

Anxious People Report Less Emotional Distancing While Imagining Negative Future Events

by

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Abstract

This study examined the relationship between future thinking, temporal distance, and anxiety. The primary goal of this study was to investigate whether psychological distance has the same emotional impact while imagining future events that it does when remembering past events. A second goal was to determine whether individual differences in anxiety might moderate the impact of psychological distancing. Based on previous research, I expected anxious individuals to feel more negative when imagining anxiety-provoking negative events than non-anxious individuals (Wu et al., 2015). Secondly, I expected individuals in the immersed condition to have increased negative feelings when describing the event than participants in the distanced condition. Finally, I expected the difference between high- and low-anxious participants to be larger in the immersed than distanced condition. Undergraduates (N = 73) from Appalachian State University completed the study in exchange for course credit. Upon coming into the lab, they were randomly assigned to either an *immerse* (i.e., fully experience feelings of anxiety that may arise while describing the event) or *distancing* (i.e., adopt a distant-future perspective and reflect on typicality of event) condition and were asked to describe a future event that was at least two weeks away. Highly anxious people reported more immersion while imagining the events. They did not, however, differ in how they *felt* while describing the event from low-anxious participants.

Keywords: anxiety, future thinking, temporal distancing

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Do you ever think about an upcoming event, like an upcoming exam or an important interview, in a way that makes you feel like you are experiencing the event now? Do your palms sweat or does your heart race as you imagine it unfolding? If imagining future events does make you anxious or worried, you are experiencing a natural response to a uniquely human ability. Referred to as Episodic Future Thinking (Schacter, Addis, & Buckner, 2007), Foresight (Suddendorf, 2017), or Propection (Gilbert & Wilson, 2007), the ability to imagine upcoming events can be very beneficial to humans. It can protect us from entering dangerous situations and help us react to environmental threats (Bulley, Henry, and Suddendorf, 2017). It can also help people plan, make decisions, and even think creatively (Madore, Jing, & Schacter, 2018).

Though the cognitive ability to imagine the future is beneficial, the feelings these mental simulations evoke may be unpleasant (Emery, Hardin, Graves, & Knight, 2019). Temporary anxious feelings are not necessarily problematic but being chronically worried or anxious about the future can be harmful to our wellbeing. For example, worrying to the extent it complicates day-to-day functioning is common among people who have generalized anxiety disorder (Bulley et al., 2017). How, then, might people experience the benefits of episodic future thinking while controlling the unpleasantness of the experience?

One possible method for reducing feelings of anxiety during Episodic Future Thinking is to mentally place space between oneself and past events by adopting a “cognitively distant” perspective (Kross & Ayduk, 2011), as opposed to reliving an experience from an immersed, first-person perspective. This can be accomplished through increasing social distance (e.g., imagining yourself through the eyes of another or referring to yourself in third-person language) or temporal distance (e.g., mentally broadening the scope of time and imagining how your future

self would think about this event). The research literature on psychological distancing, however, is focused on remembering *past* events, rather than imagining *future* ones. It is therefore unknown whether distancing is an effective tool for reducing anxiety when thinking about the future.

The primary goal of this thesis, therefore, was to investigate whether psychological distance has the same emotional impact while imagining future events that it does when remembering past events. A second goal was to determine whether individual differences in anxiety might moderate the impact of psychological distancing. Before turning to my study, I will review some of what is known about the relationships between distancing, anxiety and future thinking, using a theoretical model of threat-related internal thought (Bulley et al., 2017) as a framework.

The Costs and Benefits of Imagining the Future

The human capability to defend against future threats is thought to be a result of cognitive and physiological advancement in our evolutionary history (Bulley et al., 2017; Suddendorf, 2018). The ability broadly referred to as internally generated thinking allows humans to prospectively consider future threats and retrospectively reproduce those that have already been endured, regardless of stimuli in the present environment (Bulley et al., 2017). That is, all animals can experience fear, which is a reaction to immediate and concrete threats in the environment. Humans, however, have ability to imagine events that haven't happened but might occur, and experience anxiety in response to this imagined event. While having an excess of anxiety is harmful, Bulley et al. (2017) argue that having some anxiety may be beneficial for humans. They define anxiety as an internal response based on prospective (forward-looking)

and/or retrospective (looking backward) thinking, in combination with cues of potential threat. These cues can be real or imagined.

Internally generated thought is derived from a combination of episodic and semantic thinking. Episodic thinking is described as first-person, image-based thinking. Semantic thinking is an innate “knowing” without mental stimulation and is much more abstract and verbal than episodic thinking. The episodic and semantic content of thought is acquired by memories of past experiences but can be combined in new ways to think about the future (Schacter, Addis, & Buckner, 2007). As described by Bulley et al. (2017): “Semantic and episodic memories provide the ‘raw material’ from which prospective thoughts are construed” (pg. 59).

Most future thinking contains some amounts of both episodic and semantic content. Researchers make a distinction, however, between a phenomenon known as *episodic future thinking* (EFT) and other types of more general future thought. Episodic future thoughts are mental imaginations or simulations of upcoming future events (Schacter et al., 2007; Wu, Szpunar, Godovich, Schacter, & Hoffman, 2015). EFT dominates most of human thought and contain specific details with concrete mental imagery. For example, if someone describes the vacation they went on last summer, episodic details would include what they did and where (e.g., flew a yellow kite on the beach), when (e.g., the first Wednesday of the vacation), and with who (e.g., a grandparent). Episodic future thought differs from semantic thought. For comparison, the semantic version of the episodic example used above would sound something like this: “I enjoyed going to the beach.” Generally, EFT may help us plan, attain goals, and may be helpful in prospective coping. As may be expected, EFT tends to contain more episodic information than semantic information, at least amongst young adults (Emery et al., 2019). When describing EFT that is specifically about threat, Bulley et al. (2017) suggest the term *episodic threat prospection*.

ETP is often emotionally laden, which helps humans avoid threats, but is harmful to one's welfare in some cases because of the way ETP negatively influences mood (Bulley et al., 2017).

In contrast to EFT, other types of future thinking are dominated by semantic content. For example, *worry* about the future is a common feature of anxiety disorders (Bulley et al., 2017). Kaplan et al. (2018) define worry as a response that is based on uncertainty or the potential for future problems to arise. Bulley et al. (2017) clinically defines worry as non-concrete verbal depictions of future threats, which are mostly reliant upon semantic processes. This type of thinking is also known as *semantic threat prospection* and is common among individuals with generalized anxiety disorder (GAD). These thoughts are usually scarce in mental imagery and episodic content. Semantic worry aids in alerting an individual of a problem but is not particularly useful for problem-solving (Bulley et al., 2017). Prior research indicates that semantic threat prospection may help individuals cope with troublesome effects of anxiety that are commonly elicited by episodic threat prospection. That is, worry may be an avoidant response to the negative feelings evoked by imagining a specific future event (e.g., Borkovec, Ray, & Stöber, 1998). Worry may therefore reduce immediate anxious feelings but impair one's ability to take active steps to avoid the very threat one is worried about.

Episodic and semantic threat prospection are thought to arise from their companion processes of episodic and semantic threat *memory*. A more common name for semantic threat memory is rumination. Kaplan et al. (2018) define rumination as a negatively valenced, uncontrollable repetitive thinking process, usually focused on self- and past-experiences, which occur independently of external stressors. In other words, to ruminate is to chronically think about the effects of one's *past* negative experiences. According to Ayduk and Kross (2010), when humans feel an emotion, there is often an urge to analyze and understand the emotion (that

is, what are the feelings and why are they happening), but analyzing feelings and ruminating on them in this way can worsen gloomy thoughts instead of helping them go away (Ayduk & Kross, 2010).

Psychological Distancing

Kross, Ayduk, and Mischel (2005) state that attempting to analyze negative emotions (e.g., anger or sadness) can be maladaptive in that it can lead to rumination. Engaging in rumination often leads to long term increases in negative affect. Preventing rumination should entail processing negative emotions in a more abstract manner to be managed in a distant, contemplative fashion. Kross, Ayduk, and Mischel (2005) suggested two factors that may affect one's capacity to cognitively depict negative feelings this way: self-perspective (immersed vs. distanced), and affective focus, which examines the subject matter of one's thoughts regarding one's emotional experiences. Previous emotional distancing research by Ayduk and Kross (2008) indicates that recalling negative events from a psychologically distant outlook (as opposed to the immersed perspective of "reliving" the experience) reduces negative emotions. When dealing with negative experiences, one can de-center themselves from experiences and view experiences from a "third-person perspective" (Kross, Auduk, & Mischel, 2005, pg. 710). The distanced outlook helps people process emotional experiences by reflecting on them rather than negatively reacting to emotional arousal.

While initial research on psychological distancing focused on remembering events from a socially distant, third person perspective, more recent research has looked at how temporal distancing (viewing a recent event from the point of view of a distant future self) can also reduce negative emotion. For example, one recent study examined the possibility that distancing oneself temporally may reduce negative affect in response to directly experiencing a negative event, and

that it may help individuals cope. Bruehlman-Senecal, and Ayduk (2015) examined whether or not expending cognitive resources by focusing on how impermanent negative events are (through the process of placing temporal distance between the current negative effects versus future impact) reduces anxiety.

Bruehlman-Senecal and Ayduk (2015) created an eight-item psychometric measure called Temporal Distancing Questionnaire (TDQ) to assess the propensity to distance oneself from negative experiences by mentally broadening the scope of time. Doing so seems to make negative events feel less severe because temporal distance allows one to view the event as transitory. This construct is measured with questions like “I tell myself that this event probably won’t impact my life very far into the future” (Bruehlman-Senecal & Ayduk, 2015). The authors also measured whether or not engaging in temporal distancing promotes general welfare. Well-being was measured through various self-report scales concerning levels of optimism, satisfaction with life, and positive well-being. The findings supported the notion that temporally distancing oneself (i.e., adopting a distant-future perspective) indeed lessened the experience of current emotional distress (Bruehlman-Senecal & Ayduk, 2015).

A recent study in our lab (Emery, Hardin, Graves, & Knight, 2019) also found that distancing oneself from everyday events (as opposed to negative ones) can promote positive emotion. In the study, adults of varying ages were asked to remember or imagine everyday events (e.g., getting a haircut) in two ways. In the immersed condition, participants were guided through the event itself, as if they were experiencing it through their own eyes. In the distanced condition, participants were asked to focus on how the event integrated into their overall life. When describing events in the distanced condition, participants reported more positive affect,

used more positive words, and reported less immersion in the event than when describing events in the distanced condition.

Anxiety and Episodic Future Thought

One limitation of the temporal distancing literature is that the vast majority of studies focus on *past* events rather than *future* ones. Because anxiety is evoked by imagining future events, it is unclear whether distancing would be as helpful for worry as it is for rumination. Highly anxious people, like those with GAD, tend to engage in both prospective and retrospective thinking that is generally more negatively valenced than that of non-anxious people (Wu et al., 2015). Common features of GAD include: persistent, chronic worry about what may happen in the future, unwillingness to accept unpredictability, and beliefs like “worrying allows me to prepare for the future” (Wu et al., 2015). Wu et al. (2015) add that worry is a thinking style analogous to rumination, focused on the semantic rather than episodic content of future imagined events.

Wu et al. (2015) hypothesized that it would be more difficult for highly anxious individuals to come up with detailed, negatively-valenced future events (as opposed to general, non-detailed events), think negative events were more likely to happen, and generally have a more negative outlook for the future. To test these hypotheses, researchers had participants generate extensive lists of familiar people, places, and things, select portable objects and specific locations and simulate a future event and rate the plausibility of the event. They then returned for a second time and re-simulated the events they previously constructed based on a valence tag of either neutral, positive, or negative. This gave participants the chance to generate novel episodic future possibilities and then measure how likely the events were believed to be. Wu et al. (2015) found that it is easier for anxious individuals to produce negative future events than positive

ones, come up with plausible reasons for the negative event's occurrence, and feel that there is high likelihood that the future will hold more negative events. Contrary to predictions, the anxious and non-anxious groups did not differ in their ratings of how detailed the negative events were when they simulated them.

Current Study

Broadly speaking, this study examined the relationship between anxiety, episodic future thinking, and temporal distancing. To my knowledge, no prior research has investigated relationships among these three constructs, largely because they arise from separate research traditions (clinical, cognitive, and social psychology, respectively). Based on the Wu et al. (2015) findings, I expected anxious individuals to engage in more negatively valenced episodic future thinking than non-anxious individuals. Based on the prior findings of Emery et al. (2019), I expected that individuals in the immersion condition would have increased feelings of negative emotion compared to people in the distanced condition. Finally, I hypothesized that the effect of anxiety on negative feelings would be bigger in the immersed condition than in the distanced condition.

Method

Participants

Participants were 73 Appalachian State University students between the ages of 18 and 25 who were recruited through SONA, Appalachian State University's psychology recruitment system. The only inclusionary criterion was that participants had to be young adults (18-25) currently enrolled at ASU. The final sample size was 53, as there were 17 participants that did not show up for time one and three participants were excluded from analysis because the event they described was less than 14 days (i.e., two weeks) away. The study was approved by

Appalachian State University's Institutional Review Board and participants explicitly consented to being part of this study with knowledge they could stop at any point. Student participation in this study was voluntary but was incentivized by the possibility of earning two experiential learning credits (ELCs) that count toward course credit by completing the study.

Materials

Future Event Questionnaire. Based on prior research (Ayduk and Kross, 2010; Ayduk & Kross, 2008; Bruehlman-Senecal and Ayduk, 2015), I used a 9-item, modified version of the questionnaire developed by Emery et al. (2019) to measure both mood and emotion regulation strategies used while imagining future events. The full version of the questionnaire may be found in Appendix E. Participant mood (the primary dependent variable) was measured by assessing positive and negative affect (“As I was describing the event, I felt a lot of positive emotion; “As I was describing the event, I felt a lot of negative emotion,” respectively). Immersion in the future event (the primary manipulation check) was measured with the item “As I was describing the event, I felt as if I was living the experience as it will be, through my own eyes.” The response scale ranged from 1-6, where 1 = *completely disagree* and 6 = *completely agree*.

Beck Anxiety Inventory (BAI; Beck et al., 1988). A self-report scale by Beck, Epstein, and Steer (1988) was used as the primary measure of anxiety in adult participants. The BAI is designed to assess an individual's anxiety severity (Beck et al., 1988) and has been used to distinguish between anxious and non-anxious groups in prior research (Wu et al., 2015). The measure is a 21-item, 4-point Likert-type scale where 0 = *not at all*, and 3 = *severely, it bothered me a lot*. Participants were asked to ponder how much they have experienced these symptoms within the past month and answer accordingly. Sample items include: “numbness or tingling” and “heart pounding/racing.” Internal consistency for the BAI was high (Cronbach's $\alpha= 0.92$)

and test-retest reliability at one week for the BAI was adequately stable ($r = 0.75$; Beck et al., 1988).

Exploratory Measures. Two measures were included for exploratory purposes, and are not reported in the analyses for the thesis.

Follow-Up Event Questionnaire. One week after the test session, participants were asked to fill out another questionnaire about the event they imagined (see Appendix F). The measure was a 14-item, 6-point scale where 1 = *strongly disagree* and 6 = *agree*. Sample items include: “As I'm thinking of the event now, I am feeling a lot of negative emotion,” “I have put the event behind me completely,” and “This event still bothers me”.

Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007). Anxiety sensitivity was assessed by the ASI-3 by Taylor et al. (2007). The self-report index consists of 18-items designed to measure general anxiety sensitivity and three domains of cognitive (e.g., “When my thoughts seem to speed up, I worry that I might be going crazy”), physical (e.g., “When my throat feels tight, I worry that I could choke to death”), and social apprehensions (e.g., “When I begin to sweat in a social situation, I fear people will think negatively of me”). Participants were asked to rate their level of agreement of each statement on a five-point Likert-type scale where 0 = *very little* and 4 = *very much*. The reliability and validity of the ASI-3 has been established, and there is indication that the psychometric qualities of the ASI-3 have been refined since the original ASI (Taylor et al., 2007). The total score is determined by calculating the sum of the 18 items, and scores range from 0-72. A score of 0-17 is indicative of “almost no anxiety sensitivity”; 18-35 indicates “low anxiety sensitivity”; 36-53 indicates “moderate anxiety sensitivity,” and 54-72 indicates an individual has a high level of anxiety sensitivity (Taylor et al., 2007).

Procedure

The experimenter began the study by briefly explaining the experiment procedure to the participant and obtained proper informed consent before continuing to the experiment (Appendix A). All procedures were approved by the Appalachian State University Institutional Review Board on 2/2/2019 (Appendix B). Participants completed the procedure individually in a quiet testing room with a single researcher present. The full scripts used by the researcher are included in Appendices C and D.

This study consisted of two parts: an in-lab, in-person portion and an online follow-up survey (Appendix F). Upon arrival for the in-lab portion of the study, participants were seated and told about the informed consent process and the researcher started video recording the participant to ensure the participant was adhering to task instructions (videos will be analyzed and coded at a later time).

Participants were randomly assigned to one of two conditions: immersed ($n = 27$) or distanced ($n = 26$). In each condition, participants were read a prompt asking them to think of an upcoming event that they are anxious about. The prompt was adapted from a prior study by Ayduk & Kross (2010), but changed from remembering a personal conflict to imagining a worrisome event:

No matter how well life is going, there are future events that we may be worried about. Take a few moments right now to think of an upcoming event that you may be anxious or concerned about — one that makes your heart race or palms sweat just thinking about. Although it may be difficult, most people can usually imagine at least one upcoming worrisome event that will come up in the future.

Please try to imagine an experience that is at least two weeks, but no more than two

months away. Take your time as you try to do this. Once such an event comes to mind let me know when you are ready to begin describing it.

In the immersed condition, participants were asked to describe details of the surroundings, people, and actions involved in the event itself. In the distancing condition, participants were asked to describe how the surroundings, people, and actions of the event relate to other events, people, and places they have previously experienced in life. These instructions had previously been used in the Emery et al. (2019) study.

After describing the event, all participants completed three questionnaires: Future Event Questionnaire, Beck Anxiety Inventory, and Anxiety Sensitivity Index-3. One week after the event, participants were sent out a follow-up questionnaire (Appendix F) to fill out via an online survey.

Results

All data were analyzed using an Analysis of Covariance (ANCOVA) with Condition (Immersed vs. Distanced) as the independent variable and BAI scores as the covariate.

Manipulation check

For the question about how immersed people were in the event, there was no main effect of condition, $F(1,49) = 1.050, p = 0.311, \eta_p^2 = 0.021$, no Condition x Anxiety level interaction, $F(1,49) = 1.165, p = 0.286, \eta_p^2 = 0.023$, but there was a main effect of anxiety, $F(1,49) = 6.686, p = 0.013, \eta_p^2 = 0.120$. Immersion ratings did not differ between the Immersed ($M = 4.67, SD = 1.14$) and distanced conditions ($M = 4.65, SD = 1.02$). This suggests that the manipulation did not have its intended effect. Anxiety level, however, was moderately and positively correlated with the amount participants felt immersed while describing the event, $r(51) = 0.33, p = 0.016$.

Negative and Positive Feelings

For negative affect reported while describing the event, there was there was no main effect of condition, $F(1,49) = .571, p = 0.454, \eta_p^2 = 0.012$, no main effect of anxiety level, $F(1,49) = 1.42, p = 0.283, \eta_p^2 = 0.028$, and no Condition x Anxiety Level interaction, $F(1,49) = 0.045, p = .833, \eta_p^2 = 0.001$. Besides being not statistically significant, the effect of condition was in the opposite direction that was predicted. Participants reported more negative affect while describing the event under distancing instructions ($M = 3.58, SD = 1.27$) than immersion instruction ($M = 3.15, SD = 1.29$).

For positive affect while describing the event, there was there was no main effect of condition, $F(1,49) = 1.901, p = 0.174, \eta_p^2 = 0.037$, no main effect of anxiety level, $F(1,49) = 0.005, p = 0.946, \eta_p^2 = 0.00$, and no Condition x Anxiety Level interaction, $F(1,49) = 0.684, p = 0.412, \eta_p^2 = 0.014$. As with negative affect, the effect of condition was in the opposite direction of what was predicted: participants reported more positive affect while describing the event under immersion instruction ($M = 3.37, SD = 1.18$) than distancing condition ($M = 2.88, SD = 1.42$).

Other Important Event Characteristics

The above results found only that highly anxious people reported more immersion while imagining the events. They did not, however, differ in how they *felt* while describing the event from low-anxious participants. To investigate possible reasons for this apparent discrepancy, I investigated data from two other questions in the future events questionnaire.

First, one question asked about how much the participant had thought about the event the before coming into the lab. For this variable, there was there was no main effect of condition, $F(1,49) = 0.070, p = 0.793, \eta_p^2 = 0.001$, a main effect of anxiety, $F(1,49) = 25.57, p < 0.001, \eta_p^2 = 0.343$, and no Condition x Anxiety Level interaction, $F(1,49) = 0.014, p = 0.908, \eta_p^2 = 0.00$. The amount someone considered the event before coming into the lab was strongly, positively

correlated with both their anxiety level, $r(51) = 0.59$, $p < 0.001$. It appears, therefore, that high and low-anxious people differed substantially in how often they had thought about the event in the past.

In addition, participants were asked how far in the future the event was. This open-ended response was converted into number of days for analysis. For the amount of time before the event occurs, there was no main effect of condition, $F(1,49) = 0.850$, $p = 0.361$, $\eta_p^2 = 0.017$, no main effect of anxiety, $F(1,49) = 0.462$, $p = 0.50$, $\eta_p^2 = 0.009$, and no Condition x Anxiety Level interaction, $F(1,49) = 0.290$, $p = 0.593$, $\eta_p^2 = 0.006$.

Discussion

In this study, I investigated whether emotional distancing decreased negative feelings about future events, and whether this effect was moderated by participants' anxiety levels. Based on previous research, I expected anxious individuals to feel more negative when imagining anxiety-provoking negative events than non-anxious individuals (Wu et al., 2015). Secondly, I expected individuals in the immersed condition to have increased negative feelings when describing the event than participants in the distanced condition. Finally, I expected the difference between high- and low-anxious participants to be larger in the immersed than distanced condition. None of these hypotheses, however, were supported by the data.

Interestingly, I did find that participants who scored higher on the BAI immersed themselves more in describing the upcoming worrisome event. Further, I found that more anxious individuals reported thinking about the event before coming into the lab more than non-anxious individuals. However, statistical analyses indicated that participants' anxiety levels did not predict how negative they felt while describing the event regardless of condition assignment (immersed or distancing). Moreover, the amount of negative affect induced was surprisingly low

– on a six-point scale, the average negative affect rating was just over the midpoint of three. This suggests that my attempt to induce anxiety through episodic future thinking was unsuccessful. It is possible that by thinking about the event beforehand allowed highly-anxious participants to rehearse details of the event and engage in emotion regulation strategies, which may explain why they did not report feeling anxious while describing the event in the lab. These findings support prior research by Wu et al. (2015) and Bulley et al. (2017) in that anxious individuals did report thinking about (and likely ruminating/worrying about) the event more than non-anxious individuals.

One surprising finding of the study was that the distancing instructions were ineffective and changing either peoples' immersion or their mood. On one hand, this finding is somewhat consistent with the findings from Wu et al. (2015) that anxiety level did not moderate the level of detail produced when imagining future events. That is, the way people think about anxiety provoking future events may be relatively impervious to either individual differences or experimental manipulations. On the other hand, these instructions have successfully changed people's sense of immersion and mood in a previous study (Emery et al., 2009). In that study, however, the events people imagined were mostly positively valenced and cued by focusing people on event content rather than event emotion. Finally, even though mood differences between conditions were not statistically significant, they were actually in the opposite direction as predicted: participants in the distanced condition reported more negative and less positive affect while describing the event than people in the immersed condition. This did not align with Bruehlman-Senecal and Ayduk's (2015) findings that adopting a distant-future perspective lessened the experience of current emotional distress.

There were several limitations to the current study that should be addressed in future research. First, a clear limitation of this study is the small sample size ($N = 53$). Future research should attempt to recruit a larger sample size, as the results could reflect a “power issue” (i.e., need a larger sample to detect effects) in detecting the differences in mood evoked by the conditions. Another potential limitation of the study is that I did not attempt to control the extent participants thought about the event before coming into the lab for time one, which may have affected the way they processed negative emotions beforehand. This could be controlled by using a procedure like that used by Wu et al. (2015). Lastly, using a sample that is not clinically diagnosed with anxiety could be problematic in that the results are not generalizable to clinical populations. The results may have been different if the population had clinical anxiety levels, as opposed to the general population.

Conclusions

In sum, the current study finds that participants who scored higher on the BAI immersed themselves more in describing an upcoming worrisome event. The nature of this effect likely depends on how much a person thinks about (i.e., cognitively rehearses) a worrisome upcoming event before its occurrence, as well as how anxious a person is in general. In addition, instruction to either immerse or self-distance oneself from negative emotional experiences has the potential to increase feelings of anxiety. These preliminary findings suggest that anxious people may ruminate on negative emotional experiences when considering future events more than non-anxious individuals.

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Appendix A

Consent Form

Consent to Participate in Research *Information to Consider About this Research*

Future Thinking and Temporal Distance as Moderators of Anxiety

Principal Investigator: Cameron Scroggs - Future Thinking and Temporal Distance as Moderators of Anxiety
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Faculty advisor: Lisa Emery, 828-262-8941; email: EmeryLJ@appstate.edu

You are being invited to take part in a research study about *the relationship between worry and thinking about the future*. If you take part in this study, you will be one of about 50 people to do so. By doing this study we hope to learn *if the way people think about future events will influence how anxious they feel*.

The research procedures will be conducted at *Appalachian State University in either room 159 University Hall or 201C Smith-Wright Hall*.

You will be asked to *think of an event two or more weeks away that you are anxious or worried about. You will then be asked to describe the event while either distancing yourself from negative experiences by mentally broadening the scope of time or by allowing yourself to fully experience whatever feelings of anxiety or worry that may arise while describing the event. You will then be asked to report on your level of anxiety/worry while describing the event. Doing so will earn you 1 ELC. Another ELC (1) can be earned by completing a follow-up online questionnaire one week later reporting on how you feel about the event after describing it in the lab. The total time commitment for participation in this study will be approximately one hour, which includes time for the follow-up online questionnaire a week later.*

You cannot volunteer for this study if are under 18 years of age or over 25 years of age.

What are possible harms or discomforts that I might experience during the research?

You may feel emotional reactions from thinking about and describing the anxiety-provoking event, however, to the best of our knowledge, the risk of harm for participating in this research study is no more than you would experience in everyday life.

What are the possible benefits of this research?

There may be no personal benefit from your participation, but the information gained by doing this research may help others in the future by demonstrating how emotion regulation strategies can either minimize or increase the symptoms of anxiety.

Will I be paid for taking part in the research?

Appendix B

Institutional Review Board Approval

To: Cameron Scroggs
Psychology
CAMPUS EMAIL

From: Dr. Andrew Shanely, IRB Chairperson

Date: February 26, 2019

RE: Notice of IRB Approval by Expedited Review (under 45 CFR 46.110)

STUDY #: 19-0230

STUDY TITLE: Future Thinking and Anxiety

Submission Type: Modification

Expedited Category: 7.Surveys/interviews/focus groups, Minor Change to Previously Approved Research

Approval Date: 2/26/2019

Expiration Date of Approval: 2/26/2019

The Institutional Review Board (IRB) approved the modification for this study. The IRB found that the research procedures meet the expedited category cited above. IRB approval is limited to the activities described in the IRB approved materials, and extends to the performance of the described activities in the sites identified in the IRB application. In accordance with this approval, IRB findings and approval conditions for the conduct of this research are listed below.

Submission Description:

After running a few participants, I (Cameron Scroggs) noticed that it was not taking as long as I anticipated to complete the study. Instead of earning three (3) ELCs for completing the study, participants will now earn two (2). One ELC will be earned for the in-lab portion (taking around 30 minutes), and another ELC will be earned after completing the online follow-up questionnaire administered seven days after completing part one.

Documents to be modified:

Informed consent, IRB application (Part B - Incentives)

Study Regulatory and other findings:

The IRB determined that this study involves minimal risk to participants.

All approved documents for this study, including consent forms, can be accessed by logging into IRBIS. Use the following directions to access approved study documents.

1. Log into IRBIS
2. Click "Home" on the top toolbar
3. Click "My Studies" under the heading "All My Studies"
4. Click on the IRB number for the study you wish to access
5. Click on the reference ID for your submission

6. Click "Attachments" on the left-hand side toolbar
7. Click on the appropriate documents you wish to download

Approval Conditions:

Appalachian State University Policies: All individuals engaged in research with human participants are responsible for compliance with the University policies and procedures, and IRB determinations.

Principal Investigator Responsibilities: The PI should review the IRB's list of PI responsibilities. The Principal Investigator (PI), or Faculty Advisor if the PI is a student, is ultimately responsible for ensuring the protection of research participants; conducting sound ethical research that complies with federal regulations, University policy and procedures; and maintaining study records.

Modifications and Addendums: IRB approval must be sought and obtained for any proposed modification or addendum (e.g., a change in procedure, personnel, study location, study instruments) to the IRB approved protocol, and informed consent form before changes may be implemented, unless changes are necessary to eliminate apparent immediate hazards to participants. Changes to eliminate apparent immediate hazards must be reported promptly to the IRB.

Approval Expiration and Continuing Review: The PI is responsible for requesting continuing review in a timely manner and receiving continuing approval for the duration of the research with human participants. Lapses in approval should be avoided to protect the welfare of enrolled participants. If approval expires, all research activities with human participants must cease.

Prompt Reporting of Events: Unanticipated Problems involving risks to participants or others; serious or continuing noncompliance with IRB requirements and determinations; and suspension or termination of IRB approval by external entity, must be promptly reported to the IRB.

Closing a study: When research procedures with human subjects are completed, please log into our system a https://appstate.myresearchonline.org/irb/index_auth.cfm and complete the Request for Closure of IRB review form.

Websites:

1. PI responsibilities:

<http://researchprotections.appstate.edu/sites/researchprotections.appstate.edu/files/PI%20Responsibilities.pdf>

2. IRB forms: <http://researchprotections.appstate.edu/human-subjects/irb-forms>

CC:

Lisa Emery, Psychology

Appendix C
Experimenter Script: Immersion Condition
EXPERIMENTER SCRIPT - TIME 1 SESSION

*Make sure the computer is turned on before the participant comes in and REDCap is pulled up. Sign into REDCap and pull up “**Scroggs Honor Thesis 2019.**” Under the “**Data Collection**” tab on the left-hand side of the screen, click “**add / edit records.**” Next, click “**Add new record.**” Click “**Participant Information**” and enter the participant’s email address that was used to sign up via SONA. Next, click “**randomize**” and confirm randomization. REDCap will then give you a message that looks something like this:*

*Record ID “9” was randomized for the field “**Condition**” and assigned the value “**2 = Distancing**” (2).*

*This will give you the participant number (‘9’ in this case) and the condition they were randomly assigned to (either ‘1 = immerse’ or ‘2= distancing’). Next, click “**save and go to next form.**”*

INFORMED CONSENT PROCEDURE

Thank you for participating in this study! In order to ensure that we treat everyone the same way, I must read these instructions to you word for word, even though that may feel a bit formal at times. In this first session, you will be asked to think of an event that is two or more weeks away that you are anxious or worried about. You will then be asked to describe the event while either distancing yourself from negative experiences by mentally broadening the scope of time or by allowing yourself to fully experience whatever feelings of anxiety or worry that may arise while describing the event. You will then be asked to report on your level of anxiety or worry while describing the event by completing a few questionnaires. A follow-up questionnaire asking you to rate your current level of anxiety/worry will be sent out a week later via email.

The event you will be describing is similar to what you would come across in your daily life, for instance, being anxious about an upcoming test or interviewing for graduate school. The event you are describing should not cause significant distress, however, please inform the experimenter (me) if you feel unable to continue the study for any reason, and we will end the session. Do you have any questions so far?

In order to proceed to the next section of the study, you will first need to fill out this consent form. *Hand participant consent form and pen*

This form will tell you what we are studying and what we will be doing in both this session and the next session, one week from today. Please read through the form and let me know if you have any questions. When you reach the end of the form, sign your name, write down today’s date, and let me know you have finished. Just so you are

aware, this consent form applies to both this study session and the Time 2 study session you will be participating in next week.

Wait for participant to complete consent form

We are now about to begin the Time 1 study session. Do you have any questions? Let's begin!

If it is not already, we would like for your phone to be off and out of your sight, in order to minimize potential distractions during the study.

EVENT DESCRIPTION & QUESTIONNAIRES

This experiment explores the relationship between future thinking, anxiety, and worry. There are different ways people can cope with the negative feelings they may experience when an anxiety-provoking event is coming up. For example, they may attempt to "push away" the event by mentally broadening the scope of time, telling themselves things like "oh, this feeling is temporary and the event will not impact me much in the future." Or, the person may worry about the event to the extent it causes them a great deal of anxiety or worry.

Do you have any questions? Great! Let's get started.

Now turn to task instructions; either 'distance' or 'immerse,' based on the condition the participant was assigned to.

IMPORTANT - *Instructions differ based on condition; please ensure you read the correct instructions based on what condition the participant was assigned to in REDCap.*

Task Instructions: IMMERSION CONDITION

Prior to beginning, start the video recording using the webcam software by pressing the record button (with a red dot) and start the audio recording in Audacity. You should be able to tell that the audio is recording and an indicator signal should be flashing for the webcam on the computer monitor. Minimize the video window once you know it is recording.

In this experiment, you will be prompted to describe one future event that is at least two weeks away. This event must be one that invokes a sense of anxiety within you. The event should be relatively short; it may last up to several hours but needs to be less than a day. You should pick a situation in which you will be personally involved and describe details of the event. Do not pick events described to you by others, or imagine how others could describe them to you.

Once you have picked the event, I will ask you to describe the event in more detail. As you elaborate on the details, try to picture each event from a first-person perspective, as if you are experiencing the events now through your own eyes.

After you have described the event, I will ask you to answer some questions about the event. The questions are listed on this screen. (Refer them to the questions on the screen.) Be sure to read each question carefully before answering; some questions ask about how you will feel when the event occurs, and others ask about how you felt while describing the event now. Do you have any questions? OK, let's begin.

No matter how well life is going, there are future events that we may be worried about. Take a few moments right now to think of an upcoming event that you may be anxious or concerned about — one that makes your heart race or palms sweat just thinking about. Although it may be difficult, most people can usually imagine at least one upcoming worrisome event that will come up in the future. Please try to imagine an experience that is at least two weeks, but no more than two months away. Take your time as you try to do this. Once such an event comes to mind let me know when you are ready to begin describing it.

Now I'm going to ask you some more in-depth questions about the event you are describing. I am going to guide you through the event as if I were interviewing you as a witness to what will happen. I would like you to describe the event with as much detail as possible about the surroundings, the people involved, and what everyone will say and do during the event. Once again, try your best to see the event through your own eyes, as if you were experiencing the event as you describe it.

Mental Imagery About the Surroundings

First I want you to close your eyes and get a picture in your head about the surroundings where the event will take place. I want you to think about what types of things are in the environment, how they are arranged, and what they look like. Once you have a really good picture in your head I want you to tell me everything you can about the surroundings. Try to be as specific and detailed as you can.

(Remind them of the prompt as needed – “what types of things are there? How are they arranged? What do they look like?”)

Mental Imagery About the People

Now I want you to close your eyes and get another picture in your head, this time about the people involved in the event. I want you to think about what the people look like and what they are wearing. Once you have a really good picture in your head I want you to tell me everything you can about the people in the event. Again, try to be as specific and detailed as you can.

(Remind them of the prompt as needed – “what do the people look like? What are they wearing?”)

Mental Imagery About the Actions

Finally, I want you to close your eyes and get a picture in your head about the actions that happen during the event. I want you to think about what everyone is doing or saying, and how they do or say these things. Once you have a really good picture in your head I want you to tell me everything you can about the actions starting with the first one and ending with the last one. Try to be as specific and detailed as you can.

After the person has described all they can: **Good – now please fill out the next set of questions about the event you described**

- **IMPORTANT:** *STOP* participants **after** they complete the Beck Anxiety Inventory.
 - Do **not** allow participants to complete time 2 questionnaire!

Okay, you are all finished. Thank you for participating in this study! Your ELC will be granted within 24 hours. In 7 days, you will be sent a reminder email to complete a follow-up questionnaire about your level of anxiety along with the reminder phrase you entered today; completing this follow-up survey will earn you your last ELC. Do you have any questions?

When the participant leaves, please be sure to save the video and save the participant record on REDCap.

Appendix D
Experimenter Script: Distancing Condition
EXPERIMENTER SCRIPT - TIME 1 SESSION

*Make sure the computer is turned on before the participant comes in and REDCap is pulled up. Sign into REDCap and pull up “**Scroggs Honor Thesis 2019.**” Under the “**Data Collection**” tab on the left-hand side of the screen, click “**add / edit records.**” Next, click “**Add new record.**” Click “**Participant Information**” and enter the participant’s email address that was used to sign up via SONA. Next, click “**randomize**” and confirm randomization. REDCap will then give you a message that looks something like this:*

*Record ID “9” was randomized for the field “**Condition**” and assigned the value “**2 = Distancing**” (2).*

*This will give you the participant number (‘9’ in this case) and the condition they were randomly assigned to (either ‘1 = immerse’ or ‘2= distancing’). Next, click “**save and go to next form.**”*

INFORMED CONSENT PROCEDURE

Thank you for participating in this study! In order to ensure that we treat everyone the same way, I must read these instructions to you word for word, even though that may feel a bit formal at times. In this first session, you will be asked to think of an event that is two or more weeks away that you are anxious or worried about. You will then be asked to describe the event while either distancing yourself from negative experiences by mentally broadening the scope of time or by allowing yourself to fully experience whatever feelings of anxiety or worry that may arise while describing the event. You will then be asked to report on your level of anxiety or worry while describing the event by completing a few questionnaires. A follow-up questionnaire asking you to rate your current level of anxiety/worry will be sent out a week later via email.

The event you will be describing is similar to what you would come across in your daily life, for instance, being anxious about an upcoming test or interviewing for graduate school. The event you are describing should not cause significant distress, however, please inform the experimenter (me) if you feel unable to continue the study for any reason, and we will end the session. Do you have any questions so far?

In order to proceed to the next section of the study, you will first need to fill out this consent form. *Hand participant consent form and pen*

This form will tell you what we are studying and what we will be doing in both this session and the next session, one week from today. Please read through the form and let me know if you have any questions. When you reach the end of the form, sign your name, write down today’s date, and let me know you have finished. Just so you are

aware, this consent form applies to both this study session and the Time 2 study session you will be participating in next week.

Wait for participant to complete consent form

We are now about to begin the Time 1 study session. Do you have any questions? Let's begin!

If it is not already, we would like for your phone to be off and out of your sight, in order to minimize potential distractions during the study.

EVENT DESCRIPTION & QUESTIONNAIRES

This experiment explores the relationship between future thinking, anxiety, and worry. There are different ways people can cope with the negative feelings they may experience when an anxiety-provoking event is coming up. For example, they may attempt to "push away" the event by mentally broadening the scope of time, telling themselves things like "oh, this feeling is temporary, and the event will not impact me much in the future." Or, the person may worry about the event to the extent it causes them a great deal of anxiety or worry.

Do you have any questions? Great! Let's get started.

Now turn to task instructions; either 'distance' or 'immerse,' based on the condition the participant was assigned to.

IMPORTANT - *Instructions differ based on condition; please ensure you read the correct instructions based on what condition the participant was assigned to in REDCap.*

Task Instructions: DISTANCING CONDITION

Prior to beginning, start the video recording using the webcam software by pressing the record button (with a red dot) and start the audio recording in Audacity. You should be able to tell that the audio is recording, and an indicator signal should be flashing for the webcam on the computer monitor. Minimize the video window once you know it is recording.

In this experiment, you will be prompted to describe one future event that is at least two weeks away. The event should be relatively short; it may last up to several hours but needs to be less than a day. You should pick a situation in which you will be personally involved and describe details of the event. Do not pick events described to you by others or imagine how others could describe them to you. Once you have picked the event, I will ask you to describe the event in more detail. As you elaborate on the details, try to picture each event from a first-person perspective, as if you are experiencing the events now through your own eyes.

After you have described the event, I will ask you to answer some questions about the event. The questions are listed on this screen. (Refer them to the questions on the screen.) Be sure to read each question carefully before answering; some questions ask about

how you will feel when the event occurs, and others ask about how you felt while describing the event now. Do you have any questions? OK, let's begin.

No matter how well life is going, there are future events that we may be worried about. Take a few moments right now to think of an upcoming event that you may be anxious or concerned about — one that makes your heart race or palms sweat just thinking about. Although it may be difficult, most people can usually imagine at least one upcoming worrisome event that will come up in the future. Please try to imagine an experience that is at least two weeks, but no more than two months away. Take your time as you try to do this. Once such an event comes to mind let me know when you are ready to begin describing it.

Now I'm going to ask you some more in-depth questions about how the event fits into the rest of your life. I would like you to describe the event by thinking about how the event relates to other events, places, and people in your life. Try your best to think not just about *what* will happen, but about *what the event, and the people and places involved, will mean to you.*

Connection to the Surroundings

First, I want you to close your eyes and think about the surroundings where the event will take place. I want you to consider whether you have been in this place before or since, or if it reminds you of other places you've been. Once you have thought about your connection to this place, I want you to tell me everything that comes to mind as you think about your connection to the surroundings. Try to be as comprehensive as you can.

(Remind them of the prompt as needed – “have you been to the place before? Does it remind you of other places you've been”)?

Connection to the People

Now I want you to close your eyes and think about the people who will be involved in the event. I want you to think about how you know these people, or if you know anyone else like them. Once you have thought about your connection to the people, I want you to tell me everything that comes to mind as you think about the people involved. Again, try to be as comprehensive as you can.

(Remind them of the prompt as needed – “how do you know these people? Do you know anyone else like them?”)

Connection to the Actions

Finally, I want you to close your eyes and think about the unfolding of the event itself. I want you to think about how typical the event is in your life, and whether you've experienced similar events before or since. Once you have thought about how typical the event is, I want you to tell me everything that comes to mind when you think about the event. Again, try to be as comprehensive as you can.

(Remind them of the prompt as needed – “how typical is this event? Have you experienced other events like this?”)

After the person has described all they can:

Good – now please fill out the next set of questions about the event you described

- *IMPORTANT: STOP participants after they complete the Beck Anxiety Inventory.*

Okay, you are all finished. Thank you for participating in this study! Your ELC will be granted within 24 hours. In 7 days, you will be sent a reminder email to complete a follow-up questionnaire about your level of anxiety along with the reminder phrase you entered today; completing this follow-up survey will earn you your last ELC. Do you have any questions?

When the participant leaves, please be sure to save the video and save the participant record on REDCap.

Appendix E

Future Event Questionnaire

Future Event Questions

Please read through the following set of statements about the event you just described. Please rate your agreement with each statement on a scale of 1 (COMPLETELY DISAGREE) to 6 (COMPLETELY AGREE) by placing an “X” in the appropriate box.

The first two questions are about how you anticipate to feel when the event happens.

	1	2	3	4	5	6
When this event happens, I will feel a lot of <u>negative</u> emotion.						
When this event happens, I will feel a lot of <u>positive</u> emotion.						

The next set of questions ask about what you were thinking and feeling when you were telling me about the event just now.

	1	2	3	4	5	6
As I was describing the event, I felt a lot of <u>negative</u> emotion.						
As I was describing the event, I felt a lot of <u>positive</u> emotion.						
As I was describing the event, I felt as if I was living the experience as it will be, through my own eyes.						
As I was describing the event, my thoughts focused on the specific chain of events—the sequence of events, what happened, and what was said and done.						
As I was describing the event, I thought about how it won't happen for a while longer.						
As I was describing the event, I tried to avoid thinking about the details.						

The next question will ask about how much you have thought about the event before coming in today. (1 = Not at all; 6 = All the time)

	1	2	3	4	5	6
I have thought a lot about this event before coming in today.						

Appendix F

Time-2 Questionnaire

Time 2 Questionnaire | Follow up

Finally, the last few questions ask about your thoughts and feelings between the time the event happened and your visit here today. (1 = Disagree; 6 = Agree)

	1	2	3	4	5	6
This event is still an active, unresolved source of distress.						
This event still bothers me.						
I have complete closure on this event.						
The event seems like ancient history.						
The event is a closed book to me.						
I have put the event behind me completely.						
I avoid thinking about this event as much as possible.						
I have thought about this event many times since it happened.						
I have taken steps to actively deal with this event since it happened.						
I tell myself that this event won't impact my life very far into the future.						