

Purpose

Several studies have shown conflicting trends regarding the age-related positivity effect, and therefore it is not known for certain the effect which increasing age has on overall positivity. (Schweizer et al., 2019). By understanding and addressing how overall positivity changes over the lifespan of an individual, the appropriate changes in environment or lifestyle can be made in order to improve quality of life.

Researchable Question

How does the age of an individual affect emotional responses to color-based visual stimuli?

Hypothesis

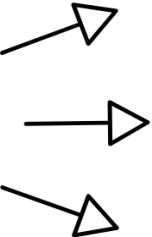
If the age of the individual is increased, then their self-reported reactions to red-based stimuli will increase in positivity. Typically, these colors are associated with danger or a warning, but in accordance with the age-related positivity effect, responses should become increasingly positive with aging.

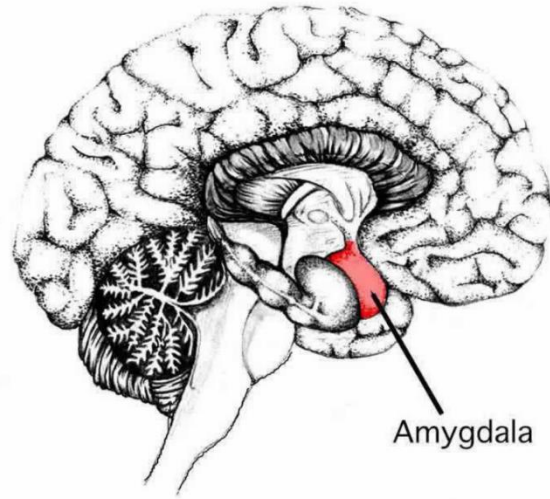
	Initial Emotional State		Red Based Affectivity		Green Based Affectivity		Blue Based Affectivity	
	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive
15-20	2.282	2.906	1.276	3.013	1.370	2.882	1.361	2.407
21-40	1.412	2.897	1.047	3.822	1.343	2.754	1.564	3.048
41-60	1.467	2.661	1.519	3.005	1.640	2.896	1.636	2.617

Table 1: Represents overall positive and negative affectivity for each color in each age group.

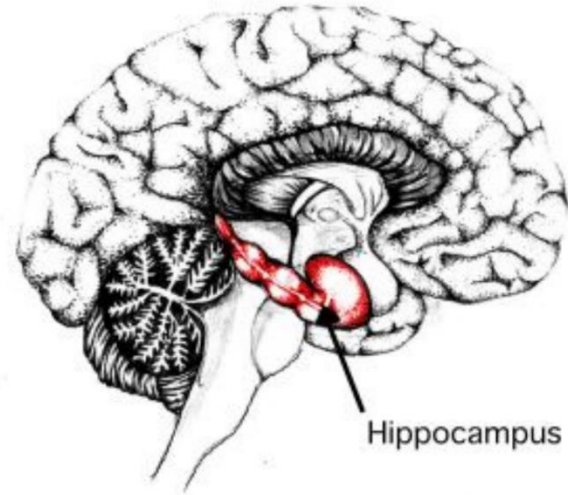
Highlighted values indicate the largest value/affectivity across age groups for that particular column.

Background



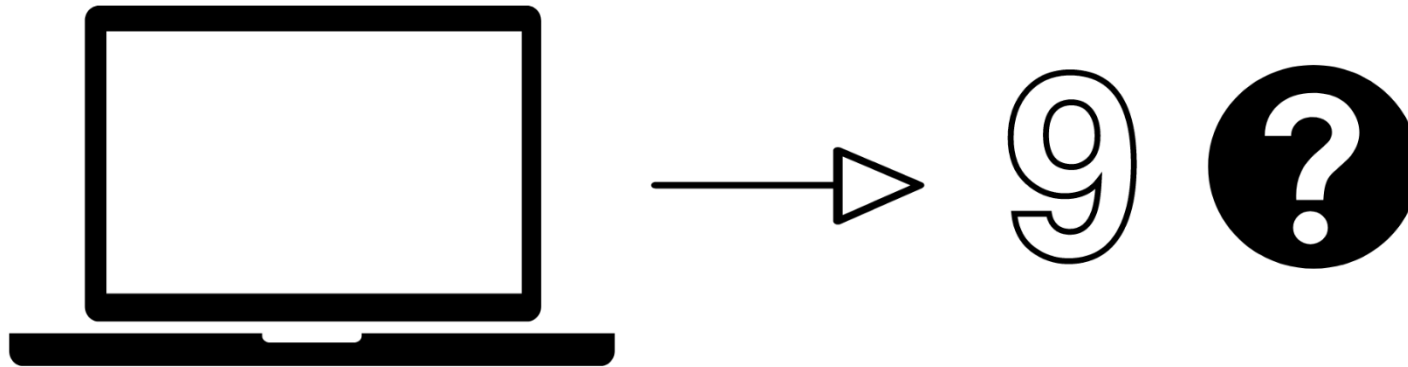


Amygdala



Hippocampus

Methods



1 Not at all 2 Slightly 3 Somewhat 4 Moderately 5 Quite a bit 6 Very much 7 An extreme amount

- The images that are used in the survey were taken from the Geneva Affective Picture Database, otherwise known as GAPED (Dan-Glauser, 2011).
 - The chosen images depicted natural sceneries, contained only inanimate objects.
- Participants for the survey were of varying ages, and were open to any gender or ethnic background.

Results

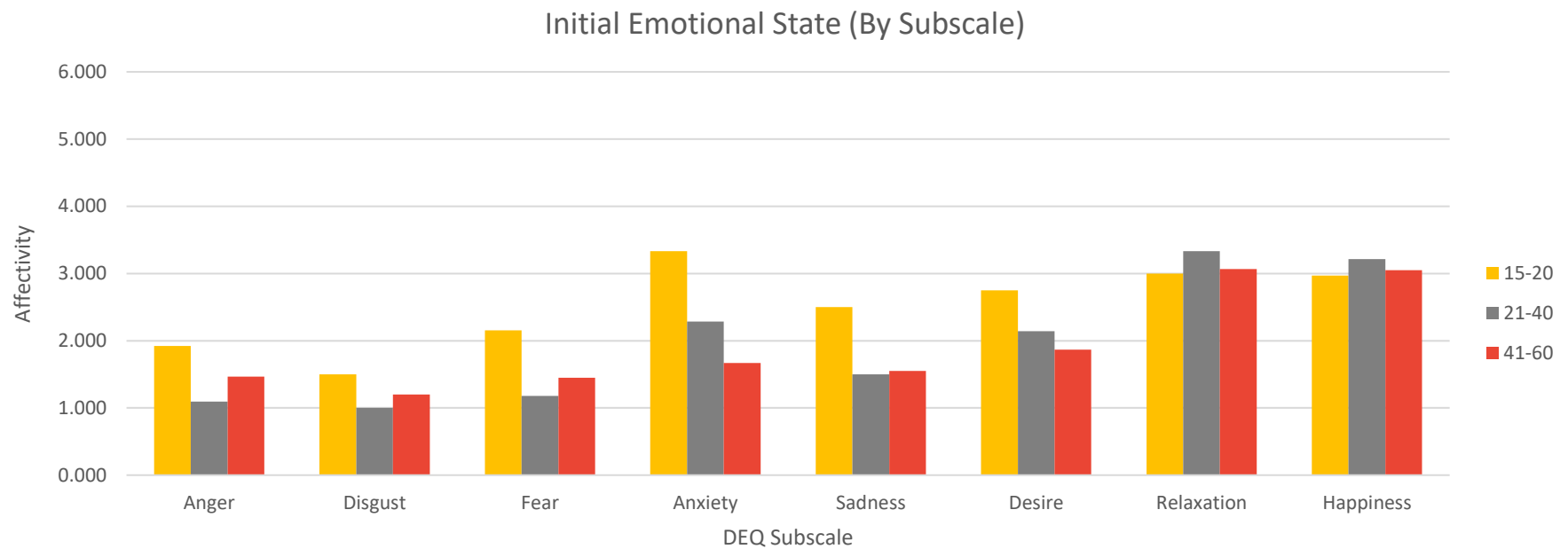


Figure 1: Initial Emotional State for each age group, organized by specific subscale affectivity

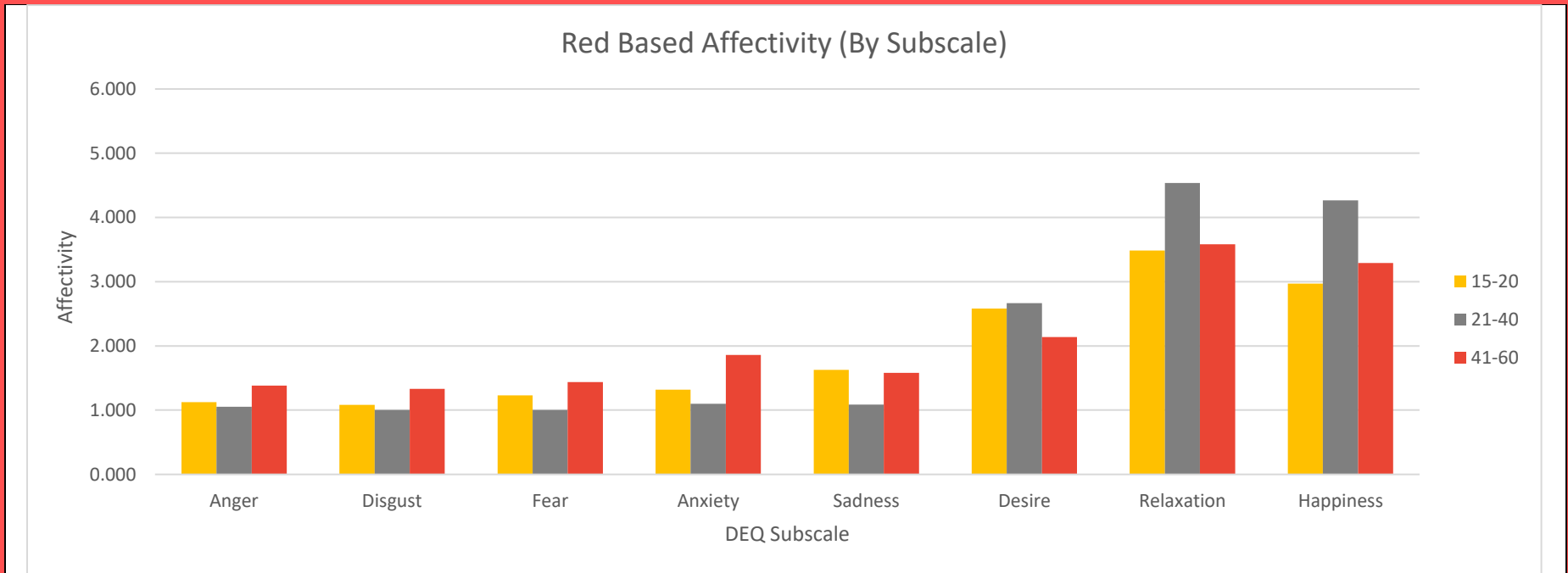


Figure 2: Red-based imagery affectivity for each age group, organized by specific subscale

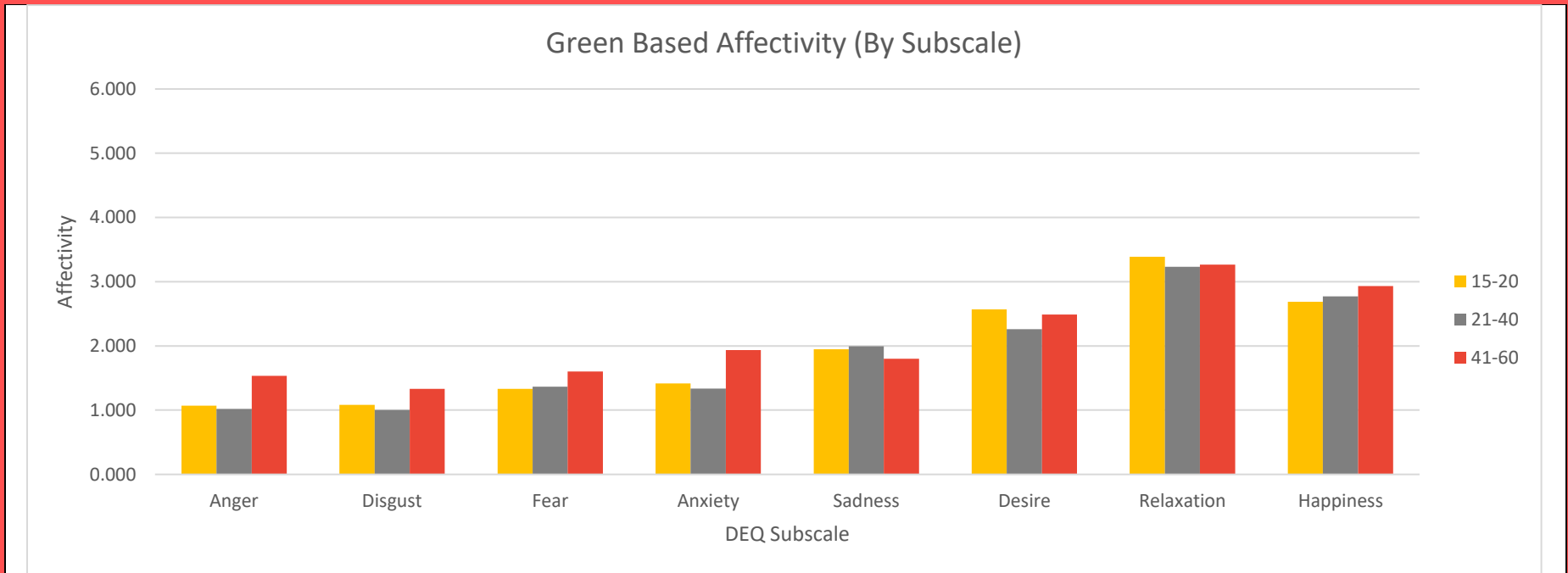


Figure 3: Green-based imagery affectivity for each age group, organized by specific subscale

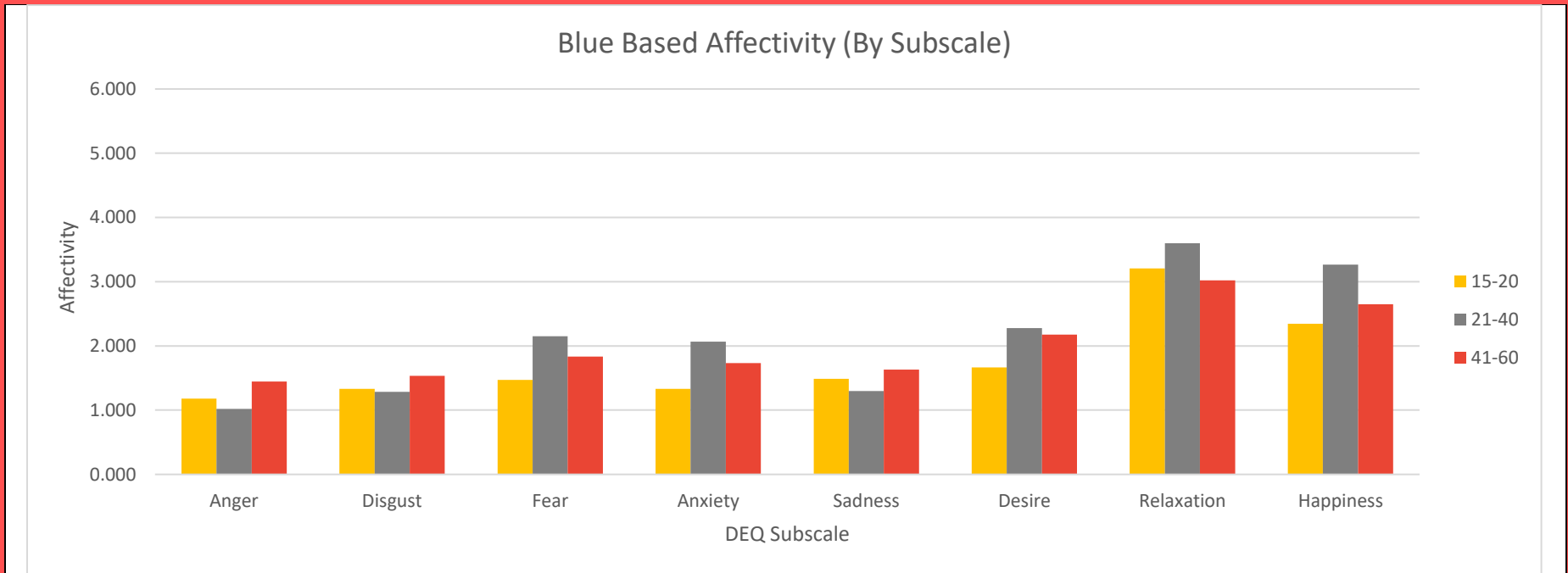


Figure 4: Blue-based imagery affectivity for each age group, organized by specific subscale

Analysis

A Single-Factor ANOVA test was used to determine if there was a statistically significant difference between each of the age groups for each type of affectivity. Highlighted values are statistically significant p-values.

	F-value	p-value
Red Based Affectivity		
Positive	1.095367	0.393084
Negative	8.913215	0.004241
Green Based Affectivity		
Positive	0.094363	0.911276
Negative	1.176934	0.341408
Blue Based Affectivity		
Positive	0.770065	0.503868
Negative	1.017678	0.390613

Conclusions

Findings:

- The oldest age group demonstrated the highest negative affectivity across all colors
 - However, these values differed the least from their established baseline of emotional state
- The middle age group demonstrated higher levels of positive affectivity in comparison to other groups
- The only statistically significant difference between groups was located in the negative red-based affectivity

Conclusions:

- The hypothesis was refuted
 - There was no linear trend between positive reactions to red stimuli
- It cannot be concluded whether overall positivity increases with age for certain

Sources of Error

- This study was dependent on the participants' self-reported response to the visual stimuli.
 - This method of data collection can vary greatly in its reliability, due to the large possibility of personal bias influencing responses.
- Another possible source of error could have resulted from some lack of responses in one or two emotions for an image from one participant.
 - The survey was still accepted, as the large majority of questions were answered
- This study was relatively small, and did not include enough participants to establish a normal distribution

Future Extensions

- Analyzing this data, or doing a similar study, in conjunction with the participants' self-identified favorite/preferred colors.
 - It would be interesting to see how positive or negative affectivity changes in reaction to colors that they 'prefer,' as the numbers may show that they actually react more positively to a different color.
- Conducting a similar study in younger children
 - Younger children may not have had an opportunity to form a solid emotional association with particular colors yet, and so they may see colors more abstractly or differently than most adults would

QR Code



The Effect of

Age on

Emotional

Response to

Color-Based Visual Stimuli

Anger (Ag)

Wanting (Dr)

Dread (Ax)

Sad (S)

Easygoing (R)

Happy (H)

Liking (H)

Rage (Ag)

Grief (S)

Anxiety (Ax)

Desire (Dr)

Nervous (Ax)

Terror (F)

Scared (F)

Mad (Ag)

Satisfaction (H)

Relaxation (R)

Empty (S)

Panic (F)

Longing (Dr)

Calm (R)

Fear (F)

Revulsion (Dg)

Enjoyment (H)

Lonely (S)