

Emotion Expression and Color: Their Joint Influence on Perceived Attractiveness and Social Position

Vanessa L. Buechner · Markus A. Maier ·
Stephanie Lichtenfeld · Andrew J. Elliot

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Abstract This research examined the joint influence of emotion expression (pride vs. shame) and color (red vs. blue) on female and male perceptions of the attractiveness and social position of a male target. In female perceivers, we observed an Emotion Expression x Color interaction: for women viewing a man displaying pride, the color red increased their perceptions of his attractiveness, but for women viewing a man displaying shame, the color red tended to decrease their perceptions of his attractiveness. Male perceivers did not show this Emotion Expression x Color interaction. A main effect of emotion expression was observed for both male and female perceivers on both status and dominance ratings, independent of color. These findings point to a moderator of the influence of the color red in female mate evaluation, and illustrate the powerful, embodied connection between emotion expression and social position.

Keywords Emotion · Pride · Shame · Color · Red · Attractiveness

Social scientists and the general public alike are interested in the question of what women find attractive in men. Research on women's sexuality has revealed several different factors that influence women's perceptions of men's attractiveness, including facial features, body shape, personality, and intelligence (Gangestad and Scheyd 2005; Hatfield and Sprecher 1995; Weeden and Sabini 2005). In addition to these rather stable, trait-like factors, other more dynamic, state-like factors that can vary considerably over brief periods of time have been studied (see Buss 2008, for a review). Two

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V. L. Buechner (✉) · M. A. Maier · S. Lichtenfeld
Department of Psychology, University of Munich, Leopoldstr. 13, 80802 Munich, Germany
e-mail: vanessa.buechner@psy.lmu.de

A. J. Elliot
Department of Clinical and Social Sciences in Psychology, University of Rochester, Rochester, NY
14620, USA

such dynamic factors that have recently been shown to affect women's mate evaluations are emotion expression and color (e.g., Elliot et al. 2010; Roberts et al. 2010; Tracy and Beall 2011). Both of these factors are presumed to carry associations that are spontaneously (i.e., without intention) used as information in the process of person perception and mate evaluation (Carlston and Mae 2007; Maier et al. 2013). In the present research, we focus on these two factors, emotion expression and color, together. Specifically, we focus on the emotions pride and shame and the colors red and blue to examine how they jointly influence women's attraction to men.

Possible links between distinct emotion expressions and perceptions of attractiveness have been largely neglected over the years, but recent work has begun to address this issue. Most of the research that has been conducted has examined the influence of happy and, to a lesser extent, sad facial expressions on perceptions of the attractiveness of a target person (for reviews, see Golle et al. 2014; Krumhuber et al. 2007). Relatively little research has been conducted on the emotions focused on herein—pride and shame. Women are posited to be attracted to men displaying pride (slight smile, chin up, eyes forward, arms raised or akimbo, erect posture; Tracy and Robins 2004), because pride signals high rank and control of resources (i.e., high mate value; Shariff and Tracy 2009; Williams and DeSteno 2009); furthermore, pride is associated with dominance, and dominance both fits the prevailing gender norm for males in many cultures (Wood and Eagly 2007) and is linked to the reproductive success of males in many primate species (Dixson 1998; Pérusse 1993). The most intuitive proposal regarding women's response to men displaying shame (slight frown, chin down, eyes averted, slumping posture; Lewis 2008) is that women find them less attractive, because shame signals low rank (Tracy and Beall 2011); however, this negative signal may be offset to some degree by the fact that shame also communicates appeasement, trustworthiness, and a willingness to cooperate (Gilbert 2007; Keltner et al. 1997). Recent empirical work by Tracy and Beall (2011) has demonstrated that women indeed find men displaying pride to be particularly attractive, but have a more complex, mixed perception of men displaying shame.

As with the links between emotion expression and perceptions of attractiveness, the relations between color and perceptions of attractiveness have been overlooked until recently. However, research has started to emerge on this topic, particularly research on the color red. Most of the research that has been conducted has focused on the influence of red on men's perceptions of women's attractiveness (and related variables; for reviews, see Elliot and Maier 2014; Pazda and Greitemeyer in press). Comparatively little research has been conducted on the focus herein—red and women's perceptions of men's attractiveness. Women are posited to be particularly attracted to males displaying red because red carries associations with sex and romance (Elliot and Maier 2012; Hutchings 2004), and signals good physical health and high rank (i.e., high mate value; Elliot et al. 2010; Stephen et al. 2012). In recent empirical work, Roberts et al. (2010) demonstrated that women rate men wearing red as more attractive than men wearing several other colors (i.e., blue, green, yellow, and white; some evidence was found for a positive advantage for other colors such as black, as well). Elliot et al. (2010) found this same red effect with both colored shirts and picture borders (see also Meier et al. 2012; Wartenberg et al. 2011). (Stephen and McKeegan 2010) and Re et al. (2011) found that women perceive men displaying greater redness on their lips and face to be more attractive (for comparable research on red and men's perceptions of women's

attractiveness, see Elliot and Niesta 2008; Guéguen 2012; Schwarz and Singer 2013; Stephen and McKeegan 2010).

Factors that influence women's perceptions of men's attractiveness are typically studied in isolation. A key question is thus: What happens when two factors come together? In the following, we address this question regarding emotion expression and color, guided by the idea that viewing an emotion expression on a target person establishes a valenced motivational tendency in the perceiver that is modulated by color cues, particularly, red. This research is the first of its kind with regard to the integration of emotion expression and color cues; we believe it is important to move in this integrative direction not only for conceptual reasons, but also for applied reasons, as complex, integrated stimuli are what perceivers actually encounter in daily life.

Red as an Importance Cue

Red has long been viewed as a color of poignancy and prominence (Ellis 1900). This may be seen in biology and nature, as well as in language and culture. Red is the color of spilled blood and of blood under the skin of a conspecific, communicating anger, sexual arousal, or general physical health (Changizi 2009; Stephen et al. 2011). Red is the color of ripe fruit, but it is also the color of aposematic insects and reptiles (Regan et al. 2001; Stevens and Ruxton 2012). Red is the first chromatic term to appear in most lexicons around the world (Kay and Maffi 1999), and it is used in many different metaphors and phrases (e.g., “see red”, “in the red”, “a red letter day”) to indicate something noteworthy. Likewise, red commonly appears in symbolism (e.g., hearts, crosses) and signage (e.g., sirens, alarms) used to communicate messages of great importance or urgency.

In short, red not only carries specific information, such as “this fruit is ripe” or “this person is angry”, but red more generally carries the message that the situation is important and worthy of attention (Humphery 1976). As such, we propose that red is a signal of relevance that accentuates perceivers' existing response tendencies. That is, if a stimulus evokes an approach tendency, the addition of red will increase that approach tendency, whereas if a stimulus evokes an avoidance tendency, the addition of red will increase that avoidance tendency. For example, imagine a mate evaluation context in which the perceiver's motivation is typically to approach potential partners displaying positive qualities and to avoid potential partners displaying negative qualities. If red accentuates existing response tendencies, adding red to an appetitive candidate should make that potential mate more appealing, whereas adding red to an aversive candidate should make that potential mate less appealing.

The Present Research

The primary aim of the present research was to test the joint influence of emotion expression and color on heterosexual females' attractiveness perceptions of a male target person. Emotion expression was manipulated with explicit, prototypic poses of pride and shame; color was manipulated by placing a small red or blue dot on the chest of the target person. Emotion expression was posited to establish the valenced

motivational tendency of the perceiver: a pride expression was used to represent high mate value and evoke approach motivation, whereas a shame expression was used to represent low mate value and evoke avoidance motivation. Color was posited to moderate the effect of emotion expression on attractiveness judgments. Red (relative to blue) was expected to accentuate the approach tendency in the pride condition thereby leading to higher perceptions of attractiveness, whereas red (relative to blue) was expected to accentuate the avoidance tendency in the shame condition thereby leading to lower perceptions of attractiveness. Although our primary interest herein was on females' perceptions of a male target person, we also examined males' perceptions of a male target person for the purpose of contrast. We anticipated no systematic patterns in this instance, given the sparse and inconclusive empirical yield at present. Roberts et al. (2010), for instance, found color-attractiveness associations in a within-subjects study when males were judged by either sex, but Elliot et al. (2010) found no color-attractiveness associations in a between-subjects study when males judged another male. Findings for female but not male perceivers in the present experiment would highlight the role of red as a romance-relevant sexual signal in mate evaluation (see Elliot and Maier 2014).

A secondary aim of the present research was to examine female and male perceivers' ratings of the target male's social position. Social position may be differentiated in terms of status (i.e., rank based on skills) and physical dominance (i.e., rank based on strength; Henrich and Gil-White 2001), and we assessed both in this study. Pride and shame expressions have been linked to evaluations of social position for both female and male perceivers rating male targets (see Martens et al. 2012, for a review). Likewise, although the extant research is sparse, red has been linked to social position-relevant constructs for females rating males (Elliot et al. 2010; Stephen et al. 2012). In terms of the joint influence of pride/shame and red/blue on perceived social position, we anticipated that color would serve a moderating role, much as outlined above for perceived attractiveness. However, it is possible that the extremely close, embodied connection between pride/shame expressions and high/low social position exerts such a strong influence on social position evaluations that it overrides any possible moderating effects of color on these judgments. We had no expectations regarding perceiver gender for the social position ratings.

Method

Participants and Research Process

One hundred eighty-nine (96 male, 93 female) German high school students ($M_{age}=16.88$ years; $SD_{age}=1.23$) voluntarily participated. Participation was restricted a priori to hetero—and bisexual individuals without a color deficiency. There were no data exclusions, we report all manipulations (i.e., conditions) and measures analyzed, and data collection was completed before any analysis. Sample size was determined by a joint consideration of power and participant availability; this is the only study on emotion expression, color, and perceived attractiveness that we have conducted (see Bruno et al. 2013, for a similar statement and reason for its inclusion).

Design and Procedure

Participants were randomly assigned to a condition of an emotion expression (pride vs. shame) \times color (red vs. blue) between-subjects design. The experiment was run in group sessions; the experimenter was blind to condition and hypotheses. Participants opened a folder to view a 6.5-in. \times 5.2-in. head and upper torso photo of a young Caucasian man wearing a white shirt. Color was manipulated by placing a small red or blue circle on the upper left chest of the target male; this color manipulation is different than that used in prior work (in which colored shirts or picture borders were colored; see Elliot et al. 2010; Roberts et al. 2010) and, as such, allowed us to further test the generalizability of the effect. A spectrophotometer was used to determine the precise parameters of the colors: red (LCh [50.9, 59.7, 25.7]) and blue (LCh [49.2, 60.2, 278.2]); lightness and chroma were equated across hue. Blue is a commonly used contrast color in research on the color red; it may be considered a stringent comparison color when used in the context of attraction, because it is a popular color (Adams and Osgood 1973; Madden et al. 2000) and has positive connotations that could be relevant to mate evaluation (e.g., high quality, competence, calmness; Jobes 1962; Kaya and Epps 2004; Labrecque and Milne 2012). Emotion expression was manipulated using photos that varied the facial expression, head position, and body posture of the target male. Pride and shame photos were selected from the University of California-Davis Set of Emotion Expressions (Tracy et al. 2009; see Fig. 1). After participants viewed the photo for 5 seconds, they were instructed to close the folder and complete the questionnaire containing the dependent measures and demographic items. No mention was made of emotion expression or color in the instructions to participants.

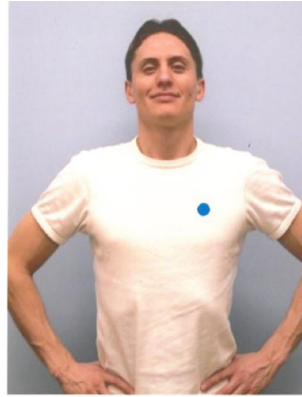
Measures

Elliot et al.'s (2010) three-item measure was used to assess perceived attractiveness (e.g., "How attractive do you think this person is?"; $\alpha=.88$). Elliot et al.'s (2010) two-item measure was used to assess perceived status (e.g., "How high in status is this person?"; $\alpha=.94$). Buunk and Dijksterhuis' (2005) two-item measure was used to assess perceived physical dominance (e.g., "How physically strong do you think this person is?"; $\alpha=.77$). Participants responded on 1 (not at all) to 9 (extremely) scales for all measures.

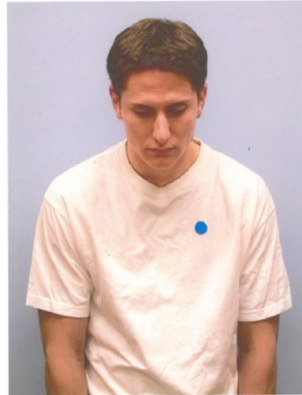
Results

Perceived Attractiveness

A between-subjects analysis of variance (ANOVA) with emotion expression, color, and sex as between-subjects factors was conducted on perceived attractiveness. Results revealed a three-way interaction on perceived attractiveness, $F(1,181)=6.93$, $p=.009$, $\eta^2_p=.04$. There was also a marginally significant main effect for emotion expression ($F=3.07$, $p=.08$; $d=.26$); participants tended to rate the target as more attractive in the pride ($M=3.89$, $SD=1.73$) than in the shame ($M=3.54$, $SD=1.74$) condition. No main effects of color or sex were found ($F_s<.81$, $p_s>.36$).



a The Emotion Expression manipulation - Pride condition. Color condition was established by making the circle on the upper left chest of the target male either red or blue



b The Emotion Expression manipulation - Shame condition. Color condition was established by making the circle on the upper left chest of the target male either red or blue

Fig. 1 **a** The Emotion Expression manipulation - Pride condition Color condition was established by making the circle on the upper left chest of the target male either red or blue **b** The Emotion Expression manipulation–Shame condition. Color condition was established by making the circle on the upper left chest of the target male either red or blue

For female participants, the emotion expression \times color interaction was significant, $F(1,89)=8.20$, $p=.005$, $\eta_p^2=.08$. No main effects of emotion expression or color were found ($F_s<.47$, $p_s>.49$). We then ran contrasts within each emotion expression condition. In the pride condition, women rated the target as more attractive in the red ($M=4.30$, $SD=1.65$) than in the blue ($M=3.21$, $SD=1.53$) condition, $t(48)=2.42$, $p=.02$, $d=.70$. In the shame condition, women tended to rate the target as less attractive in the red ($M=3.08$, $SD=1.72$) than in the blue ($M=3.96$, $SD=1.74$) condition, $t=-1.67$, $p=.10$, $d=.48$.

For male participants, the emotion expression \times color interaction was not significant ($F=.88$, $p>.35$). There was a marginally significant main effect for emotion expression

($F=3.11$, $p=.08$, $d=.35$); men tended to rate the target as more attractive in the pride ($M=4.10$, $SD=1.78$) than in the shame ($M=3.54$, $SD=1.73$) condition. No main effect of color was found ($F=.37$, $p=.55$).

Social Position

An ANOVA revealed no significant interactions between emotion expression, color, and sex on perceived status ($F_s < .51$, $p_s > .48$). There was a significant main effect of emotion expression, $F(1,180)=55.87$, $p<.001$, $d=1.12$; participants rated the target as higher in status in the pride ($M=5.01$, $SD=1.75$) than in the shame ($M=3.29$, $SD=1.41$) condition. There was also a marginally significant main effect for sex ($F=2.91$, $p=.09$, $d=.29$); males tended to rate the target as higher in status ($M=4.47$, $SD=1.92$) than females ($M=4.05$, $SD=1.73$). No main effect of color was found ($F=.02$, $p=.88$).

An ANOVA revealed a significant three-way interaction on perceived physical dominance, $F(1,181)=8.03$, $p=.01$, $\eta_p^2=.04$. There was also a significant main effect of emotion expression, $F(1,181)=73.82$, $p<.001$, $d=1.28$; participants rated the target as higher in dominance in the pride ($M=5.77$, $SD=1.11$) than in the shame ($M=4.33$, $SD=1.31$) condition. No main effects of color or sex were found ($F_s < 2.11$, $p_s > .14$). Next we examined the effect of emotion expression and color for female and male participants separately.

For female participants, the emotion expression x color interaction was not significant ($F=1.55$, $p=.22$). A significant main effect of emotion expression was found, $F(1,89)=40.34$, $p<.001$; $d=1.34$); women rated the target as more dominant in the pride ($M=5.81$, $SD=1.16$) than in the shame ($M=4.23$, $SD=1.26$) condition. No main effect of color was found ($F=.14$, $p=.71$).

For male participants, the analysis revealed a significant emotion expression x color interaction, $F(1,92)=7.80$, $p=.006$; $\eta_p^2=.08$). There was also a significant main effect of emotion expression, $F(1,92)=33.51$, $p<.001$; $d=1.22$), and a marginally significant main effect of color, $F=2.90$, $p=.09$; $d=.35$). Men rated the target man as more dominant in the pride ($M=5.74$, $SD=1.07$) than in the shame ($M=4.43$, $SD=1.37$) condition, and tended to rate the target as more dominant in the red ($M=5.35$, $SD=1.27$) than in the blue ($M=4.84$, $SD=1.47$) condition.

We proceeded to run contrasts within each emotion expression condition. In the pride condition, the color effect was not significant ($t=-.86$, $p=.39$). In the shame condition, men rated the target man as more dominant in the red ($M=4.92$, $SD=1.30$) than in the blue ($M=3.82$, $SD=1.22$) condition, $t(41)=2.84$, $p=.007$, $d=.89$.

Discussion

The present research examined the joint influence of emotion expression and color on female and male perceptions of the attractiveness and social position of a male target person. Our results were in line with predictions regarding our central focus, and raised several intriguing questions regarding our other foci.

Our central focus was on female perceptions of male attractiveness, and here the anticipated interaction between emotion expression and color was observed. For women viewing a man displaying pride, red increased their perceptions of his

attractiveness, whereas for women viewing a man displaying shame, red tended to decrease their perceptions of his attractiveness. These findings are in accord with our proposition that red accentuates existing response tendencies, making an appealing target more appealing and an unappealing target less appealing. Females who viewed a man showing an appetitive signal of mate value (i.e., pride) found him particularly attractive when he displayed red, but females who viewed a man showing an aversive signal of low mate value (i.e., shame) tended to find him less attractive when he displayed red. The finding in the shame condition was somewhat weaker than that in the pride condition; this may reflect the greater complexity of shame as a mate-relevant signal, relative to pride (Tracy and Beall 2011). Shame not only communicates low rank, which undoubtedly triggers an avoidance tendency in a female perceiver, but may also communicate some positive qualities such as trustworthiness and a willingness to openly acknowledge one's weaknesses (Gilbert 2007; Tangney and Dearing 2002). These positive qualities would likely trigger an approach tendency to at least some degree, and this commingling of avoidance and approach tendencies may have diluted the effect of red.

The Emotion Expression x Color Interaction that we observed suggests a moderator of the link between red and attractiveness in females viewing males. Specifically, our results indicate that not all males who display red will be perceived as more attractive by females, but only men who possess qualities that unequivocally evoke approach motivation in women. Thus, red may only enhance the attractiveness of men possessing at least a moderate amount of facial symmetry, masculinity, intelligence, and/or other desirable qualities. This moderator would be consistent with other research indicating that female mate evaluation is quite nuanced. For example, women don't just desire masculine men, but masculine men who also possess other positive, security-relevant characteristics such as kindness (Jensen-Campbell et al. 1995). In a similar vein, it is likely that women respond differently to different variants of red displayed by men. A light (pinkish) red may be associated with femininity, and a highly saturated red may be associated with aggression, both of which would likely decrease, rather than increase, female attraction (Elliot and Maier 2014).

For female perceptions of male social position, a main effect of emotion expression was observed, rather than an interaction between emotion expression and color. Females who viewed a man displaying pride perceived him to be higher in both status and dominance, regardless of the color displayed. It seems that the embodied connection between the emotion expressions and social position (i.e., head up, chest expanded for pride; head down, chest deflated for shame) was so direct and powerful that it overwhelmed the more subtle information conveyed by red (for similar findings illustrating the power of emotion expressions over other cues, see Shariff et al. 2012). It is possible that red displayed more elaborately (e.g., on an entire shirt) or red on facial skin (i.e., more embodied red) might produce a stronger influence of color in this context; it would be helpful to test this possibility in subsequent work. As is, it appears that a boundary condition for color has also been found for social position: subtle color signals get overridden when other more direct or elaborate indicators of status and dominance are present.

Male perceivers were used as a contrast to female perceivers in our experiment, and here we observed an emotion expression main effect on all dependent measures. Pride, relative to shame, enhanced ratings in all instances; this represented a trend for

attractiveness and a very powerful effect for the two social position variables. Heterosexual individuals' judgments of the attractiveness of same-sex targets are not directly relevant to mate selection, but their judgments of the social position of same-sex targets are clearly directly relevant to daily social interaction (Buss 2008; Eibl-Eibesfeldt 1989). As such, it is not surprising that the influence of emotion expression emerged more strongly for males rating another male on social position, as opposed to attractiveness.

For dominance, an Emotion Expression x Color Interaction also emerged for males rating the target male, indicating that red had no influence on dominance perceptions in the context of a pride display, but enhanced dominance perceptions in the context of a shame display. It may be that red only has an influence on males' dominance perceptions when the overwhelmingly strong signal of pride is absent, or it may be that males view the shame expression of a man displaying red as a temporary appeasement rather than a dispositional sign of weakness (Gilbert 2007; Tracy and Beall 2011). Both of these interpretations are clearly speculative, pointing to the need for additional, clarifying research.

Prior research has demonstrated that the influence of color on psychological functioning varies as a function of context. Context, in the prior work, has been conceptualized in terms of domain of behavior, particularly the achievement domain and the affiliation (mating) domain (Elliot and Maier 2014, for a review). Context can take on many different meanings (Bamford and Ward 2008; Bouton 2010; Feldman Barrett et al. 2010), and the present research suggests that the concept of context can be extended to include the motivational state of the perceiver. This notion of context is more specific than that of domain of behavior, and indeed may be seen as relevant *within* any given domain. More research is needed to more extensively, and more directly, examine motivational state as an intrapsychic context that can modulate the influence of color on affect, cognition, and behavior (see Buechner et al. *in press*).

The research that we presented herein is limited in the sense that it focuses on a narrow age group – adolescents. In one respect, this is a positive feature of our research, in that it demonstrates that the emotion expression and color findings primarily observed with undergraduates to date may also be found with younger individuals. However, additional research on these cues, especially these cues in conjunction with each other, is also clearly needed among undergraduates and beyond. An optimal next step would be to seek to replicate the present work with adolescents while simultaneously extending it to undergraduates or older; this would require a very large sample, but it would be a valuable follow up to the work reported herein. Additional research is also needed to examine emotion expression and color using target stimuli at different levels of attractiveness. The means from the present experiment indicate that the target male was at the lower end of moderately attractive, and it would be interesting to see if these effects generalize to highly attractive and, especially, highly unattractive people as well. A ceiling effect may be operative for highly attractive individuals; if our reasoning is correct regarding red exacerbating initial tendencies, red may lead to extreme derogation of an initially unattractive person. Our use of a T-shirt rather than a more stylish shirt (such as a polo shirt), and our use of a small red dot to present color rather than placing color on the full shirt also raises questions regarding the degree to which our findings would generalize to other types of clothing and color presentation. Finally, research is needed to directly investigate the processes responsible for the joint effect of

emotion expression and color on attractiveness. Research utilizing physiological measures and examining the time course of reactions and responses would be particularly welcomed to begin to shed light on the complexities of multi-cue processing and its implications over time.

In intersexual and intrasexual perception and evaluation in everyday life, multiple signals are viewed by the perceiver that are integrated into an overall impression. Nevertheless, most research continues to focus on a single signal at a time. We believe the time has come to focus on integrating different signals in this area of research, in the interest of developing more nuanced, ecologically valid theorizing. The present research was designed to be a first, initial step in this direction with regard to emotion expression and color, and the results both demonstrated an informative interactive pattern for females' perceptions of male attractiveness, and raised questions that highlight the complexity involved in focusing on multiple signals. We urge others to conduct subsequent research that attends to the questions raised herein and that extends this type of work to other signals and integrative combinations.

References

- Adams, F. M., & Osgood, C. E. (1973). A cross-cultural study of the affective meaning of color. *Journal of Cross-Cultural Psychology*, 4, 135–156.
- Bamford, S., & Ward, R. (2008). Predispositions to approach and avoid are contextually sensitive and goal dependent. *Emotion*, 8, 174–183.
- Bouton, M. E. (2010). The multiple forms of “context” in associative learning theory. In B. Mesquita, L. Feldman-Barrett, & E. Smith (Eds.), *The mind in context* (pp. 233–258). New York: Guilford Press.
- Bruno, N., Martani, M., Corsini, C., & Oleari, C. (2013). The effect of the color red on consuming food does not depend on achromatic (Michelson) contrast and extends to rubbing cream on the skin. *Appetite*, 71, 307–313.
- Buechner, V. L., Maier, M. A., Lichtenfeld, S., & Schwarz, S. (in press). Red - Take a Closer Look. *PLOS ONE*.
- Buss, D. M. (2008). *Evolutionary psychology: The new science of mind* (3rd ed.). New York: Pearson Education.
- Buunk, B., & Dijksterhuis, A. (2005). A narrow waist versus broad shoulders: Sex and age differences in the jealousy-evoking characteristics of a rival's body build. *Personality and Individual Differences*, 39, 379–389.
- Carlston, D. E., & Mae, L. (2007). Posing with the flag: Trait-specific effects of symbols on person perception. *Journal of Experimental Social Psychology*, 43, 241–248.
- Changizi, M. A. (2009). *The color revolution: How the latest research overturns everything we thought we knew about human vision*. Dallas: BenBalla Books, Inc.
- Dixon, A. F. (1998). *Primate sexuality: Comparative studies of the prosimians, monkeys, apes, and human beings*. New York: Oxford University Press.
- Eibl-Eibesfeldt, I. (1989). *Human ethology*. New York: Aldine de Gruyter.
- Elliot, A. J., & Maier, M. A. (2012). Color-in-Context Theory. *Advances in Experimental Social Psychology*, 45, 61–125.
- Elliot, A. J., & Maier, M. A. (2014). Color psychology: Effects of perceiving color on psychological functioning in humans. *Annual Review of Psychology*, 65, 95–120.
- Elliot, A. J., & Niesta, D. (2008). Romantic red: Red enhances men's attraction to women. *Journal of Personality and Social Psychology*, 95, 1150–1164.
- Elliot, A. J., Niesta Kayser, D., Greitemeyer, T., Lichtenfeld, S., Gramzow, R. H., Maier, M. A., & Liu, H. (2010). Red, rank, and romance in women viewing men. *Journal of Experimental Psychology: General*, 139, 399–417.
- Ellis, H. (1900). The psychology of red. *Popular Science Monthly*, 57, 365–375.
- Feldman Barrett, L., Mesquita, B., & Smith, E. R. (2010). *The context principle*. L. Feldman Barrett, B. Mesquita, & E. Smith (Eds.), *The mind in context* (pp 1–22). New York: Guilford Press.

- Gangestad, S. W., & Scheyd, G. J. (2005). The evolution of physical attractiveness. *Annual Review of Anthropology*, 34, 523–548.
- Gilbert, P. (2007). The evolution of shame as a marker for relationship security: A biopsychosocial approach. In J. L. Tracy, R. W. Robins, & J. P. Tangney (Eds.), *The self-conscious emotions: Theory and research* (pp. 283–309). New York: Guilford Press.
- Golle, J., Mast, F. W., & Lobmaier, J. S. (2014). Something to smile about: The interrelationship between attractiveness and emotional expression. *Cognition and Emotion*, 28, 298–310.
- Guéguen, N. (2012). Color and women attractiveness: When red clothed women are perceived to have more intense sexual intent. *The Journal of Social Psychology*, 152, 261–265.
- Hatfield, E., & Sprecher, S. (1995). Men's and women's preferences in marital partners in the United States, Russia, and Japan. *Journal of Cross-Cultural Psychology*, 26, 728–750.
- Henrich, J., & Gil-White, F. J. (2001). The evolution of prestige: Freely conferred status as a mechanism for enhancing the benefits of cultural transmission. *Evolution and Human Behavior*, 22, 165–196.
- Humphery, N. (1976). The colour currency of nature. In T. Porter & B. Mikellides (Eds.), *Colour for architecture* (pp. 95–98). London: Studio-Vista.
- Hutchings, J. (2004). Colour in folklore and tradition - The principles. *Color Research & Application*, 29, 57–66.
- Jensen-Campbell, L. A., Graziano, W. G., & West, S. G. (1995). Dominance, prosocial orientation, and female preferences: Do nice guys really finish last? *Journal of Personality and Social Psychology*, 68, 427–440.
- Jobes, G. (1962). *Dictionary of mythology, folklore, and symbols*. New York: Scarecrow Press.
- Kay, P., & Maffi, L. (1999). Color appearance and the emergence and evolution of basic color lexicons. *American Anthropologist*, 101, 743–60.
- Kaya, N., & Epps, H. H. (2004). Relationship between color and emotion: A study of college students. *College Student Journal*, 38, 396–405.
- Keltner, D., Young, R., & Buswell, B. N. (1997). Appeasement in human emotion, social practice, and personality. *Aggressive Behavior*, 23, 359–374.
- Krumhuber, E., Manstead, A. S. R., & Kappas, A. (2007). Temporal aspects of facial displays in person and expression perception: The effects of smile dynamics, head-tilt, and gender. *Journal of Non-verbal Behavior*, 31, 39–56.
- Labrecque, L. L., & Milne, G. R. (2012). Exciting red and competent blue: the importance of color in marketing. *Journal of the Academy of Marketing Science*, 40, 711–27.
- Lewis, M. (2008). Self-conscious emotions: Embarrassment, pride, shame, and guilt. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions* (3rd ed., pp. 742–756). New York: Guilford Press.
- Madden, T. J., Hewett, K., & Roth, M. S. (2000). Managing images in different cultures: A cross-national study of color meanings and preferences. *Journal of International Marketing*, 8, 90–107.
- Maier, M. A., Elliot, A. J., Lee, B., Lichtenfeld, S., Barchfeld, P., & Pekrun, R. (2013). The Influence of Red on Impression Formation in a Job Application Context. *Motivation and Emotion*, 37, 389–401.
- Martens, J. P., Tracy, J. L., & Shariff, A. F. (2012). Status signals: Adaptive benefits of displaying and observing the nonverbal expressions of pride and shame. *Cognition and Emotion*, 26, 390–406.
- Meier, B. P., D'Agostino, P. R., Elliot, A. J., Maier, M. A., & Wilkowski, B. M. (2012). Color in context: Psychological context moderates the influence of red on approach- and avoidance-motivated behavior. *PloS One*, 7, e40333.
- Pazda, A., & Greitemeyer, T. (2014). Color in romantic contexts in humans. In A. Elliot, M. Fairchild, & A. Franklin (Eds.), *Handbook of Color Psychology*. Cambridge: Cambridge University Press.
- Pérusse, D. (1993). Cultural and reproductive success in industrial societies: Testing the relationship at proximate and ultimate levels. *Behavioral and Brain Sciences*, 16, 267–322.
- Re, D. E., Whitehead, R. D., Xiao, D., & Perrett, D. I. (2011). Oxygenated-Blood Colour Change Thresholds for Perceived Facial Redness, Health, and Attractiveness. *PloS One*, 6, e17859.
- Regan, B. C., Julliot, C., Simmen, B., Viénot, F., Charles-Dominique, P., & Mollon, J. D. (2001). Fruits, foliage, and the evolution of primate colour vision. *Philosophical Transactions of the Royal Society of London. Series B*, 356, 229.
- Roberts, S. C., Owen, R. C., & Havlicek, J. (2010). Distinguishing between perceiver and wearer effects in clothing color-associated attributions. *Evolutionary Psychology*, 8, 350–364.
- Schwarz, S., & Singer, M. (2013). Romantic red revisited: Red enhances men's attraction to young, but not menopausal women. *Journal of Experimental Social Psychology*, 49, 161–164.
- Shariff, A. F., & Tracy, J. (2009). Knowing Who's Boss: Implicit Perceptions of Status From the Nonverbal Expression of Pride. *Emotion*, 9, 631–639.

- Shariff, A. F., Tracy, J. L., & Markusoff, J. L. (2012). (Implicitly) Judging a Book by Its Cover: The Power of Pride and Shame Expressions in Shaping Judgments of Social Status. *Personality and Social Psychology Bulletin*, 20, 1–16.
- Stephen, I. D., & McKeegan, A. M. (2010). Lip colour affects perceived sex typicality and attractiveness of human faces. *Perception*, 39, 1104–1110.
- Stephen, I. D., Coetzee, V., & Perrett, D. I. (2011). Skin carotenoid and melanin coloration affect perceived health of human faces. *Evolution & Human Behavior*, 32, 216–227.
- Stephen, I. D., Oldham, F. H., Perrett, D. I., & Barton, R. A. (2012). Redness Enhances Perceived Aggression, Dominance and Attractiveness in Men's Faces. *Evolutionary Psychology*, 10, 562–572.
- Stevens, M., & Ruxton, G. D. (2012). *Linking the evolution and form of warning coloration in nature. Proceedings of the Royal Society B: Biological Sciences*, 279, 417–426.
- Tangney, J. P., & Dearing, R. (2002). *Shame and guilt in interpersonal relationships*. New York: Guilford Press.
- Tracy, J. L., & Beall, A. T. (2011). Happy guys finish last: The impact of emotion expressions on sexual attraction. *Emotion*, 11, 1379–1387.
- Tracy, J. L., & Robins, R. W. (2004). Show Your Pride. Evidence for a Discrete Emotion Expression. *Psychological Science*, 15, 194–197.
- Tracy, J. L., Robins, R. W., & Schriber, R. A. (2009). Development of a FACS-verified set of basic and self-conscious emotion expressions. *Emotion*, 9, 554–559.
- Wartenberg, W., Höpfner, T., Potthast, P., & Mirau, A. (2011). *If you wear red on a date, you will please your mate*. Jena: Empiriepraktikumskongress Proceedings.
- Weeden, J., & Sabini, J. (2005). Physical attractiveness and health in Western societies: A review. *Psychological Bulletin*, 131, 635–653.
- Williams, L. A., & DeSteno, D. (2009). Pride. Adaptive social emotion or seventh sin? *Psychological Science*, 20, 284–288.
- Wood, W., & Eagly, A. H. (2007). Social structural origins of sex differences in human mating. In S. W. Gangestad & J. A. Simpson (Eds.), *Evolution of the mind: Fundamental questions and controversies* (pp. 383–390). New York: Guilford Press.