



## FlashReport

# Romantic red revisited: Red enhances men's attraction to young, but not menopausal women<sup>☆</sup>

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## HIGHLIGHTS

- ▶ Young and old men judged a young or older woman against a red or white background.
- ▶ Red increases only young woman's sexual attractiveness.
- ▶ Young and old men do not differ in this sexual attractiveness ratings.
- ▶ Red does not increase physical attractiveness, intelligence or sympathy.
- ▶ Men are not aware of this red effect.

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## ABSTRACT

Recent studies have shown that the color red enhances men's sexual attraction to women. In this study, a sample of 60 young ( $M = 24.67$  years) and 60 old male participants ( $M = 53.47$  years) was presented either a young female target (perceived age:  $M = 23.67$  years), or an old female target (perceived age:  $M = 48.18$  years), either on a red or white background. The results show that only the young target was perceived as more sexually attractive against the red compared to the white background. Background color had no effect on the sexual attractiveness of the older target. Further implications of these findings are discussed.

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## Introduction

Previous research has revealed that men evaluate specific physical attributes to make judgments about the attractiveness of women. In brief, regardless of age, men are attracted to women who are at their peak reproductive potential in order to enhance reproductive success (Buss, 2008). This reproductive potential is cued by such physical attributes as a youthful and feminine face, a low waist-to-hip ratio, and a low, but not too low, body weight (Swami & Furnham, 2008).

Further research reveals nonphysical factors that influence men's attraction to women, e.g., clothing. Studies have shown that prior to ovulation, women are likely to wear more provocative clothes, and men perceive these women as more attractive (Durante, Griskevicius, Hill,

Perilloux, & Li, 2011; Haselton, Mortezaie, Pillsworth, Bleske-Rechek, & Frederick, 2007; Röder, Brewer, & Fink, 2009; Schwarz & Hassebrauck, 2008).

Recent research has demonstrated that another factor can influence men's attraction to women: the color red. Red is a very dominant color and has been directly connected to sexuality for thousands of years. Ethnographic and archaeological records in southern Africa revealed that women extensively used red ochre and other red pigments for cosmetic purposes as a symbol of their fertility (Powers, 1999; Watts, 1999). Some women in Africa still use red ochre during wedding rituals (Douglas, 2001).

Even today in more industrialized cultures, most participants rate red as a positive color, because it is associated with love, passion, and warmth (Kaya & Epps, 2004). Elliot and Niesta (2008) offered two possible explanations for the connection between red and sexuality. The first source is conditioning based on the longstanding tradition connecting red with romantic concepts. For example, red is paired with hearts on Valentine's Day to symbolize romantic affection, and in many societies, red signals sexual availability in "red-light" districts. Second, the color red also has biological roots in reproduction in our

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close relatives. In some female primates, increased estrogen levels prior to ovulation lead to increased blood flow, thereby causing the skin at the genitals, perineum, chest, or face to become red. Male primates are sexually attracted to these cues of ovulation (Deschner, Heistermann, Hodges, & Boesch, 2004; Dixson, 1983). Regardless of whether one emphasizes the proximate societal or the ultimate biological explanation for the linkage between red and sexuality, red may enhance men's attraction to women.

Elliot and Niesta (2008) systematically examined the effect of the color red on the physical and sexual attractiveness of women. They showed male participants' pictures of female targets, printed on either red, white, blue, grey, or green backgrounds. The authors found that red backgrounds led men to perceive women to be more physically and sexually attractive than other background colors (Elliot & Niesta, 2008). This effect was especially strong on ratings of sexual attractiveness. Sympathy, intelligence, and friendliness ratings were not influenced by the background (a similar study by Roberts, Owen, & Havlicek, 2010 found comparable effects). Niesta-Kayser, Elliot, and Feltman (2010) also presented evidence from a behavioral study. When the female target wore a red T-shirt, men chose to sit closer to her than a woman wearing a blue T-shirt (see also Guéguen, 2012).

However, it is currently unknown if all women are perceived as more sexually attractive when associated with red. In previous studies, the targets as well as the participants were young (i.e., around 20 years old). Women around this age are near peak fertility and have a high reproductive value (Buss, 2008). If red is related to fertility, older, post-menopausal women (beyond 50 years) should not generally be viewed by men as sexual targets and thus red should not elicit any sexual effect. On the other hand, if the societal learning theory is correct and humans are conditioned to associate red with romance and sex, red should lead to higher perceptions of attractiveness regardless of the age of the woman. Further, as men, regardless of their own age, prefer young women (Schwarz & Hassebrauck, *in press*) we expect red to have an effect independent of men's age.

## Method

### Participants

A total of 120 men participated in this study. The mean age of the younger men ( $n = 60$ ) was 24.67 years (19–31 years,  $SD = 3.15$ ), and the mean age of the men in the older cohort ( $n = 60$ ) was 53.47 years (45–65 years,  $SD = 4.69$ ).

### Material

The questionnaire used in this study was adapted from Elliot and Niesta (2008). Participants were told that they would participate in a study on person perception. The following three questions were used to measure sexual attractiveness ( $\alpha = .95$ ): "How much do you want to be intimate with this person?", "How sexually desirable do you find this person?", and "How much do you want to have sex with this person?"

Furthermore, participants were asked to rate the physical attractiveness ("How beautiful do you think this person is?"), intelligence ("How intelligent do you think this person is?"), and likeability ("How much do you like this person?") of the female targets. Further, the participants were asked to what degree they believed their ratings were influenced by the facial expression, dress, and color of the background. All items were rated on a 9-point scale (1: not at all to 9: extremely). Finally, the participants estimated the age of the woman.

The photographs were 10.2 cm × 15.2 cm and centered on a DIN A4 page. The young target was the same one used by Elliot and Niesta (2008). Pretests have shown that the young target as well as the older target used in this study were both moderately attractive.

The photos were printed with a HP PSC 1410 on glossy white paper (110 g/m<sup>2</sup>) and presented on the same red background as in the original study or with no background and matched regarding luminance and chroma.<sup>1</sup>

### Procedure

Participants were recruited from a shopping district in a medium sized city in Germany as well as a university campus. The experimenter randomly showed each participant one of four photos (i.e., red vs. white background and young vs. old target) for 5 s. Then the participants completed the questionnaire.

## Results

First, we analyzed the perceived target age. The participants perceived the age of the young target as clearly younger ( $M = 23.67$  years,  $SD = 3.67$ ) than the older target ( $M = 48.18$  years,  $SD = 5.81$ ,  $t(118) = 27.64$ ,  $p < .001$ ).

Next, we conducted a 2 (background color: red vs. white) × 2 (age of target: young vs. older) × 2 (age of participant: young vs. older)-ANOVA on sexual attraction. Men rated the young target as more sexually attractive ( $M = 4.62$ ,  $SD = 2.31$ ) than the old target ( $M = 3.15$ ,  $SD = 2.34$ ,  $F(1, 112) = 14.33$ ,  $p < .001$ ,  $d = .63$ ). Moreover, the targets in front of the red background were marginally significant rated as more sexually attractive ( $M = 4.24$ ,  $SD = 2.34$ ) than targets in front of the white background ( $M = 3.53$ ,  $SD = 2.39$ ,  $F(1, 112) = 3.25$ ,  $p = .07$ ,  $d = .30$ ). More importantly, these two main effects were qualified by a significant two-way interaction between background color and age of the target,  $F(1, 112) = 4.79$ ,  $p = .03$ . Post-hoc tests showed that participants were more attracted to the young target in front of the red background than to the same target in front of the white background ( $F(1, 116) = 7.33$ ,  $p = .008$ ,  $d = .71$ ); however, the background color had no significant effect on the sexual attractiveness of the older target ( $F < 1$ ). The second significant interaction ( $F(1, 112) = 6.33$ ,  $p = .01$ ) between the age of the participant and age of the target shows that both young and old participants viewed the young woman as equally sexually attractive ( $F < 1$ ). In contrast, old participants rated the old target as more sexually attractive ( $M = 4.07$ ,  $SD = 2.52$ ) than young participants ( $M = 2.22$ ,  $SD = 1.44$ ,  $F(1, 116) = 10.64$ ,  $p < .001$ ,  $d = .93$ ). Further post-hoc tests showed that young participants rated the young target as more sexually attractive ( $M = 4.68$ ,  $SD = 2.28$ ) than the old target ( $M = 2.22$ ,  $SD = 1.44$ ),  $F(1, 116) = 18.75$ ,  $p < .001$ ,  $d = 1.32$ . However, old participants perceived the young and old targets as equally sexually attractive ( $F < 1$ ). Finally, there was no significant three-way interaction ( $F < 1$ ).

We further examined the effect of red on ratings of physical attractiveness, intelligence, and sympathy. With regard to physical attractiveness, a significant main effect was observed for the age of the target ( $F(1, 112) = 13.85$ ,  $p < .001$ ,  $d = .67$ ). Specifically, the young target was rated as more physically attractive ( $M = 6.32$ ,  $SD = 1.69$ ) than the old target ( $M = 5.17$ ,  $SD = 1.76$ ). No significant effects could be found with regard to intelligence (max.  $F(1, 112) = 3.44$ ,  $p = .07$ ) and sympathy (max.  $F(1, 112) = 2.07$ ,  $p = .15$ ). Especially background color did not show significant effects on these variables (max.  $F(1, 112) = 1.54$ ,  $p = .22$ ). Taken together, red only influenced the ratings of sexual attractiveness of the young targets (cf. Table 1).

Finally, we used a mixed 2 (background color of the photo: red vs. white) × 3 (facial expression, dress, and color of the background)-ANOVA with repeated measurement on the second factor to control the degree to which these dimensions influenced the ratings in the eyes of the participants. We only found a significant main effect for the

<sup>1</sup> A spectrophotometer was used to match the two photos against the red background. Only slight differences in luminance (young woman: 35.2 vs. old woman: 34.5) and chroma (young woman: 39.3 vs. old woman: 38.6) were found.

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