Behaviour Research and Therapy 49 (2011) 406–412

Contents lists available at ScienceDirect

Behaviour Research and Therapy

journal homepage: www.elsevier.com/locate/brat

Effect of visual perspective on memory and interpretation in dysphoria

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ARTICLE INFO

Article history:
Received 26 August 2010
Received in revised form
14 March 2011
Accepted 30 March 2011

Keywords:
Depression
Interpretation
Memory
Observer perspective
Distanced analysis

ABSTRACT

When engaging in self-reflection, the visual perspective one adopts has important effects on emotional reactivity. Specifically, adopting a distanced stance, or viewing oneself from a third-person perspective, has been found to reduce emotional reactivity to negative autobiographical memories. The effect of adopting this perspective is moderated by depression such that reactivity is not reduced for individuals with particularly low levels of depressive symptoms. In the current study, we examine the effects of visual perspective on two forms of mental imagery in dysphoric and nondysphoric individuals. We attempt to replicate previous findings for recall of sad autobiographical memories and extend this research to interpretation of ambiguous situations. The results suggest that the effects of adopting a distanced stance are not moderated by depressive symptoms and do not extend from memories to interpretations of ambiguous situations.

Self-reflection, or thinking about one's own thoughts, feelings, and experiences, is thought to be a valuable means of increasing self-knowledge. Different forms of self-reflection, including expressive writing (Pennebaker, Mayne, & Francis, 1997) and mindfulness, or nonjudgmental self-awareness (Baer, 2003), are associated with improved psychological well-being. However, some forms of self-reflection are counterproductive and lead to undesirable outcomes (Borkovec, Robinson, Pruzinsky, & Depree, 1983; Kashdan & Roberts, 2007; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Self-reflection may therefore be adaptive or maladaptive depending on the specific form it takes (Trapnell & Campbell, 1999; Watkins, 2008).

In an intriguing line of research, Kross and Ayduk have proposed that the visual perspective one adopts while engaging in self-reflection may be critically important to determining whether such thought is adaptive or maladaptive (e.g., Kross, Ayduk, & Mischel, 2005). When recalling memories or engaging in mental imagery, one can adopt either a field perspective, in which one views the event from one's own perspective ("through one's own eyes"), or an observer perspective, in which one views the situation as an outside observer, as if one were watching a movie starring oneself (Nigro & Neisser, 1983). Individuals are more likely to recall memories from a field perspective when asked to focus on the emotional aspects, rather than the objective circumstances, of a situation (Nigro & Neisser, 1983). Conversely, when asked to recall a memory from the field perspective, individuals are more likely to focus on the emotional aspects of that memory than when asked to adopt an observer perspective (Holmes, Coughtrey, & Connor, 2008; McIsaac & Eich, 2002). Robinson and Swanson (1993) found that when participants switched from field to observer perspective for the same autobiographical memory, emotional reactivity to the memory was reduced. Finally, individuals with PTSD who spontaneously recalled trauma memories from an observer perspective recalled fewer emotional reactions and psychological states than those who spontaneously adopted a field perspective (McIsaac & Eich, 2004).

Kross and Ayduk have extended these findings from memory recall to emotional processing of the memories, which they have operationalized as "asking why" one experienced particular emotions. When participants are asked to contemplate why they felt the way they did, doing so from an observer (or "distanced") perspective leads to less emotional reactivity than a field (or "immersed") perspective. They have found similar effects of distanced analysis for memories of anger (Ayduk & Kross, 2008; Kross et al., 2005)[1] and sadness (Kross & Ayduk, 2008). The benefits of adopting a distanced perspective extend from the moment of recall to at least seven days later (Kross & Ayduk, 2008) and are

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[1] One failure to replicate the effect of distanced analysis on memories of anger has been reported in the literature; however, subsequent analyses indicated that this replication failure was likely due to insufficient statistical power (Ayduk & Kross, 2009; Wimalaweera & Moulds, 2008).

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doi:10.1016/j.brat.2011.03.012

seen in both self-report and physiological measures of emotional reactivity (blood-pressure reactivity, Ayduk & Kross, 2008). Gruber, Harvey, and Johnson (2009) found a similar pattern of results for distanced and immersed analysis of positive autobiographical memories. They found that distanced analysis was associated with reduced experience of positive emotion according to self-report and heart-rate indices, although they found no effect on other psychophysiological indicators. Therefore, the general finding that distanced analysis reduces emotional reactivity has been found for memories eliciting anger, sadness, and positive emotions.

The short-term benefits of distanced analysis of negative memories appear to be more pronounced in individuals with high levels of depressive symptoms. In an analysis collapsing across five experiments, the impact of distanced analysis increased linearly as depressive symptoms increased (Kross & Ayduk, 2009). Specifically, distanced analysis was found to result in reduced reactivity for all individuals except those with especially low levels of depressive symptoms (<1 SD below the mean). This result mirrors findings that self-focused rumination is only detrimental for individuals with depressive symptoms. A large body of research on depressive rumination has found that inducing rumination leads to more negative mood for dysphoric and clinically depressed, but not nondysphoric, individuals (Nolen-Hoeksema et al., 2008). Similarly, the results reported by Kross and Ayduk (2009) suggest that immersed analysis may only be detrimental in the context of at least some depressive symptoms.

Several methodological issues merit consideration before accepting Kross and Ayduk's (2009) conclusions, however. By integrating data across five different experiments, the authors were forced to collapse across two types of memory content (anger-eliciting and sadness-eliciting) and several different measures of emotional reactivity, which may have influenced their results. For example, the failure to find an effect of condition among individuals with low levels of depressive symptoms may be due to the increased error associated with collapsing across different measures of both the independent and dependent variables. And because three of the five studies and over half of the total participants focused on anger-eliciting, rather than sadness-eliciting memories, it is also unclear whether the moderating effect of depressive symptoms is present for sad memories. In the current study, we address these limitations by focusing exclusively on sad memories, which are most relevant to cognitive theories of depression, and by standardizing the measures of emotional reactivity used for all study participants.

Much of the research on distanced analysis has focused on autobiographical memories. However, visual perspective is relevant not only for memory, but for other forms of mental imagery as well. Mental imagery has been found to be more emotionally evocative than verbal processing of the same stimuli, and mental imagery has emerged as an important factor in modifying interpretations of ambiguous stimuli (Holmes, Lang, & Shah, 2009; Holmes & Mathews, 2010). In this study, we seek to extend the investigation of distanced analysis from an exclusive focus on autobiographical memories to interpretation imagery. Interpretation imagery may be particularly relevant for individuals with depressive symptoms because cognitive theories of depression assign an important role to the interpretation of ambiguous situations (Beck, 1967). Depressed individuals are thought to interpret such ambiguous situations in a negatively biased way, and these negatively biased interpretations are thought to maintain depressive symptoms by providing support for negative self-beliefs and by contributing to negative memory biases (Beck, 1967; Hertel, Brozovich, Joormann, & Gotlib, 2008). Much of the evidence for interpretation biases in depression comes from tasks that do not explicitly encourage mental imagery, including the resolution of ambiguous homophones or asking participants to read ambiguous sentences or vignettes (e.g., Krantz & Hammen, 1979; Mogg, Bradbury, & Bradley, 2006; Wisco & Nolen-Hoeksema, 2010; but see also Lawson, MacLeod, & Hammond, 2002, for a more imagery-based assessment). Given the increasingly prominent role of mental imagery in the modification of interpretation biases (e.g., Holmes et al., 2009), it is important to examine whether similar depression-linked effects are found for interpretation imagery, and what effect the visual perspective of the imagery has on these biases. For this study, we selected an existing measure of interpretation bias found to be sensitive to depression-linked differences, the Interpretation Bias Questionnaire (IBQ, Wisco & Nolen-Hoeksema, 2010) and modified it to encourage more mental imagery. The IBQ offers the opportunity to examine two interpretation processes: the generation of possible interpretations and the selection of one interpretation as most likely. We have found previously that depressive biases exist for both generation and selection of interpretations and that considering others, rather than oneself, reduces emotional reactivity for dysphoric individuals (Wisco & Nolen-Hoeksema, 2010). In this study, we examine whether viewing the self as an other, by adopting a distanced stance, leads to a similar decrease in emotional reactivity. We also investigate whether adopting a distanced stance changes the valence of interpretations, by encouraging less negative interpretation generation and selection.

In this study, we aim to replicate the findings that distanced analysis leads to reduced emotional reactivity to sad memories and that depressive symptoms moderate this effect. We also examine interpretation imagery, in order to investigate whether depressive biases in interpretation are seen when using imagery-based assessment, and to determine whether the benefits of distanced analysis extend from clearly negative memories to interpretations of ambiguous situations, in terms of both emotional reactivity and cognitive content.

Method

Participants

One hundred and thirty individuals recruited from flyers posted in the community or the psychology subject pool participated in this study for either a payment of 15 US dollars or course credit. Nineteen participants no longer met the BDI-II cut-off criteria at the time of testing and were excluded from the analyses. Participants' ages ranged from 18 to 30 with a mean age of 21.8 (SD = 3.5); 43 (38.7%) participants were male and 68 (61.3%) were female. Participants reported their race/ethnicity as: 54 (48.6%) Caucasian, 25 (22.5%) Asian, 18 (16.2%) African-American, 9 (8.1%) Hispanic, 4 (3.6%) "Other." One participant declined to answer this question.

Materials

Memory imagery

In an attempt to replicate previous memory findings, we included the memory imagery task described by Kross and Ayduk (2008). In this version of the measure, participants are instructed to recall a time from their past when they felt sad or depressed. They are first instructed to form a vivid image of the memory from either an immersed or a distanced perspective and then to consider why they had those feelings. Participants listened to these instructions which were provided on digital audio files.

Reexperiencing of emotion

Two emotional reactivity questions from Kross et al. (2005) were included. These questions were "To what extent did you

reexperience the original negative emotions you felt during the incident?" and "With what intensity did you reexperience the original negative emotions you felt during the incident?" Participants provided their responses on scales from 1 to 7, with higher numbers corresponding to greater reexperiencing of emotion.

Interpretation bias imagery (IBI)

As mentioned previously, this measure was adapted from the Interpretation Bias Questionnaire (Wisco & Nolen-Hoeksema, 2010). In this version of the measure, participants listened to audio files that led them through guided imagery of eight ambiguous situations.[2] For example, one of the situations involves seeing a friend while walking down the street, waving to this friend, and seeing that the friend does not respond. Participants were instructed to close their eyes and imagine the situations as fully and completely as possible. Participants were randomly assigned to imagine these situations from either an immersed or a distanced self-perspective. The distanced perspective instructions asked participants to "take a few steps back and move away from the situation to a point where you can watch the event unfold from a distance and see yourself in the event. As you do this, focus on what has now become the distant you. Watch the situation unfold as if it were happening to the distant you." The immersed perspective instructions instructed participants to "See the situation unfold through your own eyes, as if it were happening to you right now."

After imagining the situation, participants are instructed to provide their interpretations by answering a single question (e.g., "Why didn't your friend respond?"). Participants are asked both to write down all explanations that came to mind (interpretation generation) and to select one interpretation that they deem the "most likely" explanation for the situation by circling one of their responses (interpretation selection). To ensure that participants understood the directions, a practice vignette was completed and reviewed by the experimenter. If the participant only wrote down one response for the practice situation, the experimenter prompted them by saying "Is this the only explanation that came to mind?" to ensure that the participant understood the instruction to write down all interpretations that they generated. If the participant did not circle any of their interpretations, the experimenter prompted them by saying "Please circle the one response that you believe is most likely."

Manipulation check

Following the interpretation bias imagery, participants were asked to respond to a question assessing how well they were able to adopt the intended visual perspective. Participants in the immersed condition were asked "To what extent were you able to see the situations through your own eyes?" Participants in distanced condition were asked "To what extent were you able to see yourself in the situations?" Both groups were asked to rate the question on a scale from 1 to 5, with 1 corresponding to "not at all" and 5 corresponding to "very well." The manipulation check question was added to the study after 17 individuals had already participated, therefore, data are unavailable for those participants.

Interpretation ratings-participant

This rating scale was also adapted from the measure used in previous studies (Wisco & Nolen-Hoeksema, 2010). Participants rated the positivity and negativity of each of the interpretations they had generated on Likert-type scales from 1 (not at all) to 5 (extremely). As in Wisco and Nolen-Hoeksema (2010), composite valence scores were computed for each interpretation by subtracting the negativity score from the positivity score. The composite valence score ranged from −4 to 4, with higher numbers corresponding to more positive interpretations. The index of interpretation generation is the mean valence of all interpretations generated by the participant and the index of interpretation selection is the mean valence of the eight interpretations selected as most likely.

Interpretation ratings-coder

All responses were also coded by two independent coders, who were blind to participant condition and dysphoria status, using the same five-point Likert scales. Before being given to coders, all participant responses were typed, entered into a database, and put in random order. Coders were therefore unaware of which responses came from the same participants, reducing the possibility of bias. Coders demonstrated good interrater reliability and agreement for ratings of positivity (ICC = 0.92, $\kappa = .80$) and negativity (ICC = 0.93, $\kappa = .80$), and all discrepancies were resolved by consensus. The indices of interpretation generation and selection were computed using the method described above for participant ratings.

State mood measures

Participants were asked to describe themselves "right now" by completing a series of ratings on a scale from 1 to 9. Several distracter ratings (e.g., not creative-very creative) were included in this questionnaire to hide the purpose of the measure as a mood assessment. The two mood ratings of interest were not sad–sad and not depressed–depressed. The two highly correlated items were summed to form a single mood rating, with higher numbers corresponding to more negative mood. Variants of these scales have been used extensively in previous research (e.g., Lyubomirsky, Caldwell, & Nolen-Hoeksema, 1998; Lyubomirsky, Tucker, Caldwell, & Berg, 1999; Wisco & Nolen-Hoeksema, 2010), and demonstrated good internal consistency in this study (Cronbach αs ranging from .84 to .93).

Beck Depression Inventory-II (BDI-II)

The BDI-II is a widely used 21-item self-report measure of depressive symptoms with well-documented reliability and validity (Beck, Steer, & Brown, 1996).

Procedure

Potential participants first completed a prescreening measure via email, which consisted of a modified version of the BDI-II excluding one item assessing suicidal ideation. Adopting commonly-used cut-offs (e.g., Lyubomirsky et al., 1998), individuals who scored ≤ 9 or ≥ 16 on the prescreen were invited to participate in the study. The full BDI-II was administered at time of testing and participants who no longer met cut-off criteria were excluded from final analyses. Participants were randomly assigned to the immersed or distanced conditions such that approximately equal numbers of dysphoric and control participants were assigned to each condition. Condition assignment determined the version of both the interpretation and the memory measures, such that participants received matching instructions for the two measures (either both immersed or both distanced). Participants met individually with the experimenter and provided informed consent followed by the interpretation bias imagery and ratings, memory imagery, emotion reexperiencing questions, and a packet of self-report questionnaires including demographics questions and the BDI-II. Participants were not aware that they would be rating their interpretations until after completing the imagery. Participants' state mood was assessed with the Likert

[2] This measure is available from the corresponding author upon request.

scales immediately before and following the interpretation bias imagery and immediately before and following the memory imagery.

Results

No demographic variables varied significantly by condition, indicating that randomization was successful. Age and sex of participants did not differ significantly between the dysphoric and nondysphoric groups, however, a difference in race/ethnicity emerged (dysphoric individuals, 40% Caucasian; nondysphoric individuals, 57% Caucasian), $\chi^2 = 2.99$, $p = .08$. Although this difference was not statistically significant, exploratory analyses indicated that ethnicity had significant effects on some outcomes of interest, so we statistically controlled for ethnicity for all analyses. Because one participant declined to provide information about race/ethnicity, this participant could not be included in the analyses. This left a final sample of 110 participants (28 nondysphoric-immersed, 30 nondysphoric-distanced, 25 dysphoric-immersed, 27 dysphoric-distanced). In all of the following analyses, dysphoria status (dysphoric, nondysphoric), self-perspective condition (immersed, distanced), and ethnicity (Caucasian, Non-Caucasian) were entered as independent variables. Because we did not have specific hypotheses concerning race/ethnicity, we only report these findings when significant effects emerge.

Memory imagery findings

We first assessed whether any differences in mood were present prior to completing the memory measure, as assessed by the state mood measure. As expected, a main effect of dysphoria status emerged, $F(1, 102) = 88.4$, $p < .001$, $\eta_p^2 = .464$, with dysphoric participants reporting more negative mood than nondysphoric participants. No other significant main effects or interactions emerged at baseline, $Fs < 2$, $\eta_p^2 s < .02$. We then examined change in mood using a repeated measures ANOVA with mood pre and post memory task entered as the within-subjects variable. A significant main effect of time emerged, such that all participants showed an increase in negative mood following the memory measure, $F(1, 102) = 146.6$, $p < .001$, $\eta_p^2 = .590$. No other significant effects emerged in the model, $Fs < 1$, $\eta_p^2 s < .01$. The predicted three-way interaction between time, condition, and dysphoria status was not statistically significant and the effect size was small, $F(1, 102) < 0.001$, *ns*, $\eta_p^2 < .001$.

We then examined the reexperiencing of emotion questions. A main effect of dysphoria status emerged for both questions, such that dysphoric participants reported reexperiencing negative emotions to a greater extent, $F(1, 102) = 15.17$, $p < .001$, $\eta_p^2 = .129$, and with greater intensity, $F(1, 102) = 21.9$, $p < .001$, $\eta_p^2 = .177$, than nondysphoric participants. No main effect of condition emerged for the extent to which participants reexperienced negative emotions, $F(1, 102) = 1.28$, *ns*, $\eta_p^2 = .012$, although the nonsignificant effect was in the predicted direction. Participants in the self-immersed condition did report reexperiencing emotions with significantly greater intensity than participants in the self-distanced condition, $F(1, 102) = 4.03$, $p = .047$, $\eta_p^2 = .038$. No other significant effects emerged. The predicted interactions between dysphoria status and condition were not statistically significant and the effect sizes were small, $Fs < 1$, *ns*, $\eta_p^2 s < .002$ (see Table 1).

Table 1
Reexperiencing of emotion during negative memory imagery.

	Immersed	Distanced	Average
Extent reexperienced			
Dysphoric	5.48 (0.31)	5.07 (0.28)	5.28 (0.21)
Control	4.28 (0.28)	4.04 (0.27)	4.16 (0.19)
Average	4.88 (0.21)	4.56 (0.20)	
Intensity of emotion			
Dysphoric	5.30 (0.31)	4.70 (0.27)	5.00 (0.21)
Control	3.96 (0.27)	3.44 (0.26)	3.70 (0.19)
Average	4.63 (0.20)	4.07 (0.19)	

Note. Marginal means adjusting for ethnicity are provided with standard errors in parentheses. The questions had possible scores ranging from 1 to 7, with higher numbers reflecting greater reexperiencing of negative emotion.

Interpretation bias imagery findings

Manipulation check

Participants' responses to the manipulation check question indicated that participants in both conditions were able to form images of the situations in their minds using the intended visual perspective. On a scale of 1–5, with 5 corresponding to "very well," participants in the immersed condition reported a mean of 4.56 (SD = 0.55) and participants in the distanced condition reported a mean of 4.57 (SD = 0.68). No effects of dysphoria status or condition emerged on the extent to which participants were able to adopt the intended visual perspective, $Fs < 0.3$, *ns*, $\eta_p^2 s < .004$.

Mood effects of making interpretations

Mood was assessed immediately prior to and immediately following the interpretation bias measure. We first assessed whether any differences in mood were present prior to making interpretations. As expected, a main effect of dysphoria status emerged, $F(1, 102) = 138.3$, $p < .001$, $\eta_p^2 = .575$, such that dysphoric participants reported more negative mood than controls. No main effects or interactions emerged at baseline, indicating that randomization was successful, $Fs < 2$, *ns*, $\eta_p^2 s < .02$. Change in mood was examined using a repeated measures ANOVA with mood pre and post interpretations entered as the within-subjects variable. A significant effect of time emerged, $F(1, 102) = 4.15$, $p = .04$, $\eta_p^2 = .039$, such that participants felt significantly worse after completing the interpretation bias imagery. No other significant effects emerged in the model, $Fs < 2$, $\eta_p^2 s < .02$. The predicted three-way interaction between time, dysphoria status, and condition was not statistically significant and was a small effect, $F(1, 102) = 0.45$, *ns*, $\eta_p^2 = .004$ (see Fig. 1).

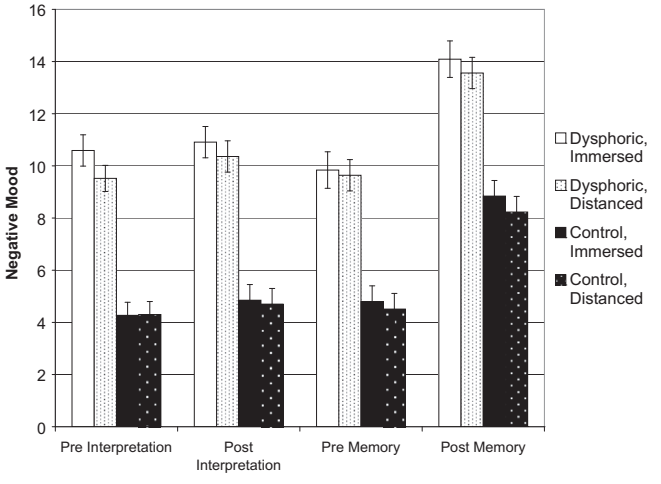

Fig. 1. Emotional reactivity to interpretation and memory imagery. Note. Error bars reflect standard errors, and means are marginal means adjusting for ethnicity. Negative mood scores had a possible range of 2–18, with higher numbers reflecting more negative mood.

Table 2
Interpretation valence by dysphoria status and self-perspective condition.

Participant ratings				Coder ratings			
	Immersed	Distanced	Average		Immersed	Distanced	Average
Interpretation generation							
Dysphoric	−0.77 (0.18)	−0.77 (0.16)	−0.77 (0.12)	Dysphoric	−1.01 (0.10)	−0.83 (0.09)	−0.92 (0.07)
Control	−0.30 (0.16)	−0.38 (0.16)	−0.34 (0.11)	Control	−0.56 (0.09)	−0.65 (0.09)	−0.61 (0.06)
Average	−0.54 (0.12)	−0.57 (0.11)		Average	−0.79 (0.07)	−0.74 (0.06)	
Interpretation selection							
Dysphoric	−0.67 (0.25)	−0.54 (0.23)	−0.61 (0.17)	Dysphoric	−1.11 (0.16)	−0.86 (0.14)	−0.99 (0.11)
Control	0.08 (0.22)	0.31 (0.22)	0.20 (0.16)	Control	−0.30 (0.14)	−0.14 (0.14)	−0.22 (0.10)
Average	−0.29 (0.17)	−0.12 (0.16)		Average	−0.70 (0.11)	−0.50 (0.10)	

Note. Marginal means adjusting for ethnicity are presented with standard errors in parentheses. The average valence ratings had possible values from −4 to 4, with higher numbers reflecting more positive interpretations.

Interpretation valence

Participants generated an average of 3.9 interpretations per vignette, and the number of interpretations generated did not differ significantly by dysphoria status, $F(1, 102) = 0.1$, *ns*, $\eta_p^2 = .001$. The number of interpretations generated did differ by condition, with participants in the distanced condition generating fewer interpretations per vignette (Immersed M = 4.16, SE = 0.14; Distanced, M = 3.68, SE = 0.13), $F(1, 102) = 6.3$, $p = .01$, $\eta_p^2 = .058$. Examination of the data revealed two outlying participants in the distanced condition with average scores less than 2.5 standard deviations below the mean. However, the effect of condition remained significant even when excluding data from these two participants, $F(1, 100) = 4.5$, $p = .036$, $\eta_p^2 = .043$ (Distanced, M = 3.77, SE = 0.13).

We examined the valence of interpretations generated and selected as most likely using both the participants' own and the independent coder ratings (see Table 2). One participant failed to indicate which interpretation s/he selected as most likely and thus could not be included in selection analyses. For the participants' own ratings, the predicted main effect of dysphoria status emerged, with dysphoric participants both generating, $F(1, 102) = 6.58$, $p = .01$, $\eta_p^2 = .061$, and selecting, $F(1, 101) = 12.2$, $p = .001$, $\eta_p^2 = .107$, more negative interpretations than nondysphoric controls. An unexpected main effect of ethnicity appeared, such that Caucasian participants generated more negative interpretations than non-Caucasians, $F(1, 102) = 4.89$, $p = .029$, $\eta_p^2 = .046$. The effect of ethnicity on interpretation selection was not significant, $F(1, 101) = 2.11$, *ns*, $\eta_p^2 = .020$. No other main effects or interactions were statistically significant, $Fs < 1.5$, $\eta_p^2 s < .015$. The predicted interactions between dysphoria status and condition were not significant and the effect sizes were very small, $\eta_p^2 s \leq .001$.

According to the independent coder ratings, we found a similar, but not identical, pattern of results. Again, dysphoric participants both generated, $F(1, 102) = 10.78$, $p = .001$, $\eta_p^2 = .096$, and selected, $F(1, 101) = 27.3$, $p < .001$, $\eta_p^2 = .213$, more negative interpretations than nondysphoric participants. The effect of ethnicity on interpretation valence, however, was significant for selection, $F(1, 101) = 4.16$, $p = .04$, $\eta_p^2 = .04$, but not for generation, $F(1, 102) = 2.67$, $p = .11$, $\eta_p^2 = .026$, such that Caucasian participants were more negative than non-Caucasian participants. No other significant main effects or interactions emerged in the model, $Fs < 2.5$, $\eta_p^2 s \leq .03$. The predicted interactions between dysphoria status and condition were not statistically significant for either generation, $F(1, 102) = 2.06$, *ns*, $\eta_p^2 = .02$, or selection, $F(1, 101) < 1$, *ns*, $\eta_p^2 = .001$.

Discussion

In this study, we provided the first independent replication of the effects of distanced analysis of sad memories and found that distanced analysis leads to less intense reexperiencing of emotion than immersed analysis. Contrary to previous findings, we did not find that depressive symptoms moderated this effect, but rather similar effects of distanced analysis were seen for dysphoric and nondysphoric individuals. We extended previous research on negative interpretation bias by examining interpretations using mental imagery instead of verbal assessment, and found that dysphoric individuals are more negative than nondysphoric individuals when asked to visualize ambiguous situations.

Because the majority of evidence for the benefits of distanced analysis come from the same lab group, independent replications of the effects of distanced analysis are important to ensure the robustness of these results (Moulds, 2009). Participants in the distanced condition reported reexperiencing negative emotions less intensely than participants in the immersed condition, although the other measures of emotional reactivity showed no effect of condition. Therefore, we were able to replicate the effect of distanced analysis on sad memories (Kross & Ayduk, 2008), although our findings were less robust than previous work. Our choice of sad memories may explain the mixed nature of these findings. In previous studies of distanced analysis, the effect sizes for sad memories (*d*s = .34 and .41, Kross & Ayduk, 2008) were, on average, smaller than those found for angry memories (*d*s range from .45 to .69, Kross et al., 2005; $d = .7$, Ayduk & Kross, 2008). Although not definitive, one intriguing explanation for this pattern is that distancing reduces emotional reactivity by reducing physiological arousal. If this explanation is accurate, greater effects would be expected for emotions associated with high levels of physiological arousal, like anger, than for sadness. Future research comparing the effects of distancing on memories associated with different levels of physiological arousal could examine this possibility.

In the current study, we found no evidence that depressive symptoms moderate the effect of distanced analysis. Rather, it appears that the effect of distancing from sad memories was similar for dysphoric and nondysphoric individuals. This study had a relatively small sample size compared to previous investigations by Kross and colleagues, raising the possibility of Type II error. However, the size of the interactions between dysphoria status and condition were very small for all measures of emotional reactivity ($\eta_p^2 s < .002$).[3] The choice of sad memories in this study may also be a reason for the discrepancy between our findings and those of Kross and Ayduk (2009), who found that depressive symptoms

[3] The choice to examine the dichotomous variable of dysphoria status, as opposed to a continuous measure of depressive symptoms, also limited statistical power. We reran all analyses using the total score on the BDI-II rather than dysphoria status. No significant interactions between depressive symptoms and condition emerged, $Fs < .5$, $\eta_p^2 s < .01$, offering further support for the conclusion that dysphoria did not moderate the effects of visual perspective in this study.

moderated the effect of distanced analysis. Their analysis collapsed across angry and sad memories, with more participants being asked to recall anger-inducing than sad events. Perhaps dysphoric individuals have more difficulty adopting a distanced stance for sad memories, given the salience of sad memories for this group. Because we did not include an angry memory condition in this study, however, this explanation remains speculative in nature.

Our analysis of the interpretation imagery task indicated that dysphoric participants both generate and select more negative interpretations than nondysphoric individuals when considering ambiguous situations, replicating our prior findings (Wisco & Nolen-Hoeksema, 2010). Whereas previous work used verbal presentation of ambiguous situations (e.g., Krantz & Hammen, 1979; Mogg et al., 2006), we found similar results in this study using an imagery-based assessment, offering evidence for the robustness of these results. Given the increasingly prominent role of imagery in the modification of interpretation biases for anxiety and depression (e.g., Holmes et al., 2009), the demonstration of depressive biases in interpretation imagery is especially significant.

The visual perspective adopted during the interpretation imagery, however, did not appear to be essential. The only significant effect of self-perspective condition was on the number of interpretations generated, with participants generating significantly fewer possible interpretations in the distanced than in the immersed condition. When not instructed which visual perspective to adopt, individuals are more likely to adopt an immersed than a distanced perspective (McIsaac & Eich, 2004; Nigro & Neisser, 1983). The immersed perspective is also more similar to how one actually experiences an event. Participants may have found it more difficult to think creatively about the ambiguous situations when adopting a less familiar visual perspective, possibly making it more difficult to come up with multiple interpretations for the scenarios.

In terms of the primary outcomes of interest, however, there were no significant effects of self-perspective condition. No main effects of condition and no significant interactions between condition and dysphoria status emerged for either mood change during the interpretation bias imagery or the valence of the interpretations generated or selected. The sizes of these effects were also small. This stands in contrast to research comparing self-focus to other-focus in depression. Considering others leads to less negative thinking for dysphoric/depressed participants across a number of cognitive processes, including interpretation, attributional style, and predictions for the future (see Wisco, 2009, for a review). Unlike considering others, distanced analysis requires a focus on the self, albeit from a different perspective. We have found previously that when the other condition failed to reduce self-focus, negativity of interpretations was actually exacerbated, rather than reduced (Wisco & Nolen-Hoeksema, 2010, Study 2). Forms of distancing that require self-focus, such as distanced analysis, may be less likely to reduce negativity than externally focused exercises, such as considering others.

Our interpretation results also diverge from findings that distanced analysis reduces emotional reactivity to negative memories. There are several reasons why self-perspective may be less important in interpretation imagery than recall of negative memories. One possible explanation is that the immersed/distanced distinction is only important in imagery that is particularly emotionally evocative. Negative mood increased significantly during both the interpretation and memory tasks, but the effect sizes were much larger for the memory task. This discrepancy may emerge because ambiguous situations, by their nature, allow for neutral and positive interpretations as well as negative interpretations. Alternatively, because the situations in the interpretation task are hypothetical, participants may be less likely to become emotionally involved in the interpretation imagery than recall of negative events that they actually experienced. Making interpretations for a hypothetical situation may also be a more effortful process than recalling a memory that actually happened. Participants may have been less able to engage in mental imagery for the interpretation measure, thus reducing the possible benefits of adopting a distanced stance. Examining the effects of self-perspective on interpretation of real-life ambiguous events would be an interesting future direction of this research. For example, participants could be asked to take part in an experimentally controlled social interaction in which ambiguous feedback is given, and then asked to analyze the feedback from either an immersed or distanced perspective. Examining interpretation of ambiguous situations actually experienced by the participants would allow for greater confidence that the hypothetical nature of the interpretation bias imagery does not account for the lack of benefits seen from distanced analysis in this study.

Therefore, it is unclear whether distanced analysis leads to reduced emotional reactivity to interpretations of ambiguous situations. Distanced analysis of memories is associated with reduced emotional reactivity, although this effect was less robust in this study than in prior work (e.g., Ayduk & Kross, 2008; Kross & Ayduk, 2008; Kross et al., 2005). Kross and Ayduk (2009) have argued that reducing emotional reactivity is beneficial, particularly for clinical populations, as a means of staying in contact with emotionally evocative material. But other theorists have suggested that although assuming a distanced stance may offer short-term relief from distress, it can be detrimental in the long run (McIsaac & Eich, 2004; Williams & Moulds, 2007). Specifically, they argue that adopting an observer perspective serves an avoidant function that allows escape from negative emotional arousal but interferes with emotional processing of memories, thus calling into question the longer-term consequences of this strategy. Interestingly, individuals with clinical disorders including social phobia and depression have been found to be more likely than healthy controls to spontaneously recall memories from an observer, or distanced, perspective (Coles, Turk, & Heimberg, 2003; Coles, Turk, Heimberg, & Fresco, 2001; Hackmann, Surawy, & Clark, 1998; Kuyken & Howell, 2006). Adopting an observer perspective is also associated with higher levels of cognitive avoidance in dysphoric, but not nondysphoric, individuals (Williams & Moulds, 2007; see also Ayduk & Kross, 2010).

Therefore, one group argues that distanced analysis is adaptive and potentially beneficial in clinical populations, with other theorists calling this conclusion into doubt and contending that distanced analysis is maladaptive in the long run. Given the lack of long-term follow-up in the current study, our results cannot speak to the long-term consequences of distancing. We suggest, however, that distanced and immersed self-perspectives are inherently neither positive nor negative. Rather, adopting a distanced perspective is likely to reduce emotional intensity in the short-term, which may be beneficial under some circumstances but detrimental in others. Attention to the type of self-perspective engaged by a client, therefore, may be vitally important to successful imagery interventions during psychotherapy. Examination of the situations in which immersed versus distanced perspectives are more useful for clinical populations is an important direction of future research, particularly given the growing interest in incorporating imagery into treatments for clinical disorders (Holmes & Mathews, 2010).

Acknowledgments

We thank Teresa Treat, Marcia Johnson, Margaret Clark, and Douglas Mennin for valuable feedback on this study and Ozlem Ayduk and Ethan Kross for providing the materials from their

immersed and distanced self-perspective manipulations. We also thank Anna Urdahl, Carmen Chambers, Caroline Albert, Emma Sloan, and Emily Auchincloss for their assistance with data collection and coding.

References

Ayduk, O., & Kross, E. (2008). Enhancing the pace of recovery: self-distanced analysis of negative experiences reduces blood pressure reactivity. *Psychological Science, 19*, 229–231.

Ayduk, O., & Kross, E. (2009). Asking 'why' from a distance facilitates emotional processing: a reanalysis of Wimalaweera and Moulds (2008). *Behaviour Research and Therapy, 47*, 88–92.

Ayduk, O., & Kross, E. (2010). From a distance: implications of spontaneous self-distancing for adaptive self-reflection. *Journal of Personality and Social Psychology, 98*, 809–829.

Baer, R. A. (2003). Mindfulness training as a clinical intervention: a conceptual and empirical review. *Clinical Psychology: Science and Practice, 10*, 125–143.

Beck, A. T. (1967). *Depression: Clinical, experimental and theoretical aspects*. New York: Harper & Row.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck depression inventory-II*. San Antonio, TX: Psychological Corporation.

Borkovec, T. D., Robinson, E., Pruzinsky, T., & Depree, J. A. (1983). Preliminary exploration of worry: some characteristics and processes. *Behaviour Research and Therapy, 21*, 9–16.

Coles, M. E., Turk, C. L., & Heimberg, R. G. (2003). The role of memory perspective in social phobia: immediate and delayed memories for role-played situations. *Behavioural and Cognitive Psychotherapy, 30*, 415–425.

Coles, M. E., Turk, C. L., Heimberg, R. G., & Fresco, D. M. (2001). Effects of varying levels of anxiety within social situations: relationship to memory perspective and attributions in social phobia. *Behaviour Research and Therapy, 39*, 651–665.

Gruber, J., Harvey, A. G., & Johnson, S. L. (2009). Reflective and ruminative processing of positive emotional memories in bipolar disorder and healthy controls. *Behaviour Research and Therapy, 47*, 697–704.

Hackmann, A., Surawy, C., & Clark, D. M. (1998). Seeing yourself through others' eyes: a study of spontaneously occurring images in social phobia. *Behavioural and Cognitive Psychotherapy, 26*, 3–12.

Hertel, P. T., Brozovich, F., Joormann, J., & Gotlib, I. H. (2008). Biases in interpretation and memory in generalized social phobia. *Journal of Abnormal Psychology, 117*, 278–288.

Holmes, E. A., Lang, T. J., & Shah, D. M. (2009). Developing interpretation bias modification as a 'cognitive vaccine' for depressed mood—imagining positive events makes you feel better than thinking about them verbally. *Journal of Abnormal Psychology, 118*, 76–88.

Holmes, E., Coughtrey, A. E., & Connor, A. (2008). Looking at or through rose-tinted glasses? Imagery perspective and positive mood. *Emotion, 8*, 875–879.

Holmes, E., & Mathews, A. (2010). Mental imagery in emotion and emotional disorders. *Clinical Psychology Review, 30*, 349–362.

Kashdan, T. B., & Roberts, J. E. (2007). Social anxiety, depressive symptoms, and post-event rumination: affective consequences and social contextual influences. *Journal of Anxiety Disorders, 21*, 284–301.

Krantz, S., & Hammen, C. (1979). Assessment of cognitive bias in depression. *Journal of Abnormal Psychology, 88*, 611–619.

Kross, E., & Ayduk, O. (2008). Facilitating adaptive emotional analysis: distinguishing distanced-analysis of depressive experiences from immersed analysis and distraction. *Personality and Social Psychology Bulletin, 34*, 924–938.

Kross, E., & Ayduk, O. (2009). Boundary conditions and buffering effects: does depressive symptomology moderate the effectiveness of self-distancing for facilitating adaptive emotional analysis? *Journal of Research in Personality, 43*, 923–927.

Kross, E., Ayduk, O., & Mischel, W. (2005). When asking "why" does not hurt. *Psychological Science, 16*, 709–715.

Kuyken, W., & Howell, R. (2006). Facets of autobiographical memory in adolescents with major depressive disorder and never-depressed controls. *Cognition and Emotion, 20*(3–4), 466–487.

Lawson, C., MacLeod, C., & Hammond, G. (2002). Interpretation revealed in the blink of an eye: depressive bias in the resolution of ambiguity. *Journal of Abnormal Psychology, 111*, 321–328.

Lyubomirsky, S., Caldwell, N. D., & Nolen-Hoeksema, S. (1998). Effects of ruminative and distracting responses to depressed mood on retrieval of autobiographical memories. *Journal of Personality and Social Psychology, 75*, 166–177.

Lyubomirsky, S., Tucker, K. L., Caldwell, N. D., & Berg, K. (1999). Why ruminators are poor problem-solvers: clues from the phenomenology of dysphoric rumination. *Journal of Personality and Social Psychology, 77*, 1041–1060.

McIsaac, H. K., & Eich, E. (2002). Vantage point in episodic memory. *Psychonomic Bulletin and Review, 9*, 146–150.

McIsaac, H. K., & Eich, E. (2004). Vantage point in traumatic memory. *Psychological Science, 15*, 248–253.

Mogg, K., Bradbury, K. E., & Bradley, B. P. (2006). Interpretation of ambiguous information in clinical depression. *Behaviour Research and Therapy, 44*, 1411–1419.

Moulds, M. (2009). Asking 'why' still increases intrusions: a response to Ayduk and Kross (2008). *Behaviour Research and Therapy, 47*, 93–96.

Nigro, G., & Neisser, U. (1983). Point of view in personal memories. *Cognitive Psychology, 15*, 467–482.

Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspectives in Psychological Science, 3*, 400–424.

Pennebaker, J. W., Mayne, T. J., & Francis, M. E. (1997). Linguistic predictors of adaptive bereavement. *Journal of Personality and Social Psychology, 72*, 863–871.

Robinson, J. A., & Swanson, K. L. (1993). Field and observer modes of remembering. *Memory, 1*, 169–184.

Trapnell, P. D., & Campbell, J. D. (1999). Private self-consciousness and the five-factor model of personality: distinguishing rumination from reflection. *Journal of Personality and Social Psychology, 76*, 284–304.

Watkins, E. R. (2008). Constructive and unconstructive repetitive thought. *Psychological Bulletin, 134*, 163–206.

Williams, A. D., & Moulds, M. L. (2007). Cognitive avoidance of intrusive memories: recall vantage perspective and associations with depression. *Behaviour Research and Therapy, 45*, 1141–1153.

Wimalaweera, S. W., & Moulds, M. L. (2008). Processing memories of anger-eliciting events: the effect of asking 'why' from a distance. *Behaviour Research and Therapy, 46*, 402–409.

Wisco, B. E. (2009). Depressive cognition: self-reference and depth of processing. *Clinical Psychology Review, 29*, 382–392.

Wisco, B. E., & Nolen-Hoeksema, S. (2010). Interpretation bias and depressive symptoms: the role of self-relevance. *Behaviour Research and Therapy, 48*, 1113–1122.