



# Is there an Additive Effect of Make-Up upon Gaze and Perception?

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## Introduction:

Make-up is a popular category of product thanks to an increase in contrast between facial features and skin tone homogeneity benefits [1]. Such contrasts enhance the sexual dimorphic attributes of the face (in particular, the lip and eye areas), which is in turn associated with 'attractiveness' [2]. Attractive, as an adjective, can be defined as 'appealing to look at' or 'sexually alluring.' Indeed, it can also mean 'having qualities or features which arouse interest. With regards to how we look at each other, some associations have already been established between eye movements and the perception of attraction. Kwart et al demonstrated that judgement of age and attractiveness was strongly associated with fixation on the eye area, as well as the nose and the mouth [3]. Similar findings were found in another study, where attractiveness correlated to the amount of gaze received from images, highlighting that skin tones with even colour distribution are more likely to capture visual attention [4].

In the present study, we aimed at exploring the added value of combined make-up product application (lipstick, foundation, mascara), versus bare skin (no make-up) or application of a stand-alone make-up product. Not unlike the benefits of a multi-step skincare routine, we expected the application of multiple make-up products to yield greater benefits in terms of attention, attractiveness and perception of age/health, compared to applying a stand-alone make-up product or bare skin

## Materials & Methods:

Front images of 20 women aged 19 to 60 years old (Skin type II to IV) were captured using an imaging booth (Colorface®, Newtone, Lyon, France) under a variety of different make-up conditions, as detailed in Table 1 below. Volunteers were free to select their preferred lipstick shade out of a selection of 10 shades. Lipstick was self-applied while foundation and mascara application was performed by a technician.

**Table 1:** Order of Image conditions acquisition using the Colorface® and short abbreviation for reference

Image Condition	Abbreviation
Bare Skin	B
Lipstick Applied	L
Lipstick + Foundation Applied	LF
Lipstick + Foundation + Mascara Applied	LFM

Previously captured images were subsequently presented to a mixed-gender panel of 8 viewers (both male and female). These images were arranged as scenes of two (B versus L or LF versus LFM) or four images (B,L, LF and LFM) of a same volunteer. As the panelists viewed images, their gaze was monitored using an eye tracker (Gazepoint GP3 Eye Tracker, Vancouver, Canada). Scenes containing two images were displayed for a duration of 5 seconds, while scenes containing the four conditions were displayed for 10 seconds, with 2 second blank scenes containing a central red cross, in between scenes to reset the gaze. As such, images were randomized within a scene and scene order was also randomized. Three different eye-tracking parameters were recorded and assessed, as described in Table 2 below.

**Table 2:** Eye Tracking Parameters

Eye Tracking Parameter	Description
Time Viewed	Quantifies the amount of time that panelists have spent looking at a particular area of interest e.g. eyes / mouth. Could also be referred to as 'dwell time.'
Visual Fixation	The maintenance of visual gaze on a single are of interest for a duration of at least 100ms.
Revisits	The number of revisits quantifies how many times a panelist returned their gaze to a spot, defined by an area of interest.

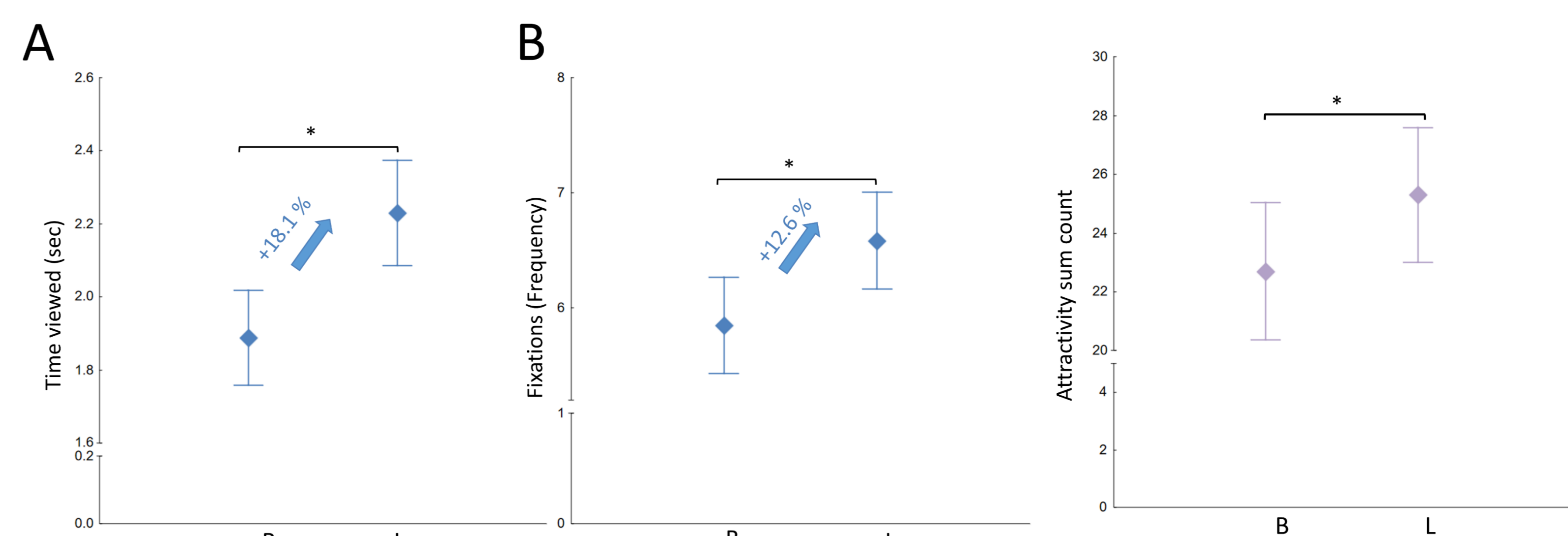
After spontaneous viewing of the different scenes, volunteers were then asked to estimate the perceived age, perceived health and attractiveness of the images individually. The volunteers were debriefed about the scope of the experiment at the end of the visit. Differences in gaze between image conditions were compared using paired t-test (2 conditions) or repeated measures ANOVA with LSD post-hoc (4 conditions). Differences in perceived age, perceived health and attractiveness were compared using Wilcoxon Matched Pairs Test (2 conditions) or Friedman ANOVA (4 conditions). The significance level set at  $\alpha = 0.05$  throughout the analysis.

## References:

1. Porcheron A, Mauger E, Russell R (2013) Aspects of Facial Contract Decrease With Age. PLoS ONE 8(3):e57985.
2. Stephen I, McKeegan A (2010) Lip Colour Affects Perceived Sex Typicality and Attractiveness of Human Faces. Perception 39:1104-1110.
3. Kwart D, Foulsham T, Kingstone A (2012) Age and Beauty are in the Eye of the Beholder. Perception 41: 925 – 938.
4. Fink B, Matts PJ, Klingenberg H, Kuntze S, Weege B and Grammer K (2008) Visual attention to variation in female facial skin color distribution. J Cosmet Dermatol 7(2): 155–161.

## Results & Discussion:

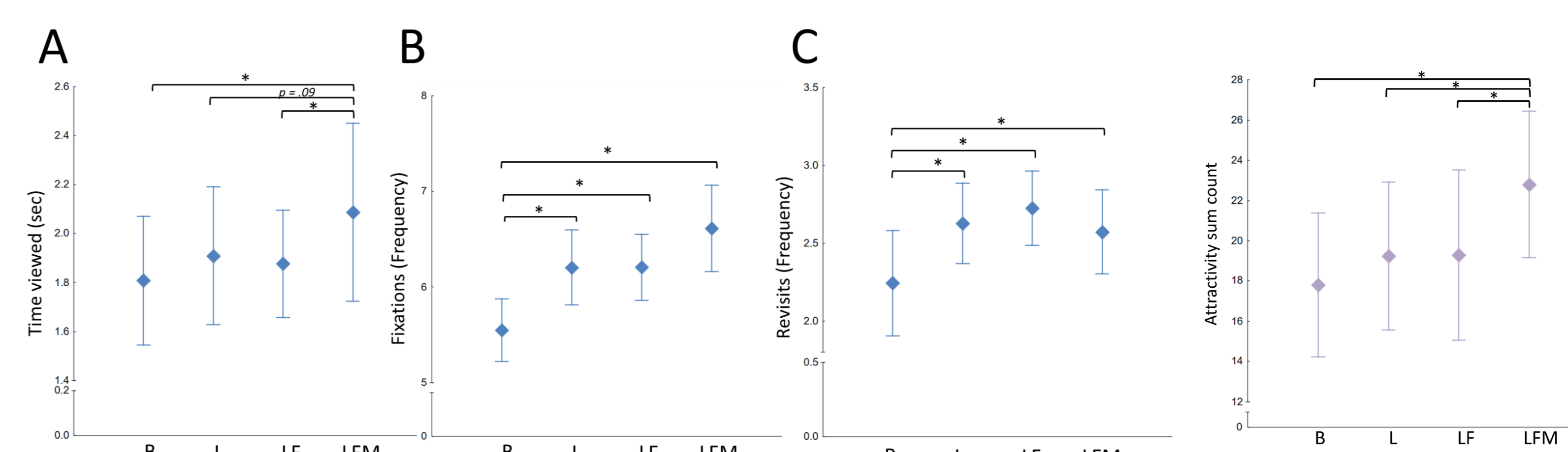
### Faces with lipstick versus bare skin : visual attention & attractivity



**Figure 1:** Mean  $\pm$  SD of (A) time viewed and (B) fixations parameters of bare versus lipstick conditions. \* denotes a significant difference (paired t-test,  $p < 0.05$ )

**Figure 2:** Mean  $\pm$  SD of attractivity sum count of bare versus lipstick conditions. \* denotes a significant difference (Wilcoxon matched pairs test,  $p < 0.05$ )

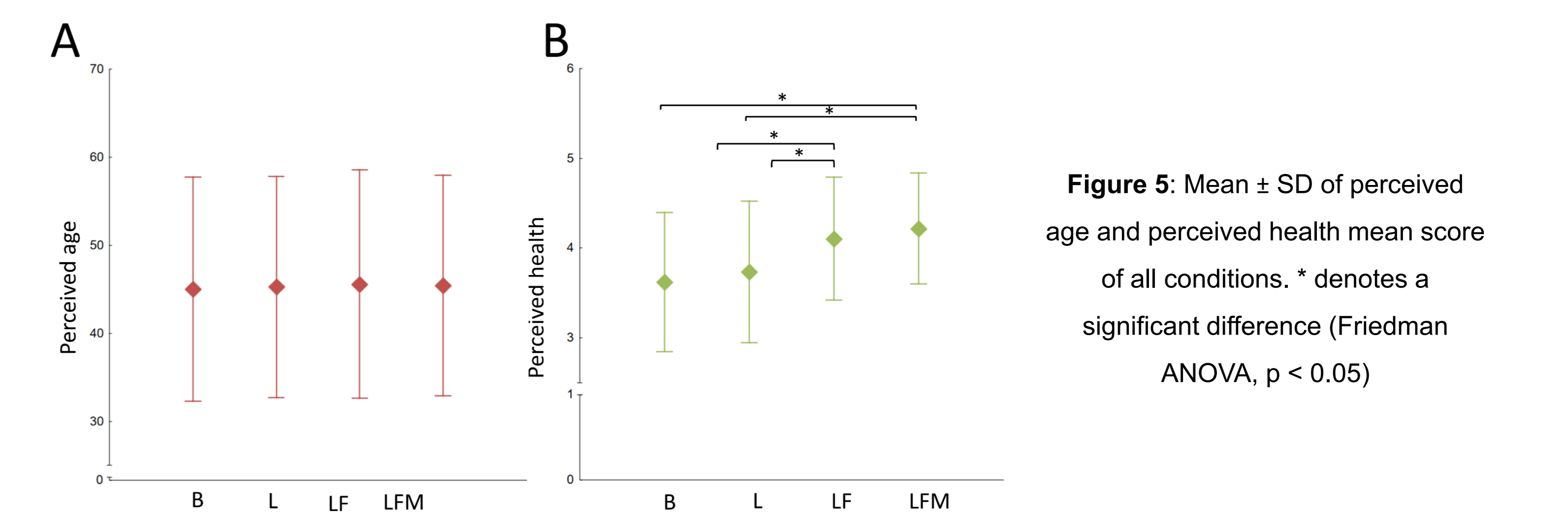
### All conditions : visual attention & attractivity



**Figure 3:** Mean  $\pm$  SD of (A) time viewed, (B) fixations and (C) revisits parameters of all conditions. \* denotes a significant difference (Repeated measure ANOVA,  $p < 0.05$ )

**Figure 4:** Mean  $\pm$  SD of attractivity sum count of all conditions. \* denotes a significant difference (Friedman ANOVA,  $p < 0.05$ )

### All conditions : Perceived age and Perceived health



**Figure 5:** Mean  $\pm$  SD of perceived age and perceived health mean score of all conditions. \* denotes a significant difference (Friedman ANOVA,  $p < 0.05$ )

## Conclusions:

Application of multiple make-up products has a positive, incremental effect on gaze and attractivity, with lipstick and mascara as key drivers. Beneficial contribution of foundations upon perceived health was observed, while none of the make-up combination substantially impacted perceived age. By capitalizing on the distinct effect of various make-up products, it is possible influence on people's attitude towards oneself, in terms of visual attention, perception of attractivity and perceived skin health.

## Aknowledgments:

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