

# **Bad Beauty: The Impact of Affect and Biospheric Values on Beauty Judgments of Environmental Pollution Photography**

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## Abstract

Aesthetic judgments are influenced by both integral and incidental feelings, yet the relative strength of these influences remains unclear. We investigated how incidental mood, integral affect, and biospheric values affect beauty judgments of photographs depicting environmental pollution. Participants ( $N = 501$ ) were randomly assigned to a positive, neutral, or negative mood condition before rating the beauty of images paired with neutral or negative descriptive texts. Results replicated the moral framing effect: negative descriptive texts led to significantly lower beauty ratings ( $p < .001$ ,  $d = 0.5$ ). While a good mood led to higher beauty ratings than a bad mood ( $p = .011$ ,  $d = 0.25$ ), the overall incidental mood effect was only marginally significant. Biospheric values negatively predicted beauty ratings in the negative text condition, but not in the neutral condition, suggesting that value-driven responses depend on contextual cues. In conclusion, our findings highlight the role of integral affect in aesthetic judgments and suggest that incidental mood effects were overshadowed. Future research should examine whether aesthetic judgments are inherently resistant to incidental affect or if stronger manipulations could produce more robust effects.

*Keywords:* aesthetic processing, judgments, affect, mood, beauty

## **Bad Beauty: The Impact of Affect and Biospheric Values on Beauty Judgments of Environmental Pollution Photography**

What makes certain individuals see beauty in polluted landscapes or depictions of pain, while others are repelled? Aesthetic processing has intrigued scientists for over a century (Jacobsen, 2006), with research aiming to unravel the factors that shape aesthetic experiences and underlying feelings such as beauty, awe, or disgust (Brattico et al., 2016; Fingerhut & Prinz, 2020; Menninghaus et al., 2019). Consistent with the popular notion that beauty is in the eye of the beholder (Franke, 2016), the empirical literature suggests that aesthetic processing is influenced by a wide range of individual and contextual factors, rather than solely by physical stimulus properties (Chatterjee & Vartanian, 2014; Leder et al., 2004; Leder & Nadal, 2014; Pelowski et al., 2017; Silvia, 2005; Wassiliwizky & Menninghaus, 2021). Indeed, while properties such as contrast (Jacobsen & Beudt, 2017; Ramachandran & Hirstein, 1999) and symmetry (Jacobsen & Höfel, 2003) are known to affect aesthetic processing and subsequent beauty judgments, the nature of these effects may change when accounting for individual factors such as expertise (Darda & Cross, 2022; Else et al., 2015; Era et al., 2019; Leder et al., 2014, 2019), prior experience (Bara et al., 2022), affect (Duer et al., 2024; Eskine et al., 2012; Silvia, 2009, 2013), and personality (Marschallek et al., 2021), as well as the context of presentation (Brieber et al., 2014; Grüner et al., 2019; Millis, 2001).

The *feelings-as-information theory* (FAIT; Bower, 1981; Clore et al., 2001; Clore & Huntsinger, 2007; Scherer, 2005; Schwarz, 2012; Schwarz & Clore, 2003; Tversky & Kahneman, 1973) has established that different feelings affect decision-making and evaluative judgments (Bruyneel et al., 2009; Dutt & Wahl, 2017; Pitts et al., 2014) – for example, researchers found that bad mood results in less favorable judgments of life satisfaction (Schwarz & Clore, 1983), as well as higher subjective age during midlife and old age (Dutt & Wahl, 2017). Theoretical work suggests that aesthetic judgments are impacted by feelings in a similar way as other types of evaluative judgments (Schwarz, 2012; Skov & Nadal, 2018,

2020), but experiments on this topic remain limited (Reber et al., 1998, 2004; Schwarz, 2018; Winkielman et al., 2003) and results of the few studies that have investigated the link between feelings and aesthetic judgments are sometimes inconsistent (Era et al., 2015; Zhang et al., 2017). We sought to address this research gap by investigating the role of incidental and integral feelings in the formation of beauty judgments, while also accounting for participant values.

Our aim was to replicate and build on prior research (Duer et al., 2024), in which we explored the beauty perceived in morally contentious photographs (Franke, 2016; Silvia & Brown, 2007). More specifically, we showed participants photographs paired with either neutral or negative descriptive texts. We situate these stimuli in the *bad beauty* framework because all contained scenes of environmental pollution (Ukaogo et al., 2020), but some were aesthetically pleasing and the “badness” was mainly due to the framing of the descriptive texts. In essence, the negative affect these stimuli evoke is highly dependent on participant values and moral framing. This complex interplay connects to other frameworks of aesthetic responses, such as enjoyment of negative emotions or aesthetic awe, where positive and negative elements also coexist and influence each other (Eskine et al., 2012; Menninghaus et al., 2019).

In our original study (Duer et al., 2024), participants felt worse when contemplating photographs paired with negative descriptive texts (descriptions of adverse effects on the environment) and rated these photographs as less beautiful than the same photographs paired with neutral texts (general information about the locations). While these findings allow for inferences about the role of affect in aesthetic processing, the feelings evoked by the photographs and descriptive texts were integral (Bodenhausen, 1993; Bodenhausen et al., 1994; Schwarz, 2012) to the objects of judgment, thus providing valid information about the participants’ attitude towards the stimuli. This made the subsequent beauty judgments biased, but functional. The FAIT, however, posits that the informational value of feelings extends to

incidental feelings, i.e., feelings induced by a source with no real informational value to a subsequent judgment (Messner & Wänke, 2011; Schwarz, 2012; Schwarz & Clore, 1983) – a claim that is underexplored in the field of empirical aesthetics.

Building on the FAIT, we conceptually replicated our prior experiment (Duer et al., 2024) and expanded its scope by introducing incidental mood alongside integral affect manipulations. This allowed us to test the joint influence of different affective sources in a single design and address the underlying question whether beauty judgments are solely guided by stimulus-related feelings, or also susceptible to unrelated affective states. Since incidental feelings (e.g., mood) affect a large portion of daily experiences, it is crucial to understand their role in aesthetic processing. If mood systematically alters beauty judgments, this would have broad implications for art appreciation and media consumption. Given the effects of mood in other domains (Siemer & Reizenzein, 1998), it is reasonable to assume such an influence.

In the present study, we induced good or bad mood (and a neutral control condition) through an established *mood induction technique* (MIT) and observed its influence on aesthetic judgments, using the stimulus set from our previous work (see Supplementary Material C). As in the original study, photographs were paired with either neutral or negative descriptive texts. We chose beauty as the domain of judgment because of its central role in empirical aesthetics (Jacobsen et al., 2004), and define it as a judgment that can reflect both perceptual features and affective responses (Silvia, 2005).

Following the FAIT, we expected the neutral descriptive texts to cause stronger positive affect than the negative descriptive texts, which participants should attribute to the photographs, thereby influencing beauty ratings. Within the bad beauty framework, we refer to this pattern as the moral framing effect. Consistently, we predicted a main effect of the descriptive text condition (Neutral vs. Negative), where beauty ratings are higher in the neutral condition than in the negative condition.

Furthermore, we expected participants' mood to inform beauty judgments in the same way as integral affect. This should result in lower beauty ratings when participants are in a bad mood than when they are in a good mood. Quantitatively, we predicted a main effect of the mood condition (Good vs. Neutral vs. Bad), where beauty ratings are higher in the good mood condition than in the neutral and bad conditions, and higher in the neutral mood condition than in the bad condition.

Values are an integral part to explain reactions to the photographs we use in our study because they are the primary source of affective responses to morally charged stimuli (Diessner et al., 2008; Jacobsen & Beudt, 2017; Pohling & Diessner, 2016). Participants with higher levels of *biospheric values* (i.e., who care about the environment and its preservation; de Groot & Steg, 2008; Dietz et al., 2005; Steg et al., 2014; van der Werff et al., 2013) should experience a stronger value intrusion when confronted with environmental pollution than participants with lower levels of biospheric values (Diessner et al., 2022; Smith & Leiserowitz, 2014). This value intrusion should result in negative affect, which, in turn, should translate to lower beauty ratings, as indicated by the FAIT (Schwarz, 2012). In the neutral descriptive texts condition, however, biospheric values are primarily challenged by the photographs whereas in the negative condition, they are additionally challenged by the descriptive texts. Therefore, participants should experience a stronger value intrusion and subsequent affective response in the negative condition than in the neutral condition. Thus, we predicted a negative relationship between biospheric values and beauty ratings, and a moderation effect of the descriptive text, where the relationship between biospheric values and beauty ratings is more strongly negative in the negative than in the neutral condition.

Finally, incidental mood should influence the relationship between biospheric values and beauty ratings. This is because research on mood and processing styles (Forgas, 1990, 1995; Schwarz, 2012) suggests that when individuals are in a good mood, they are generally less critical in their information processing than when they are in a bad mood. Consequently,

negative content should pose a less pronounced value intrusion, less pronounced negative affect, and higher beauty ratings when participants are in a good mood. Thus, we predicted a moderation effect of the MIT condition on the relationship between biospheric values and beauty ratings. More specifically, we expected a stronger negative relationship in the bad mood condition than in the neutral and good mood conditions, and a stronger negative relationship in the neutral than in the good mood condition.

## **Method**

We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in the study (Simmons et al., 2012). All data was collected using the online tool Unipark, statistical analyses were conducted with R v4.2.2 (imported packages: tidyverse, ez, car, lsr, ggplot2, ggsignif, olsrr, jtools, moments, lmtest), and sample size calculations were conducted with G\*Power v3.1.9.7 (Faul et al., 2007). Photographs and descriptive texts are available in Supplementary Material C. The dataset of the main study is available in an online repository (see Supplementary Material E).

### **Sample Size and Participants**

We conducted an a priori power analysis for the main effect of incidental mood in a 3(Mood Condition: Good vs. Neutral vs. Bad)  $\times$  2(Descriptive Text: Neutral vs. Negative) between-subjects ANOVA. Assuming a small to medium effect size of  $f = 0.20$ , a power of 0.95, and a significance criterion of 0.05, the required sample size was  $N = 390$  participants. Because online studies are likely to cause a reduction in statistical power (Birnbbaum, 2004a), we targeted a sample size of 500 participants. Our final sample of  $N = 501$  exceeded this target.

The data collection was conducted pseudo-anonymously and all participants provided informed consent. Participants in the pre-analysis were recruited at the Helmut Schmidt University / University of the Federal Armed Forces Hamburg and received course credit as compensation for completion. For more information about the pre-analysis, please see

Supplementary Material A. Participants in the main study were recruited via a professional panel service and were evenly distributed across gender, age, and education. They received one euro of monetary compensation upon completion of the experiment. We conducted the study in accordance with the World Medical Association's Declaration of Helsinki and the Ethical Guidelines of the German Association of Psychologists (DGPs). Given the nature of the bad mood condition, we applied for (and received) ethical approval from the Ethics Committee of Psychology at the Helmut Schmidt University. Additionally, we included a warning in the bad mood condition to avoid the risk of triggering potential trauma (Görizt, 2007; Verheyen & Görizt, 2009).

In total, 998 individuals opened the study, three were screened out because of their age, 70 were screened out because of their mental health, six were screened out because they falsely replied to our control item, 95 were screened out because they met our criteria for photography expertise, 13 chose to quit the study because of the trigger warning in the bad mood condition, and 310 quit the study for other, unspecified reasons. Regarding age, we screened out all participants who were younger than 18 and older than 100. We chose to screen out participants with a self-reported mental disorder because they would potentially be subjected to a negative mood induction. Towards the beginning of the study, we implemented a control item ("I understand that this is a control item and select 'No'.") to screen out inattentive participants. We chose to screen out photography experts because their method of information processing may have influenced the effects that we examined in the study (Else et al., 2015; Leder et al., 2014). The final sample consisted of 501 German speakers. Of these participants, 166 were in the good mood condition (86 male, 80 female;  $Age_{Mean} = 50.70$ ,  $Age_{SD} = 15.86$ ,  $Age_{Range} = 20-89$ ), 166 were in the neutral mood condition (73 male, 91 female, 2 diverse;  $Age_{Mean} = 49.73$ ,  $Age_{SD} = 16.58$ ,  $Age_{Range} = 21-85$ ), and 169 were in the bad mood condition (89 male, 80 female,  $Age_{Mean} = 48.88$ ,  $Age_{SD} = 15.61$ ,  $Age_{Range} = 21-81$ ).

For detailed information about participant characteristics, please see Supplementary Material B.

### **Research Design and Procedure**

Participants were randomly assigned to a mood condition and a descriptive text condition. They rated each of the 25 photographs in terms of perceived beauty. All data collection was conducted online, and we did not impose any restrictions regarding time, place, or device used. The median session length in the main study was approximately 13 minutes and 20 seconds. Upon clicking on the study link, participants gave informed consent and were screened for age, mental health, and photography expertise, before responding to the control item. They were then randomly assigned to a mood condition and read the corresponding text. We instructed participants to pay close attention, as they would allegedly be asked questions about text perception later in the experiment. Each text was shown for a minimum of three minutes before participants could continue with the experimental procedure, in order to encourage participants to read thoroughly. After reading the text, participants were instructed to complete filler tasks to pass time until they answered the text perception questions: rating the photographs, providing demographic information, and responding to the mood item and biospheric values questionnaire (in this order). During the rating task, one trial consisted of a large version of the photograph appearing on the screen for three seconds, after which a smaller version of the photograph appeared on the left side of the screen, and its corresponding descriptive text appeared on the right side next to it. After an additional seven seconds, the scale for the beauty rating appeared below the descriptive text. This procedure was repeated for each photograph in randomized order. Finally, participants were briefed that there would be no text perception questions and then thanked for participating.

### **Stimuli and Conditions**

We used the stimulus set from our previous study (Duer et al., 2024), which consisted of 25 photographs of environmental pollution sources that were handpicked from a large pool

of pre-selected images. The photographs were standardized in terms of resolution and aspect ratio (Fekete et al., 2022), and were rated by a student sample ( $N = 138$ ) on several dimensions (see Duer et al., 2024, for more detailed information about the stimulus set). Each photograph was paired with either a neutral or a negative descriptive text, which consisted of a reference to where the image was taken, and either general information (Neutral Condition) or information about its content's adverse environmental effects (Negative Condition). The texts were controlled in terms of word and character count, and rated in terms of perceived valence (Duer et al., 2024). During the experiment, participants in the neutral descriptive text condition were prompted with each photograph and its corresponding neutral text, and vice versa. All photographs and corresponding descriptive texts used in the original and current study are in Supplementary Material C.

In contrast to our previous study (Duer et al., 2024), we also applied a mood induction for which we used an established MIT that has been developed for online use, with kind permission from the authors (Göriz, 2007; Verheyen & Göriz, 2009). In this MIT, participants were instructed to read one of three texts. In the neutral condition, participants read an excerpt from the book *Hawking*, which describes humankind's evolving image of the universe over time. In the good mood condition, participants were shown funny passages that teachers had found in children's essays. In the bad mood condition, participants were confronted with a text that describes two electric chair executions. In one publication (Verheyen & Göriz, 2009), the authors used only the texts to induce mood, whereas in another publication (Göriz, 2007), each text was accompanied by two images. Mood differences between the conditions were larger for plain texts than for texts with accompanying images. Given these counter-intuitive results, we decided to test both versions of the MIT, prompting half of the participants with texts and images, and the other half with plain texts. For more information about the origin and usage of the MIT, please see Supplementary Material D.

## **Measures**

### ***Beauty***

Participants rated each photograph based on the question “Is this a beautiful picture?” on a seven-point Likert scale (1 = “not at all”; 7 = “very much”; Duer et al., 2024; Weigand & Jacobsen, 2022). We used single-item measures for both beauty and mood to reduce demand effects and maintain task simplicity, acknowledging that single-items do not allow internal consistency measures. However, beauty ratings were repeated across 25 stimuli and single-item mood measures have been successfully used in other studies (Görizt, 2007; Messner & Wänke, 2011; Schwarz & Clore, 1983). Additionally, a single mood item can sometimes capture mood more precisely than elaborate scales, which cover very specific emotions and affective stances, that may not be relevant to the current investigation (Gluth et al., 2010; Watson et al., 1988).

### ***Mood***

Participants were prompted with the item “How is your current mood?” (Verheyen & Görizt, 2009), and responded on a seven-point Likert scale (1 = “very bad”; 4 = “neutral”; 7 = “very good”).

### ***Biospheric Values***

Participants were asked to state the importance of the following values “as guiding principles in their lives”: (1) “*Respecting the earth: harmony with other species*”, (2) “*Unity with nature: fitting into nature*”, (3) “*Protecting the environment: preserving nature*”, and (4) “*Preventing pollution: protecting natural resources*”. Responses were given on a continuous scale (0 = “not important”; 100 = “extremely important”). We adapted these items from de Groot and Steg (2008; see also Steg et al., 2014; van der Werff et al., 2013), but modified the scale. More specifically, we excluded -1 = “opposed to my principles” and included 101 total responses rather than nine. Participants were encouraged to consider the entire scale, as prior work (Duer et al., 2024) had shown that about 25 % of participants selected the maximum

value. For statistical analysis, the four dimensions were aggregated into a single composite value. The biospheric values scale was translated into German using the back translation method (Brislin, 1970).

### ***Expertise***

Individuals who responded to at least one of the following items with “yes” were excluded from participation: (1) I consider myself to be a photography expert, (2) I have at least five years of professional experience in photography, (3) I am currently working in the field of photography professionally.

### ***Demographics***

We collected the following demographic measures: age, gender identity, occupation, and education.

## **Results**

For all statistical tests, we employed a significance criterion of .05. Cohens  $d$  values are stated unsigned. We used bootstrapping for all moderation analyses and unless otherwise specified, all bootstrapping procedures substantiated the original results. Unless otherwise specified, all statistical assumptions were met. For descriptive statistics, please see Supplementary Material B.

### **Manipulation Check and Group Differences**

A pre-analysis ( $N = 72$ ) revealed a significant difference in mood following the MIT ( $F(2, 69) = 5.25, p = .008, \eta^2 = .132$ , medium-sized effect; (Levine & Hullett, 2002; Richardson, 2011). A series of one-tailed Welch  $t$ -tests with a Bonferroni adjustment indicated that participants in the good mood condition ( $M = 4.88, SD = 1.23$ ) reported better mood than participants in the neutral condition ( $M = 4.04, SD = 1.17; t(47) = 2.43, p = .028, d = 0.70$ , medium-sized effect; Cohen, 1988) and bad mood condition ( $M = 3.74, SD = 1.36; t(44) = 3.01, p = .007, d = 0.88$ , large effect; Cohen, 1988). Participants in the neutral condition reported better mood than participants in the bad mood condition, but this difference was non-

significant ( $t(44) = 0.82, p = .626, d = 0.24$ , small effect; Cohen, 1988). Considering (1) that every mean comparison resulted in at least a small effect, (2) the significant ANOVA with a medium-sized effect, and (3) that the MIT had already been proven to work in two other studies (Göriz, 2007; Verheyen & Göriz, 2009), we concluded the MIT to be successful. For more information about the pre-analysis, please see Supplementary Material A.

We computed a 3 (Mood Condition: Good vs. Neutral vs. Bad) x 2 (Descriptive Text: Neutral vs. Negative) between-subjects ANOVA to explore whether participants between the experimental conditions differed in terms of their biospheric values. There was no significant difference between the mood conditions ( $F(2, 495) = 0.40, p = .667$ ) or the descriptive text conditions ( $F(1, 495) = 0.28, p = .597$ ). The ANOVA indicated a significant interaction ( $F(2, 495) = 5.26, p = .021$ ), but Tukey Honest Significant Difference tests revealed that there were no significant differences between any two groups, when accounting for Type I error accumulation.

### **Beauty Ratings as a Function of Descriptive Texts**

A one-tailed Welch t-test (Descriptive Text: Neutral vs. Negative) revealed that participants in the neutral descriptive text condition ( $M = 3.73, SD = 0.98$ ) reported higher beauty ratings than participants in the negative condition ( $M = 3.21, SD = 1.07; t(496) = 5.58, p < .001, d = 0.50$ , medium-sized effect; Cohen, 1988).

### **Beauty Ratings as a Function of the MIT**

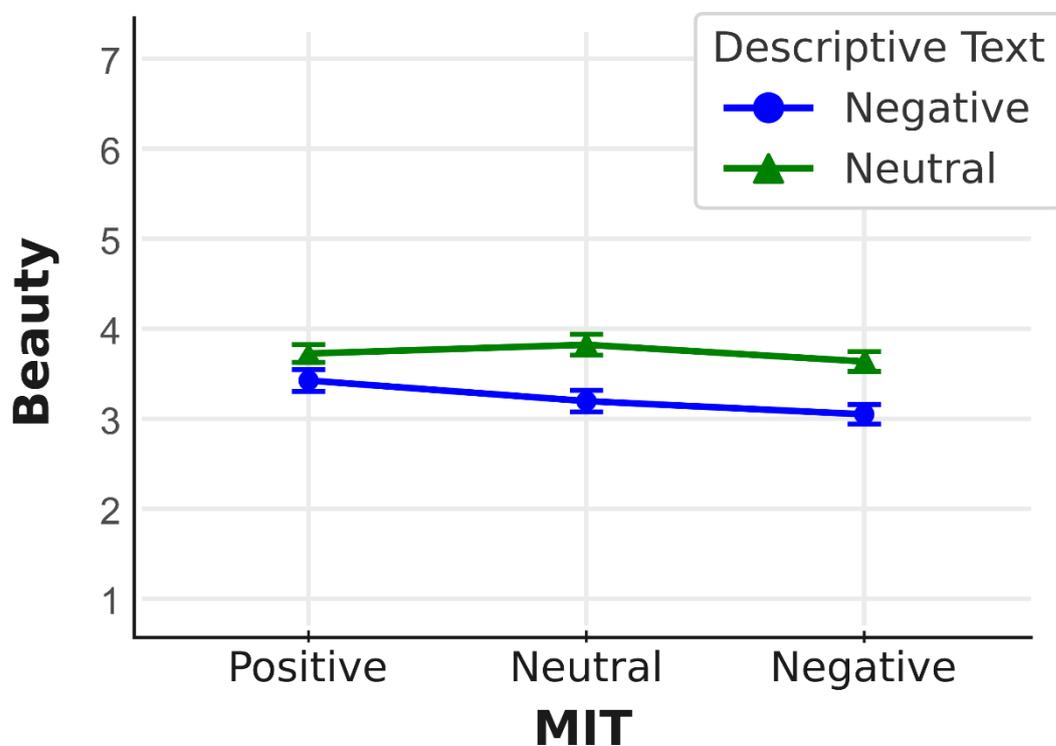
A between-subjects ANOVA (Mood Condition: Good vs. Neutral vs. Bad) revealed a difference approaching significance in beauty ratings between the mood conditions ( $F(2, 498) = 2.52, p = .081, \eta^2 = .010$ , small effect; Levine & Hullett, 2002; Richardson, 2011). Because of our predictions regarding group comparisons and current statistical recommendations (Midway et al., 2020), we conducted planned contrasts. A series of one-tailed Welch t-tests with a Bonferroni adjustment showed that participants in the good mood condition ( $M = 3.59, SD = 1.00$ ) reported higher beauty ratings than participants in the bad mood condition ( $M =$

3.33,  $SD = 1.04$ ;  $t(333) = 2.29$ ,  $p = .011$ ,  $d = 0.25$ , small effect; Cohen, 1988). Beauty ratings between participants in the good and neutral mood conditions ( $M = 3.49$ ,  $SD = 1.12$ ;  $t(326) = 0.79$ ,  $p = .216$ ,  $d = 0.09$ , negligible effect; Cohen, 1988), and participants in the neutral and bad mood conditions ( $t(330) = 1.38$ ,  $p = .084$ ,  $d = 0.15$ , negligible effect; Cohen, 1988) did not differ significantly.

An exploratory 3 (Mood Condition: Good vs. Neutral vs. Bad) x 2 (Descriptive Text: Neutral vs. Negative) between-subjects ANOVA indicated that there was no interaction between the mood condition and the descriptive text condition with respect to beauty ratings ( $F(2, 495) = 1.25$ ,  $p = .287$ ,  $\eta^2 = .005$ , negligible effect; Levine & Hullett, 2002; Richardson, 2011). Please see Figure 1 for a visual representation of the analyses described above.

**Figure 1**

*Beauty Ratings as a Function of MIT and Descriptive Text*



*Note.*  $N = 501$ . Error bars represent  $\pm 1 SE$ .

### **Beauty Ratings as a Function of Biospheric Values and the Descriptive Texts**

We computed a linear regression which revealed a significant effect of biospheric values on beauty ratings ( $b = -0.01$ , 95% CI [-0.011, -0.001],  $\beta = -0.101$ , 95% CI [-0.188, -0.013],  $t = -2.26$ ,  $p = .024$ ,  $R^2 = .010$ , small effect; Cohen, 1988). To further explore this relationship, we added the descriptive text condition to the model and conducted a moderation analysis (Hayes PROCESS for R, v4.3.1, Model 1) with biospheric values as the predictor (X), beauty ratings as the dependent variable (Y), and the descriptive text condition as the moderator (M). This analysis revealed a significant moderation effect ( $F(1, 497) = 7.58$ ,  $p = .006$ ,  $R^2_{\text{change}} = .014$ , small effect; Cohen, 1988). The conditional effect of X on Y in the neutral condition was not significant ( $b = 0.002$ , 95% CI [-0.005, 0.008],  $\beta = 0.026$ , 95% CI [-0.095, 0.146],  $t = 0.42$ ,  $p = .675$ ,  $R^2 = .001$ , negligible effect; Cohen, 1988), and the conditional effect in the negative condition was significant ( $b = -0.012$ , 95% CI [-0.019, -0.005],  $\beta = -0.211$ , 95% CI [-0.330, -0.093],  $t = -3.50$ ,  $p < .001$ ,  $R^2 = .045$ , small effect; Cohen, 1988). In other words, we found no significant relationship between biospheric values and beauty ratings in the neutral condition, and a significant negative relationship between biospheric values and beauty ratings in the negative condition. The moderation analysis revealed that, in total, biospheric values, the descriptive text condition, and their interaction accounted for 8.17% of the variance in beauty ratings ( $R^2 = .082$ , small effect; Cohen, 1988;  $F(3, 456) = 14.73$ ,  $p < .001$ ).

### **Beauty Ratings as a Function of Biospheric Values and the MIT**

In order to explore the impact of the mood condition (M) on the relationship between biospheric values (X) and beauty ratings (Y), we conducted a moderation analysis (Hayes PROCESS for R, v4.3.1, Model 1). This analysis revealed a non-significant moderation effect ( $F(1, 497) = 0.25$ ,  $p = .618$ ,  $R^2_{\text{change}} = .001$ , negligible effect; Cohen, 1988). The conditional effect of X on Y in the good mood condition was not significant ( $b = -0.004$ , 95% CI [-0.012, 0.004],  $\beta = -0.071$ , 95% CI [-0.206, 0.065],  $t = 1.02$ ,  $p = .307$ ,  $R^2 = .005$ , negligible effect;

Cohen, 1988), the conditional effect in the neutral condition was significant ( $b = -0.006$ , 95% CI [-0.011, -0.001],  $\beta = -0.098$ , 95% CI [-0.186, -0.011],  $t = -2.21$ ,  $p = .028$ ,  $R^2 = .010$ , small effect; Cohen, 1988), and the conditional effect in the bad mood condition was approaching significance ( $b = -0.007$ , 95% CI [-0.015, 0.001],  $\beta = -0.126$ , 95% CI [-0.269, -0.018],  $t = -1.72$ ,  $p = .085$ ,  $R^2 = .016$ , small effect; Cohen, 1988). The moderation analysis revealed that, in total, biospheric values, the descriptive text condition, and their interaction accounted for 1.96% of the variance in beauty ratings ( $R^2 = .020$ , small effect; Cohen, 1988;  $F(3, 497) = 14.73$ ,  $p = .020$ ).

## Discussion

In this study, we investigated the impact of incidental and integral affect and biospheric values on the perceived beauty in photographs depicting environmental pollution sources. First, we predicted that the descriptive texts condition would result in higher beauty ratings when showing neutral than negative descriptive texts. The results clearly supported this prediction, thus replicating the moral framing effect from our previous study (Duer et al., 2024), although the magnitude of this effect is arguably dependent on whether the content of the photographs is experienced as “bad” in the first place (Diessner et al., 2022). If an individual does not care about the preservation of the environment, there will be no mismatch between their values and the content of the photographs (de Groot & Steg, 2008; Jacobsen & Beudt, 2017). Therefore, there is little potential for negative affect in either condition, reducing the presumed effect size. Regarding our choice of stimulus material, please note that environmental pollution in itself is not our focus of research, but an arbitrary instantiation of bad beauty. We use it simply as a vehicle to induce a mismatch between content and values which, in turn, induces negative affect because the majority of the population is negatively inclined towards environmental pollution (de Groot & Steg, 2008; Jacobsen & Beudt, 2017; Steg et al., 2014). Likewise, we did not seek to investigate biospheric values as a construct but used it as a proxy for this mismatch. These notions have important implications regarding the

overarching question of how feelings, especially moods, influence aesthetic judgments. Prior research has shown an inherent connection between moral beauty and positive affective responses (Diessner et al., 2008; Pohling & Diessner, 2016), and between moral standing and physical beauty (He et al., 2022; Klebl et al., 2021). Our study is consistent with these findings, but the exact nature of the underlying effect needs to be further investigated. Future studies should investigate the moral framing effect for various instantiations of negativity, e.g., images depicting war, poverty, or social injustice (Aquino et al., 2007).

Second, we predicted that incidental mood would lead to progressively lower beauty ratings from the good to the neutral to the bad mood conditions. Descriptively, beauty ratings followed the predicted pattern, but only the difference between the good and bad mood conditions reached significance. Therefore, the predicted linear trend was not supported, indicating that mood effects on beauty judgments were minimal. One explanation is that integral affect effects are often stronger (Slovic et al., 2007) and less subjective to distortion (Messner & Wänke, 2011; Schwarz, 2012). Additionally, the impact of the MIT was less immediate than that of the descriptive texts. The weak effect of incidental mood suggests that aesthetic judgments may be more resistant to mood influences than assumed. Given the dominant role of integral affect, incidental mood may have had limited influence on beauty judgments. While this resembles real-world interaction with aesthetic stimuli (i.e., ecological validity), future studies may isolate mood effects more directly, for example by removing deliberate manipulations of integral affect.

Third, we predicted a negative relationship between biospheric values and beauty ratings which interacts with the descriptive texts condition. Both predictions were substantiated by descriptive and inferential statistics. Upon closer inspection, however, the results only indicated a negative relationship in the negative but not in the neutral condition. Since we found this pattern in our previous study (Duer et al., 2024), it cannot reasonably be attributed to noise in the data. Instead, the results suggest that the photographs are not able to

induce a noticeable value intrusion without the descriptive texts. One possible explanation is that participants in the neutral condition were distracted from the negative content when reading the texts, which may have mitigated the subsequent value intrusion to a point where it no longer had an effect on beauty ratings. In the negative condition, however, the descriptive texts directed the participants' attention to the negative content elements. This should have different effects for participants with higher or lower levels of biospheric values, which could explain the observed effect. Another explanation is different processing styles (Forgas, 1990, 1995; Schwarz, 2012) that may have been induced by the descriptive texts. More specifically, the negative descriptive texts may have induced negative affect independent of the photographs, resulting in a more critical processing style. This may have led participants to consider their values and reasoning to a higher degree when contemplating an associated photograph and judging its beauty. Both possibilities could explain why we only found a relationship between biospheric values and beauty ratings in the negative condition and deserve to be investigated in future studies.

Finally, we predicted that the relationship between biospheric values and beauty ratings would interact with incidental affect, resulting in a progressively stronger negative relationship from the good to the neutral to the bad mood condition. This hypothesis was not substantiated, as the moderation effect was negligible (Cohen, 1988) and not statistically significant. Exploratory analyses revealed that the descriptive pattern of the conditional effects matched the predicted pattern. However, while this may suggest that the effect was present but underpowered, it does not warrant support for the hypothesis beyond further investigating the effect in a future study. Beyond a limitation in statistical power, one possible explanation for the lack of significant results is that processing styles did not influence how participants with varying biospheric values evaluated the stimulus contents. This explanation contradicts existing research (Schwarz, 2012; Schwarz & Clore, 1983), as well as the results of our moderation analysis ( $X = \text{Biospheric Values}$ ;  $Y = \text{Beauty}$ ;  $M = \text{Descriptive Texts}$ ),

given the assumption that the descriptive texts modulated processing styles through the affective responses they evoked. A more likely explanation is that the moderation effect size was negligible due to interference with integral feelings induced by the descriptive texts, which adversely affected statistical power. This would be consistent with (although not substantiate) the originally hypothesized mechanism, as well as the descriptive pattern of results. Future studies should investigate the moderation effect in isolation—specifically, in an experiment using neutral stimuli and no integral affect manipulation (Jacobsen & Höfel, 2002).

Overall, although several effects reached statistical significance, most effect sizes were small (Cohen, 1988; Richardson, 2011). This indicates that the practical impact of incidental mood on aesthetic judgments is limited, and that biospheric values, as a proxy for value intrusion, exerted only modest effects. Integral affect, on the other hand, produced medium-sized and consistent effects. Therefore, our findings suggest that beauty judgments are more strongly shaped by immediate and content-related feelings than by unrelated mood states.

### **Limitations**

Online studies have several drawbacks, including potential distractions from the study, different display methods and screen sizes, and generally less experimental control of nearly every variable (Birnbau, 2004a, 2004b). While online protocols offer advantages (Verheyen & Göritz, 2009), these drawbacks must be carefully addressed in order to ensure high-quality data collection. We employed several strategies to mitigate these negative effects, such as control items, screen-outs, and a larger sample size than otherwise recommended by a-priori power analyses. In retrospect, we have no indication for a systematic influence of the aforementioned factors on our results.

While we used an established MIT (Göritz, 2007; Verheyen & Göritz, 2009) to induce incidental mood and tested its effectiveness in a pre-analysis, a direct manipulation check of the MIT was not feasible in the main study. This is because we only collected data on mood

after the rating task, a point in the experiment at which mood was heavily influenced by the photographs and descriptive texts. This was, however, a methodological necessity, because drawing attention to the participants' mood may have influenced its effect on subsequent beauty ratings (Schwarz, 2012; Schwarz & Clore, 1983). Indeed, Messner and Wänke (Messner & Wänke, 2011) found that asking participants about their mood before a rating task eliminated its effect on a subsequent evaluative judgment. Future studies should address this limitation, e.g., by utilizing biofeedback during the study to measure mood changes after the mood induction and over the course of the study (see Leder et al., 2014).

## **Conclusion**

The FAIT provides a robust framework for understanding how various feelings shape evaluative judgments, yet its application to aesthetic processing remains underexplored. Our work contributes to bridging this gap by demonstrating that both integral and incidental affect may influence beauty judgments of morally contentious photographs, i.e., photographs depicting environmental pollution.

We successfully replicated prior findings that integral affect (elicited by descriptive texts) modulates beauty judgments (Duer et al., 2024). In contrast, incidental mood showed only a weak and inconsistent influence, with beauty ratings descriptively following the predicted direction but not supporting a robust effect beyond the comparison between good and bad mood. Finally, we found further evidence that values influence beauty judgments, especially when contextual presentation factors are at odds with these values.

Future research should further isolate incidental mood effects, potentially using neutral stimuli and removing integral affect manipulations. Expanding the scope to different forms of morally charged content, such as images of war, poverty, or social injustice, may also yield deeper insights into how feelings and values affect aesthetic processing.

## **Data Availability**

We provide the dataset of the main study here: <https://doi.org/10.23668/psycharchives.21441>.

Please see Supplementary Material E for additional information about the dataset.

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