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Art Schema Effects on Affective Experience: The Case of Disgusting Images

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Can we experience depictions of repulsive objects more positively when we watch them as part of a work of art? We addressed this question by using a scenario approach in a laboratory setting designed to activate two different cognitive schemata: participants viewed the same pictures framed either as art photographs or as documentary photographs for educational purposes. Self-reports of the positivity, the negativity, and the intensity of the affective responses yielded three results. First, participants experienced the photos more positively in the art-framing condition. Second, the negativity ratings did not differ in both conditions, suggesting that art framing does not erase, diminish, or convert the negative affect vis-à-vis the disgusting stimulus features. Third, there was no difference in terms of the intensity of the experience—a result that contradicts the position that aesthetic emotions are less intense than ordinary emotions. The results of our study suggest that cognitive schema activation should be included in a multifactor psychological account of the aesthetic enjoyment of artworks that involve negative emotions. More specifically, results add to the growing insight into what distinguishes aesthetically modified emotions from ordinary emotions.

Keywords: aesthetics, art, affect, disgust, cognitive schema

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The work of contemporary artists like Cindy Sherman, Paul McCarthy, or Andres Serrano (for examples of their work, see McCarthy, 1974; Serrano, 1987; Sherman, 1987) frequently includes depictions of disgusting objects. Horror films typically feature the appearance of a revolting monster. Even theater directors like Calixto Bieito or Martin Kušej present disgusting objects in their stage productions (for examples, see Bieito, 2007 and Kušey, 2006). Pleasure taken in the artistic representation of disgusting subject matter has been a recurring theme in poetics and aesthetics ever since Aristotle (Menninghaus, 2003). In fact, pictures of corpses and repulsive animals are the very first examples Aristotle draws upon when he discusses the interplay of art, cognition, and emotion (Aristotle, *Poetics* section 1448b). However, interest in discrete emotional responses to the experience of art resurged only during the last decade (e.g., Cupchik, 2001; Leder, Belke, Oeberst, & Augustin, 2004), with the specific nexus of negative emotions and art recently being addressed by Silvia and Brown (2007). The authors applied an appraisal-theoretical account to explain negative responses like anger and disgust that were elicited by provocative artworks. Yet, they did not consider the possibility that exposure to something *as* art might, by itself, enable types of enjoyment that go together with negative emotions.

The Art Schema and Aesthetic Processing

We suggest that categorizing something as a work of art has an impact on the affective response to the object such that it enables a pleasurable experience of negative emotions. To take something as a work of art means that an art schema—a mental representation of what art is and how to respond to it—is activated.

Schemata, or cognitive frames, help us in structuring our experiences, understanding situations, and producing appropriate (re)actions (Abelson, 1981; Brewer & Nakamura, 1984). As mentioned above, we assume that when visitors encounter visual artworks in a museum or a gallery, they automatically activate a

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fitting schema for this situation.[1] This art schema is one of the factors that regulate the perceptual and cognitive processing of artworks, and, by consequence, the appraisals of the specific situation and its concomitant emotions (e.g., Carroll, 2010, p. 21; Jacobsen, 2006). A modernist artist like the Dadaist Marcel Duchamp (1917) played with (and implicitly underscored the importance of) this art schema when he selected found objects ("ready-mades") such as a urinal, signed them with a pseudonym, and submitted them to be displayed at an art exhibition.

The art schema comes with certain preconceptions. First, the types of objects encountered in an art context do not constitute a risk for the viewer's health (cf. Apter's concept of the "protective frame," 1982). Second, these objects usually do not serve immediate pragmatic goals (cf. Apter's concept of the "paratelic mode," 1982). Third, the art schema entails guidelines for the processing of stimuli, for example, to focus on formal aspects of the work (Cupchik, Vartanian, Crawley, & Mikulis, 2009). It also activates an elaborate aesthetic appreciation process (Leder et al., 2004). Evidence for processing differences due to activated genre schemata is provided by Zwaan (1991), who showed that texts that were considered newspaper articles or examples of (fictional) literature respectively affected the reading time and the performance on memory tasks differently. Fourth, exposure to the arts comes with an expectation of experiential (aesthetic) pleasure (cf. Leder et al., 2004). Fifth, the absence of practical and motivational consequences allows one to maintain an ambivalent, that is, mixed emotional state (Cacioppo, Larsen, Smith, & Berntson, 2004). Finally, the art schema favors a stronger focus on savoring one's own feelings in response to the aesthetic object (Frijda & Sundararajan, 2007).[2]

Thus, we assume that an art schema—the conception of something as a work of art as opposed to a nonart object—contributes to explaining the puzzle of why aesthetic enjoyment is frequently compatible with negative emotions. On a less general level, there probably exist several different art schemata depending on different artistic domains, rules of genre, and individual expertise with smaller or larger differences regarding their effects on the perceptual, affective, and evaluative processes. In this study, we understand "art schema" in the general sense that the recipient categorizes something as a work of art as opposed to a nonart object.

Using a scenario approach in a laboratory setting, we tried to show that framing something as a work of art does indeed have a significant impact on affective processing: aesthetically modified emotions are different from ordinary or "utilitarian" emotions (Scherer, 2005). We instructed one group of participants that a number of photographs showing disgusting motifs were artworks; we told a different group of participants that the identical pictures were documentary photographs serving a practical purpose. Our guiding hypothesis was in line both with schema theory (e.g., Abelson, 1981; Brewer & Nakamura, 1984) and appraisal theories of emotion (e.g., Ellsworth & Scherer, 2003).

Effects of Context in Aesthetic Appreciation

Several studies have investigated how context information affects the appreciation of artwork. Researchers have examined how information about the artists (e.g., Bernberg, 1953; Isham, Ekstrom, & Banks, 2010), the artworks' manufacturing processes (e.g., whether it was made by an artist or generated by a computer; Kirk, Skov, Hulme, Christensen, & Zeki, 2009), or how artwork titles (Leder, Carbon, & Ripsas, 2006) influence the liking of artworks. Already in the 1960s, Lazarus and colleagues (Lazarus & Alfert, 1964; Speisman, Lazarus, Mordkoff, & Davison, 1964) had studied the influence of interpretive context information on the affective responses of viewers of a stressful movie. Recently, Hemenover and Schimmack (2007) explicitly instructed participants how to view a disgusting movie clip. Their results showed that the adoption of different perspectives leads to differences in emotional responses.

Our study differs from this kind of research by employing contextual information of a much more general and abstract level. Our experimental manipulation presented the pictures under two different concepts declaring them either as documentary images or as art photographs. Presenting the pictures as works of art—we call this experimental manipulation art framing—should activate the art schema. In contrast, presenting the pictures as nonart—that is, as documentary photographs for purposes of hygiene instruction—should not activate the art schema, but hygiene- and health-related schemata instead. The activated art schema is hypothesized to bias the recipient's perception of the situation. The perception of a situation as "art reception" might then work like a self-fulfilling prophecy, at least within certain limits: Because art is supposed to provide pleasure, the encounter would also be pleasurable. Furthermore, it probably enables art-specific modes of perceptual processing (e.g., Leder et al., 2004; Baumgarten, 1750/2007, pp. 21–27; Kant, 1790/1990, pp. 39–86).

Hypotheses

In our study, we examined whether the activation of the art schema would enable recipients to make the negative emotion of disgust compatible with positive aesthetic enjoyment. To investigate a possible copresence of positive and negative affective responses, we drew on available methods for the measurement of what are often referred to as "mixed emotions." Cacioppo and colleagues (2004) have provided both a theoretical model and measurement tools that allow addressing the positive and negative valence of a given affect state separately. Besides positive and negative valence, we also asked for the overall intensity of the affective responses. To control the effect on object-focused variables, we also collected the participants' evaluations of beauty and disgustingness. Using these five variables, we tested the following hypotheses.

> *Hypothesis 1a (H.1a):* Perceiving a situation as one of art reception—through the activation of the art schema by presenting the pictures as works of art (i.e., the art-framing manipulation)—will facilitate positive responses, even of representations of disgusting subject matter. In other words, the aesthetic enjoyment as measured by the strength of the positive affective response should be stronger in the art-framing condition than in the nonart-framing condition.

[1] For the institutional theory of art as some kind of counterpart of the psychological art schema hypothesis, see Danto (1981, pp. 28–32) and Dickie (1974, pp. 19–52).

[2] Some proposed functions of the art schema bear parallels to the concept of "psychical distance" as described by Bullough (1912; for a contemporary account, see Cupchik, 2002).

Hypothesis 1b (H.1b): With regard to the negativity and intensity of the experience, we had no prediction, given that current theoretical positions allow for contradictory assumptions (cf. Oatley, 1994; Scherer, 2005; Tan, 2000, p. 117). Thus, recipients in the art-framing condition might simultaneously experience both negative as well as positive affective responses. In the same way, the affective responses might be similarly intense for both groups. Alternatively, the framing manipulation might reduce or even erase the experience of disgust (as measured by the strength of the negative affective response) and reduce the overall intensity of the affective response.

Hypothesis 1c (H.1c): If the art framing enhances the positive affective response dimension while not reducing the negative one, a higher mixed-emotion score (see Hemenover & Schimmack, 2007; Larsen, McGraw, & Cacioppo, 2001) is to be expected for recipients in the art-framing condition as compared with the nonart-framing condition.

Hypothesis 2 (H.2): As to the positive correlation between participants' ratings of beauty and positivity of felt affective response, we expected that this correlation would be stronger in the art-framing condition than in the nonart-framing condition.

Experiment: Disgust and Aesthetic Pleasure

In our experiment, we tested our main hypothesis that looking at disgusting pictures with an activated art schema changes the emotional response to these pictures, in that the positive part of the response will be stronger. Disgust is a starkly negative emotion (Kolnai, 1929; Oaten, Stevenson, & Case, 2009; Rozin, Haidt, & McCauley, 2000). As an emotion pertaining to the experience of art, disgust was "rediscovered" in 18th-century aesthetics (Menninghaus, 2003), picking up on Aristotle's treatment in his *Poetics* (Aristotle, 1961/335 BC). Subsequently, it played an important role in 20th-century theories of art, partly due to its potential for provocation and its capacity for capturing the attention of an audience. However, there is only one recent study that has addressed its compatibility with enjoyment in the arts (Hemenover & Schimmack, 2007).

As discussed in the introduction, we assume that an art schema entails general and abstract information, which affects the perception of a situation. To enhance the credibility of our manipulation under the conditions of a laboratory experiment, we decided to use a between-subjects design. Hence, we designed an experiment in which we presented two groups of participants with different framing stories regarding the pictures.

Theoreticians of mixed emotions have developed a model that allows for a decoupling of the trajectories of positive and negative affect (Cacioppo et al., 2004; for an overview, see Rafaeli, Rogers, & Revelle, 2007). Adopting this model, we asked the participants to rate the positivity as well as the negativity and the intensity of their emotional responses to the pictures independently. Furthermore, we asked the participants to rate the beauty of the pictures and the disgustingness of the depicted objects. The ratings were expected to reveal whether or not the groups differed on the more object-related evaluations. Regarding possible differences in the processing and appreciation of the pictures, we analyzed how, depending on the framing, the beauty ratings correlated with the positive affective responses (H.2).

To assess emotional differences between the groups after the entire testing session, we administered the German form of the Positive and Negative Affect Schedule (PANAS) before and after the presentation of the pictures (Krohne, Egloff, Kohlmann, & Tausch, 1996; Watson, Clark, & Tellegen, 1988). For the same reason, we also asked the participants to fill out the German State Disgust Scale (Ihme & Mitte, 2009), in addition to several similarly construed questions regarding their state of happiness/joy, though only after the presentation. Finally, we applied two personality measures to control for possible differences between the groups. Personality differences might play a role in the affective response to disgusting stimuli and/or artworks that feature disgusting objects. We therefore administered the German version of the NEO-FFI (Borkenau & Ostendorf, 1993; Costa & McCrae, 1989) and the German Questionnaire for the Assessment of Disgust Sensitivity (FEE; Schienle, Walter, Stark, & Vaitl, 2002).

Method

Participants

Thirty-two students (24 women) participated in the experiment. They were between 19 and 43 years of age ($M = 26.3$ years, $SD = 5.9$). All were students at the Freie Universität Berlin (Germany), most of them psychology majors; none was an expert in the arts (according to their self-reports from informal interviews after the experiment and their reported fields of study). The participants were recruited for an experiment on the affective responses during picture processing. They gave their informed consent and were paid 7 € for participation or received course credit. All had normal or corrected-to-normal vision. None of the students had participated in the stimulus-assessment part of this study.

Stimuli

We used 60 pictures that depicted typical disgust elicitors like mold, feces, rotten food, worms, and dirty rooms and that bore some resemblance to abject art (Houser, Jones, Taylor, & Ben-Levi, 1993); for some examples see Figure 1. To guarantee that our stimuli would support both the art and the nonart framing, we had the pictures evaluated before the actual experiment. We had preselected 96 pictures, which consisted of images made by artists as well as images made by professional or amateur photographers. Some of the pictures were made with an aesthetic intention, others with a documentary intention. These pictures were presented to students in several lecture classes with an LCD projector for 5 s each and then rated on one of four 7-level scales for beauty, disgustingness, suitability for art, or suitability for hygiene education. As expected, beauty and disgustingness ratings were highly negatively related ($r = -.78$, $p < .01$; for the mean ratings of the pictures and detailed analyses of the prerating, see the supplementary material available online, Table S1.1, and Table S1.2). Beauty and suitability for art were highly positively related ($r = .82$, $p < .01$). To obtain a measure of our pictures' suitability for both framings while accounting for the different associations between

Figure 1. Examples of the stimuli used in the study. On the left side, pictures with high beauty ratings are depicted, on the right side pictures with high disgust ratings. Pictures are by (from left to right, top to bottom; numbers in square brackets refer Table S1.1 column 1): [17] ©K. Eppele (fotolia.com); [15] ©H. Gawrisch (gawrisch.de/henning/bilder.html); [14] ©Martin Green | Dreamstime.com; [2] ©S. Jurvetson (flickr.com); [50] ©iStockphoto.com/dlewis33; [47] ©iStockphoto.com/photosmash.

the suitability ratings on one side and the beauty and disgustingness ratings on the other side, we employed a composite score, taking into account all four ratings. For this purpose, we first calculated the residuals of the ratings for suitability for art and suitability for hygiene respectively, by regressing them on the ratings of beauty and disgustingness. This was done to account for the different influences of beauty and disgustingness on the both suitability ratings. The residuals were multiplied according to the formula

$$\text{Suitability}_{\text{combined}} = (\text{ART}_{\text{Residual}} + 2) * (\text{HYGIENE}_{\text{Residual}} + 2)$$

because products are more sensitive to similarities than sums (for a similar procedure, see Hass, Katz, Rizzo, Bailey, & Eisenstadt, 1991, especially Footnote 5). Before multiplying, a constant was added to the residuals to obtain only positive values to avoid high negative residuals resulting in higher values when multiplied than low positive residuals (as the lowest residual of both variables was 1.56, we added 2 in each case). For the experiment, we selected the 60 pictures with the highest values in this composite score.[3]

Procedure

We tested two groups of participants: an art group in which participants were primed with an art-framing and a hygiene group in which participants were primed with a nonart-framing. Participants were assigned alternately to one group or the other based on the sequence of their showing up at the laboratory. The participants of the art group were informed that they would be shown pictures from a recent exhibition of contemporary photographers at a renowned art museum. The participants of the hygiene group were instructed that they would see pictures selected as didactic material for a website on hygiene instruction. Furthermore, to increase the salience of the perception of the situation as either art-related or hygiene-related, each group received a corresponding questionnaire. The art questionnaire was an adapted version of the one used by Leder and colleagues (2006); it included items such as "I often visit art exhibitions." The hygiene questionnaire consisted of questions taken from a quiz on a website for hygiene instruction (http://www.hygiene-educ.com/en/learn/everyday/sci_data/frame1.htm).

Immediately before the presentation of the pictures, the participants reported their mood state on a PANAS (Watson, Clark, & Tellegen, 1988; Krohne, Egloff, Kohlmann, & Tausch, 1996) sheet. The presentation consisted of two blocks. Each picture was presented once in each block. Each block started with two warm-up pictures followed by the 60 experimental pictures. In the first block, participants rated the positivity, negativity, and intensity of their felt affective response after each trial: "Please indicate how positive/negative/intense your feelings [*Gefühlsregungen*] have been in response to the picture (from 1 for *not at all* up to 7 for *very positive/negative/intense*)"; for the sake of brevity we will subsequently just talk of positivity, negativity, and intensity (of affective responses). In the second block, participants were asked to rate the beauty of each picture and the disgustingness of the depicted object(s) after each trial: "Please indicate how beautiful the picture is/how disgusting the depicted objects are (from 1 for *not at all* to 7 for *very beautiful/disgusting*)." The participants gave their self-reports on 7-point Likert scales by pressing the corresponding keys on a keyboard. A trial was structured such that they first saw a blank screen for 600 ms, followed by 600 ms during which a fixation cross was presented. Immediately thereafter the experimental stimuli were displayed for 6,000 ms. Finally, the three affective response scales in the first block (always rated in the sequence positivity, negativity, intensity) and the two object-related scales in the second block (always rated in the sequence beauty, disgustingness) were presented simultaneously on the screen until the rating for the last scale was given. The pictures were presented in 16 different pseudorandomized sequences; each sequence was shown once in the art group and once in the hygiene group. After the picture presentation, participants answered several questionnaires in the following order: (a) the PANAS; (b) the German State Disgust Scale (Ihme & Mitte, 2009), plus several similarly construed questions regarding their state of happiness/joy; (c) the FEE (Schienle et al., 2002); and (d) the German version of the NEO-FFI (Borkenau & Ostendorf, 1993; Costa & McCrae, 1989).

The experiment was run on a computer with a Pentium processor (Intel Corporation, Santa Clara, CA). Stimulus presentation and response recording was controlled by Presentation (NeuroBe-

[3] Due to a mistake during the calculation, the composite score was not fully correct. Eleven pictures became part of the experimental stimulus set although 11 other pictures actually had higher scores. Nevertheless, all reported analyses yielded essentially the same results when calculated without those 11 items.

Table 1
Mean Ratings of the Five Dependent Variables, Positivity, Negativity, Intensity, Beauty, and Disgustingness as Well as of the Mixed-Emotion Score for the Whole Sample and for Each Group Estimated by Unconditional Multilevel Analyses

Group	Positivity of the feelings	Negativity of the feelings	Intensity of the feelings	Beauty of the pictures	Disgustingness of the depicted objects	Mixed-emotion score
Hygiene						
M	1.92	4.10	3.90	2.94	4.10	1.66
SE	(0.15)	(0.24)	(0.25)	(0.23)	(0.20)	(0.10)
Art						
M	2.47	4.05	4.20	3.04	3.89	1.91
SE	(0.24)	(0.25)	(0.24)	(0.30)	(0.26)	(0.13)
Whole sample						
M	2.20	4.08	4.05	2.99	4.00	1.78
SE	(0.16)	(0.18)	(0.18)	(0.21)	(0.18)	(0.090)

Note. Standard errors are given in parentheses.

havioral Systems, San Francisco, CA). The pictures were presented with the height and width of maximal 800 pixels on black background (red, green, blue values [RGB]: 0 0 0) on an LCD screen. Participants were seated before the screen with a viewing distance of approximately 80 cm.

Results

To test our hypotheses, we conducted several multilevel analyses (MLA) with both participants and pictures as random factors (Baayen, Davidson, & Bates, 2008; Gelman & Hill, 2007, Chapter 13.5; Rasbash & Browne, 2008). MLA is a powerful statistical method, which is appropriate for data that have a nested structure (in our study, the ratings as Level-1 measures are nested under two fully crossed Level-2 variables: participants and pictures). Furthermore, MLA enables testing of within-person relationships (our Hypothesis H.2) as well as between person differences (see Silvia, 2007, as well as Silvia & Brown, 2007, for application in empirical aesthetics). The predictor variables were grand-mean centered and the framing variable was contrast coded (with art group = 1 and hygiene group = −1). All analyses were conducted in R (R Development Core Team, 2011) with the package lme4 (Bates, Maechler, & Bolker, 2010), using restricted maximum-likelihood estimation. The means and standard errors for the dependent variables—estimated by unconditional MLA—for the whole sample as well as for each group separately are depicted in Table 1.[4] The mixed-emotion score (ME) was calculated by taking the minimum of the positivity and the negativity ratings: ME = min(positivity, negativity); see Hemenover & Schimmack, 2007).

H.1. Art Schema Effects on the Affective Responses

We tested the effect of the framing on the dependent variables with the following model.

$$\begin{aligned} &\text{Level 1}: \; y_{ij} = \beta_{0ij} + \varepsilon_{ij} \\ &\text{Level 2}: \; \beta_{0ij} = \gamma_{00} + \gamma_{01} * \text{Framing}_i + \nu_{0i} + \nu_{0j} \end{aligned} \quad (2)$$

with $\varepsilon_{ij} \sim N(0, \sigma^2_{ij})$, residual variance;
$\nu_{0i} \sim N(0, \sigma^2_{0i})$, random intercept for the participants;
$\nu_{0j} \sim N(0, \sigma^2_{0j})$, random intercept for the pictures.

Only for the positivity ratings (H.1a) did the MLA reveal a significant effect of the framing manipulation ($b = 0.27$, $SE = 0.15$, $t = 2.07$), that is, the art group had a significantly higher mean for the positivity ratings than the hygiene group. For all other dependent variables (H.1b) the factor framing yielded no effect (all ts < 1; see Table 2).

The groups differed significantly in their mean sensitivity for disgust (FEE; Schienle et al., 2002) with higher total scores for the art group (129.6 vs. 116.6 for the art group vs. the hygiene group, respectively; $t(30) = -2.30$, $p < .05$). Regarding the NEO-FFI (Costa & McCrae, 1989), the groups differed on the dimensions Agreeableness and Conscientiousness, with higher scores for the art group (33.69 vs. 28.69 for Agreeableness, $t(30) = -2.41$, $p < .05$; and 32.75 vs. 27.69 for Conscientiousness, $t(30) = -2.05$, $p < .05$; for the means and correlations of all personality variables, see Table S2.1). However, all reported MLA in the study yielded essentially the same results when taking these variables into account as covariates (see Table S2.2). Only for the ME score (H.1c) did we find a significant effect of the framing ($b = 0.34$, $SE = 0.12$, $t = 2.84$) when taking person-related variables into account with a higher mixed-emotion score for the art group as compared with the hygiene group.

H.2. Art Schema Effects on the Relationship Between Participants' Beauty Ratings and Their Affective Responses

The framing had no effect on the beauty and disgustingness ratings (see Table 2). We computed an MLA with a cross-level interaction to test whether the relationship between beauty and positivity was moderated by the framing factor (see Table 2, H.2).

[4] Due to technical problems, there were two data points of the positivity ratings missing for the hygiene group; for the art group, one data point of the disgustingness rating was missing.

Table 2
Results of the Multilevel Analyses

	Hypotheses						
	H.1a	H.1b	H.1b	H.1c			H.2
	DV						
Parameter	Positivity	Negativity	Intensity	Mixed emotions	Beauty	Disgust.	Positivity
	Fixed effects						
Intercept							
b_0	2.20	4.08	4.05	1.79	2.99	4.00	2.15
SE	(0.15)	(0.19)	(0.199)	(0.091)	(0.21)	(0.19)	(0.10)
t	14.33***	21.77***	21.82***	19.68***	14.14***	21.38***	21.36***
Framing (F)							
b_1	0.27	−0.024	0.15	0.12	0.053	−0.10	0.25
SE	(0.13)	(0.15)	(0.17)	(0.085)	(0.17)	(0.14)	(0.095)
t	2.07*	−0.16	0.87	1.41	0.31	−0.73	2.64*
Beauty (B)							
b_2							0.38
SE							(0.037)
t							10.20***
F × B							
b_3							0.11
SE							(0.034)
t							3.26*
	Random parameters						
Residual variance: Level 1							
s^2_{ij}	1.32	1.79	1.55	0.81	1.64	1.82	1.00
Level 2: Intercept (Participants)							
s^2_{0i}	0.53	0.73	0.89	0.22	0.87	0.62	0.27
Level 2: Slope (Participants)							
s^2_{1i}							0.030
Level 2: Intercept (Pictures)							
s^2_{0j}	0.37	0.67	0.35	0.06	1.00	0.88	0.066
Level 2: Slope (Pictures)							
s^2_{1j}							0.007
Deviance	6218	6825	6530	5209	6690	6856	5630

Note. Disgust. = disgustingness of the depicted objects. Standard errors are in parentheses.
$^{+}$ $p < .1$. * $p < .05$. ** $p < .01$. *** $p < .001$.

$$\begin{aligned} \text{Level 1:}\ & y_{ij} = \beta_{0ij} + \beta_{1ij} * \text{Beauty}_{ij} + \varepsilon_{ij} \\ \text{Level 2:}\ & \beta_{0ij} = \gamma_{00} + \gamma_{01} * \text{Framing}_i + \nu_{0i} + \nu_{0j} \\ & \beta_{1ij} = \gamma_{10} + \gamma_{11} * \text{Framing}_i + \nu_{1i} + \nu_{1j} \end{aligned} \quad (3)$$

with $\varepsilon_{ij} \sim N(0, \sigma^2_{ij})$, residual variance;
$\nu_{0i} \sim N(0, \sigma^2_{0i})$, random intercept for the participants;
$\nu_{1i} \sim N(0, \sigma^2_{1i})$, random slope for the participants;
$\nu_{0j} \sim N(0, \sigma^2_{0j})$, random intercept for the pictures;
$\nu_{1j} \sim N(0, \sigma^2_{1j})$, random slope for the pictures.

As expected, the interaction of art framing and beauty was significant. Simple effect analyses revealed a coefficient for beauty ratings two times higher for the art group than the hygiene group ($b = 0.55$, $SE = 0.024$, $t = 22.55$; and $b = 0.27$, $SE = 0.022$, $t = 12.19$, respectively).

Whole-Session Effects (PANAS, Disgust State, and Happiness State)

For each of the PANAS (Watson et al., 1988) variables (PA and NA), a 2 × 2 repeated-measures ANOVA with time point (pre vs. post) and framing as independent variables was computed (see Table S3 for the descriptive statistics). The analysis with PA as dependent variable yielded no significant main effect or interaction, $F(1, 30) = 1.87$, $p = .18$, $\eta^2 = .059$, for the interaction; all other Fs < 1. The same ANOVA with NA as dependent variable showed no effect either (all Fs < 1). ANOVAs for the dependent variables of the disgust state and the happiness state also yielded no significant effect between the groups (all Fs < 1).

Discussion

In this study, we tested how the activation of an art schema influences the affective processing of pictures. The study yielded three main results. First, there was a higher mean rating of the positive affective response in the group that perceived the pictures as art, supporting our Hypothesis H.1a. Second, the negativity ratings did not differ between both groups (cf. Andrade & Cohen, 2007; Hemenover & Schimmack, 2007). This important result bears on a key question concerning the nexus of aesthetic enjoyment and negative emotions, namely, whether negative emotions in aesthetic situations are actually still experienced as negative, even if they are also enjoyed. According to our data, this is indeed

the case: The art schema does not erase, diminish, or convert the negative affect vis-à-vis the disgusting stimulus features. Accordingly, the mixed-emotion score estimating the simultaneous experience of positive and negative affective responses was higher in the art group than it was in the hygiene group. Third, we also found no difference in terms of the intensity of the experience. This result contradicts the position that aesthetic emotions are experienced less intensely than ordinary emotions (Lange, 1901; Scherer, 2005). It conforms, however, to certain accounts in theoretical aesthetics (Kleinschmidt, 2004) that hold that affective responses to artworks can be just as equally intense and arousing as responses to nonart objects/events. These three results are still valid when we take personal differences into account, such as general personality dimensions (NEO-FFI; Costa & McRae, 1989) or specific differences regarding the disgust sensitivity.

Both groups also showed no difference regarding their beauty and disgustingness ratings. Note that the instructions directed the participants' focus for these ratings on the pictures—in contrast to the affective response ratings which focused on the subjective feelings. A further possible explanation for the similarity of the beauty ratings could be that even the members of the hygiene group, when entering the task of evaluating the beauty of the pictures, also activated a more aesthetic (and thus art-related) mode of perception. Despite similar ratings for disgustingness and beauty, which indicate a similar intersubjective assessment of the pictures, the art group experienced altogether stronger positive affective responses toward the images. This allows us to conclude that the activation of the art schema tends to yield a higher compatibility between negative stimuli and concomitant feelings on the one hand, and positive enjoyment of artworks on the other.

One further qualifying remark concerns the fact that even in the art group, the strength of negativity ratings outweighed that of the positivity ratings. This might result from the divergence between the conditions of our laboratory experiment and the conditions of more typical situations of aesthetic appreciation: (a) Seeking exposure to specific artworks is strongly based on personal interests and preferences—our participants were given no choice as to which pictures they could look at. In an informal postexperiment interview, most of the participants reported that they disliked the kind of art we presented to them (i.e., abject art); (b) our stimuli were chosen in such a way that they would function reasonably well within both contexts. However, most art photographs (and, in general, most works of art) usually offer cues that accentuate their status *as* artworks (e.g., a markedly aesthetic composition, an unrealistic combination of features, etc.). This quality would have rendered them unsuitable for the hygiene framing, which depended upon the pictures being processed as documentary photographs, that is, not as artworks. In the end, this left us with a selection of images comprising only a few actual artworks. This raises the question of whether our results can be related to—and whether our interpretation is a valid explanation for—the effects of actual artworks, and not just for the kind of stock images that we used in our experiment.

For two reasons, we strongly believe that the former is the case. First, as mentioned above, real art photographs display numerous features that mark them as artworks, thus intrinsically activating the art schema and better enabling an aesthetic processing mode. Second, real artworks mostly received higher beauty ratings than stock images and snap shots made by amateurs. Thus, the higher beauty of real artworks—as a source of pleasure—can compensate even more strongly for the negative emotional impact of the disgustingness of the depicted objects. Hence, our data by no means rule out a net-positive effect for real works of art. In fact, despite the factors that worked against our hypothesis (an atypical situation of aesthetic reception, and mostly no real artworks), we succeeded in achieving the goal of this study, namely to demonstrate that the activation of an art schema renders negative emotions more compatible with the overall enjoyment of a work of art.

Regarding our second hypothesis, we found positive within-person correlations between the beauty ratings and the positivity ratings in each group. They were stronger for the art group as revealed by a significant cross-level interaction (see Figure 2). This result provides support for the hypothesis that the activated art schema influenced the processing and appraisal of the formal aspects of the pictures.

As we collected the personality data after the main part (and thus after the framing manipulation), it could be asked whether the differences in the personality measures were caused by the framing. We think that this is quite unlikely, because we found no differences in the questionnaires from the PANAS (Watson et al., 1988) or the German Disgust State Scale (Ihme & Mitte, 2009), which explicitly asked for the affective state (Krohne et al., 1996). Hence, the differences in the personality questionnaires were most probably valid measures of the differences in these traits between the participants. It is important to note, controlling statistically for these variables did not change the result pattern of our dependent variables. Nevertheless, there are some effects of the personality variables on the affective responses (see Table S2.2). Thus, a higher score in Agreeableness predicted a decrease in the positivity ratings, whereas a higher score in Openness predicted an increase by trend. This effect of Openness fits well with its interpretation as an indicator of the interest in new types of experiences, especially

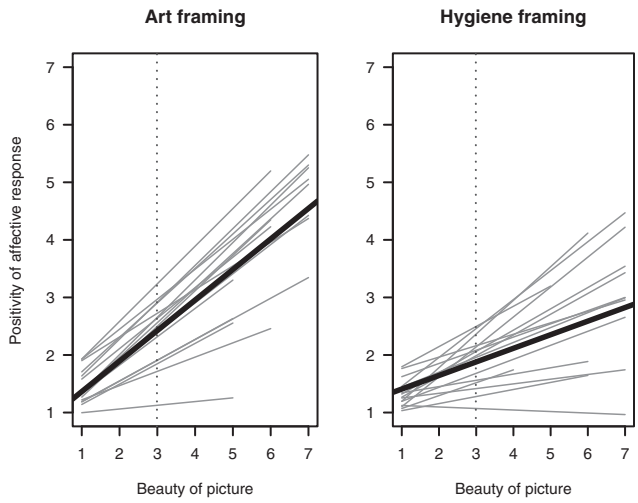

Figure 2. Linear relationships between the beauty ratings and the positive affective responses for each participant depicted for each framing group separately (the bold black lines represent the relationships between the variables for the groups). For the art framing the intercepts of the positive ratings at the overall mean of the beauty ratings (depicted as a gray horizontal dotted line at 2.99) are higher. Furthermore, the slopes are much steeper reflecting the interaction of framing and beauty ratings.

for aesthetic experiences (McCrae, 2007). In contrast, for the negativity (and the intensity) ratings, a higher Conscientiousness score predicted a decrease, whereas disgust sensitivity predicted an increase. The effect of disgust sensitivity was to be expected. It is more interesting that for participants arriving at the experiment with higher negative affect (as measured by the PANAS) a significant decrease in the intensity and the disgustingness ratings was found.

Possible Explanations for the Art-Schema Effect

How can we explain this effect of the framing manipulation? We propose that the two activated schemata—art schema and hygiene schema—affected the processing and appraisal of the pictures differently. Cupchik and colleagues have proposed that there are differences in the processing of pictures as aesthetic stimuli (Cupchik et al., 2009; see also Leder et al., 2004). In addition, the different schemata might trigger different expectations about the relevance and significance of the pictures. Both aspects could have had a modifying impact on the resulting emotional appraisals.

The analysis of the relationship between beauty ratings and the positive affective responses within participants revealed a moderation to the effect that this association was about two times stronger in the art group than in the hygiene group. In other words, for the participants in the art framing, the beauty of the pictures had a stronger impact on their (positive) affective responses. Hence, the activation of the art schema also changed the processing and appraisal of the pictures' beauty.

This interpretation is in agreement with the results and interpretations of other studies. Previously acquired knowledge about the stimuli is most probably the cause for a similar effect de Araujo and colleagues have found outside the art context (de Araujo, Rolls, Velazco, Margot, & Cayeux, 2005). They demonstrated that applying different labels (cheese vs. socks) for the same odor leads to differently valenced affective responses. The combination of the smell and the labels (smelling cheese vs. smelling socks) probably activated a network of associated beliefs (about food vs. dirty clothing) and attitudes toward these objects (liking or disliking depending on personal preference vs. need of washing). Hemenover and Schimmack (2007) instructed participants either to identify with the protagonist of a disgusting film clip, or to adopt a more distant observer position. Even as both groups experienced the same amount of disgust, only the observer group reported amusement. The authors explained this effect of different perspectives in terms of differences in cognitive processing. Referring to Apter's (1982) concept of the protective frame, Andrade and Cohen (2007) proposed that by focusing on the artificiality of the artwork, the spectators are detached from the impact of negative emotions. This in turn might allow viewers to enjoy those feelings. In a similar vein, we assume that activating an art schema directs the focus more strongly toward the artistic aspects of the stimuli. In an fMRI-study, Cupchik and colleagues (Cupchik et al., 2009) likewise showed that there are differences in (perceptual) processing depending on the task that participants engaged in.

The art schema-based expectation of pleasure could be a further explanatory factor: Artworks are supposed to be interesting, sometimes challenging, or even disturbing, but, most importantly, they are typically aimed at providing some inherent processing pleasure. This could work as a self-fulfilling affective-forecasting strategy that shapes cognitive and affective processing (Wilson & Gilbert, 2003). Even if a work of art turns out not to be particularly enticing—as was the case for our disgust-pictures—the schema-based expectation of some processing pleasure may still push positivity ratings to slightly higher degrees when compared with seeing the same aversive pictures in a nonart condition. By contrast, the concept of hygiene and its related concept of health leave little leverage for seeing the disgusting objects in a more favorable light and from a less pragmatic perspective. As schemata provide descriptive knowledge as well as procedural knowledge (Abelson, 1981; Brewer & Nakamura, 1984), both mechanisms probably could have caused this effect.

Another explanation for our results relates to the so-called prestige bias. Several studies showed that works of art receive higher preference or liking ratings if identical pictures are presented as products of famous artists than as works of people of lesser prestige (e.g., Bernberg, 1953; Kirk et al., 2009). Thus, one could argue that framing the pictures as art photographs exhibited in a renowned museum might have activated the prestige bias. With regard to the prestige of art (as indicated, e.g., by the sums that are paid for some artworks), we cannot exclude that part of the effects of the art schema is due to a prestige bias. However, we think it is important to note two points. First, in contrast to the studies on prestige bias, which usually focus on the preference for/liking of artworks, we tried to test whether the activation of the art schema can render negative emotions elicited by pictures more enjoyable. Thus, we asked separately for the positive and negative affective responses of the participants. There certainly is a connection between affective responses toward artworks and the liking of/preference for artworks (Leder et al., 2004; Hoege, 1984), but how to model this relationship is an open question. Furthermore, in contrast to the positivity ratings, the beauty ratings showed no difference between the groups. An explanation that relies exclusively on the prestige bias would have to give some additional reasons for this differential effect, as the effects of the prestige bias are usually found in both subject-focused measures (e.g., preference) and object-focused measures (e.g., beauty; cf. Isham et al., 2010). Second, most studies on the prestige bias in the art context examine differences of prestige between artworks, that is, for example, between pictures made by famous versus unknown artists. Hence, concerning our manipulation, one would ask whether there is an interaction between the framing (the activated situational art schema) and the prestige of the producer of the artifact.

One important question remains: Can disgust indeed contribute positively to the enjoyment of art? A hint to an answer might be derived from the fact that the intensity ratings correlate positively with both the negativity and the positivity ratings ($\beta = 0.64$, $p < .001$, and $\beta = 0.19$, $p < .001$, respectively; for further details, see the supplementary material available online, Section S4). This indicates that art might coopt the arousal and intensity of negative emotions for the purpose of strengthening its attentional effect (Berlyne, 1960; Lang, Greenwald, Bradley, & Hamm, 1993) and its own (positive) affective impact on the audience. Hence, the evocation of disgust might positively contribute to aesthetic enjoyment, because it is part of a compositional art aimed at securing high levels of affective involvement. However, testing this hypothesis is up to future studies.

Conclusion

The activation of an art schema, which we achieved by manipulating information about pictures presented to participants, had an effect on the positivity of the experienced affect. However, it did not change the negativity of the affective response and left its intensity at similar levels (as reported by rating scales). The study thus demonstrates the importance of schema activation for the emotional responses to perceived objects. More specifically, cognitive framing effects are among the factors that might offer a psychological explanation of why aesthetic enjoyment and negative emotions do not exclude each other.

References

Abelson, R. P. (1981). Psychological status of the script concept. *American Psychologist, 36,* 715–729. doi:10.1037/0003-066X.36.7.715

Andrade, E. B., & Cohen, J. B. (2007). On the consumption of negative feelings. *Journal of Consumer Research, 34,* 283–300. doi:10.1086/519498

Apter, M. J. (1982). *The experience of motivation: The theory of psychological reversals*. London, England: Academic Press.

Aristotle. (1961). *Poetics.* (S. H. Butcher, Translator). New York, NY: Hill & Wang. (Original work published ca. 335 BC).

Baayen, R. H., Davidson, D. J., & Bates, D. (2008). Mixed-effects modeling with crossed random effects for subjects and items. *Journal of Memory and Language, 59,* 390–412. doi:10.1016/j.jml.2007.12.005

Bates, D., Maechler, M., & Bolker, B. (2010). lme4: Linear mixed-effects models using S4 classes (Version 0.999375–42). Retrieved from http://lme4.r-forge.r-project.org/

Baumgarten, A. G. (2007): *Ästhetik*. [Aesthetics]. Hamburg, Germany: Meiner. (Original work published 1750)

Berlyne, D. E. (1960). *Conflict, arousal, and curiosity*. New York, NY: McGraw-Hill. doi:10.1037/11164-000

Bernberg, R. E. (1953). Prestige suggestion in art as communication. *The Journal of Social Psychology, 38,* 23–30. doi:10.1080/00224545.1953.9711433

Bieito, C. (2007). *Berg - Wozzeck*. BBC Opus Arte.

Borkenau, P., & Ostendorf, F. (1993). *NEO-Fünf-Faktoren Inventar (NEO-FFI) nach Costa und McCrae* [NEO-Five-Factor-Inventory–German Version]. Göttingen, Germany: Hogrefe.

Brewer, W. F., & Nakamura, G. V. (1984). The nature and functions of schemas. In R. S. Wyer & T. K. Srull (Eds.), *Handbook of social cognition* (Vol. 1, pp. 119–160). Hillsdale, NJ: Erlbaum.

Bullough, E. (1912). "Psychical distance" as a factor in art and an aesthetic principle. *British Journal of Psychology, 5,* 87–118. doi:10.1111/j.2044-8295.1912.tb00057.x

Cacioppo, J. T., Larsen, J. T., Smith, N. K., & Berntson, G. G. (2004). The affect system: What lurks below the surface of feelings? In A. S. R. Manstead, N. H. Frijda, & A. H. Fischer (Eds.), *Feelings and emotions: The Amsterdam Conference* (pp. 223–242). New York, NY: Cambridge University Press. doi:10.1017/CBO9780511806582.014

Carroll, N. (2010). *Art in three dimensions*. Oxford, England: Oxford University Press.

Costa, P. T. J., & McCrae, R. (1989). *The Neo-PI/Neo-FFI manual supplement*. Odessa, FL: Psychological Assessment Resources.

Cupchik, G. C. (2001). Aesthetics and emotion in entertainment media. *Media Psychology, 3,* 69–89. doi:10.1207/S1532785XMEP0301_04

Cupchik, G. C. (2002). The evolution of psychical distance as an aesthetic concept. *Culture & Psychology, 8,* 155–187. doi:10.1177/1354067X02008002437

Cupchik, G. C., Vartanian, O., Crawley, A., & Mikulis, D. J. (2009). Viewing artworks: Contributions of cognitive control and perceptual facilitation to aesthetic experience. *Brain and Cognition, 70,* 84–91. doi:10.1016/j.bandc.2009.01.003

Danto, A. C. (1981). *The transfiguration of the commonplace. A philosophy of art*. Cambridge, MA: Harvard University Press.

de Araujo, I. E., Rolls, E. T., Velazco, M. I., Margot, C., & Cayeux, I. (2005). Cognitive modulation of olfactory processing. *Neuron, 46,* 671–679. doi:10.1016/j.neuron.2005.04.021

Dickie, G. (1974). *Art and the aesthetic. An institutional analysis*. Ithaca, NY: Cornell University Press.

Duchamp, M. (1917). *Fountain*. Retrieved from http://upload.wikimedia.org/wikipedia/commons/f/f6/Duchamp_Fountaine.jpg

Ellsworth, P. C., & Scherer, K. R. (2003). Appraisal processes in emotion. In R. J. Davidson, H. Goldsmith, & K. R. Scherer (Eds.), *Handbook of the affective sciences* (pp. 572–595). New York, NY: Oxford University Press.

Frijda, N. H., & Sundararajan, L. (2007). Emotion refinement. A theory inspired by Chinese poetics. *Perspectives on Psychological Science, 2,* 227–241. doi:10.1111/j.1745-6916.2007.00042.x

Gelman, A., & Hill, J. (2007). *Data analysis using regression and multilevel/hierarchical models*. Cambridge, England: Cambridge University Press.

Hass, R. G., Katz, I., Rizzo, N., Bailey, J., & Eisenstadt, D. (1991). Cross-racial appraisal as related to attitude ambivalence and cognitive complexity. *Personality and Social Psychology Bulletin, 17,* 83–92. doi:10.1177/0146167291171013

Hemenover, S. H., & Schimmack, U. (2007). That's disgusting! . . ., but very amusing: Mixed feelings of amusement and disgust. *Cognition & Emotion, 21,* 1102–1113. doi:10.1080/02699930601057037

Hoege, H. (1984). The emotional impact on aesthetic judgments: An experimental investigation of a time-honored hypothesis. *Visual Arts Research, 10,* 37–48. Retrieved from http://www.jstor.org/stable/20715574

Houser, C., Jones, L., Taylor, S., & Ben-Levi, J. (Eds.). (1993). *Abject art: Repulsion and desire in American art. Selections from the permanent collection*. New York, NY: Whitney Museum of American Art.

Ihme, J. M., & Mitte, K. (2009). Measuring state disgust. Evaluation of a German state disgust scale. *European Journal of Psychological Assessment, 25,* 150–156. doi:10.1027/1015-5759.25.3.150

Isham, E. A., Ekstrom, A. D., & Banks, W. P. (2010). Effects of youth authorship on the appraisal of paintings. *Psychology of Aesthetics, Creativity, and the Arts, 4,* 235–246. doi:10.1037/a0019308

Jacobsen, T. (2006). Bridging the arts and sciences: A framework for the psychology of aesthetics. *Leonardo, 39,* 155–162. doi:10.1162/leon.2006.39.2.155

Kant, I. (1990). *Kritik der Urteilskraft.* [Critique of judgment]. Hamburg, Germany: Meiner. (Original work published 1799)

Kirk, U., Skov, M., Hulme, O., Christensen, M., & Zeki, S. (2009). Modulation of aesthetic value by semantic context: An fMRI study. *NeuroImage, 44,* 1125–1132. doi:10.1016/j.neuroimage.2008.10.009

Kleinschmidt, E. (2004). *Die Entdeckung der Intensität: Geschichte einer Denkfigur im 18. Jahrhundert* [The discovery of intensity: The history of an 18th-century concept of thought]. Göttingen, Germany: Wallstein.

Kolnai, A. (1929). Der Ekel [Disgust]. *Jahrbuch für Philosophie und Phänomenologische Forschung, 10,* 515–569.

Krohne, H. W., Egloff, B., Kohlmann, C. W., & Tausch, A. (1996). Investigations with a German version of the Positive and Negative Affect Schedule (PANAS). *Diagnostica, 42,* 139–156.

Kušej, M. (2006). *Schostakowich - Lady Macbeth of Mzensk*. BBC/Opus Arte.

Lang, P. J., Greenwald, M. K., Bradley, M. M., & Hamm, A. O. (1993). Looking at pictures: Affective, facial, visceral, and behavioral reactions. *Psychophysiology, 30,* 261–273. doi:10.1111/j.1469-8986.1993.tb03352.x

Lange, K. (1901). *Das Wesen der Kunst: Grundzüge einer realistischen Kunstlehre* [The essence of art: Outline of a realistic theory of art] (Vol. 1). Berlin, Germany: Grote.

Larsen, J. T., McGraw, A. P., & Cacioppo, J. T. (2001). Can people feel happy and sad at the same time? *Journal of Personality and Social Psychology, 81,* 684–696. doi:10.1037/0022-3514.81.4.684

Lazarus, R. S., & Alfert, E. (1964). Short-circuiting of threat by experimentally altering cognitive appraisal. *Journal of Abnormal and Social Psychology, 69,* 195–205. doi:10.1037/h0044635

Leder, H., Belke, B., Oeberst, A., & Augustin, M. D. (2004). A model of aesthetic appreciation and aesthetic judgments. *British Journal of Psychology, 95,* 489–508. doi:10.1348/0007126042369811

Leder, H., Carbon, C. C., & Ripsas, A. L. (2006). Entitling art: Influence of title information on understanding and appreciation of paintings. *Acta Psychologica, 121,* 176–198. doi:10.1016/j.actpsy.2005.08.005

McCarthy, P. (1974). *Hot dog*. Retrieved from http://www.themoorespace.org/oldmoorespace/cefm/CEFM/McCarthy1.JPG

McCrae, R. (2007). Aesthetic chills as a universal marker of openness to experience. *Motivation and Emotion, 31,* 5–11. doi:10.1007/s11031-007-9053-1

Menninghaus, W. (2003). *Disgust. Theory and history of a strong sensation*. Albany, NY: SUNY Press.

Oaten, M., Stevenson, R. J., & Case, T. I. (2009). Disgust as a disease-avoidance mechanism. *Psychological Bulletin, 135,* 303–321. doi:10.1037/a0014823

Oatley, K. (1995). A taxonomy of the emotions of literary response and a theory of identification in fictional narrative. *Poetics, 23,* 53–74. doi:10.1016/0304-422X(94)P4296-S

Rafaeli, E., Rogers, G. M., & Revelle, W. (2007). Affective synchrony: Individual differences in mixed emotions. *Personality and Social Psychology Bulletin, 33,* 915–932. doi:10.1177/0146167207301009

Rasbash, J., & Browne, W. J. (2008). Non-hierarchical multilevel models. In J. De Leeuw & E. Meijer (Eds.), *Handbook of multilevel analysis* (pp. 301–334). New York, NY: Springer. doi:10.1007/978-0-387-73186-5_8

R Development Core Team. (2011). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from http://www.R-project.org

Rozin, P., Haidt, J., & McCauley, C. R. (2000). Disgust. In M. Lewis & J. M. Haviland-Jones (Eds.), *Handbook of emotions* (2nd ed., pp. 637–653). New York, NY: Guilford Press.

Scherer, K. R. (2005). What are emotions? And how can they be measured? *Social Science Information–Sur Les Sciences Sociales, 44,* 695–729. doi:10.1177/0539018405058216

Schienle, A., Walter, B., Stark, R., & Vaitl, D. (2002). A questionnaire for the assessment of disgust sensitivity. *Zeitschrift für Klinische Psychologie und Psychotherapie: Forschung und Praxis, 31,* 110–120. doi:10.1026//1616-3443.31.2.110

Serrano, A. (1987). *Piss Christ*. Retrieved from http://www.uniurb.it/Filosofia/bibliografie/Bataille_GiuliaFrattini/images/Serrano%20Andres,%20Piss%20Christ%201987.jpg

Sherman, C. (1987). Untitled #175. Retrieved from http://www.moma.org/interactives/exhibitions/2012/cindysherman/lib/uploads/G06A07Untitled-175.1987_large-724x475.jpg

Silvia, P. J. (2007). An introduction to multilevel modeling for research on the psychology of art and creativity. *Empirical Studies of the Arts, 25,* 1–20. doi:10.2190/6780-361T-3J83-04L1

Silvia, P. J., & Brown, E. M. (2007). Anger, disgust, and the negative aesthetic emotions: Expanding an appraisal model of aesthetic experience. *Psychology of Aesthetics, Creativity, and the Arts, 1,* 100–106. doi:10.1037/1931-3896.1.2.100

Speisman, J. C., Lazarus, R. S., Mordkoff, A., & Davison, L. (1964). Experimental reduction of stress based on ego-defense theory. *Journal of Abnormal and Social Psychology, 68,* 367–380. doi:10.1037/h0048936

Tan, E. S. (2000). Emotion, art, and the humanities. In M. D. Lewis, *Handbook of emotions* (pp. 116–134). New York, NY: Guilford Press.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54,* 1063–1070. doi:10.1037/0022-3514.54.6.1063

Wilson, T. D., & Gilbert, D. T. (2003). Affective forecasting. *Advances in Experimental Social Psychology, 35,* 345–411. doi:10.1016/S0065-2601(03)01006-2

Zwaan, R. A. (1991). Some parameters of literary and news comprehension: Effects of discourse-type perspective on reading rate and surface structure representation. *Poetics, 20,* 139–156. doi:10.1016/0304-422X(91)90003-8

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Correction to Tinio and Reiter-Palmon (2014)

In the Special Section Introduction, "Growth, Renewal, and Replication Redux," by Pablo P. L. Tinio and Roni Reiter-Palmon (*Psychology of Aesthetics, Creativity, and the Arts*, 2014, Vol. 8, No. 1, p. 1. doi:10.1037/a0035876), the editors neglected to mention that the Special Section was edited by Jonathan Plucker. The editors regret this omission and wish to acknowledge Dr. Plucker's contribution to the issue.

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