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**To cite this article:** Marina Iosifyan & Judith Wolfe (13 Feb 2024): Buffering effect of fiction on negative emotions: engagement with negatively valenced fiction decreases the intensity of negative emotions, *Cognition and Emotion*, DOI: [10.1080/02699931.2024.2314986](https://doi.org/10.1080/02699931.2024.2314986)

**To link to this article:** <https://doi.org/10.1080/02699931.2024.2314986>



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Published online: 13 Feb 2024.



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# Buffering effect of fiction on negative emotions: engagement with negatively valenced fiction decreases the intensity of negative emotions

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## ABSTRACT

Previous research has investigated how the context of perception affects emotional response. This study investigated how engagement with perceived fictional content vs perceived everyday-life content affects the way people experience negative emotions. Four studies with an experimental design tested how engagement with perceived fictional content vs perceived everyday life content affects the intensity of negative emotional response to negative emotional content, the motivation to decrease negative emotions, and cognitive reappraisal. Participants were presented with negatively valenced images and were asked to imagine either that they were witnessing them, or that a bystander was witnessing them, or that they were viewing a movie including these scenes. After the manipulation, all participants observed a different set of negatively valenced images or a set of negatively valenced videos and reported their emotional response. We found that the intensity of negative emotions and motivation to decrease them was lower among participants in the fiction condition compared to participants in the everyday life condition. Although perspective-taking had a similar effect on negative emotions, fiction condition was more successful in decreasing negative emotions. This might indicate that fiction plays a buffering role in decreasing the negative emotions people experience when facing negative emotional content.

## ARTICLE HISTORY

Received 10 March 2022  
Revised 9 January 2024  
Accepted 13 January 2024



## KEYWORDS

Fiction; emotion; cognitive reappraisal; negative emotions; perspective-taking

When reading a book or watching a movie, people may encounter fictional events and characters that they react to emotionally. They may feel sadness, admiration, fear, compassion, even though they clearly understand that what they are imagining or perceiving is not real. English philosophers Radford and Weston (1975) called this phenomenon the *paradox of fiction*. One way to resolve the paradox of fiction is to assume that the emotions we feel in everyday life are different in nature from the emotions we feel when reading/watching fiction.

The emotions we experience while engaged in fiction were discussed in psychology long before

Radford and Weston introduced the paradox of fiction. In 1925, Lev Vygotsky published *Psychology of Art*, which proposes that “fictional” and “everyday-life” emotions are different in nature (Vygotsky, [1925] 1974). Vygotsky suggests that, unlike “fictional” emotions, “everyday-life” emotions motivate us to act. For instance, the emotion of fear we feel while looking at a barking dog may motivate us to run. However, the emotion of fear we experience while looking at a scary monster in a horror movie will probably not force us to run out of the cinema. According to Vygotsky, art is a fiction that elicits intense emotions which are not turned into action. Vygotsky cited several researchers who shared this opinion: Richard

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Müller-Freienfels and Hugo Münsterberg (Vygotsky, [1925] 1974).

These theoretical assumptions, with such a long history, have been tested empirically. These empirical studies typically present participants with fiction or facts and compare the intensity of emotions elicited in these two conditions. In one study, LaMarre and Landerville showed participants a documentary and a fictional film on the Rwandan genocide. They found differences in self-reported guilt: the self-reported emotion of guilt was weaker for the fiction film compared to the documentary (LaMarre & Landerville, 2009). However, this study has an important limitation: the two videos shown to the participants were different. Thus, it is difficult to isolate the causes of the observed effects, might have occurred not solely because of the fiction vs fact distinction, but also because of other factors, including the differing qualities of the videos.

In another study, Thalia Goldstein showed her participants films which were presented either as based on facts or fiction. The participants were then asked to report their emotional reactions to the films. The author concluded that no major differences between factual and fictional conditions had been identified (Goldstein, 2009). Although in this study the same videos were shown for both conditions, all were extracts from feature films. Thus, even while viewing a film presented as based on real events, participants were nonetheless aware that it was a feature film rather than a documentary or nonfiction.

More recently, Sperduti et al. (2016) conducted a study designed to assess both physiological aspects of emotions and self-reported emotional response to fiction. They showed their participants several YouTube videos, presenting each video either as documentary or as fictional, ensuring that participants perceived videos as realistic in the first condition and as fictional in the second. Although no differences were found in physiological aspects of emotions (electrodermal activity), it was found that self-reported emotional response was more intense for the everyday life condition as compared to the fictional condition, especially for negative emotions (Sperduti et al., 2016). Thus, empirical research has shown that there are some differences in intensity of negative emotions under the fiction condition vs the everyday life condition: the intensity of negative emotions is higher under the everyday life condition.

Our work builds on these findings, but extends the study of the effects of fictional vs everyday-life

contexts on negative emotions in two ways. First, we examine not merely the intensity of negative emotion but also its quality, attempting to make progress on Vygotsky's question whether emotions experienced in fictional contexts differ in quality from those experienced in everyday-life contexts. Such differences may be reflected, among other things, (a) in the intensity of an audience's desire to decrease the negative emotions, and (b) in their facility to re-appraise such emotions. Secondly, we examine not merely responses to (perceived) fiction itself, but the effect it might have on subsequent experience.

In order to extend our discussion of the effects of fiction on emotions, we first need to indicate what we mean by fiction. Fiction can be broadly defined as imaginary narratives in various forms or media. But at least two different types of fiction must be distinguished, as each might have a different effect on emotion. One type of fiction involves narratives which were deliberately created to appear as fact but are, in fact, false. For example, during the war in Donbas in 2014, Channel One Russia showed a news report on the public crucifixion of a three-year-old boy performed by soldiers, which later was shown to be disinformation (Musafirova & Makarenko, 2015). It is very likely that the same news report elicited very different emotions when the viewers perceived it as fact vs when they were aware that it was a fiction. Investigating the effects of false vs true facts on emotions is important: a recent study showed that fake news reaches far more people compared to the true news, partly because it is deliberately designed to be startling (Vosoughi et al., 2018). A different type of fiction is evident in the arts – literature, cinema, theatre, poetry, opera, etc. Artworks might also present fictional portrayals of crucifixion, but signal through contextual cues and/or formal technique that they are fictional rather than factual. Such undisguised, artistic fictions (“art fiction” for short) may elicit a different emotional response compared to the two types of news report described above. In this study, we were particularly interested in art fiction and its impact on emotion, and subsequent uses of the term *fiction* in this paper refer, in the first instance, to art fiction.

There are currently two opposing views of the impact of art fiction on emotion. The first assumes that it affects emotion the same way as everyday life does. For instance, the single-code hypothesis developed by Shaun Nichols (2004) assumes that real-life

beliefs and pretense representations share the same psychological and neural mechanisms, and therefore should produce similar affective outputs. That is, the sorrow induced by an account of Hemingway dying by suicide is similar to the sorrow induced by a pretense representation of Anna Karenina dying by suicide. This hypothesis can be supported by an empirical study conducted by Lang et al. (1983): the experiment asked participants to read a piece of fiction about an encounter with a snake, and the majority displayed physiological reactions typically associated with fears upon meeting a real snake.

The more recently developed “embodied simulation” theory, introduced by Vittorio Gallese and his colleagues, also supports the idea that the impact of art fiction on emotion is similar to the impact of everyday life. The embodied simulation theory assumes that the sensory motor system, which we use to interact with the world (e.g. move, feel<sup>1</sup>), plays an important role in imagination: motor imagery and executed movement, and visual imagery and mental imagery, share neutral substrates (Boecker et al., 2002; Guillot et al., 2009; Hanakawa et al., 2008; Lacourse et al., 2005; Pearson et al., 2015). In other words, we use embodied simulation when we perceive others and plan future actions, and involve the same system in imagery processes and engagement in fiction (Ardizzi et al., 2020; Heimann et al., 2014; Umiltà et al., 2012). This theory explains, for example, why viewers experience empathy when perceiving a fictional artwork. The embodied simulation framework suggests that viewers imagine themselves experiencing what is depicted in the artwork and therefore experience empathy (Freedberg & Gallese, 2007).

The alternative view of the impact of art fiction on emotion assumes that fiction affects emotion differently compared to everyday life. One element of this view has been expressed by psychologists, e.g. Lev Vygotsky, as described above: namely, that emotions we experience when we perceive art do not motivate us to act. A similar idea is developed by Winfried Menninghaus and his colleagues in the Distancing-Embracing model of emotion in art (Menninghaus et al., 2017).<sup>2</sup>

The first component of this model, distancing, holds that art-induced negative emotions are not the same as their everyday-life parallels, because the context of art provides distancing from these emotions. When we are engaged with an artwork, even if it depicts physically threatening or dangerous

events, we know that the events pose no real physical danger for us. With our physical safety ensured, we are not compelled to act, and therefore our coping potential is not challenged. The second component of Menninghaus’s model is embracing, which refers to the potency of negative emotions. Because negative emotions are generally of high intensity, they render aesthetic experience more intense and profound. Sociobiologically considered, negative emotions such as fear, anger, or disgust are associated with the detection of dangerous stimuli or situations, and thus correlate with better remembering, as heightened attention and emotional intensity tend to aid survival (Cacioppo & Gardner, 1999; Frijda, 1988). These qualities of negative emotions make them particularly important in aesthetic experience, since works of art also seek attention, intensity of engagement, and to be remembered. Some empirical findings support this idea. For example, viewers rate sad movies as more intensely affecting than joyful movies (Menninghaus et al., 2015; Wassiliwizky et al., 2015). Because negative emotions in an art-fiction contexts can be less disturbing, individuals can be less motivated to decrease them, and thus allow themselves to be relatively intensely affected by them.

Some researchers have further developed the idea that negative emotions are qualitatively different in fiction contexts because such contexts do not afford the opportunity, as everyday life does, to act and change the events we perceive. Affordances, or opportunities for action, may affect the way we perceive an environment (e.g. a cup affords grasping; Gibson, 1977). Art fiction does not involve affordances in their classical understanding (Gibson’s), because we are usually unable to act on them. It has been proposed, however, that art involves affordances of a particular type, namely aesthetic affordances (Brincker, 2015). These affordances are not related to all forms of fiction but particularly to art, for the worlds mediated by artworks are characterised not only by detachment from action but also by affordances to “behold”:

The “detachment” from action thus is not meant to preclude emotional involvement but rather promotes a receptiveness, where the pause of in action [*sic*] allows the experience to play with our emotions, sensorimotor resonance and potentially with our memories and imagination. (Brincker, 2015, p. 131)

That art fiction affords an opportunity to “behold” – that is, to experience or even enjoy negative emotions in the absence of an imperative to act –

is also part of several philosophical theories of aesthetics, most influentially that of Stanley Cavell (Cavell, 2008). According to Cavell, such an “aesthetic” experience of negative emotions affords unique psychological opportunities which may have positive effects on everyday life. Most importantly, it affords enlarged opportunities for reappraisal. In the psychological literature, reappraisal affordances are opportunities for a semantic re-interpretation of situations or emotions with which we are confronted (Suri et al., 2018). By reinterpreting the significance of a situation or emotion, we regulate our own emotional response to it. Reappraisal is a vital component of our regulation of negative emotions, and art fiction may afford opportunities to practice it.

There are storylines with higher affordances for reappraisal (a character experiencing suffering that may result in something good in the end) and storylines with lower affordances for reappraisal (a character experiencing suffering that cannot result in something good in the end). Previous research has shown that content with a high intensity of negative emotions is harder to cognitively reappraise compared to content with a low intensity of negative emotions (Suri et al., 2018). That is, the qualities of the content itself might affect the reappraisal affordances. The context of perception – i.e. when one is aware that one is perceiving an art fiction – can also affect these affordances. For example, in everyday life, a young couple’s suicide would afford their loved ones little opportunity to reappraise/interpret the meaning of the event in an emotionally satisfying way, whereas Romeo and Juliet’s suicide, on the contrary, might afford the play’s audience an opportunity to re-appraise/re-interpret the event as testimony that love can conquer the fear of death.

In summary, it remains a controversial question whether emotions we experience in art fiction differ from emotions we experience in everyday life. Previous research has mostly investigated how the context of perception (fiction vs everyday life) affects the intensity of the emotions we experience (Goldstein, 2009; LaMarre & Landreville, 2009; Lang et al., 1983; Sperduti et al., 2016). However, not only the intensity of emotions but also emotional regulation and motivation to decrease negative emotions can be different in the experience of art fiction. In this study, we investigated how engagement with art fiction vs engagement with everyday life affects the way people later experience and regulate negative emotions. While most of the research investigated

the way people engage negative emotions in fiction contexts, the after-effects of exposure to fiction remain less investigated. We expected that because art fiction is related to greater detachment from action compared to everyday life, because negative emotions in art fiction are more pleasurable, and because art involves beholding affordances, engagement with it (as opposed to everyday life) will decrease (1) the intensity of negative emotions and (2) the motivation to reduce negative emotions, but will increase (3) cognitive reappraisal of negatively valenced content.

## Study 1

Study 1 was a study with experimental design conducted to test the hypothesis that engagement with fiction, in contrast to engagement with everyday life, decreases the intensity of negative emotions and the motivation to decrease negative emotions, but increases cognitive reappraisal. Participants were randomly assigned to the fiction and the everyday conditions. They were asked to briefly describe negatively valenced images. After the manipulation task, they observed a different set of negatively valenced images and reported their emotional response to them.

## Method

### Power analysis

Previous research comparing the effects of fiction vs everyday life on affective responses has generally found large effect sizes (LaMarre & Landreville, 2009; Sperduti et al., 2016). However, there is also evidence of weak or no effect of the context of perception (fiction vs everyday life) on affective response (Goldstein, 2009). Thus, we based the power analysis on a medium effect size ( $d = 0.5$ ).

G\*Power (Faul et al., 2007) indicated that the minimal sample size to detect a difference between two independent groups would be 88 participants in each, with a medium effect ( $d = 0.5$ ), a power of .95, and an alpha level of 0.05. We recruited additional participants in order to meet this sample size requirement in case of participant exclusion.

### Participants

Two hundred and six participants were recruited on Prolific, a platform for online research. Ten were excluded because they failed the attention task,

which consisted of one item (*This is a test item. Please select 100*). Six participants were excluded because they did not follow the instructions for the manipulation task: instead of describing what the main character would feel and do, they described their own feelings and actions. The final sample included 190 participants. One hundred and three participants from 18 to 70 years old ( $M = 34.76$ ,  $SD = 12.10$ , 35 males, 67 females, 1 non-binary) were randomly assigned to the control (everyday life) condition. Eighty-seven participants from 18 to 79 years old ( $M = 36.62$ ,  $SD = 13.11$ , 38 males, 48 females, 1 non-binary) were randomly assigned to the experimental (fiction) condition.

All studies described in this manuscript were approved by XXX, approval code YYY. Because both studies involve negatively valenced content, all participants were informed about this fact prior to the beginning of the study.

### Materials

Previous research has shown that content with a high intensity of negative emotions is harder to cognitively reappraise compared to content with a low intensity of negative emotions (Suri et al., 2018). For this reason, 10 high-intensity and 10 low-intensity negative-emotion images were used as stimuli (see Image 1). These images were selected from the Open Affective Standardized Image Set (OASIS, Kurdi et al., 2017). Initially, we selected 30 high-intensity and 30 low-intensity negative-emotion images from this database. We reasoned that it would be easier to present realistic images as movie shots rather than present movie shots as realistic images.

Therefore, we needed to select images which would be perceived as realistic. To discover this information, we recruited 50 participants on Prolific, who did not take part in the main study. These participants evaluated 60 images on a scale from 1 (Not realistic) to 4 (Realistic). We selected 10 high-intensity and 10 low-intensity emotional images which were evaluated as realistic ( $>3.3$ ,  $M = 3.56$ ,  $SD = 0.13$ , see Appendix A). The high-intensity images we selected had more negative valence compared to low-intensity images based on an OASIS dataset ( $M = 2.02$ ,  $SD = 0.59$  vs  $M = 2.48$ ,  $SD = 0.34$  respectively),  $t(18) = -2.15$ ,  $p = .045$  (Kurdi et al., 2017). The high-intensity images had higher arousal ratings compared to low-intensity images ( $M = 4.72$ ,  $SD = 0.24$  vs  $M = 3.46$ ,  $SD = 0.26$  respectively),  $t(18) = 11.19$ ,  $p < .0001$ . Based on our own data, these images did not differ in perceived realism,  $p = .313$ .

### Procedure

Participants were randomly assigned to experimental (fiction) and control (everyday life) conditions. In the experimental condition, they received the following instructions:

You will see 6 images with negative emotional content. Imagine that you are viewing a movie including these scenes. Your task is to briefly describe what you think the main character would feel and do when witnessing this scene.

In the control condition, participants received the following instructions:

You will see 6 images with negative emotional content. Imagine that you are witnessing these scenes. Your task is to briefly describe what you would feel or do.



**Image 1.** High-intensity image with a negative emotional content (left), low-intensity images with a negative emotional content (right).



Three high-intensity images and three low-intensity images were displayed in a random order, one after another, with a text box below. The time of each trial was not limited. After the manipulation, participants were told that they had finished this task, and in the next task they were asked to view and cognitively reappraise a set of images (five high-intensity images and five low-intensity images) in order to experience fewer negative emotions. The meaning of reappraisal was explained to them: “to think about images in different ways to lessen their negative impacts, to reinterpret what you see in order to experience fewer negative emotions”. An example of reappraisal was given to them: “For example, you might see a woman undergoing a painful medical procedure. In order to experience fewer negative emotions, you can reappraise it by thinking that later she will feel better”. The images were displayed in random order among the participants. Participants were asked to answer the following questions, using a sliding scale from 0 (not at all) to 100 (very much):

- (1) How intense are negative emotions you experience?
- (2) How much did your negative emotions bother you?
- (3) How motivated were you to decrease these negative emotions?
- (4) How easy was it to think of the image in a different way to decrease any negative emotion?
- (5) How effective was the new way of thinking in reducing any negative emotion you were experiencing?

The order of questions was not counterbalanced between participants. Again, time was not limited for each trial. The data was averaged across images. Questions 2 and 3 were collapsed into one index of motivation to decrease negative emotions,  $r(190) = .673$ ,  $p < .0001$ . Questions 4 and 5 were collapsed

into one index of cognitive reappraisal,  $r(196) = .881$ ,  $p < .0001$ . Reappraisal difficulty as a measure of reappraisal affordances was found to be stable and used in previous research (Suri et al., 2018).

## Results

Means and standard deviations of all variables among participants in experimental and control conditions are reported in Table 1. All data analysis reported in this paper was conducted with SPSS Statistics 28. We conducted three repeated measures ANOVA to test how condition (fiction vs everyday life) and emotional intensity (high vs low) affect (1) the intensity of negative emotions; (2) motivation to decrease negative emotions, and (3) cognitive reappraisal; see Table 2. The condition was entered as a between-participants factor, while emotional intensity was entered as a within-participants factor.

Interaction between condition (fiction vs everyday life) and emotional intensity (high vs low) was marginally significant (see Table 2). Negative emotions were less intense in the fiction condition compared to the everyday life condition when observing high-intensity images,  $t(188) = -2.11$ ,  $p = .036$ ,  $d = 0.31$ . These differences were not significant when participants observed low-intensity images,  $p = .630$ . Similarly, motivation to decrease negative emotions was less intense in the fiction condition compared to the everyday life condition when observing high-intensity images,  $t(188) = -2.56$ ,  $p = .011$ ,  $d = 0.37$ . These differences were not significant when participants observed low-intensity images,  $p = .216$ . No differences in cognitive reappraisal were observed between conditions.

## Discussion

Study 1 was conducted to investigate the effect of fiction on negative emotions. We found a significant effect on negative emotions experienced when

**Table 1.** Means and standard deviations of all variables among participants in experimental and control conditions in Study 1.

Groups	Intensity			Reappraisal			Motivation		
	High*	Low*	Total	High	Low	Total	High	Low	Total
Fiction $N = 87$	45.39 (17.55)	42.90 (19.24)	44.15 (16.43)	46.31 (21.14)	43.30 (20.93)	44.81 (19.63)	38.90 (16.21)	35.23 (17.13)	37.07 (15.27)
Everyday life $N = 103$	51.28 (20.41)	44.30 (20.32)	47.79 (18.40)	46.65 (18.71)	44.41 (16.97)	45.53 (15.61)	45.30 (17.98)	38.63 (20.05)	41.96 (17.61)

Note. Intensity = intensity of negative emotions; Reappraisal = cognitive reappraisal; Motivation = motivation to decrease negative emotions. High = high-intensity images, Low = low-intensity images. Standard deviations are in round breaks.

**Table 2.** Repeated measures ANOVA results in Study 1.

	<i>F</i>	<i>p</i>	$\eta^2$	<i>df</i>
Model 1: Intensity of negative emotions				
Intensity	14.51	<.001	.072	1, 188
Fiction	2.04	.155	.011	1, 188
Intensity*Fiction	3.27	.072	.017	1, 188
Model 2: Motivation to decrease negative emotions				
Intensity	25.71	<.001	.120	1, 188
Fiction	4.11	.044	.021	1, 188
Intensity*Fiction	2.17	.142	.011	1, 188
Model 3: Cognitive reappraisal				
Intensity	4.85	.029	.025	1, 188
Fiction	0.08	.779	.001	1, 188
Intensity*Fiction	0.10	.747	.001	1, 88

Note. Intensity: image negativity intensity; fiction = condition (fiction vs everyday life).

participants viewed images with a high intensity of negative emotions. That is, participants who had engaged with fiction experienced less intense negative emotions and were less motivated to decrease them compared to participants engaged with everyday life. This result is consistent with previous research which found that in the art-fiction condition individuals express less intense negative emotions (Sperduti et al., 2016). However, this study extends that finding by showing that engagement with art fiction affects the way individuals later experience negative emotions. Importantly, this result was only valid for content with a high intensity of negative emotions. This might signify that engagement with art fiction plays a buffering role for intense negative emotions experienced later in everyday life. That is, after being exposed to fiction, individuals are less inclined to experience intense negative emotions.

This study also found that participants engaged with fiction were less bothered by negative emotions and less motivated to decrease them. This finding can support the distancing-embracing theory of negative emotions in art (Menninghaus et al., 2017). That is, when engaging with fiction (in comparison to everyday life), individuals are less bothered by negative emotions and enjoy them more. For example, it was earlier found that sad moving films affect people more intensely than joyful moving films (e.g. Menninghaus et al., 2015; Wassiliwizky et al., 2015). An alternative explanation of the fact that individuals are less bothered by negative emotions in the fiction condition is that because they experience less intense negative emotions when engaged with it, they are less bothered by them.

Finally, contrary to our expectations, we did not observe any effects on cognitive reappraisal of

images in the fiction condition in comparison to the everyday life condition. First, this may indicate that the self-report measure we used has limitations in capturing the efficacy of cognitive reappraisal. Participants were explicitly asked to engage in cognitive reappraisal in the main task; however, their ability to assess this cognitive reappraisal was not measured adequately. Second, this might signify that cognitive reappraisal is not responsible for decreased intensity of negative emotions in the fiction condition. That is, engagement with fiction is not necessarily related to increased cognitive reappraisal affordances, at least in relation to static images.

## Study 2

Study 2 was conducted to extend the findings of Study 1. It was conducted to test the hypothesis that engagement with fiction, in contrast to engagement with everyday life, decreases the intensity of negative emotions and the motivation to decrease negative emotions, but increases cognitive reappraisal. Participants were randomly assigned to experimental (fiction) and control (everyday life) conditions. They were asked to briefly describe negatively valenced images. After the manipulation task, they observed a set of negatively valenced videos and evaluated their emotional response to them. Videos were selected instead of images because they are more ecologically valid than static images and are an effective means of creating emotional reactions in experimental settings (Rottenberg et al., 2007). Study 2 also investigated how individual differences in attitudes towards art and need for affect moderate the effect of fiction on negative emotions. Need for affect is a personality trait related to a strong disposition to approach or avoid emotion-inducing situations (Maio & Esses, 2001). It is possible that individuals who have positive attitudes towards art and are motivated to approach emotion-inducing experiences show a stronger buffering effect of fiction on negative emotions compared to individuals who do not have positive attitudes towards art and are motivated to avoid emotion-inducing experiences.

## Method

### Participants

As in Study 1, we recruited 200 participants to detect a difference between two independent groups with a medium effect size, a power of .95, and an alpha



level of 0.05. We recruited additional participants to meet the sample-size requirement in case of participant exclusion.

Two hundred participants were recruited on Prolific. One hundred and three participants from 18 to 65 years old ( $M = 33.53$ ,  $SD = 13.25$ , 40 males, 63 females) were randomly assigned to the control (everyday life) condition. Ninety-seven participants from 18 to 77 years old ( $M = 35.59$ ,  $SD = 14.51$ , 28 males, 69 females) were randomly assigned to the experimental (fiction) condition. To ensure high data quality, we only included participants with a high approval rating (>80%). All participants followed the instructions in the manipulation task, and none were excluded.

### Materials

Five videos with negative emotional content were used as stimuli. Initially, we selected 16 short videos on YouTube which might elicit negative emotions (e.g. police beating a crowd). To ensure that these videos would elicit negative emotions and be perceived as realistic, we recruited 50 participants from Prolific who did not take part in the main study. These participants evaluated 16 videos on three items: valence (on a 7-point scale, from  $-3 =$  very negative emotions to  $+3 =$  very positive emotions), arousal ( $+3 =$  very calming to  $-3 =$  very arousing), and realism (4-point scale, from 1 = not realistic to 4 = realistic). We selected five videos which were evaluated as negatively valenced ( $M = -1.52$ ,  $SD = 0.67$ , one sample t-test (test value = 0):  $t(49) = -15.97$ ,  $p < .0001$ ) and five which were evaluated as realistic ( $M = 3.39$ ,  $SD = 0.43$ , one sample t-test, test value = 3,  $t(49) = 6.50$ ,  $p < .0001$ ). The arousal ratings varied across videos (see Appendix A).

### Procedure

Participants were randomly assigned to the fiction and the everyday life conditions. In the fiction condition, they received the following instructions:

You will see 6 images with negative emotional content. Imagine that you are viewing a movie including these scenes. Your task is to briefly describe what you think the main character would feel and do when witnessing this scene. Please, do not describe what you would feel or do. Remember, your task is to describe what the main character of the movie would feel and do.<sup>3</sup>

In the everyday life condition, participants received the following instructions:

You will see 6 images with negative emotional content. Imagine that you are witnessing these scenes. Your task is to briefly describe what you would feel or do.

Six negatively valenced high-intensity images were displayed in a random order, one after another, with a text box below. The time of each trial was not limited. After the manipulation, participants were told that they had finished this task, and in the next task they were asked to view and cognitively reappraise a set of short videos in order to experience fewer negative emotions. The meaning of reappraisal was explained to them, as in Study 1: "to think about images in different ways to lessen their negative impacts, to reinterpret what you see to experience fewer negative emotions". The videos were displayed in random order among the participants. Immediately after viewing each video, participants were asked to answer five questions, using a sliding scale from 0 (not at all) to 100 (very much), as in Study 1 (see above).

The time for each trial was not limited. The data was averaged across all videos. Questions 2 and 3 were collapsed into one index of motivation to decrease negative emotions,  $r(200) = .595$ ,  $p < .0001$ . Questions 4 and 5 were collapsed into one index of cognitive reappraisal,  $r(200) = .913$ ,  $p < .0001$ .

At the end of the study, participants reported their attitudes towards art and need for affect. To measure attitudes towards art, we asked the participants to evaluate three statements ("I like art", "I think I understand art", "Usually I often go to art exhibitions and cinema") on a scale from 1 (not at all) to 7 (very much). The three items were collapsed into one index of attitude towards art (Cronbach's alpha = 0.84).

To measure need for affect, we used the need for affect scale (NFA; motivation to approach or avoid emotion-inducing experiences; Maio & Esses, 2001). Participants evaluated 10 statements (e.g. "I feel that I need to experience strong emotions regularly") on a scale from  $-3$  (strongly disagree) to  $+3$  (strongly agree). The 10 statements were collapsed into one index of need for affect (Cronbach's alpha = 0.85).

### Results

Means and standard deviations of all variables among participants in fiction and everyday life conditions are reported in Table 3. The intensity of negative emotions, motivation to decrease negative emotions,

**Table 3.** Means and standard deviations of variables between conditions in Study 2.

Groups	Intensity	Reappraisal	Motivation
Fiction ( $N = 97$ )	55.15 (19.54)	35.75 (18.82)	46.08 (19.05)
Everyday life ( $N = 103$ )	60.90 (20.42)	33.99 (18.05)	48.63 (20.99)

Note. Standard deviations are in parantheses.

and cognitive reappraisal were averaged across all videos. We conducted three independent *t*-tests to compare the intensity of negative emotions, motivation to decrease negative emotions, and cognitive reappraisal between conditions. Negative emotions were less intense in the fiction condition compared to the everyday life condition,  $t(198) = 2.03$ ,  $p = .043$ ,  $d = 0.29$  (see Table 3). All other differences between conditions were not significant,  $ps > .370$ .

To investigate the moderation effects of attitudes towards art and need for affect, we conducted a moderation analysis using the PROCESS programme for SPSS (Hayes, 2012). The condition (manipulation) was entered as the independent variable, attitudes towards art and need for affect as moderators, and intensity, reappraisal, and motivation as dependent variables. The moderation effects of attitudes towards art on the link between the condition and the dependent variables were not significant,  $ps > .331$ . The moderation effects of need for affect on the link between the condition and the dependent variables were not significant either,  $ps > .354$ .

## Discussion

Study 2 was conducted to investigate the effect of fiction on negative emotions. We found a significant effect on negative emotions among participants who were engaged with fiction vs everyday life. That is, the participants who had engaged with fiction experienced less intense negative emotions. This result is consistent with Study 1. After engaging with fiction, individuals were less inclined to experience negative emotions when they viewed realistic videos with negative emotional content (e.g. TV news about police attacking a crowd, a bear attacking a man). Interestingly, this effect was not moderated by individual differences in attitudes towards art and need for affect. That is, even participants who do not like art and/or have low need for affect still experience less intense negative emotions after engaging with fiction. This indicates that this effect is relatively universal.

However, Study 2 did not support the findings of Study 1 on the effect of fiction on motivation to decrease negative emotions, as there were no significant differences in the motivation to decrease negative emotions between the two conditions, although the means pointed in expected direction. Finally, as in Study 1, we did not observe any effects on cognitive reappraisal of images for either condition (fiction, everyday life).

## Study 3

Studies 1–2 compared the effect of fiction and everyday life on negative emotions. Instructions used in the fiction condition involved perspective-taking (imagining a movie character and what they would feel and do), unlike the first-perspective instructions in the everyday condition (imagining yourself and what you would feel and do). Indeed, fiction often requires perspective-taking, but perspective-taking is not specific to fiction. Therefore, it is possible that the observed effects of fiction are related not to fiction specifically, but to perspective-taking. In order to address this possibility, we conducted Studies 3 and 4.

Study 3 was conducted to compare the intensity of negative emotions and motivation to decrease them<sup>4</sup> in three experimental conditions: fiction, bystander, and everyday life. While the bystander condition involved perspective-taking, it was not related to fiction, but to everyday life. Participants were randomly assigned to three conditions and asked to briefly describe negatively valenced images. After the manipulation task, they observed a different set of negatively valenced images and reported their emotional response to them.

## Method

### Participants

Power analysis was similar to Study 1. Three hundred participants were recruited on Prolific, a platform for online research. To ensure high data quality, we only included participants with a high approval rating (>80%). One participant was excluded because they did not follow the instruction and described their own feelings and actions instead of the bystander's. Ninety-nine participants from 19 to 72 years old were randomly assigned to the fiction condition ( $M_{age} = 39.72$ ,  $SD = 14.50$ , 68 females, 31 males). Ninety-five participants from 19 to 74 years old ( $M_{age} = 42.24$ ,  $SD = 13.84$ , 61 females, 31 males, 1

non-binary, 1 did not report their gender) were randomly assigned to the bystander condition. One hundred and five participants from 21 to 72 years old ( $M_{\text{age}} = 41.59$ ,  $SD = 13.25$ , 55 females, 49 males, 1 non-binary) were randomly assigned to the everyday life condition.

### Materials

We used images preselected in Study 1. Since Study 1 showed that stronger effects of fiction on emotion are associated with a high intensity of negative emotions, we selected high-intensity images as stimuli. In the manipulation task, we used six high-intensity images from the OASIS dataset (valence:  $M = 2.42$ ,  $SD = 0.29$ ; arousal:  $M = 4.04$ ,  $SD = 0.85$ ). In the main task, we used ten high-intensity images from the same database (valence:  $M = 2.02$ ,  $SD = 0.57$ ; arousal:  $M = 4.92$ ,  $SD = 0.29$ ).

### Procedure

Participants were randomly assigned to fiction, bystander, and everyday life conditions. In the fiction condition, they received instructions similar to Study 1, with one exception.<sup>5</sup> When the image was displayed on the screen, they were asked to (1) briefly describe the main character; (2) briefly describe what they would feel and do witnessing this scene.

In the bystander condition, participants received the following instructions:

You will see 6 images with negative emotional content. Imagine a bystander is witnessing these scenes. Your task is to briefly describe what they would feel or do.

When the image was displayed on the screen, they were asked to (1) briefly describe the bystander; (2) briefly describe what they would feel and do witnessing this scene.

Finally, participants in the everyday life condition received instructions as in Study 1 (see above). Six images were displayed in a random order, one after another, with a text box below. The time of each trial was not limited. After the manipulation, participants were told that they had finished this task, and in the next task they were asked to view and cognitively reappraise ten images with negative emotional content in order to experience fewer negative emotions. The meaning of reappraisal was explained to them as in Study 1. The images were displayed in random order among the participants. Participants were asked to answer the following three questions, using a sliding scale from 0 (not at all) to 100 (very much):

- (1) How intense are the negative emotions you experience?
- (2) How much did your negative emotions bother you?
- (3) How motivated were you to decrease these negative emotions?

The order of questions was not counterbalanced between participants. Again, time was not limited for each trial. The data was averaged across images. Questions 2 and 3 were collapsed into one index of motivation to decrease negative emotions,  $r(348) = .81$ ,  $p < .001$ .

### Results

Means and standard deviations of all variables among participants in three conditions are reported in Table 4. We conducted two one-way ANOVA to test how the condition (fiction vs bystander vs everyday life) affects (1) the intensity of negative emotions; (2) motivation to decrease negative emotions. Although descriptive statistics pointed in the expected direction (the intensity of negative emotions and motivation to decrease them were higher in the everyday life condition compared to the fiction and the bystander conditions), differences between conditions were not significant,  $ps > .468$ .

### Discussion

Study 3 investigated how fiction, bystander, and everyday life conditions affect the intensity of negative emotions and motivation to decrease them. This study did not find evidence that any significant differences occur between dependent variables in the three conditions. However, since descriptive statistics pointed in the expected direction, it is possible that the effect of the fiction and the bystander condition is small, and a larger sample size is needed to detect it. Moreover, it is possible that static images are less ecologically valid in creating emotional reactions in experimental settings (Rottenberg et al., 2007).

### Study 4

Study 4 was conducted to compare the intensity of negative emotions and motivation to decrease them when observing videos with negative emotional content. Participants were randomly assigned to three experimental conditions: fiction, bystander,

and everyday life. Participants were asked to briefly describe negatively valenced images. After the manipulation task, they observed a set of negatively valenced videos and evaluated their emotional response to them. Study 4 also investigated how individual differences in attitudes towards art and need for affect moderate the effect of the condition on negative emotions.

## Method

### Participants

As in Study 2, we recruited participants to detect a difference between two independent groups with a medium effect size, a power of .95, and an alpha level of 0.05. We recruited additional participants to meet the sample-size requirement in case of participant exclusion. To ensure high data quality, we only included participants with a high approval rating (>80%). Three hundred and two participants were recruited on Prolific. Three participants were excluded because they did not follow the instruction and described their own feelings and actions instead of the bystander's. Ninety-seven participants from 19 to 79 years old were randomly assigned to the fiction condition ( $M_{\text{age}} = 45.23$ ,  $SD = 14.71$ , 46 females, 51 males). Ninety-four participants from 18 to 76 years old ( $M_{\text{age}} = 43.56$ ,  $SD = 15.77$ , 52 females, 41 males, 1 non-binary) were randomly assigned to the bystander condition. One hundred and eight participants from 18 to 73 years old ( $M_{\text{age}} = 40.59$ ,  $SD = 15.22$ , 55 females, 51 males, 2 non-binary) were randomly assigned to the everyday life condition.

### Materials

Five videos with negative emotional content, used in Study 2, were used as stimuli.

### Procedure

Participants were randomly assigned to the fiction, bystander everyday life conditions. Six negatively valenced high-intensity images were displayed in a random order, one after another, with a text box below. Instructions in the three conditions were the same as in Study 3. After the manipulation, participants were told that they had finished this task, and in the next task they were asked to view and cognitively reappraise a set of short videos in order to experience fewer negative emotions, similar to Study 1. The videos were displayed in random order among the participants. Immediately after viewing

each video, participants were asked to answer the following questions, using a sliding scale from 0 (not at all) to 100 (very much):

- (1) How intense are the negative emotions you experience?
- (2) How much did your negative emotions bother you?
- (3) How motivated were you to decrease these negative emotions?

The time for each trial was not limited. The data was averaged across all videos. Questions 2 and 3 were collapsed into one index of motivation to decrease negative emotions,  $r(300) = .747$ ,  $p < .001$ .

At the end of the study, participants reported their attitudes towards art and need for affect. Attitudes towards art were measured as in Study 2. The three items were collapsed into one index of attitude towards art (Cronbach's  $\alpha = 0.86$ ). To measure need for affect, we used the need for affect scale (NFA; motivation to approach or avoid emotion-inducing experiences; Maio & Esses, 2001). The 10 statements were collapsed into one index of need for affect (Cronbach's  $\alpha = 0.83$ ).

## Results

Means and standard deviations of all variables among participants in fiction and everyday life conditions are reported in Table 5. We conducted two one-way ANOVA to test how the condition (fiction vs bystander vs everyday life) affects (1) emotion intensity, and (2) motivation to decrease negative emotions. Although descriptive statistics pointed in the expected direction (intensity of negative emotions was higher in the everyday life condition compared to the fiction and the bystander conditions), differences between conditions were not significant,  $p_s > .348$ . Condition effect on motivation to decrease negative emotions was only marginally significant,  $F(2,298) = 2.43$ ,  $p = .090$ . Independent samples t-test showed that participants in the everyday life condition were motivated to decrease negative emotions more compared to participants in the fiction condition,  $t(203) = -2.19$ ,  $p = .030$ ,  $d = 0.31$ . Differences between participants in other conditions were not significant,  $p_s > .196$ .

To investigate the moderation effects of attitudes towards art and need for affect, we conducted a moderation analysis using the PROCESS programme for

**Table 4.** Means and standard deviations of variables among participants in the fiction, bystander and everyday life conditions in Study 3.

Condition		Fiction <i>N</i> = 99	Bystander <i>N</i> = 95	Everyday life <i>N</i> = 108
Intensity	<i>M</i> ( <i>SD</i> )	51.65 (17.25)	50.95 (18.58)	53.97 (18.94)
Motivation	<i>M</i> ( <i>SD</i> )	45.27 (17.38)	44.56 (19.57)	47.31 (18.95)

Note. Intensity = intensity of negative emotions; Motivation = motivation to decrease negative emotions.

**Table 5.** Means and standard deviations of variables among participants in the fiction, bystander and everyday life conditions in Study 4.

Condition		Fiction <i>N</i> = 97	Bystander <i>N</i> = 94	Everyday life <i>N</i> = 108
Intensity	<i>M</i> ( <i>SD</i> )	52.31 (20.57)	53.18 (19.47)	56.23 (20.87)
Motivation	<i>M</i> ( <i>SD</i> )	41.22 (21.48)	45.22 (21.15)	47.70 (20.86)

Note. Intensity = intensity of negative emotions; Motivation = motivation to decrease negative emotions.

SPSS (Hayes, 2012). The condition (manipulation) was entered as the independent variable, attitudes towards art and need for affect as moderators, and intensity and motivation as dependent variables. The moderation effects of attitudes towards art on the link between the condition and the dependent variables were not significant,  $ps > .475$ . Need for affect moderation effects were not significant as well,  $ps > .103$ .

## Discussion

Study 4 investigated how fiction, bystander and everyday life conditions affect the intensity of negative emotions and motivation to decrease them when participants view videos with negative emotional content. Similar to Study 3, we did not find evidence that any significant differences in the intensity of negative emotions occur between the three conditions. Differences in motivation to decrease negative emotions were marginally significant and indicated that experiencing negative emotions in the everyday life context (opposed to the fiction context) motivated people to decrease these negative emotions more. This finding is in line with findings in Study 1.

### Analysis across studies 1: Everyday life and fiction conditions across 4 studies

We aggregated the data (everyday life and fiction conditions) across all four studies. Descriptive statistics across all studies is presented in Table 6. Firstly, we compared the intensity of negative emotions and motivation to decrease these emotions between fiction and everyday life conditions. Independent sample t-tests indicated that participants in the fiction condition expressed less intense negative emotions and less motivation to decrease these

emotions compared to participants in the everyday life condition,  $t(797) = 2.70$ ,  $p = .007$ ,  $d = 0.19$ ;  $t(797) = 2.82$ ,  $p = .005$ ,  $d = 0.20$ . Secondly, we investigated moderation effects of the need for affect and attitudes towards art. Need for affect did not moderate the effect of fiction on the intensity of negative emotions and motivation to decrease these emotions,  $ps > .652$ . Attitudes towards art did not moderate the main effect of fiction on dependent variables either,  $ps > .465$ .

### Analysis across studies 2: Everyday life, fiction and bystander conditions in Studies 3–4

First, the data was aggregated across three experimental conditions (everyday life, fiction, and bystander) in Studies 3–4 (see Table 6 for descriptive statistics). Second, the data was aggregated across third-person perspective conditions (bystander and fiction: conditions which involved imagining another person's perspective), and first-person perspective condition (everyday life: condition which involved imagining one's own perspective). Finally, we aggregated the data across fiction condition and non-fiction conditions (everyday life and bystander).

First, we conducted two one-way ANOVA to test how different conditions affect (1) the intensity of negative emotions, and (2) motivation to decrease negative emotions. Intensity of negative emotions did not vary significantly across conditions,  $F(2,597) = 1.77$ ,  $p = .172$ . Motivation to decrease these emotions varied only marginally,  $F(2,595) = 2.37$ ,  $p = .094$ . Independent sample t-tests indicated that participants in the fiction condition expressed less motivation to decrease negative emotions compared to participants in the everyday life condition,  $t(407) = 2.17$ ,  $p = .031$ ,  $d = 0.21$ . No significant differences occurred between participants in other conditions,  $ps > .193$ .



**Table 6.** Means and standard deviations of variables among participants across all studies.

Condition		Studies 1–4			Studies 3–4			
		Everyday N = 419	Fiction N = 380	Bystander N = 189	3rd perspective N = 385	1st perspective N = 213	Fiction N = 196	Not fiction N = 402
Intensity	<i>M (SD)</i>	54.74 (20.18)	50.99 (18.92)	52.92 (19.47)	52.02 (18.94)	55.12 (19.93)	51.98 (18.92)	53.68 (19.54)
Motivation	<i>M (SD)</i>	46.42 (19.76)	42.57 (18.77)	44.89 (20.32)	44.06 (19.93)	47.51 (19.90)	43.27 (19.58)	46.28 (20.11)

Second, we tested whether third-person perspective conditions (fiction and bystander) decrease the intensity of negative emotions compared to the first-person perspective condition (everyday life). Independent samples t-test indicated that participants in the fiction and the bystander conditions reported marginally less intense negative emotions compared to participants in the everyday life condition,  $t(596) = 1.88$ ,  $p = .060$ ,  $d = 0.16$ . Participants in the fiction and the bystander conditions reported less motivation to decrease negative emotions,  $t(596) = 2.02$ ,  $p = .043$ ,  $d = 0.17$ .

Third, we tested how the fiction condition alone (opposed to the bystander and everyday life conditions) affects the intensity of negative emotions and motivation to decrease these emotions. No differences in the intensity of negative emotions occurred between participants in the fiction condition and participants in the bystander and everyday life conditions,  $t(596) = 1.01$ ,  $p = .313$ ,  $d = 0.09$ . Participants in the fiction condition reported marginally less motivation to decrease negative emotions compared to participants in the bystander and everyday life conditions,  $t(596) = 1.73$ ,  $p = .084$ ,  $d = 0.15$ .

Finally, we investigated moderation effects of the need for affect and attitudes towards art. Need for affect did not moderate the effect of third-person perspective conditions on the intensity of negative emotions and motivation to decrease these emotions,  $ps > .293$ , and neither did attitudes towards art,  $ps > .493$ . Need for cognition did not moderate the effect of the fiction condition on the dependant variables,  $ps > .198$ , and neither did attitudes towards art,  $ps > .939$ .

## General discussion

This research was conducted to investigate how engagement with fiction vs everyday life affects the way people experience negative emotions. We found that the intensity of negative emotions was lower among participants who were previously engaged with the task involving fiction compared to participants engaged with the task involving everyday

context. This suggests that engagement with fiction plays a buffering role with a small effect size, decreasing the intensity of negative emotions individuals experience later when facing emotional content. This finding might explain why fans of horror films exhibit less psychological distress during COVID-19 (Scrivner et al., 2021). It is important to understand the underlying mechanism of this effect.

Because engaging with art fiction is detached from action and thus enables beholding, we expected that engaging with art fiction would correlate with an increase in reappraisal affordances (Brincker, 2015). When we asked participants to reappraise negatively valenced stimuli in order to decrease negative emotions, we expected that individuals in the fiction condition would be more successful in this task. Indeed, they were: in both studies, the self-reported intensity of negative emotions was lower. At the same time, however, no differences in self-reported cognitive reappraisal were found in either study. That is, participants in the fiction condition did not find it easier to reappraise negatively valenced images and videos. This could be related to several reasons. Firstly, cognitive reappraisal affordances might be related to the properties of the artwork itself and not to the context of perception. That is, perhaps artists use techniques to enable us to cognitively reappraise negatively valenced content (e.g. as Shakespeare used the means of drama to depict the tragic death of Romeo and Juliet). In this study, we did not use actual artworks but images which were not made by artists and are not considered art. Thus, we did not test the role of an artwork's properties on the cognitive reappraisal of negative content. Rather, we investigated the role of context: in one context, participants were asked to engage with the images as if they were movie shots; in another, as if they were everyday-life images. We expected that presenting them as art might increase individuals' abilities to detect reappraisal affordances. However, this was not the case. Secondly, it is possible that engagement with art fiction is not necessarily related to increased cognitive reappraisal affordances. Thirdly, the self-report measure we used has



limitations in capturing the efficacy of cognitive reappraisal. Participants were explicitly asked to engage in cognitive reappraisal in the main task; however, their ability to assess this cognitive reappraisal was not measured adequately. Recently, it was found that self-report questionnaires measuring the ability to accurately recognise the thoughts and feelings of others do not correlate or weakly correlate with behavioural task paradigms measuring these abilities (Murphy & Lilienfeld, 2019). It is thus possible that although people engaged in cognitive reappraisal, the measures we used in Studies 1 and 2 were not adequately constructed to measure it.

The effect of fiction on negative emotions might be also explained by perspective-taking or cognitive empathy (Davis, 1980). Fiction often involves perspective-taking, requiring the viewers/readers to put themselves “in the shoes” of the characters. Perspective-taking is not exclusive to fiction and often happens in everyday life. It is thus possible that the decrease in negative emotions we observed is related to the difference between first- and third-person perspectives and not the distinction between fiction vs everyday life. Indeed, we found that third-person perspectives (imagining a movie character or a bystander would feel and do) marginally decreased the intensity of negative emotions and significantly decrease motivation to decrease these emotions, contrary to a first-person perspective (imagining yourself in a situation). This finding suggests that cognitive empathy facilitates embracing of negative emotions. However, we also observed that the bystander condition alone (the third-person perspective condition but not involving fiction) was not successful in decreasing negative emotions (the difference between negative emotions in the bystander condition was not significantly different from the everyday life condition). This might signify that perspective-taking is an important, but not the only component of fiction’s ability to decrease negative emotions.

Considering the buffering effect of fiction on negative emotions, one important question should be asked: Does all engagement with fiction have a buffering effect on negative emotions? It is possible that only engagement with negatively valenced art has a buffering effect. This assumption is consistent with Aristotle’s idea of catharsis: namely, that viewers enjoy tragedy because of the negative emotions they experience while watching it (Aristotle, [c. 335 BCE], 1961). Terror management theory (a theory which postulates that knowledge of inevitable

mortality creates terror and affects behaviour, Solomon et al., 1991) assumes that since death in fiction does not pose real risk to the individual, he or she is able to confront his or her own mortality in a safe way. Engaging with fears in art fiction enables one to manage negative emotions (terror) more effectively in everyday life (Goldenberg et al., 1999). This may be true for negative emotions in general and not just for the fear of death.

However, it is also possible that engagement with all art fiction, including works with positively valenced content, has a buffering effect on the intensity of negative emotions, on the premise that, unlike in everyday life, art fiction allows individuals to focus not on themselves but rather on someone else (e.g. movie characters). It was earlier found that decreased self-focus is negatively related to negative emotions (Mor & Winquist, 2002). That is, focus on self (being aware of self-referential information) increases negative mood, depression, and anxiety. On this view, because engagement with art fiction decreases self-focus it may decrease negative emotions we experience in everyday life, irrespective of whether the artwork is positively or negatively valenced. In this study, however, we tested engagement with negatively valenced fiction only. Future studies might include positively valenced art fiction as an additional experimental condition.

Finally, we investigated the role of individual differences in attitudes towards art and need for affect. We expected that these individual differences would moderate the buffering effect of fiction on negative emotions. However, this was not the case. It is possible that other individual differences play a moderating role in this effect. For example, self-consciousness or awareness of oneself may moderate the buffering effect of fiction; art fiction might have a greater effect on negative emotions in individuals less focused on themselves.

Studies described in this paper have important limitations worth noting. First, we presumed that in the everyday life condition individuals would not be detached from a context for action, contrary to the art-fiction condition. However, in both studies participants observed images and videos instead of being in an everyday life situation. Thus, they were detached from a context for action in both cases. This limitation is not easy to overcome, since participants cannot be presented with everyday life situations which involve negative emotional content (e.g. scenes of car accidents). Moreover, in everyday life we often encounter

negative emotional content via media (e.g. TV news, videos, social media), another condition in which we are not directly involved in the situation. It would be worthwhile to investigate how media involvement differs from involvement in art fiction.

A second important limitation worth noting is that we investigated emotional response to images and videos only via self-report. However, emotions are complex reaction patterns which involve not only experiential elements but also physiological and behavioural elements. Future studies might take these elements into account.

## Notes

1. Mirror neurons activate both when we perceive movement and when we execute movement ourselves (Gallese et al., 2004; Gallese, 2007, 2014). Moreover, the perception and the experience of emotions (Gallese & Guerra, 2015; Gallese & Cuccio, 2015), as well as the perception and experience of pain and touch (Gallese & Cuccio, 2015; Singer et al., 2004), share neural substrates.
2. It should be mentioned that the Distancing-Embracing model emphasises the top-down contextual effect on negative emotion processing. This model also includes embodiment and simulation as mechanisms of aesthetic emotion (Menninghaus et al., 2017).
3. The last two lines were added to ensure that all participants would follow the instruction and will not instead describe their own feelings and actions.
4. Since Studies 1–2 showed that condition has no effect on self-reported cognitive reappraisal, in Studies 3–4 we focused only on intensity of negative emotions and motivation to decrease them.
5. When conducting a pilot study to test the instructions, we observed that 40% of our participants did not follow the instruction, and instead of taking the perspective of a movie character or a bystander, they imagined themselves witnessing the scene. For this reason, in Studies 3–4 we asked our participants to first describe a movie character/bystander and next describe what they would feel and do.

## Acknowledgements

We thank Derek Keefe for his valuable comments on this manuscript.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## Funding

This work was supported by the Templeton Religion Trust, TRT0354.

## Ethics statement

All studies described in this manuscript were approved by the School of Psychology and Neuroscience Ethics Committee, University of St Andrews, approval code PS15315.

## Data availability statement

The data that support the findings of this study are openly available at <https://osf.io/xyczb/> (doi 10.17605/OSF.IO/XYCZB)

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**Appendix A.**

List of images used in Studies 1–4.

Image	Valence* <i>M</i>	Arousal* <i>M</i>	Perceived realism <i>M</i>	Group
Dog 24	1.89	4.77	3.68	High intensity
Explosion 2	2.38	4.99	3.6	High intensity
Explosion 6	2.26	4.81	3.3	High intensity
Neo-Nazi 1	2.04	4.44	3.68	High intensity
Car crash 3	2.03	4.66	3.62	High intensity
Injury 1	1.97	4.53	3.62	High intensity
Injury 3	1.97	4.70	3.66	High intensity
Injury 4	1.39	5.46	3.6	High intensity
Spider 2	2.90	4.70	3.6	High intensity
Snake 4	2.37	4.80	3.68	High intensity
Cemetery 5	2.51	4.70	3.48	High intensity
Dead bodies 1	1.20	4.51	3.46	High intensity
Dead bodies 3	1.32	5.13	3.38	High intensity
Fire 9	1.47	5.15	3.38	High intensity
Fire 11	1.75	5.32	3.39	High intensity
Dog attack 1	2.85	4.59	3.36	High intensity
Dog 26	1.30	4.86	3.38	High intensity
Cemetery 3	2.94	3.63	3.78	Low intensity
Destruction 2	2.19	3.06	3.74	Low intensity
Garbage dump 3	2.00	3.47	3.7	Low intensity
Jail 1	2.23	3.73	3.62	Low intensity
Monkey 4	2.86	3.68	3.62	Low intensity
Pollution 1	2.48	3.62	3.6	Low intensity
Prison 2	2.62	3.18	3.58	Low intensity
Garbage dump 5	2.14	3.33	3.48	Low intensity
Toilet 4	2.53	3.16	3.4	Low intensity
Sad pose 3	2.87	3.74	3.36	Low intensity

\*Data based on OASIS database

List of videos used in Study 2 and 4.

Video	Valence <i>M</i>	Arousal <i>M</i>	Perceived realism <i>M</i>
Bear attacks hunter	−1.24	0.38	3
Little boy handcuffed by the police (news report)	−1.94	0.60	3.44
Police attacks crowd	−1.78	0.04	3.52
Refugee girl interview	−1.54	0.32	3.44
Tennis player breaks down	−1.12	0.001	3.58