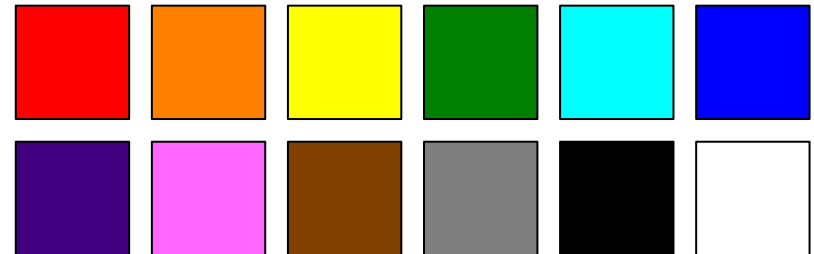


# In our research, colour is...

## Basic colour terms

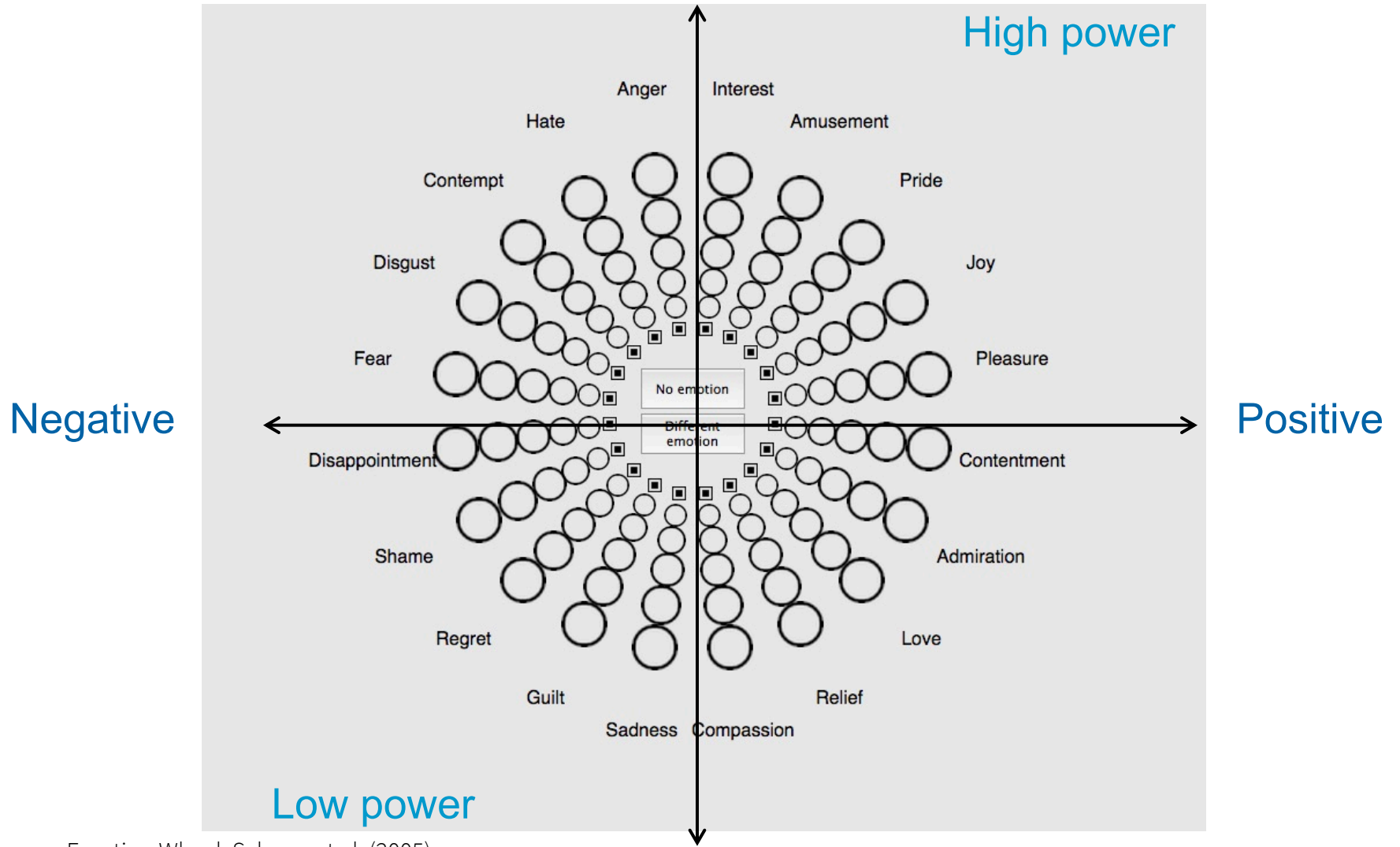
Red	Pink
Orange	Brown
Yellow	Grey
Green	Black
(Turquoise)	White
Blue	
Purple	

## Focal colours (i.e., best examples)





# Emotion is...



Geneva Emotion Wheel; Scherer et al. (2005)

# How colours are associated with emotions? Are there cross-cultural differences?



## Previous studies



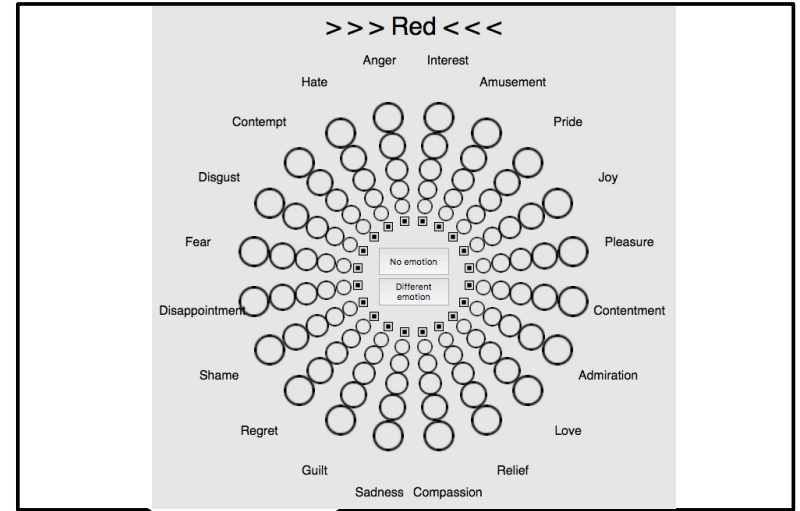
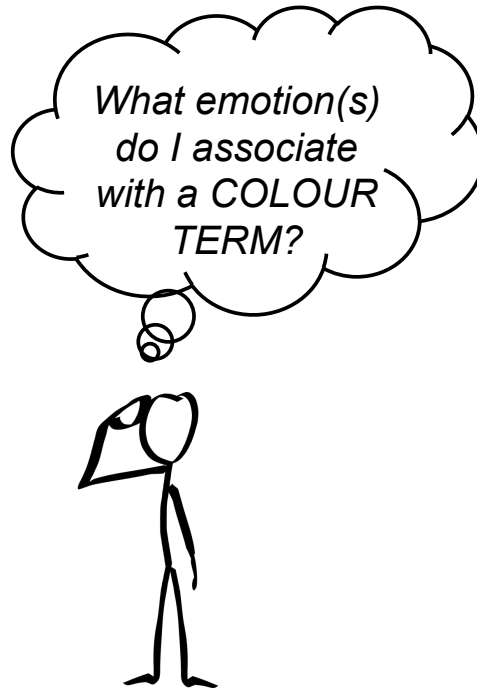
- Over 100 empirical studies linking colours and emotions in the last 120 years
- But...
- A lack of systematic investigations

earlier studies: Adams & Osgood, 1973; Allen & Guilford, 1936; Dorcus, 1926; Major, 1895; Wexner, 1954  
recent studies: Fugate & Franco, 2019; Jonauskaite et al., 2020; Kawai et al., 2020; Schloss et al., 2020; Soriano & Valenzuela, 2009

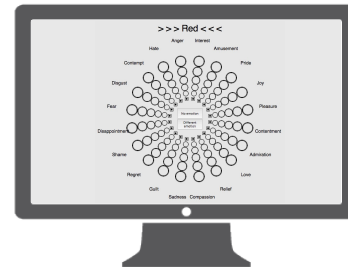
# International Colour-Emotion Associations Survey

## COLOUR TERM:

RED  
 ORANGE  
 YELLOW  
 GREEN  
 TURQUOISE  
 BLUE  
 PURPLE  
 PINK  
 BROWN  
 GREY  
 BLACK  
 WHITE



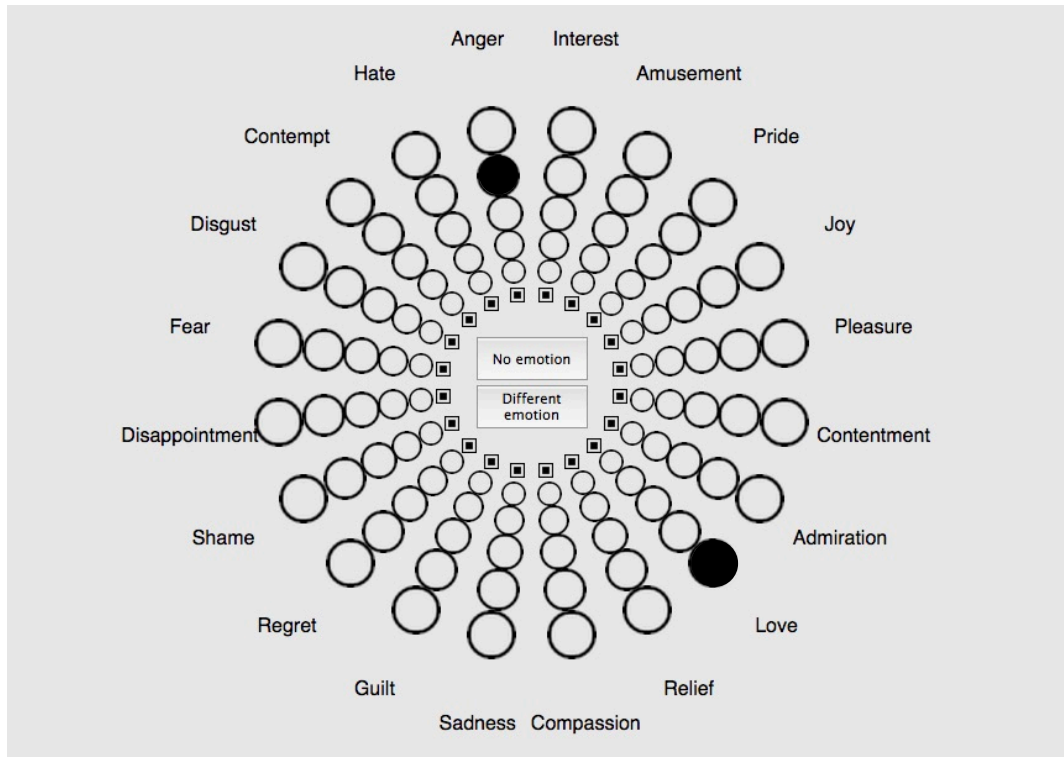
<http://www2.unil.ch/onlinepsych/ab/colour/main.php>



**NB: 46 languages available**

Griber et al., (2019), Jonauskaitė, Abdel-Khalek, et al., (2019), Jonauskaitė, Abu-Akel, et al. (2020), Jonauskaitė, Camenzind et al. (2021), Jonauskaitė, Dael et al., (2019), Jonauskaitė, Parraga et al., (2020), Jonauskaitė, Wicker, et al., (2019), Mohr et al., (2018), Ram et al., (2020)

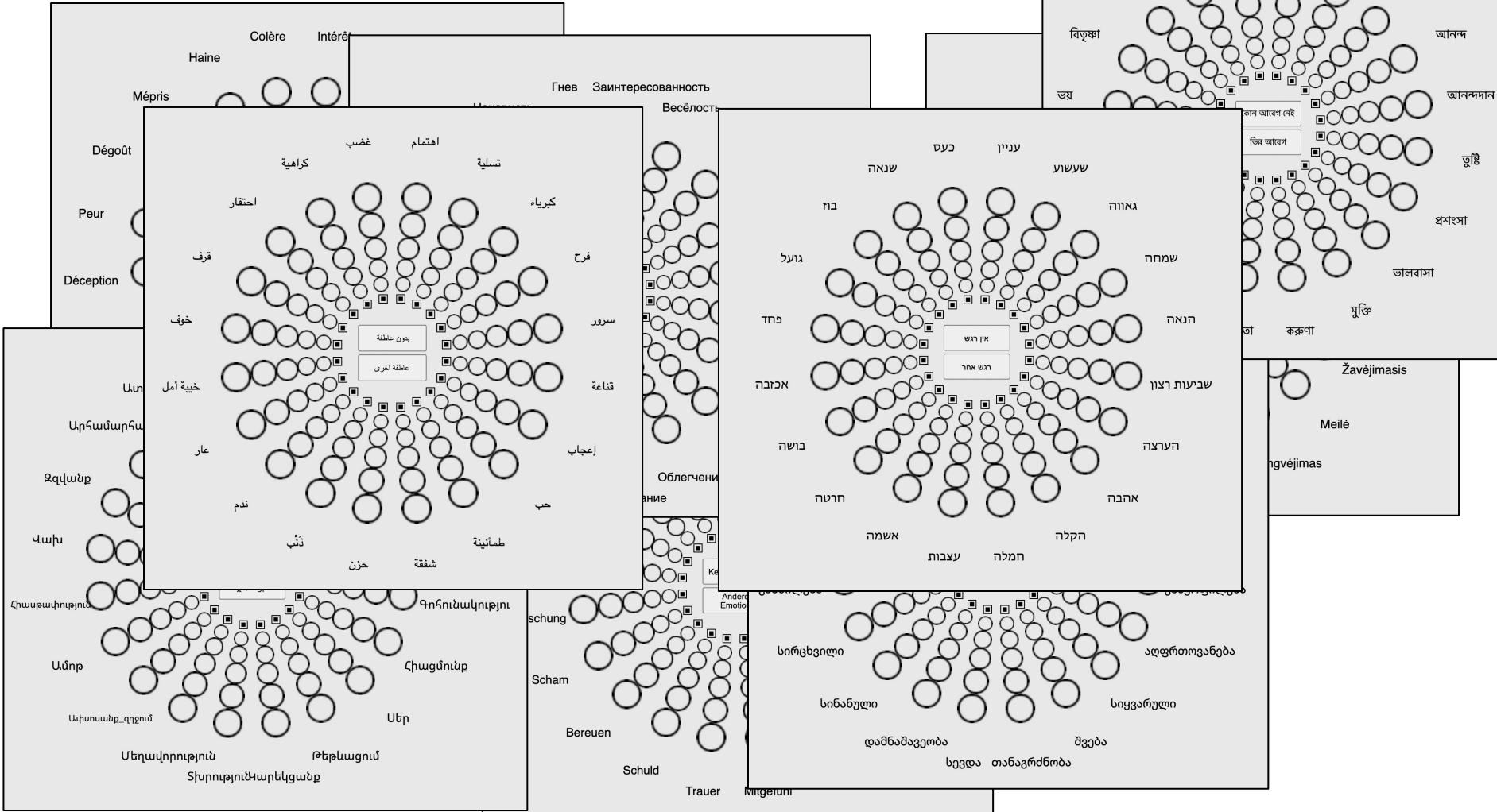
# RED



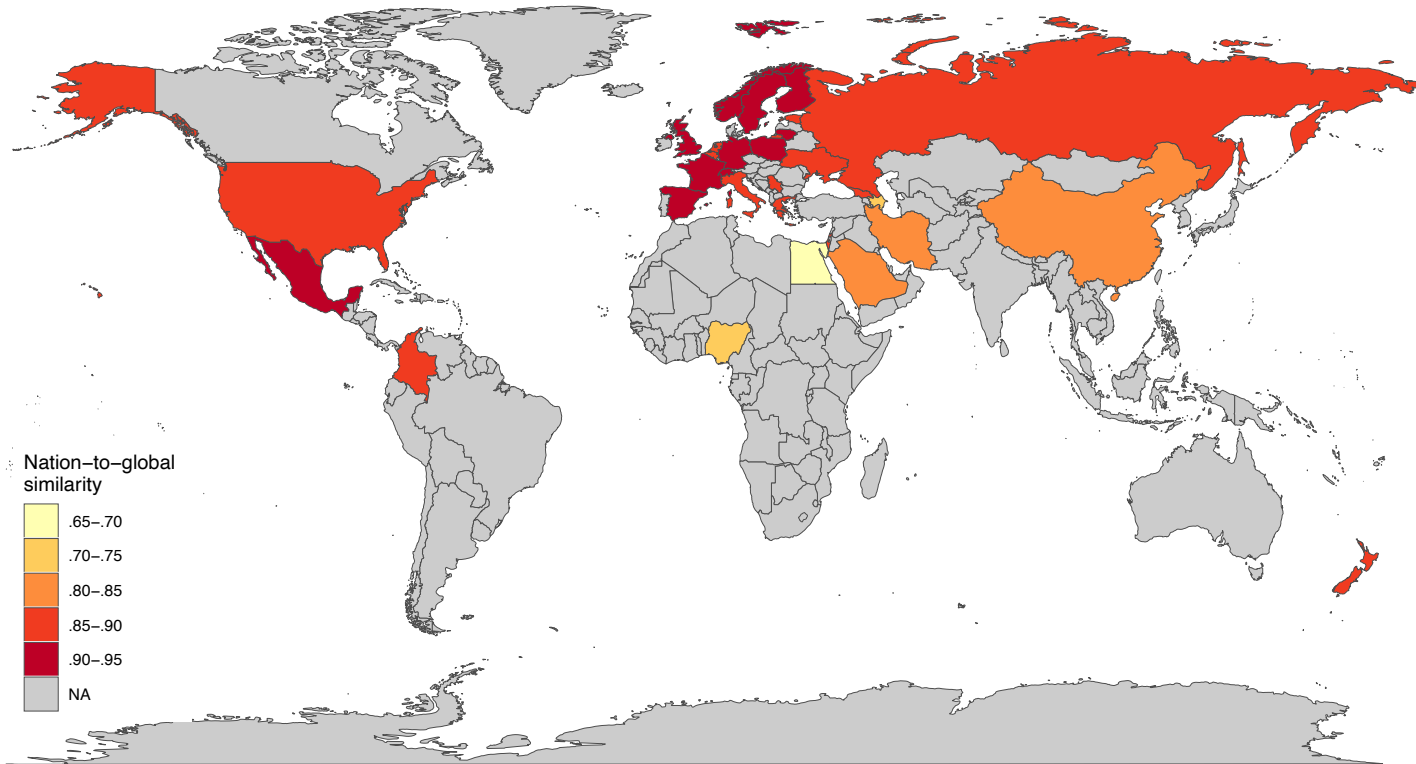
Jonauskaite et al. (2020)



# ... and the survey runs in 46 languages!



## We studied 30 nations in 22 languages ( $N = 4,598$ )

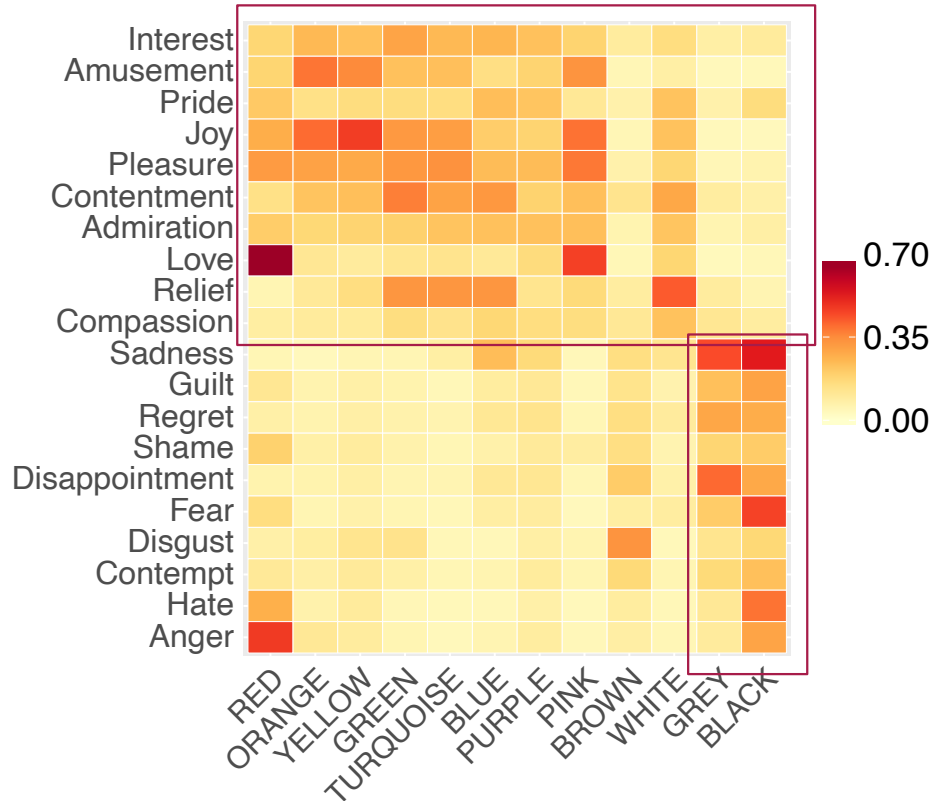


Jonauskaite, Abu-Akel et al. (2020) *Psychological Science*



# Colour-emotion associations

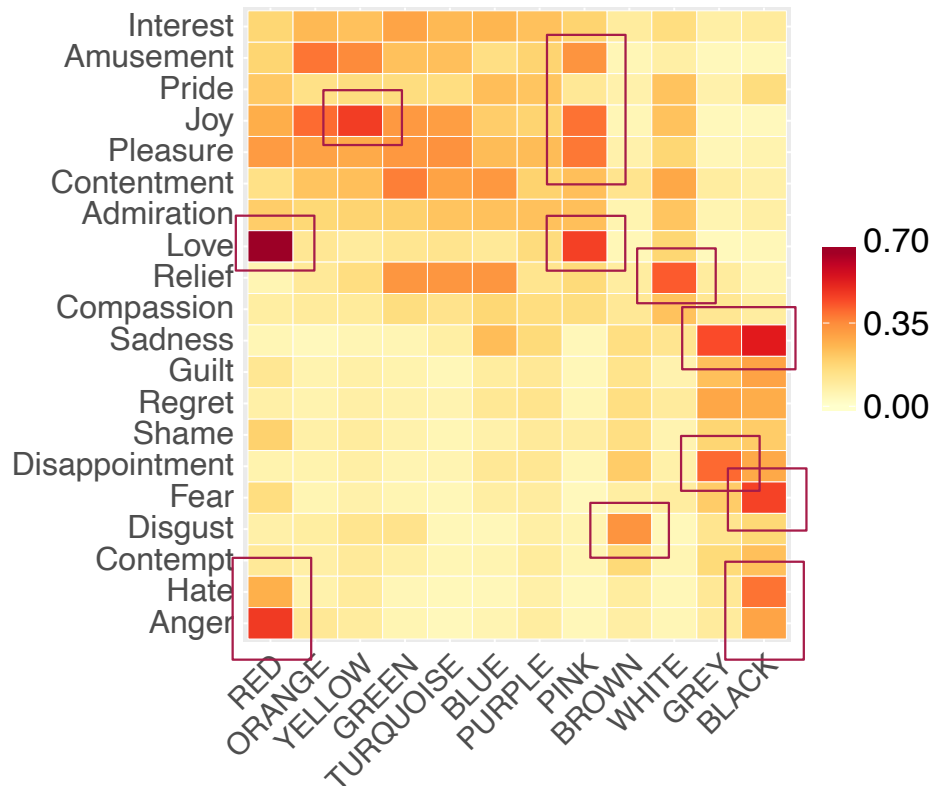
## Affective dimensions



Jonauskaite, Abu-Akel et al. (2020) *Psychological Science*

# Colour-emotion associations

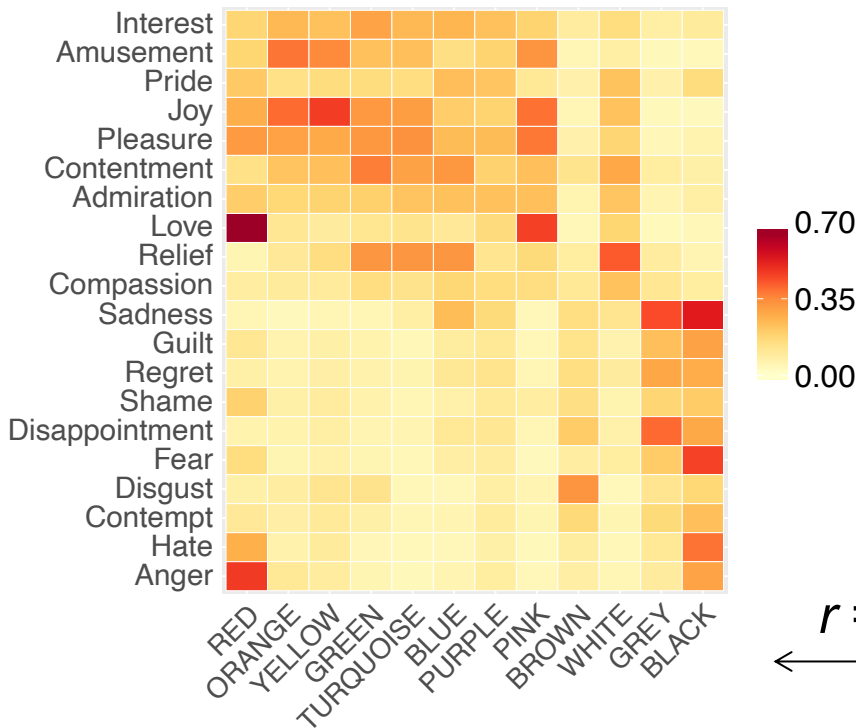
## Specific emotions



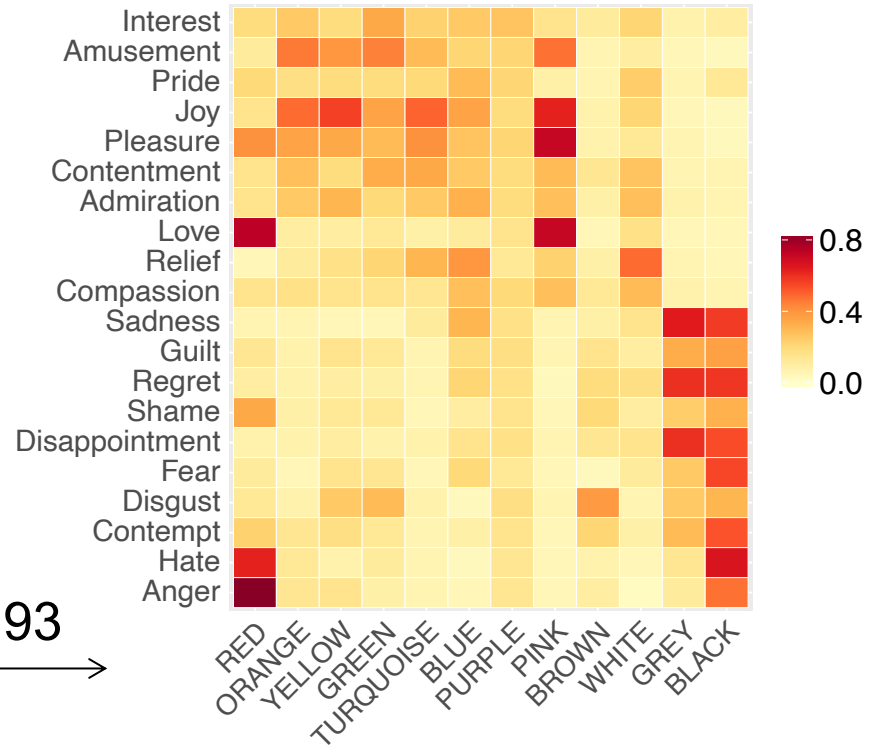
Jonauskaite, Abu-Akel et al. (2020) *Psychological Science*

# Colour-emotion associations

## 30 Nations



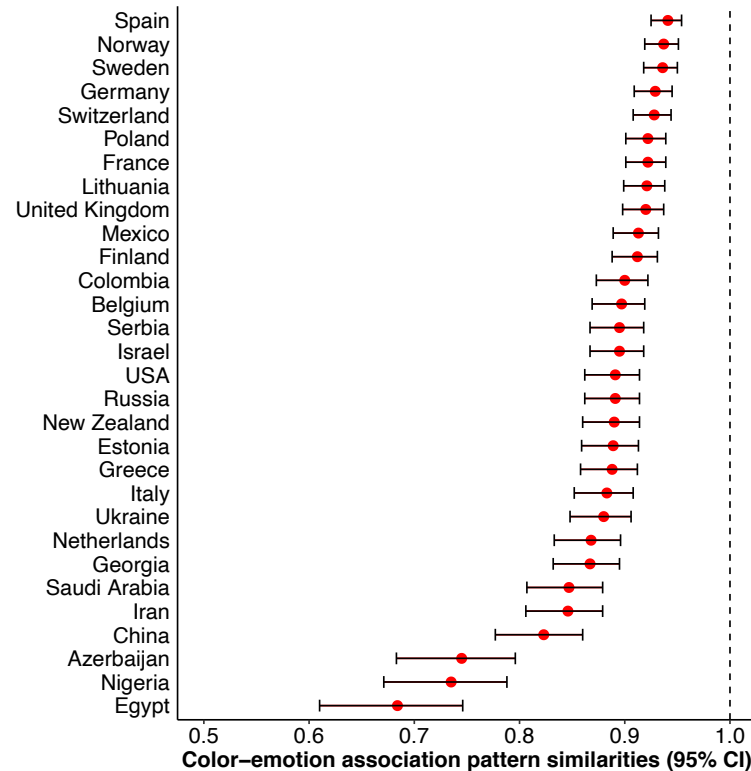
## Switzerland



$r = .93$

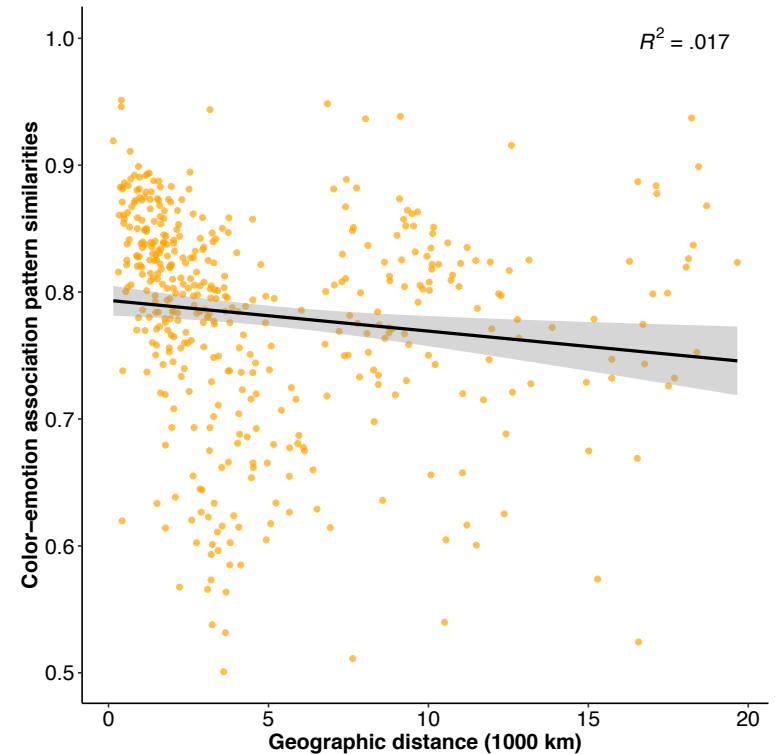
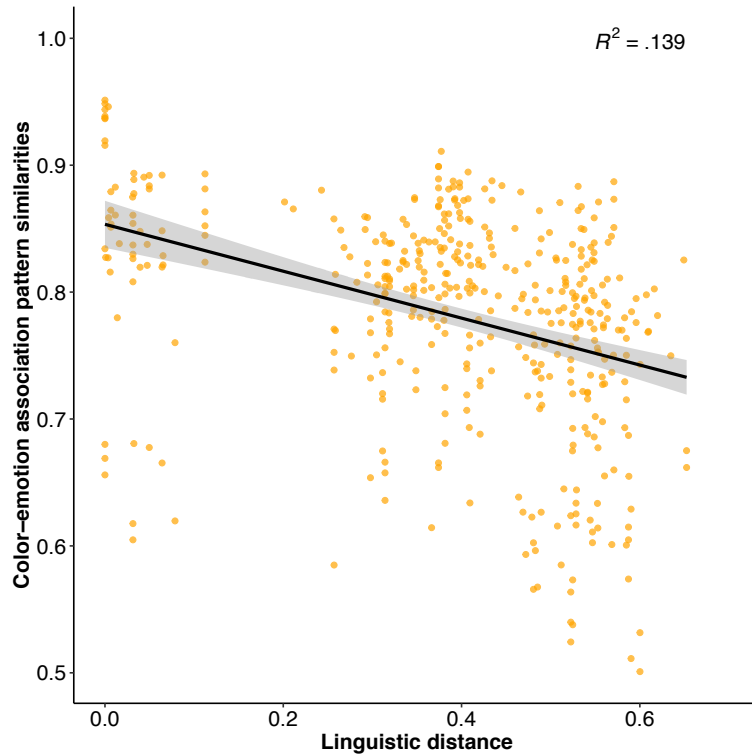
Jonauskaite, Abu-Akel et al. (2020) *Psychological Science*

# Universality of colour-emotion associations



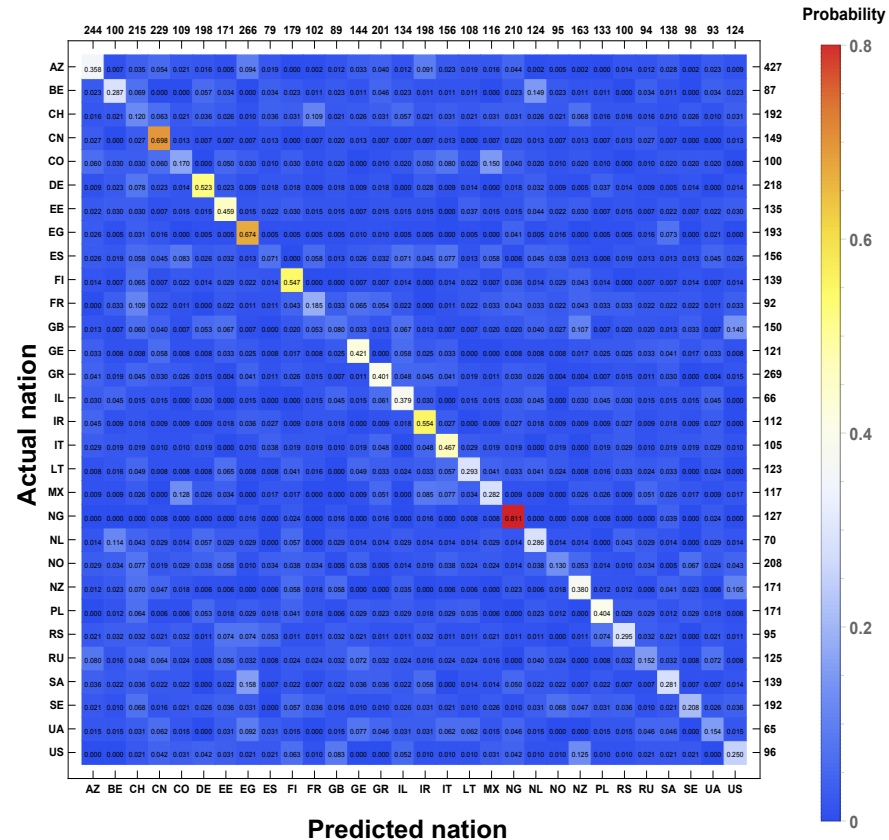
Jonauskaite, Abu-Akel et al. (2020) *Psychological Science*

# Modulation by linguistic and geographic proximity



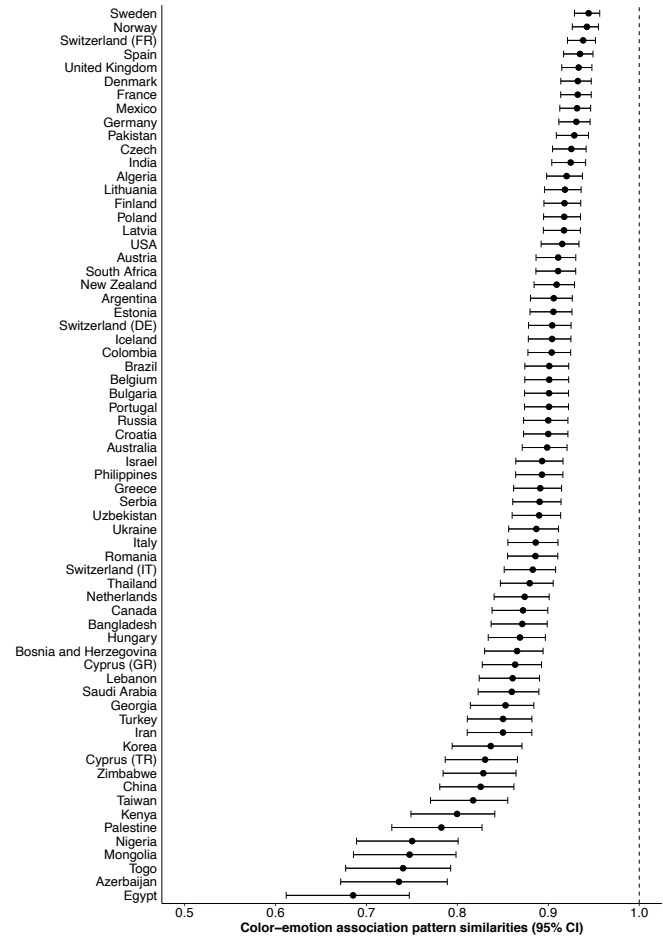
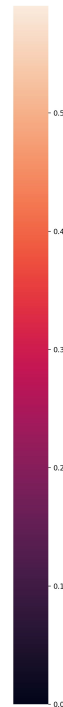
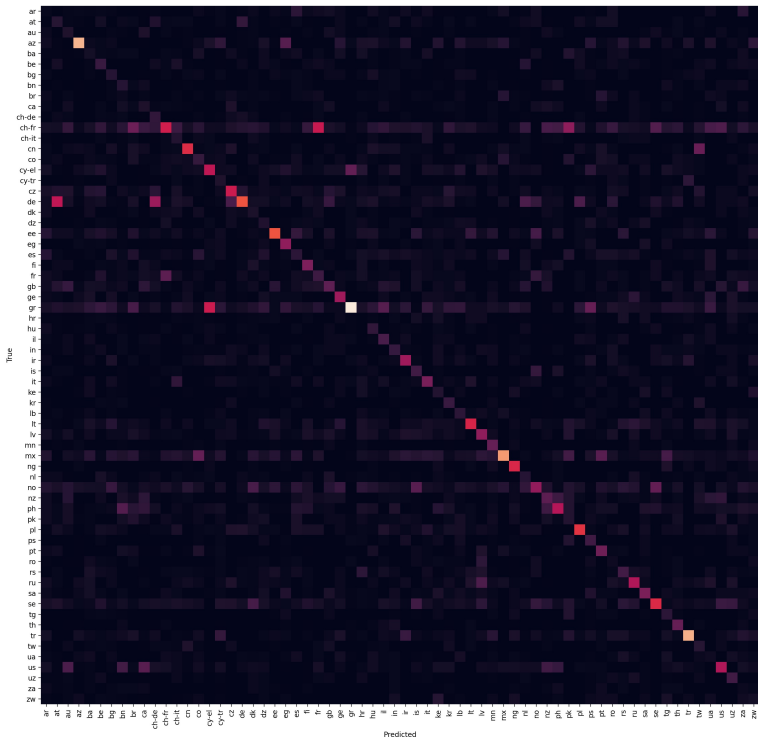
Jonauskaite, Abu-Akel et al. (2020) *Psychological Science*

# Further modulations are possible



Jonauskaitė, Abu-Akel et al. (2020) *Psychological Science*

# Very new data from 66 populations ( $N = 9,626$ )



In collaboration with Matthew Vowels and Peter Hilpert (University of Lausanne)

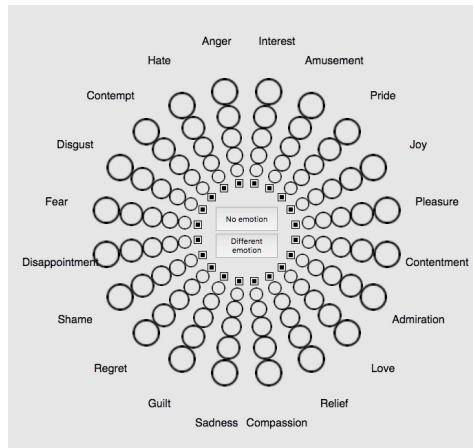
# Colour blindness

## Basic colour terms

RED



x 12 colour terms



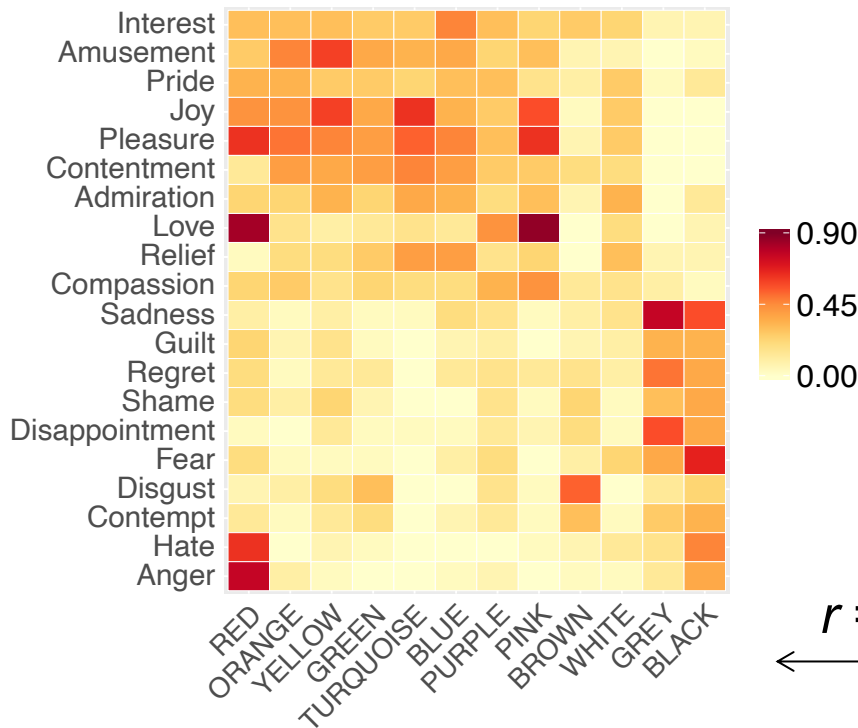
Geneva Emotion Wheel

Jonauskaite, Camenzind et al. (2021), *PeerJ*

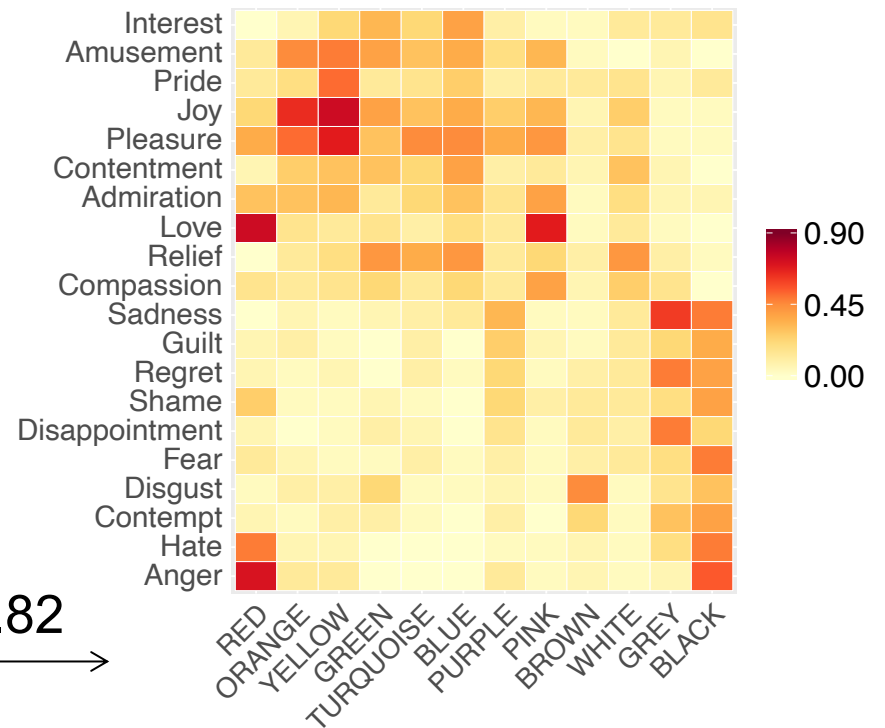


# Colour terms

## Non-colour blind



## Colour blind



$r = .82$

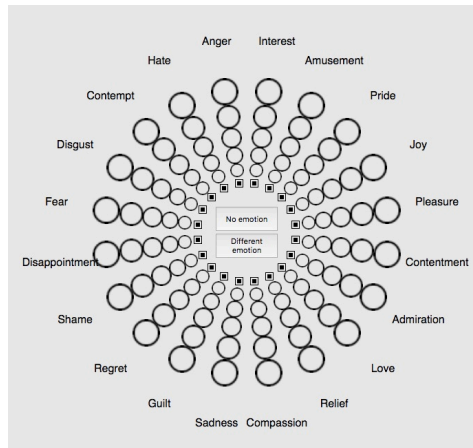
Jonauskaite, Camenzind et al. (2021), *PeerJ*

# Colour blindness

## Basic colour terms

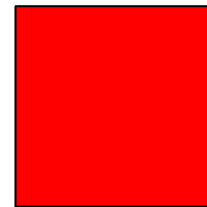
RED

x 12 colour terms

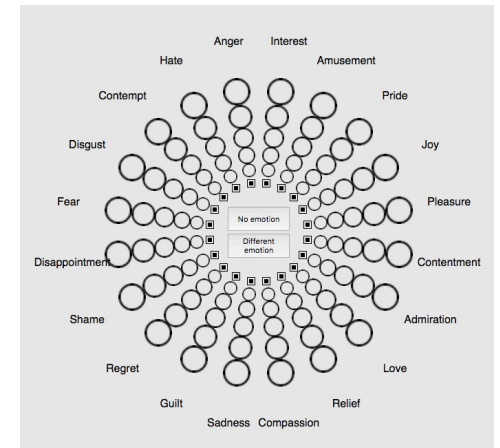


Geneva Emotion Wheel

## Focal colours



x 12 colour patches

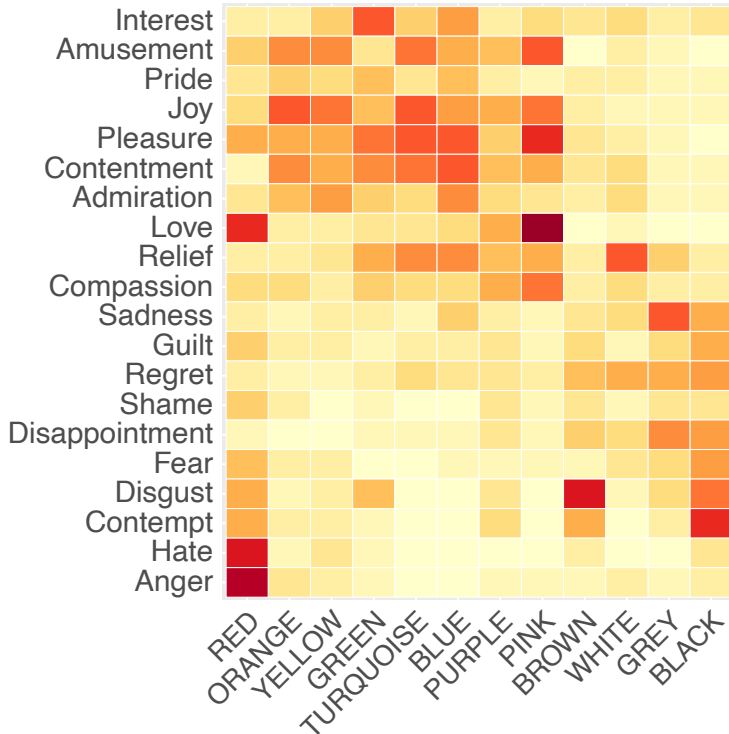


Geneva Emotion Wheel

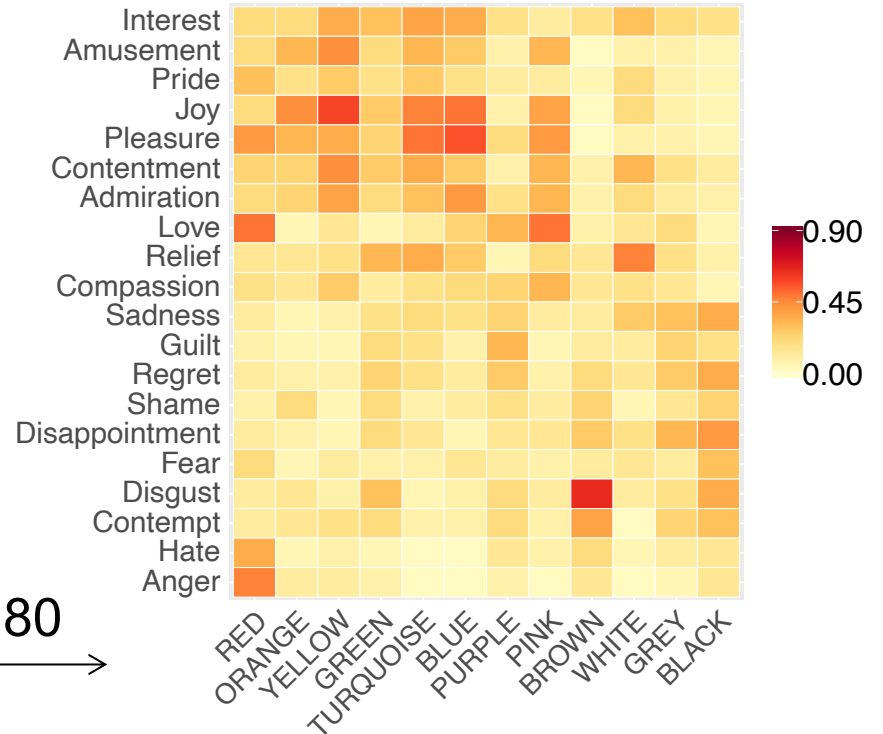
Jonauskaite, Camenzind et al. (2021), *PeerJ*

# Colour patches

## Non-colour blind



## Colour blind



$r = .80$

Jonauskaite, Camenzind et al. (2021), *PeerJ*

## So far I have presented...

- Studies with colour terms
- Studies with emotion concepts
- What about physical colours?
- What about felt emotions?



Jonauskaite, Parraga et al., 2020; Wilms & Oberfeld, 2018

## Take home messages

- Colours and emotions are associated systematically
- These associations are many-to-many rather than one-to-one
- Emotion associations with colour terms are shared across countries
- And they are further modulated by linguistic and geographic proximity
- Colour-emotion associations are conceptual and abstract
- Thus, conceptual colour-emotion associations do not guarantee that colours evoke affective experiences



Déborah Epicoco



Prof. Christine Mohr

## Many thanks to:

- ✧ Ahmad Abu-Akel
- ✧ Jean-Philippe Antonietti
- ✧ Amer Chamseddine
- ✧ Nele Dael
- ✧ Elise S. Dan-Glauser
- ✧ Peter Hilpert
- ✧ Daniel Oberfeld
- ✧ C. Alejandro Parraga
- ✧ Mari Uusküla
- ✧ Matthew Vowels
- ✧ Around 100 international colour poll collaborators

<http://www.colourexpérience.ch>

<https://www.psychologytoday.com/us/blog/color-psychology>