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Negative emotions in art reception: Refining theoretical assumptions and adding variables to the Distancing-Embracing model

Abstract

While covering all commentaries, our response specifically focuses on the following issues: How can the hypothesis of emotional distancing (qua art framing) be compatible with stipulating high levels of felt negative emotions in art reception? Which concept of altogether pleasurable mixed emotions does our model involve? Can mechanisms of predictive coding, social sharing, and immersion enhance the power of our model?

R1. Introduction

We are very grateful for the time and the intellectual acumen so many respondents devoted to our article. The commentaries come from an astounding variety of fields and perspectives. We take this to imply that the topic under consideration is, indeed, very rich in implications.

In the first section of our response, we exclusively discuss commentaries that directly address the components of our model; we do this in the order in which these components appear in our article. In the second section, we respond to commentaries that discuss issues for which our model includes explicit provisions, but which were left untreated. The third section addresses commentaries proposing additional or alternative variables regarding the enjoyment of negative emotions for which our model does not include any explicit provision.

Throughout our response we place a primary focus on discussing controversial issues. This specifically concerns the seemingly paradoxical hypothesis that the distancing implications of an art framing need not reduce the felt intensity of negative emotions to make them compatible with enjoyment, and our hypothesis of being moved as a positive emotion with a mixed affective signature. Regarding additional variables, mechanisms of predictive coding, social sharing, and immersion are discussed in greater detail than other aspects, because they were brought up in several commentaries.

To begin, we respond to two commentaries regarding the interdisciplinary design and the scope of our article. Our model clearly makes an effort to integrate humanist traditions of theorizing the enjoyment of negative emotions and recent scientific theories and empirical findings. We have not, however, aimed at unifying “holistic” (“Romanticist”) and “atomistic” approaches, as suggested by **Cupchik**. The tradition of rhetoric and poetics we draw on is (mostly) not of a “holistic” and Romanticist nature, nor are the scientific theories and findings we refer to inherently “atomistic.”

Second, our model proposes a new, integrative perspective on existing theorizing and available empirical data, but it does not provide any new data. To our knowledge, neuroscientific research on coactivations of negative emotions and feelings of reward is only beginning, and several pertinent studies (Brattico et al. 2016; Ishizu & Zeki 2017; Wassiliwizky et al. 2017b; see also the commentary by **Brattico & Vuust**) were only published after the acceptance of our article. As a result, we cannot but agree with the comment by **Nadal, Vartanian, & Skov (Nadal et al.)** that our model does not provide a “neurobiological basis” for the topic under consideration. At the

same time, we strongly disagree with the claim that a psychological model that does not specify the neural circuitry underlying its hypothetical mechanisms cannot provide useful guidance for future empirical research. (If this were true, all psychological models proposed prior to the advent of neuroscience would have been of little, if any, use for empirical research.)

R2. Commentaries addressing the individual components of our model

R2.1. Negative emotions are a predestined resource for the arts (= Hypothesis 1)

In our introductory section, we juxtapose two findings from two distant traditions. The first finding (A) comes from recent psychological research: In comparison to positive emotions, negative emotions have empirically been shown to prioritize attention, to have a distinct potential for a high intensity of subjective feeling, and to enjoy privileged storage in memory. The second finding (B) dates back to ancient rhetoric and poetics: The relevant treatises converge in suggesting that the powers to prioritize attention, to support strong emotional involvement, and to secure access to memory are precisely what the arts in general strive for. We conjecture (= Hypothesis 1): if A and B, then it might be concluded that (C) negative emotions are actually predestined resources for the arts rather than exceptional liabilities.

Reconsidering the literature, one could challenge the notion that (A) and/or (B) are correct summaries of findings/theories in the two research fields; in this case, (C) would not follow. One could likewise try to put forward arguments as to why (C) would not necessarily follow, even if (A) and (B) are right. Our conjecture was not challenged on either of these grounds. It was, however, challenged for reasons that misrepresent our argument. **Nadal et al.** (para. 3) write: “This assumption is clearly untenable, because not all interactions with art involve negative emotions” (Martindale 2001; Smith 2014). We note that we only propose that negative emotions may be *predestined* resources for the arts' efforts and *not* that they are *mandatory* resources. Moreover, we explicitly stress: “we do by no means rule out that visual representations of beautiful humans, animals, landscapes, stills, and so forth can well be enjoyed as beautiful without necessarily co-evoking any negative emotional associations” (sect. 1, final paragraph).

Regarding another conceptual issue, we fully subscribe to the remark by **Vuoskoski & Eerola** that our model should not be described as a “transformation” model. After all, the activation of an art framing typically *precedes* the actual processing of artworks. Accordingly, we do not imply – as suggested by **Leder & Schwarz** – that an undistanced negative emotion is first experienced and only *post hoc* relieved from some important aversive implications associated with negative emotions in an ordinary reality framing. Our model likewise does *not* predict that the Embracing components “transform” the negative emotions into positive ones, but rather that they enhance their compatibility – *as* negative emotions – with enjoyment. For these reasons, at some stage of writing the article, we systematically erased the term *transformation*. It has, however,

survived this revision in three sentences. We are grateful for the opportunity to clarify this inconsistency.

R2.2. Elicitors of negative emotions play a great role in artworks, and the corresponding emotions are indeed experienced (= Hypothesis 2)

As reported in our article, several 20th-century philosophers have advocated the notion that art recipients may actually not experience any relevant levels of genuine negative emotions, but only erroneously misattribute negative emotions to their felt responses. To rule out this possibility, we reviewed available empirical findings regarding both self-reported subjectively felt emotions and objective measures of physiological indicators of such emotions. This review provided substantial evidence for Hypothesis 2 as stated above.

The commentary by **Konečni** is the only one that challenges this hypothesis. On the one hand, Konečni elaborates on differences between art-elicited emotions and emotions in more ordinary life-contexts. These differences are by no means disregarded by our model but are in fact the very core of what we call the Distancing effects resulting from the activation of the situation schema of art reception. On the other hand, referring in a very general way to well-known difficulties of interpreting changes in physiological and electromyographic (EMG) data as indicative of genuine emotional episodes, Konečni dismisses all reported physiological evidence in a wholesale fashion, without discussing the respective studies in any detail. Therefore, his remarks are far from providing a scientifically sound refutation of all evidence in favor of the experiencing of negative emotions in art reception. (For new evidence regarding the actual experiencing of negative emotions in art reception, see also our comments regarding section 4.2 [= Hypothesis 5].)

R2.3. The Distancing factor of our model

Top-down cognitive influences on processing negative emotions constitute the Distancing factor of our model. Our review of the pertinent literature can be summarized as follows: *Negative emotions experienced in art contexts differ from ordinary emotions by virtue of being cognitively framed as art-, representation- and/or fiction-elicited emotions. Because these framings imply personal safety and control over continuing or discontinuing the exposure, they keep some of the aversive implications that negative emotions would typically have in real life contexts at a psychological distance. As a result, the art framing has the potential to allow for higher beauty, liking, and other positive ratings compared to a reality framing, even without reducing the levels of the felt negative emotions involved (= Hypothesis 3).* This latter qualification is crucial, because if the art framing would reduce the intensity of felt negative emotions, the Distancing component of our model would be incompatible both with our Hypothesis 1, according to which negative emotions are valuable resources for the arts (rather than mere antidotes to be tamed or converted), and with our Hypothesis 2, stipulating that negative emotions are actually experienced to significant degrees during art reception.

A remark by **Nadal et al.** suggests a mismatch between our model and the evidence we rely on: “The DEM [Distancing-Embracing model] predicts that these schemata [i.e., the art, representation, and fiction schemata] should influence the experience of negative emotions. However, Wagner et al. (2014) and Gerger et al. (2014) – cited as supporting studies – found no such influence.” We disagree. The two studies do show what our model predicts, namely, that art framings, compared with reality framings, render different sets of pictures with affectively negative content more aesthetically enjoyable, without reducing, let alone erasing, the levels of felt negative emotions. In other words, they reveal that because of an art framing, substantial levels of negative emotions are compatible with, if not conducive to, higher aesthetic liking.

To be sure, both philosophers and appraisal theorists have predicted precisely what **Nadal et al.** apparently mistook for our position: that in the absence of challenges to own personal goals, art-elicited emotions, and most notably negative ones, should have a *lower intensity* in terms of subjective feeling, motor expression, and peripheral physiological measures when compared with emotional responses to analogous stimuli in real-life contexts (cf. Frijda 1988, p. 352; Lange 1901, pp. 100–05; Lazarus 1991; Martindale 1984; Scherer 2005). We do not question this view for real-life contexts. However, several researchers, including emotion psychologists, have proposed a divergent perspective for art contexts. They hypothesized, and could partly show, that the suspension of prototypical action responses that results from the absence of challenges to own safety and other important goals makes room for a *higher second-order awareness* of one's felt sensations (Lambie & Marcel 2002) and may actually support an *increased intensity* of felt emotions (Gross & Levenson 1997; Maslow et al. 1970; Oatley 1994; Tan 2000, p. 117; Visch et al. 2010). The appraisal theorist Nico Frijda pushed this reasoning even to the point of claiming that art recipients intensely and hedonically “indulge” in these pragmatically useless emotions for their own sake (Frijda & Sundararajan 2007).

Notably, the theoretical assumptions referred to above did not specifically consider the role of negative emotions. This is where our model makes a difference. In general, it is typologically similar to the above-referred-to perspectives that give the absence of challenges to own goals, safety and action responses a decisively different turn for art-elicited, compared with garden variety, emotions. At the same time, following Batteux's remark that an art context is more beneficial to negative than to positive emotions, our model predicts differential benefits of the art framing for negative compared with positive emotions (for all details, see sect. 3 of our article). And it moreover spells out five art-specific mechanisms that support a Distancing-enabled Embracing specifically of negative emotions. As suggested in the commentaries by **Armstrong & Cutting** and **Vuoskoski & Eerola**, immersion and transportation are likely to be further processes in art reception that counteract the tendency for reduced intensity of felt negative emotions predicted by a classical appraisal perspective.

The hypothesis of an enjoyable high intensity of felt negative emotions is clearly supported by the empirical evidence provided in our article and, even more strikingly, by the additional recent evidence we report in our response concerning commentaries on section 4.2. **Hogan's** commentary even suggests that nonaversive exposure to simulations of aversive events may be adaptive for coping with similar challenges in real-life contexts.

Most commentaries do not challenge our hypothesis of Distancing, but focus on refining the predictions of our model and including more provisions for cases in which it may not work as predicted. **Gerger, Ishizu, & Pelowski (Gerger et al.)** suggest that the effects of the distancing mechanisms may not be a binary issue of being on versus off, but may vary over the temporal course of aesthetic trajectories. Moreover, there may be numerous gradations, depending on how unambiguous or ambiguous the framing is perceived to be (**Weisberg & Friend**), how representational or nonrepresentational the artwork is, and the extent to which it involves further dimensions of indeterminacy (**Rabb**). Live stage performances of individuals in pain and distress may have so immediate and visceral an impact on viewers that they reduce the art framing effect (**Goldstein**). Moreover, the adoption of an “aesthetic stance” or “focus” may yield effects similar to those of an art framing (**Brattico & Vuust**). We consider all of these remarks as potentially adding modifying variables, and hence higher granularity of predictive power, to our Distancing factor.

Finally, **Davies** deplores that our discussion of Distancing does not cover several contributions from analytic philosophy in the 1960s. We note first that our article has an expressed bias toward reviewing theoretical hypotheses in the light of empirical evidence. Second, because we consider the Embracing factor to be the more original part of our model, we deliberately spent only roughly one-seventh of our main text on the Distancing factor. Within these constraints, we could not cover the rich philosophical discussion in a more inclusive way.

R2.4. The Embracing factor

The longest section of our article – and the one on which we place the strongest focus – is devoted to the Embracing factor. Compared with the other sections and their corresponding hypotheses, this section has far fewer antecedents in the existing literature. The five subsections propose five mechanisms that allow art recipients not only to tolerate, but even to “embrace” negative emotions.

R2.4.1. Interplays of positive and negative emotions are more enjoyable than purely positive emotional trajectories, because they involve more dynamic change and emotional variety and are therefore more engaging, livelier, richer, and less likely to elicit boredom and lack of interest (= Hypothesis 4)

Section 4.1 draws on hypotheses advocated in both poetics and philosophical aesthetics. The hypothesis is well in line with basic principles of both philosophical and empirical aesthetics. Moreover, two articles on visual design that we came across only very recently (Fokkinga & Desmet 2012; 2013) make a similar case for a design-driven inclusion of negative emotions in consumers' interactions with consumer objects.

In his commentary, **Oatley** refers to two interview studies (Djikic et al. 2006; 2009) that he presents as (implicitly) supporting our hypotheses. In a nutshell, the studies show that when speaking about their own work, writers use more negative emotion words than members of a control group when speaking about their respective professional activity, and that readers show greater changes across a broad range of emotions, including negative emotions, after reading a

genuine literary narrative by Chekhov compared with readers of a control version having the same content, length, and reading difficulty.

Regarding the visual arts, **Chatterjee** suggests that paintings, photographs, and other images can encapsulate and condense time into “peak moments” (that reach out into the past and future) or “distilled moments” (that primarily reach out only into the past) and that such compositional techniques support a dilation of time perception that enables viewers to experience analogues to the temporal interplays of positive and negative emotions that our hypothesis stipulates primarily for works of literature and music. **Ainslie's** commentary points out that the enjoyment of negative emotions as stipulated by our model is likely to apply far beyond the confines of art, and sketches a rich picture of how and why this might be the case.

Summing up, Hypothesis 4 raised no critical concerns, but exclusively received commentaries that lend it additional support.

R2.4.2. Concomitant mixed emotions serve as mediators of negative emotions' positive contributions to enjoyment (= Hypothesis 5)

Section 4.2 gives the hypothesis discussed in section 4.1 a more specific turn. Rather than merely arguing for emotional variation, it attributes a crucial role to mixed emotions. Among the three examples we discuss (being moved, suspense, and disgust), the case of being moved received the most detailed and the most critical comments. We therefore focus on this example in our response.

R2.4.2.1. Are there actually episodes of being sadly moved? And how can being moved be both a positive and a mixed emotion?

Schubert, Seibt, Zickfeld, Blomster, & Fiske (Schubert et al.) suggest that being moved is a positive emotion primarily associated with happiness and that the close association of being moved with sadness that we propose is a misunderstanding. We fully agree that being moved is, overall, a positive emotion. At the same time, we also maintain our view that sadness is a key emotional ingredient of the complex emotion of being moved. The existing literature clearly supports our view. In a free association task that asked participants to list emotions that they closely associate with the concept of being moved (Kuehnast et al. 2014), the combined listings of sadness (German *Traurigkeit*) and mournfulness (German *Trauer*) ranked highest; joy and happiness were next. Based on Japanese, Finnish, and German participant pools, six other studies reported converging results, including studies that experimentally induced states of being moved (Hanich et al. 2014; Menninghaus et al. 2015b; 2017; Tokaji 2003; Vuoskoski & Eerola 2017; Wassiliwizky et al. 2015). All of these studies provide evidence for two prototypes of being moved, one being the sadly moving type and the other the joyfully moving type. On the basis of 106 detailed verbal accounts of feeling moved and with the use of latent class analysis, a more recent qualitative study from our group (yet unpublished) arrived at the same finding.

Moreover, with the exception of Hanich et al. (2014) and Vuoskoski and Eerola (2017), who exclusively considered sad films and sad music and, thus, did not address joyful episodes of being moved, the studies just mentioned also revealed that the two prototypes of being moved are by no means mere opposites. Rather, both prototypes feature blends of positive *and* negative

ingredients, if only in inverse proportions. For example, emotionally moving narratives of reconciliation and reunion elicit strong feelings of joy and happiness, yet these positive emotions are typically blended with, and amplified through, an awareness of the painful preceding separation. This motivates our use of the term *mixed emotions* for episodes of being moved.

Finally, in a study on sadly moving films (Hanich et al. 2014), we provided evidence that high ratings for being moved, even if they positively correlated with high ratings for sadness, amounted to a strongly positive overall evaluation of the eliciting film clips as artworks and, hence, to a clearly and non-ambivalently positive aesthetic emotion (for the concept of “aesthetic emotions,” see Schindler et al. 2017). Suggesting a distinction between “micro” and “macro” levels of emotional valence, Shuman et al. (2013) provide a non-contradictory conceptual framework for this finding. On this view, being moved can have both a mixed affective valence on the micro level of its temporal trajectory and an altogether positive affective valence on the macro level.

Schubert et al. do not discuss why we and others may have arrived at results that diverge from theirs. We suggest two potential reasons. First and foremost, Schubert et al. focus primarily on feelings of *kama muta* and collect ratings for being moved only as a vernacular proxy for this target construct. It is not clear, however, how they account for potential differences between the two concepts and to what extent their preconception of *kama muta* may have favored a selective bias in the study design such that the full range of episodes of being moved was not covered. In fact, several elements of this full range, as detailed by various methods of conceptual mapping in Kuehnast et al. (2014) and Menninghaus et al. (2015b), are not reflected in the *kama muta*-focused studies. Second, and most likely as a consequence of the prime focus on *kama muta*, Schubert et al. (2016) used primarily joyfully moving stimuli, such as reunions, acts of social bonding, and selfless acts of generosity, in their study.

Schubert et al. also find our concept of metonymy to be ill-defined. They obviously conflate it with the traditional rhetorical concept of metonymy. However, we expressly referred to Roman Jakobson's definition (1973) in which metonymy signifies a broad variety of (associative) contiguity relations across combinations of words (or other events); in these cases, the contiguity relations imply that the related entities inform each other's meanings. In a similar vein, feelings of being moved are routinely associated with sadness *and* joy (happiness), both in semantic space and in the context of emotionally moving episodes. Importantly, such associations are not necessarily grounded in similarity (which would be required in the case of metaphor, but *not* metonymy). Therefore, the concept of metonymical contiguity associations does not require feelings of being moved to necessarily share the valence of sadness to be closely associated with it.

Both **Schubert et al.** and **Nadal et al.** understand our hypothesis of mixed emotions as mediating emotions to imply that any sound empirical evidence should show simultaneous (online) coactivation of positive and negative affect, and they deplore the absence of such evidence. Our response is threefold. First, in our understanding of a theoretical review paper, the absence of “gold standard” evidence is not a reason to not propose a clearly testable hypothesis. Second, in the meantime we have published evidence of the type requested. Specifically, we have shown that peak moments of being moved that are induced by film clips (Wassiliwizky et al. 2017a) and poems (Wassiliwizky et al. 2017b) are associated to a greater degree with facial electromyographic activity

of the corrugator (indicating negative affect) than with zygomaticus activity (indicating positive affect). Importantly, the study on poems also reports peak levels of both hemodynamic responses in the primary neural reward circuitry and corrugator activity for the same participants and the same moments of exposure to recited poetry of an emotionally moving nature. Additional time-course analyses of these data (not yet published) based on grand averages for 1595 chills episodes reveal that these episodes show not only peak activations of the primary reward circuitry and of corrugator activity, but also of zygomaticus activity. Importantly, however, the absolute levels of corrugator activity are substantially higher than those of zygomaticus activity.

These recent findings strongly support our hypothesis that, in contexts of art reception, negative emotions are not antidotes to be tamed or converted, but rather directly co-occur with concomitant reward in moments of intense emotional experiences. Notably, the studies show that intense reward-related neural activity need not go along with affectively congruent higher zygomaticus activity compared with corrugator activity (as suggested in the commentary by **Leder & Schwarz**), at least not in the context of chills responses, which show peak activations of the neural reward circuitry combined with peak corrugator activity.

Third and finally, our hypothesis of metonymical contiguity questions the notion that mixed emotional episodes must *always* show strict online coactivations of their antithetical ingredients, let alone involve positive and negative emotional implications to near-equal degrees (i.e., the case of ambivalence). Rather, the antithetical ingredients of mixed emotions may not be fully parallel and have consistent weight during the entire time course of an emotional episode, but may oscillate, or vacillate, in a partly nonsynchronous way (Carrera & Ocejja 2007; Larsen & Green 2013; Larsen & McGraw 2011; Ocejja & Carrera 2009). The various time scales at which we process actions, perceptions, and predictions may facilitate the experience of “multiple emotions ‘at the same time’” (Hoemann et al. 2017), particularly in art contexts that favor a systematic integration of all parts of an aesthetic and emotional trajectory into a well-composed whole. In any event, the discussion triggered by our model points to open questions regarding the very concept of mixed emotions.

R2.4.2.2. Does the enjoyment of sadness in music always take a detour through being moved?

Performing path analyses, three studies on film clips and music (Hanich et al. 2014; Vuoskoski & Eerola 2017; Wassiliwizky et al. 2015) arrived at the conclusion that sadness contributes to enjoyment not directly, but only by invigorating feelings of being moved that, in turn, directly contribute to enjoyment. (As reported in our article, other studies have mentioned feelings of peace and quiet as potential mediators.) Referring to an unpublished study, **Barrett, Schulkin, & Bernacer (Barrett et al.)** argue that feelings of sadness in response to music are inherently pleasant by virtue of their “high granularity” (Feldman Barrett 2004; Kantor-Martynuska & Horabik 2015; Lindquist & Feldman Barrett 2008; Smidt & Suvak 2015). Given the focus of our Hypothesis 4 on emotional variety, our model may well be compatible with the hypothesis of high emotional granularity. In any event, the issue calls for further consideration and empirical testing, once the evidence for Barrett et al.'s hypothesis has been published.

R2.4.2.3. Is boredom a case for our hypothesis?

Both the tradition of aesthetics and our article deal with only a select range of negative emotions. **Elpidorou** asks the interesting question of whether our hypothesis of mixed emotions as redeemers of negative emotions may apply to *all* negative emotions. Specifically, he points out that our article refers to art-elicited boredom exclusively as a potential failure to be avoided, and asks: Couldn't it be that boredom, too, becomes more of a mixed emotion by context-driven associations with positive emotions, and thus also supports some sort of pleasure in special contexts? Elpidorou himself suggests that boredom might trigger a self-regulatory search for meaningful and interesting activities. This would clearly be a positive outcome of boredom; however, it would still not turn the experience of boredom into an *inherently* rewarding emotional episode. We suggest that, in a certain frame of mind, boredom in the sense of the absence of interesting stimulation might also be conducive to reaching higher levels of meditation-like states (see also Kracauer 1995). In any event, Goncharov's famous novel *Oblomov* (1859/2009) would be a good test case regarding how readers can enjoy a consistent and lengthy representation of the boring life of a completely lazy and inactive rich protagonist.

R2.4.3. Aesthetically appealing uses of the media of representation (such as sound/music, words/language, color/shape) have the power to make the processing of negative emotional content or associations more enjoyable while not reducing, let alone erasing, negative emotional responses (= Hypothesis 6)

This hypothesis, even though intuitively readily accessible, has informed very little research in the field of empirical aesthetics, and only the commentary by **Armstrong & Cutting** directly bears on the hypothesis. They suggest that “the well-orchestrated, seamless editing strategies” adopted by many current filmmakers promote the impression of narrative cohesion and may thereby enhance states of narrative immersion and transportation. As these states have in turn been shown to be conducive to enjoyment, the formal editing strategies bearing on low-level perceptual mechanisms might also contribute to rendering the exposure to aversive events more enjoyable. If demonstrated empirically, this testable assumption would clearly constitute a piece of evidence supporting our Hypothesis 6.

R2.4.4. Interpretive efforts towards meaning making contribute to (re)appraising negative emotional content and concomitant feelings in a (more) positive and enjoyable light (= Hypothesis 7)

This hypothesis is *a*, if not *the*, predominant hypothesis regarding the enjoyment of negative emotions in recent media studies. In this context, “meaningfulness” is often even associated with the concept of “eudaimonia.” Most empirical evidence in favor of this hypothesis comes from this field (Bartsch 2007; 2008; Bartsch & Viehoff 2003; Bartsch et al. 2010; Oliver 1993; Oliver & Bartsch 2010; Oliver & Woolley 2010). **Hagtvedt & Vohs** apparently misunderstood our hypothesis as negating a close relation between negative emotions and a search for meaningfulness. However, this nexus is precisely the reason why we included meaningfulness in our model, namely, as one of the means of coping with negative emotions and even integrating them into an overall

positive appreciation of artworks. We agree with Hagtvedt & Vohs that searches for meaning in art contexts are less closely related to straightforward pleasantness than to interest (Silvia 2005a; 2010; see also Knoop et al. 2016) and other types of cognitive and affective responses that allow embracing challenging input, such as being fascinated (Oosterwijk et al. 2016; Rimé et al. 2005).

R2.4.5. Activation of particular genre scripts can contribute to (re)appraising negative emotions in a positive and enjoyable light (= Hypothesis 8)

In our article, we exemplify this hypothesis with respect to the higher tolerance of dire situations of need and violence primed by the normative happy ending of fairy tales. Other genres, such as tales of horror, entail no such *a priori* anticipations of a happy turn of events. Still, both genres can be enjoyed, but typically for different reasons and by individuals of different ages, depending on their familiarity with and preference for the respective genres.

The commentaries regarding this hypothesis propose to extend it by including additional variables. In a commentary that goes to the very center of our argument and significantly enriches it, **Tan & Visch** propose that the activation of acquired schemata for particular artworks and media products may not only bear on issues of affective valence, but may also contribute to positive evaluation by virtue of being knowledge shared, for instance, by a filmmaker and his or her audience, and hence by establishing a communicative bond. **Armstrong & Cutting** suggest that the predictive power that comes with a genre script and the satisfaction derived from its fulfillment may already in itself – independently of valence – drive feelings of reward. Obviously, all of these variants of the genre-based hypothesis are not mutually exclusive, but may well apply to different degrees to different genres and different audiences.

R3. Commentaries addressing issues that are included in our model, but not treated in the article

From the outset, our article acknowledges that several important variables of art reception are not treated in the article, even though they are included in our model's schema. Specifically, we identified “individual differences (personality traits, aesthetic preferences, familiarity, expertise, current mood states)” and “social, cultural, and situational variables of art reception” (see Fig. 1 of target article) as variables that also need to be considered in all specific cases of enjoying negative emotions in art reception. We likewise noted that we deliberately did not treat potential functional benefits – other than the immediate processing pleasure – that might result from enjoyable exposure to art-elicited negative emotions.

Many of the commentaries fill this gap, offering insights and suggestions regarding how these variables might play a role specifically in responses to artworks involving substantial levels of negative emotions. Thus, **Hershfield & Alter** offer a rich and empirically well-supported perspective on the importance of situational factors at both the personal and the macroeconomic, social, and political levels, including some interesting hints regarding empirical evidence for functional benefits resulting from frequent exposure to mixed emotions (Adler & Hershfield 2012;

Larsen et al. 2003). Similarly, **Leder & Schwarz** convincingly argue that well-established general factors of aesthetic liking – in particular, familiarity, expertise, and the resulting differences in fluency – are also likely to have an emotion-regulatory effect on the compatibility of negative emotions with aesthetic enjoyment (see also **Brattico & Vuust**). **Green & Fitzgerald** provide evidence that the distancing implication of a fiction framing may actually increase prosocial behavior compared with a reality framing. Other commentaries bear on person-related variables for the phenomenon under consideration (**Fayn & Kuppens**; **Vuoskoski & Eerola**) and on the power that authorial intentions and strategies may exert over recipients even on a subconscious level (**Armstrong & Cutting**). **Azevedo & Tsakiris** make a case for considering “embodied simulation” as an important factor in the context of our model. **Leddington** suggests that our model may be helpful for understanding phenomena beyond the confines of the arts proper, specifically, theatrical magic.

Several commentaries stress the importance of social sharing and prosocial relatedness for responses to artworks involving negative emotions (**Bastian**; **Egloff**; **Tan & Visch**). Prosocial values and feelings of social relatedness constitute an integral part of our conceptualization of “being moved” as an attachment or bonding emotion that loads particularly high on appraisals for prosocial norms and self-ideals (Menninghaus et al. 2015b). However, we have not specifically investigated social sharing in this context. **Bastian** reports evidence that sharing negative emotions can not only lead to an increase in affiliative behavior, but also “amplifies both the pleasantness and the unpleasantness of the respective experience.” **Egloff** even makes the strong claim that social sharing is a “necessary” variable in any aesthetic enjoyment associated with negative emotions. Although this strong claim is not supported by the evidence we are aware of, the issue is clearly of great importance and calls for empirical studies that specifically target a distinct contribution of social sharing to the enjoyment of negative and mixed emotions, both in art reception and beyond.

Kreuzbauer suggests that interaction between the artist and the audience is a further sociopragmatic variable that may influence the enjoyment associated with negative emotions. **Swain & Ho** offer reasons why our model may even apply to adaptive parental responses to (otherwise annoying) baby cries, responses that in turn are beneficial for the baby's future life trajectory.

We welcome these additions to our core model, but refrain from any detailed comment, because no direct incompatibility with our model is involved and because we lack expertise regarding some of the fields referred to in the commentaries.

R4. Commentaries that raise issues that are not part of our model

R4.1. Can the enjoyment of negative emotions be comprehensively explained by the mechanisms of prediction error reduction?

Following up on an earlier article (Van de Cruys & Wagemans 2011), **Van de Cruys, Chamberlain, & Wagemans** (Van de Cruys et al.) propose that the understanding of the human brain as

consistently engaged in predictive coding may parsimoniously explain the enjoyment of negative emotions in art reception (see also **Armstrong & Cutting; Azevedo and Tsakiris; Nadal et al.**). They argue that “consolation” and “solace” account for much of the emotional reward experienced in art reception. At the same time, they adopt a widely shared (modern) understanding of the arts that can barely be derived from the hypothesis of predictive coding only: “good artworks will also (temporarily) obstruct alignment” (Van de Cruys et al., para. 6). The resulting challenges (uncertainties) then trigger a process in which viewers strive for a reduction of their prediction error. If successful, such attunement, or regained homeostasis, “yields positive affect (even if the content of the inputs is about negative events)” (para. 6).

For the affective reward of uncertainty reduction, it is thus irrelevant whether the resolved uncertainty is arrived at in a happy ending, as in comedy, or a sad ending, as in tragedy. In this regard, **Van de Cruys et al.**'s hypothesis is in line with formalist approaches to artworks and actually very close to a formalist analysis of the musical and narrative tension-resolution trajectories that we discuss in section 4.1 of our article. However, their commentary entails no prediction as to why negative affect resulting from prediction errors (uncertainties) should be an *inherently* enjoyable ingredient of art reception rather than only a somehow necessary obstacle (prediction error) to be overcome on the road to consolation, with the pleasure primarily, if not exclusively, resulting from *reducing* the prediction error and its concomitant negative effect. Moreover, the prediction error reduction hypothesis cannot readily account for the enjoyment of artworks specifically designed to resist the resolution of ambiguities or other uncertainties (Knobloch-Westerwick & Keplinger 2006).

The prime affective correlates of cognitive predictions and prediction errors are emotions related to cognitive mastery (Leder & Nadal 2014), ranging from the pleasures of successful coping to unresolved surprise, frustration, and outright annoyance (if the prediction error reduction fails). The latter are well established as nonpleasurable responses to artworks that are overdemanding to the point of being incompatible with enjoyment. It is less clear, however, how the prediction error (reduction) account of aesthetic enjoyment might explain the role of sadness or of being moved. After all, more often than not, these emotions have a strong bearing on feelings of social relatedness; such feelings cannot readily result from a purely formal successful coping with challenging visual or other compositional patterns. Thus, the theory of predictive coding–driven positive and negative affect is by no means co-extensive with the classical issue of the enjoyment of negative emotion, and Van de Cruys and Wagemans acknowledged this in their 2011 article. In any event, negotiating the overlap and the borders between this elegant, but largely purely formalist theory and our broader model, which also covers form-content interaction, would clearly be an interesting endeavor.

R4.2 Empathy, identification, immersion, transportation

Vuoskoski & Eerola stress that empathy, identification, and states of immersion and transportation may be further important variables in emotional responses to artworks. We do not challenge this view. Regarding empathy, we note that it is, in fact, included in our model, if only as an ingredient

involved in many instances of being moved. Moreover, a very recent neuroscientific study might be interpreted as suggesting that empathy affects negative emotions in a distinct fashion (Ishizu & Zeki 2017; see also the commentary by Gerger et al.).

Regarding immersion, transportation, and identification, we have deliberately refrained from including these psychological mechanisms for two reasons. First, we know of no empirical evidence yet that they specifically play a role in rendering negative emotions enjoyable in contexts of art reception. Second, because these mechanisms are related primarily to narrative art forms, they would have even strengthened the bias in favor of literature and film found in larger sections of our article and, hence, potentially compromise its more general claims. Still, as suggested earlier in this Response, we are sympathetic with the idea.

R4.3 The role of historical learning and artistic misunderstanding

Bullot & Reber deplore that our model cannot account for how misunderstandings of an artist's intentions and historical learning regarding an artwork's context might affect the mechanisms of Distancing and Embracing. We readily acknowledge that our model does not include special provisions for such variables other than the black box on the left-hand side, which provides room for an undetermined variety of "social, cultural, and situational variables of art reception."

We have also said very little about artworks "intended to prevent or at least inhibit embracing." At the same time, by no means have we thereby denied such works their status as art. Our model is not at all about defining what is art and what is not. It exclusively hypothesizes: *If* we enjoy artworks involving negative emotions, *then* Distancing and Embracing typically are necessary processing factors. Undoubtedly, the well-made and often beautiful shields of ancient and current warriors are not likely to trigger aesthetic enjoyment supported by Distancing and Embracing in their enemies, at least not during fighting. However, in a peaceful environment, the mechanisms stipulated by our model could well become operative, and the same warriors might aesthetically enjoy the sight of these shields even if they depict the killing of enemies. **Bullot & Reber's** anecdotal reference to a beholder who reportedly discovered beauty in Damien Hirst's artwork consisting of a cow head infested with maggots likewise speaks in favor of, rather than against our model. We hypothesize that this beholder both distanced and embraced (and, thus, was able to enjoy) the potentially disgusting aspects of the exhibit and, hence, that the predictive power of our model may be stronger than Hirst's (presumable) intentions to elicit aversive feelings in viewers.

R5. Conclusion

The wealth of commentaries from a variety of disciplines has provided opportunities for further clarification, added several important distinctions, sketched additional variables for potential inclusion in the Embracing factor, and identified interesting venues for future research guided by our model. All in all, we found – using the terminology of our model – far more reason to "embrace" the remarks offered and the propositions made than to "distance" them. Again, we are grateful to

the respondents for making the potential privilege of being a *Behavioral and Brain Sciences* “target” a real one for us. We look forward to a continuation of this process.

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