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Writing At the Horizon: How Producing Imagined Narratives Affects Mood

David Yu-Zhong Liang
Bard College

Writing At the Horizon: How Producing Imagined Narratives Affects Mood

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David Liang

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"Narrative imagining — story — is the fundamental instrument of thought. Rational capacities depend upon it. It is our chief means of looking into the future, or predicting, of planning, and of explaining." -- Mark Turner, Case Western Reserve University

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I think, then, that we are ready to begin.

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Abstract

The present study explores the effect of three different writing activities and their subsequent effects on participant mood. Writing has been of particular interest for psychologists due to its use in interventions aimed at working through traumatic or stressful periods, and recent research has begun to explore the use of narrative in placing traumatic events and experiences in greater context. However, purely therapeutic, intervention-based writing exercises exclude a large amount of more expressive, imagined creations and narratives, which may have the capacity to reorient, contextualize, and otherwise positively affect a person's mood. This study investigates whether employing the imagination may lead to greater enjoyment and engagement with the act of writing itself, leading to a positive effect on mood.

Introduction (A Puzzling Gap in Literature)

In 1994, Robert T Kellogg noted in his book *The Psychology of Writing* a strange deficiency. Despite increasing broad advances in multiple fields of psychology, the study *of* writing seemed to have been overlooked, "virtually ignored", as it were. While Kellogg spent the next 220 pages attempting to draw attention to the unexplored field and explain the cognition of the writing process, he would be disappointed to learn that nearly 27 years later, not much has progressed since. Examination of the field remains largely incomplete; some aspects and forms of writing have seemingly not been touched upon at all.

While researchers have developed some specific writing interventions that are increasingly widespread in therapeutic application -- diaries, journaling, and directive, targeted prompts, etc. not much is known about the effects of more artistic or creative forms of writing.

This is not to say that the more pragmatic, non artistic writing does not have its uses in study: From overworked medical students (Austenfeld, Paolo & Stanton, 2006), to recently discharged psychiatric patients (Suhr, Risch & Wilz, 2017), diaries, journals, and targeted exercises have been found to better regulate mood, emotionality, and even curb residual depressive symptoms from inpatient stays.

Yes, writing -- the boring, uninteresting forms of process writing, or writing to specifically *process,* understand, and comprehend an event -- seem to have documented benefits. Writing about or through trauma has been documented to lead to increased emotional health (Smyth & Catley, 2002), writing about only positive events has led to health benefits (Burton & King, 2004), in a 2006 study comparing goal oriented writing versus emotional writing, *both* forms found some positive benefit, although the former was overshadowed by the latter.

All this recounting of everyday conflict, of documenting and journaling struggle and joy -- seems remarkably similar to the beats of traditional storytelling. And yet: there is a perplexing gap in the psychological literature here regarding how the creation, the writing of *fictional* stories, of narratives where struggles not rooted in 'real life' are overcome may also have similar potential to raise mood in the moment and even potentially better prepare or adjust a writer for later 'real life' adversity and hardship.

The bridge between the imagined or the fictionalized and reality may be shorter than most think. Studies have shown that readers of even relatively simple scenarios -- technically fiction -- may have their attitudes or beliefs changed as they 'take' experiences away from the reading (Kaufman & Libby, 2012). By manipulating when and how information was presented to readers -- or by varying the way scenarios were *written* (e.g. a late reveal that a character was a member of a stigmatized group rather than an early reveal) -- Kaufman and Libby were able to control and predict how much the readers 'experienced', or became more sympathetic and understanding to, unfamiliar characters. Experience taking in the 2012 study led to a reduction of stereotypes and prejudice for characters within stigmatized groups, as well as a greater change in perception: ambivalent or questionable actions committed by stigmatized characters were rated as more neutral or positive than negative after experience taking (Kaufman & Libby, 2012).

The mechanisms at play in Kaufman and Libby's 2012 study were again observed in 2021, in which researchers observed that consistent exposure to character storylines -- this time in the more broadly accessible HBO series 'Game of Thrones' -- led to greater incorporation of character traits into participant self evaluation (Broom, Chavez, & Wagner, 2021).

The reactions and changes of attitude within readers to different characters and levels of familiarity in the scenarios presented within Kaufman and Libby's study show the capacity for

writing, even dull writing, to affect belief. Likewise the 2021 study analysing character exposure from Game of Thrones illustrates aspects of self-incorporation. Furthermore, in 2013, a study by Dan McAdams and Kate McLean suggested that the ability to contextualize traumatic events and stress into the broader context of a narrative may better lead to better outcomes, as in a decrease of the negative effects and mood from certain events. The ability to create a 'personal story' and likewise create a sense of personal identity (as is requisite in order to describe to whom the story happened) allowed for adolescents to make meaning out of "paradox and contradiction" and left individuals better adjusted for future situations (McAdams & McLean, 2013).

And yet through both aforementioned studies, the potential for the imagination to impact or aid in either experience taking or truma processing is entirely absent. While technically, Kaufman and Libby did include 'fictionalized' scenarios and situations within their study, the potential of more abstracted, imagined scenarios and characters to elicit the same effects were largely ignored. Likewise, McAdams and McLean primarily focus on the reporting of real, already-experienced traumas, ignoring and precluding the potential that imagining, simulating and working through 'made-up' traumas may have. The employment of imagination to act as a buffer between actually having a painful experience versus the benefits of being able to process an imagined event goes entirely unaddressed.

What I seek to explore is if our imaginations may actually shield ourselves from actual trauma while perhaps also eliciting positive effects from working through conflict and tension. Our ability to create and work through our own self-generated, imagined narratives may indeed give us similar positive effects or benefits as actually living through and overcoming events ourselves. While basic, noting a simple raise of mood may be indicative of the type of

satisfaction that comes from conquering a challenge within life that may likewise be captured after writing a scene in a story.

Mood in particular, is an invaluable measure because story-writing may influence mood in two distinct ways: enjoyment of the activity of writing with simultaneous engagement regarding the content or subject matter of the writing itself. Likewise, because of previous writing interventions' use of mood ratings as a scale of success (Austenfeld, Paolo & Stanton, 2006, Suhr, Risch & Wilz, 2017), I chose to focus on positive and negative affect (mood) in order to best gauge the impact of writing within this study.

Precluding the results, all this is to say that writing and reading have definite, measurable impacts that shape our present and future mood, change the way we think about experiences, define ourselves, and view the world around us. However, the forms of writing primarily studied in psychology currently are a distinct departure from more artistic and creative expressions and effectively ignore an entire area of prospective interventions rooted in the more imaginary, fiction-based writings.

Lack of Interest, Or Lack of Definition

Thus far, the majority of research has approached writing as a pragmatic tool that may be used for interventions or targeted exercises meant to help participants process, contextualize, or work through specific events. Studies concerning more 'imagined', 'artistic' or 'creative' writing are far few and far between. Studies that do analyze imagination or creativity look at the terms as constructs, not as conditions. In such studies, creativity or the imagination is viewed a resource that may be expanded, a condition that may be catalyzed or predicted (Hennesey & Amabile, 2009, Haslam et.al., 2013, Mardore, Addis & Schacter, 2015, Liang, Chang & Hsu, 2013). In essence, researchers judge *how* creative an object is and assign a value to it accordingly. Creativity becomes just a means to an end. The value of a creative endeavor is therefore rooted

in the product of the endeavor rather than the act being valued itself (Godart et.al., 2020, Haslam et.al. 2013). For example, in 2013, Haslam et.al. reports of a previous manipulation of 'group goal setting', which had participants in one condition actively work together to set a goal, and then proceed to list novel ways to use household objects. Cast against groups that were told to simply pursue a goal (and likewise list novel ways to use a broom), Haslam viewed creativity -- operationalized as the number of novel uses for a broom -- as the potential for a successful route towards these different goals. Contrasted against writing, where there is no necessary or definite end-product, this approach to creativity is not applicable.

The issue is further complicated between popular associations and definitions of the word 'creative' and its use in the aforementioned psychological or sociological context. For instance, 'creativity' as it concerns writing has been closely entangled with the concept of 'imagination' in the popular sense. Meanwhile in psychology and sociology, imagination and creativity remain distinct, and creativity is defined by a product or solution's novelty and departure from established norms (Liang, Chang, & Hsu, 2013, Godart et.al., 2020, Haslam et.al., 2013). Once again, in writing, in storytelling, there is no definite 'normal' or 'baseline' story to depart from. The usage of distance from a particular point to gauge success or 'creative-ness' is absent in writing.

The present study first seeks to acknowledge the role of the imagination in 'creative' expressions as related to writing, and further seeks to specifically explore how drawing upon the imagination when writing may have effects on an author themself.

Writing, as an Act

Writing as an effector of mood is complicated due to the varying forms, styles, and content of the writing. Aside from what is contained within, writing is also an activity that may have an effect independent of the content.

Eliciting the imagination may encourage more engagement with writing and storytelling than simply recounting or contextualizing personal experiences in exercises. Engagement as an effector of mood is supported by Csikszentmihalyi's research on flow states, in which entering a state of flow -- the mental state in which a person performing an activity feels completely focused and involved, and takes delight in completion of the activity -- leads to distorted perceptions of time, an increased sense of well being, and pleasure at completing challenging tasks, as well as lower levels of anxiety and even possible protections against negative outcomes (Nakemura & Csikszentmihalyi, 2009).

The pursuit of a flow state in any activity is intuitively desirable -- the ability to deeply engage and experience near euphoria (Nakemura & Csikszentmihalyi, 2009) while performing a task may not only yield a higher quality product at completion, but also alleviates the sense of a burden or exhaustion that may accompany working otherwise. Due to the distorted perceptions of time as well as complete and utter engagement and enjoyment of the activity, instead of being tired upon completion, persons in a flow state may feel refreshed and satisfied (Nakemura & Csikszentmihalyi, 2009).

Already, avid readers slip into a state of flow when completely engaging with text. Curling up with a book, thoroughly 'losing' oneself in a story for hours on end is a relatively familiar experience. Readers who found themselves in a flow state garnered increased reading comprehension, stamina, and vocabulary, yielding an altogether more fruitful engagement with texts. (Miles, 2013).

This has promising implications for Kaufman and Libby as flow state -- and consequently the ability to 'take experience' more effectively while reading, as in decreasing stereotype activation and becoming more understanding of stigmatized groups -- may lead to greater effects. If one is able to engage in writing to the point of entering a flow state, it stands to reason that any impact upon mood or positive affect, sense of satisfaction or benefit from processing through a difficult situation may likewise be expanded as well. The problem, of course, is that a great deal of psychological writings, and here intuition and experience lead the fore -- are simply too boring to ever have a chance to activate a flow state. A problem, as activating flow state may be key in order to expand and deepen impacts or effects of interventions.

While writing may not be a pleasurable activity for all, there are most definitely aspects and forms of writing that are usually more engaging or otherwise *interesting* than others. While some may find it exciting or invigorating to follow the steps and directives of psychological interventions, intuition and personal experience beg to differ. While there are too many factors to altogether tailor any one activity to the individual's specific needs, allowing writers to write on their own terms, using their own imaginations and coming up with their own stories may not only lead to greater enjoyment of the activity itself, but may also in effect activate tenets of Csikszentmihalyi's flow states as well as possibly furthering McAdam and McLean, 2013's concept of the formulation of personal narratives and their subsequent impact on identity and resistance to future negative events.

In order to best draw upon both narratives and the imagination, I focus on a specific style of writing that pulls upon both aspects -- the writing of narrative fiction. Narrative fiction is selected due to its accessibility and popularity in the present moment.

Narratives, as they relate to McAdams and McLean (2013)'s ability to contextualize events, and fiction as it relates to the imagination -- the ability to self generate more interesting stories, events and scenarios that better capture the attention of the author themself.

The hypotheses I arrive at are informed by past research. McAdams and McLean (2013)'s study has found that writing narratives leads to better outcomes and adjustment to stress and trying events, which cements the concept of a narrative being effective in its ability to readjust perception and raise mood. Previous interventions (Suhr, Risch & Wilz, 2017), some using the formulation of non-imagined narratives (Austenfeld, Paolo & Stanton, 2006), have also seen limited increases in participant mood. However, such interventions and writing directives lack any use of an imagination, a facet of 'creative' or otherwise more engaging writing. Such engagement, ideally to the point of flow state activation, may yield not only greater effects on mood (Nakemura & Csikszentmihalyi, 2009), but may likewise lead to a strengthening of the positive effects seen in the McAdams and McLean (2013) study, as previous flow state research has shown that engagement with reading already yields several comprehensive benefits (Miles, 2013).

I predict that the ability to invoke the imagination in writing will lead to a higher positive affect and a decreased negative affect than journaling or directed writings. Likewise, I predict that the inclusion of the imagination will lead to an increase of flow state activation compared to journaling or explicit directed writings. If the evidence supports these hypotheses, the importance of the imagination upon storytelling and targeted interventions ought to be revisited.

Method

Participants

A total of 24 of participants were recruited online via MTurk and TurkPrime. All participants were compensated with at least the hourly federal minimum wage at the time, which was $7.25 an hour. Out of an initial 24 participants, 1 was excluded due to a technical glitch, 2 were excluded for failing the attention check and for putting gibberish in the task response field, and 3 did not complete the follow up survey. All this led to a total sample size of $n = 18$.

Materials

Demographic Questionnaire

This questionnaire asked participants for their:

Age

Profession or Current Occupation

Race/Ethnicity

Gender

PANAS

The Positive Affect and Negative Schedule (PANAS) (Watson, Clark & Tellegen,1988) measures participant mood and emotion with a 20 item questionnaire. Ten items measured positive affect, and 10 items measured negative affect. Participants rate the extent to which they felt a particular emotion or mood over the past week. Scores are then reported on a Likert scale, with ‘one’ indicating the participant “Very slightly or not at all” felt the emotion in question, and ‘five’ noting an ‘extreme’ feeling of the mood or emotion. When scoring, positive affect items are summed, yielding scores that lie between 10 to 50. Higher score indicates a higher level of positive affect. Likewise, negative affect items are summed and scored respectively.

An example of a positive affect question on the PANAS: “Indicate to what extent you feel enthusiastic at the present moment or within the past week”, and an example of a negative affect question on the PANAS: “Indicate to what extent you feel distressed at the present moment or within the past week”. The duration over which the questions account for is also adjusted to match the activity, in this case, twenty-five minutes.

In order to gauge any effect of flow, I paid careful attention to participant scores for the PANAS items ‘Enthusiastic’, ‘Upset’, ‘Distressed’, ‘Inspired’ and ‘Determined’, as in line with Csikszentmihalyi’s aspects of flow. I used the difference in PANAS scores to determine any effect of the different writing interventions tested. The PANAS questionnaire is attached to the appendix for full details.

WRITING TASKS

Three writing conditions were created, two experimental conditions and one control as part of the experimental manipulation.

Control Condition. In the control condition, participants responded to the following prompt. The instructions for this prompt were modified from an intervention created by **Austenfeld, Paolo and Stanton, 2006.** The modified prompt was not intended to elicit any particular response from the participant, but nevertheless wanted to capture what most people use non-academic writing for -- journaling:

“During these next twenty-five minutes, please take the time to recount or otherwise make note of your day. Feel free to go into specific detail or generalize as you like. The only rule we have about your writing is that you write continuously for the entire time. If you run out of

things to say, just repeat what you have already written. Don't worry about grammar, spelling or sentence structure. Just write. The period will close after 25 minutes.
The survey will not progress and any response will not be submittable until the 25 minutes has come to a close. "

All prompts remained visible to participants throughout the activity.

Five days after the initial prompt, control participants were invited back and asked to repeat the same activity. The prompt shown at that time was the same as shown above.

Therapeutic Condition. Those assigned to the therapeutic group were provided with the following prompt and instructions. The materials below are closely aligned, and are adapted from a previous writing exercise developed by **Austenfeld, Paolo and Stanton, 2006**. The exercise was chosen because the prompt asks participants to place themselves in a hopeful, realistic narrative. While the Austenfeld study found that this writing intervention was only helpful in selective cases, it is used here due to its ability to encourage the participant to place themself in a more pragmatic, grounded narrative. A later study, **McAdams & McLean, 2012** has suggested that the ability to more broadly contextualize adversity as in a personal narrative may lead to a more overall positive adjustment. The prompt given to participants was as follows:

"Think about your life in the future. Assume that everything has gone as well as it possibly could. You have worked hard, overcome obstacles, and succeeded at accomplishing your life goals, both professional and personal. Think of this as the realization of all your dreams. Now, describe in writing this realization of your dreams. Be sure to include a description of how you overcame at least one major obstacle or challenge to achieve these goals. The only rule we have about your writing is that you write continuously for the entire time. If you run out

of things to say, just repeat what you have already written. Don't worry about grammar, spelling or sentence structure. Just write. The period will close after 25 minutes.

The survey will not progress and any response will not be submittable until the 25 minutes has come to a close."

Five days after the initial prompt, participants were invited back and shown the following modified prompt, which urged participants to either expand on their writing or select and contextualize another goal.

"Continue thinking about your life in the future. Assume that everything has gone as well as it possibly could. You have worked hard, overcome obstacles, and succeeded at accomplishing your life goals, both professional and personal. Continue to elaborate upon your writing from the last session. If you have finished your thought, begin to write about another goal that you have. Be sure to include a description of how you overcame at least one major obstacle or challenge to achieve this goal. The only rule we have about your writing is that you write continuously for the entire time. If you run out of things to say, just repeat what you have already written. Don't worry about grammar, spelling or sentence structure. Just write. The period will close after 25 minutes.

The survey will not progress and any response will not be submittable until the 25 minutes has come to a close."

Narrative Condition. For those in the imagined narrative condition, the following prompt was given. Due to the more open, or 'imagined' nature of this specific assignment, I foresaw the possibility of initial participant difficulty in deciding which direction to pursue. As such, some limited direction was given to participants in this condition. The prompt is as below:

“Imagine a short story or plot in which you place yourself or a character of your own design in any scenario you like.

To begin creating this scenario, you may first want to write three simple sentences, in which a circumstance, character, or setting develops, evolves, or changes as your short, three sentence 'story' progresses. E.g. have the first sentence act as a 'beginning', the second as a 'middle', and the third as an 'end'.

After these initial three sentences are written, expand upon these initial thoughts or imaginings using the rest of the time you have left. You may change what you are writing about as you need -- write organically, as long as you are using your imagination in any scenario you create.

Regardless, use the next 25 minutes to develop this chain of events. Please keep in mind these are general guidelines to help you initially start. Do not feel that you must or should adhere to a particular setting, or feel as if you must complete an entire arc or story in this single sitting. The only rule we have about your writing is that you write continuously for the entire time. Do not worry about repeating what you have already said or described. Don’t worry about grammar, spelling or sentence structure. Just write. The period will close after 25 minutes.

The survey will not progress and any response will not be submittable until the 25 minutes has come to a close.”

Five days later, participants in the imagined narratives condition were likewise told to expand on their writings from the previous session and were given the following prompt:

“Please continue developing the short story or plot in which you developed over the last session. Do not worry about sticking to what you have previously written -- you may change or keep anything as the same as you like. If you do not wish to continue the previous writing, you may start over anew. Do not feel that you must or should adhere to a particular setting, or feel as if you must complete an entire arc or story in this singular sitting. The only rule we have about your writing is that you write continuously for the entire time. Do not worry about repeating what you have already said or described. Don’t worry about grammar, spelling or sentence structure. Just write. The period will close after 25 minutes.

For Reference, here are the instructions from the previous task:

Write three simple sentences, in which a circumstance, character, or setting develops, evolves, or changes as your short, three sentence 'story' progresses. E.g. have the first sentence act as a 'beginning', the second as a 'middle', and the third as an 'end'.

After these initial three sentences are written, expand upon these initial thoughts or imaginings using the rest of the time you have left. You may change what you are writing about as you need -- write organically, as long as you are using your imagination in any scenario you create.

The survey will not progress and any response will not be submittable until the 25 minutes has come to a close.”

Flow State Scale

After the completion of each writing task, participants were asked to complete the “Activity Flow State Scale” (AFS) designed by **Payne et. al**. The scale was chosen over the

more recognized Jackson and Marsh scale as it is able to be more easily applied to activities beyond athletics. The Payne flow scale is derived from valid measures, and appears to have high internal and external validity. The AFS consists of items rated on a 5-point Likert ranging from 1 (strongly disagree) to 5 (strongly agree). The 26 question scale is divided into 9 sections, meant to correspond with the tenets of Csikszentmihalyi's flow state. Each section has around 2-4 questions. For example, for the section seeking a rating of how autotelic a particular activity, the AFS asks participants whether they "enjoyed the experience", if "The experience left [them] feeling great", and if "The experience was extremely rewarding."

The test is scored summarily, with higher scores indicating more activation of flow state overall. Scores may likewise be divided into the 9 sections, where higher scores in particular sessions indicate higher activation in that area. Sections of particular interest to the study were the aspects of 'Concentration of the Task at hand', 'Transformation of Time', and 'Loss of Self-Consciousness', as well as 'Autotelic Experience'.

The complete scale and associated details can be found in the appendix.

Landing Questionnaire

For the second session, I prepared a brief landing questionnaire for the participants to complete in order to gauge their responsiveness, ratings of the writing tasks in terms of enjoyment and overall difficulty. I asked participants if they had any changes or improvements in mind regarding the total time spent on the writing tasks. I also asked participants if they would continue to write in a similar manner to their writing tasks, as well as if they felt they had actually been thoughtful in their responses for said writing tasks.

Procedure

After completion of the Demographic and PANAS surveys, the participants were then sorted semi-randomly into three groups. Due to the limited number of participants available, I attempted to ensure each condition had near the same number of participants. No demographic factors affected the placement of participants into any condition. All groups were asked to write for 25 minutes.

Group one was the control group. I simply asked the participants to journal briefly about the events of their day; e.g. diary the last day or so.

Group two, or the therapeutic writing group, wrote to a task based on previous therapeutic interventions. I asked participants to describe a 'best case scenario' in narrative form, in which participants described a prospective route to overcoming obstacles and realizing their hopes and dreams or another long term goal.

Group three, or the imagined narratives group, had participants brainstorm or otherwise begin developing, outlining, or even explicitly writing a short story or imagined narrative. I gave a framework of instructions to the participant in order to help them begin their writings. However, these instructions were written in such a way so as to encourage participants to pursue their own thoughts and ideas.

For all groups, I gave some direction in order to catalyze the writing process, but as a whole, participants were asked to write on their own terms.

After the 25 minutes of writing or processing had elapsed, participants submitted their work to the experimenters anonymously.

At the close of the survey, participants completed the PANAS survey, as well as the Activity Flow State Scale.

After the initial writing period had closed, participants were directed to a title screen encouraging them to feel free to continue either journaling, writing about the fulfilment of their goals, or developing their short story on their own time.

Five days after the initial survey, participants were asked once again to complete another round of the same writing task. After being assigned into their separate groups, participants were instructed to complete a modified version of the first survey. The initial battery of questions given at the beginning of the second session did not ask for demographics and instead worked to capture any potential effects that the exercises had. Once again, participants completed the PANAS before and after the writing task. Participants were again asked to complete the Activity Flow State Scale after completing the writing task. Additionally, participants were asked a final battery of questions regarding their general thoughts about the two surveys, as well as a few general ratings of their own attentiveness throughout the surveys and writing tasks.

Results

As the purpose of this research was to first and foremost act as a pilot study, I did not necessarily expect any significant results. If anything, any results in either support or disagreement of my hypotheses may well be spurious. Looking at the patterns of the means would likely be more useful in all honesty, but in accordance with preregistration, I ran all primary analyses before performing any post hoc analyses.

Primary Analyses

Once the data were collected, I executed preregistered analyses of a 3 (Condition: Control, Therapeutic, Imagined Narrative) x 2 (Session: Time 1, Time 2) x 2 (Before or After

Writing) Analysis of Variance (ANOVA) with the first factor between and the last two factors within subjects to determine any effect of the Writing Tasks on Positive or Negative Affect. Although the sample size was extraordinarily small, understanding initial trends and movements in the data may yield more concrete directions to pursue in the future.

Positive Affect The pre registered 3x2x2 mixed measures ANOVA described above revealed a marginal main effect of Session, F (1, 15) = 4.035, p = 0.063, in which overall, participants reported slightly higher positive affect in session two than in session one, t (15) = 2.010, p = 0.063.

There was a main effect of Before/After, F (1, 15) = 5.307, p = 0.036, ηp^2 = 0.060, and a main effect of Condition, F (2, 15), = 4.660, p = 0.027, ηp^2 = 0.192 , such that participants in the Imagination condition reported marginally less positive affect after completing the writing task than those in the Control group, t (15) = 2.200, p = 0.104, and significantly less positive affect than those in the Therapeutic group, t (15) = 3.030, p = 0.022.

These results were qualified by a significant two-way interaction between Session and Before/After, F (1, 17) = 7.80, p = (0.012), ηp^2 = .041. To better understand this effect, I conducted simple effects t-tests comparing Before and After for each of the sessions. During the first session, participants reported more positive affect after (M = 33.900, SD = 6.890) completing the writing task than before (M = 28.900, SD = 5.170) t(20) = 3.480, p = 0.002, d = 0.758. In contrast, during the second session, participants reported scarcely any change in positive affect after (M = 33.600, SD = 6.360) in comparison to before (M = 33.000, SD = 5.29) t(17) = 0.376, p = 0.712, d = 0.088. These results indicate that while participants may have been significantly positively affected by the writing tasks in session one, trends did not carry over into session two.

There was no significant interaction between Session and Condition on Positive Affect, F (2, 15) = 0.934, p = 0.415, or Before/After and Condition on Positive Affect, F (2,15) = 0.8534, p= 0.445. Similarly, there was no significant three-way interaction between Session, Before/After, and Condition. F (2, 15) = 1.595, p = 0.236.

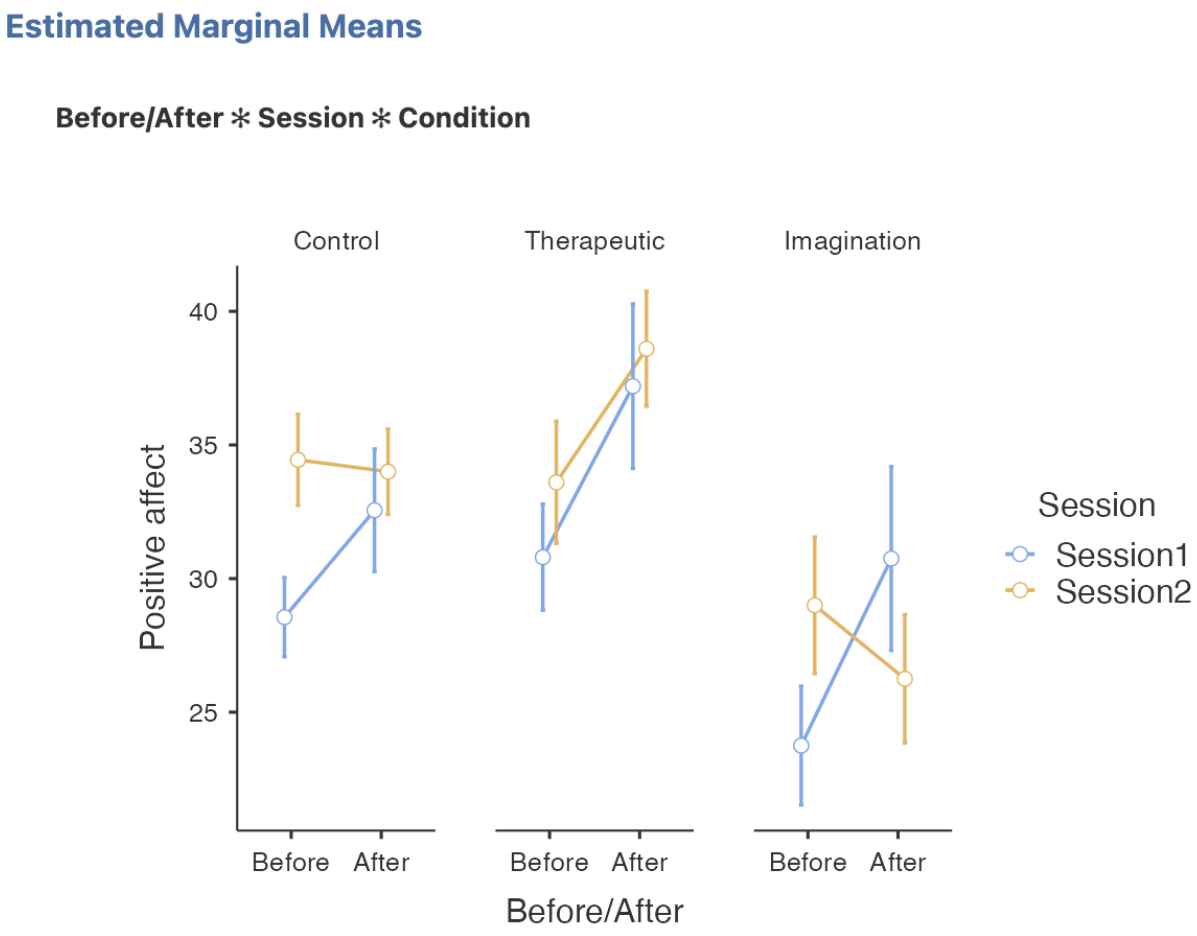
A plot of Estimated Marginal Means supported the findings above. Across all conditions, participants' positive reported increased positive affect during the first session, in support of initial hypotheses. In Session Two, however, the conditions began to diverge, again supporting the main effect observed with the mixed ANOVAs.

In session two, participants in the Control condition reported miniscule changes in positive affect, in line with my hypothesis. As participants in the control condition are simply recounting their day, a limited increase of positive affect may simply be a result of nothing particularly exciting or worthwhile happening during the day. Depending on the time of day participants took the survey, some participants were able to recount an entire day's worth of activity, whereas some participants who took the survey in the morning likely spent their twenty-five minutes trying to make what was essentially 'waking up and taking an MTurk survey' as interesting as possible.

However, in the Therapeutic condition, participants' positive affect continued to rise instead of decrease or plateau throughout the second session, in a rejection of my hypothesis. This effect was a replication of an effect for a similar prompt used in **Austenfeld, Paolo and Stanton, 2006**'s study, in which participants writing about their 'best possible self' reported a similar effect -- an increase in mood -- over a three month period. I had initially thought that participants may feel stifled or constrained regarding an inability to actually expand on what a 'best possible self' could be, but that does not seem to be the case here. It should be noted,

however, that Austenfeld, Paolo, and Stanton's 2006 study found that participants writing in response to the 'best possible self' prompt was actually less effective than another experimental prompt which directed participants to write about their *emotional* selves. That prompt was not used in the current study as there was no way to easily translate that prompt into a narrative-based exercise. This replication of the therapeutic intervention's effect does beg the question as to whether writing narratives may affect the amount of positive affect reported by participants.

Finally, participants in the imagined narrative condition additionally reported a decrease in positive affect over the second round of writing, moving in the entirely opposite direction of my hypotheses.



Negative Affect The pre-registered mixed measures ANOVA 3 x (Condition: Control, Therapeutic, Imagined Narrative) x 2 (Session: Time 1, Time 2) x 2 (Before or After Writing) Analysis of Variance revealed no main effect of Session, F (1, 15) = 0.790, p = 0.388, Before/After, F (1,15) = 3.379, p = 0.086, or Condition, F (2, 15) = 0.101, p = 0.905. This indicates that the study participants' self-reports of negative affect were not affected by either the writing tasks, the conditions, or the different sessions.

In keeping with the lack of significant main effects, the RM ANOVA found no significant interactions between Session and Condition F (2, 15) = 0.8813, p = 0.435, Before/After and Condition F (2, 15) = 2.1022, p = 0.157, on Negative Affect. Likewise, a three way interaction

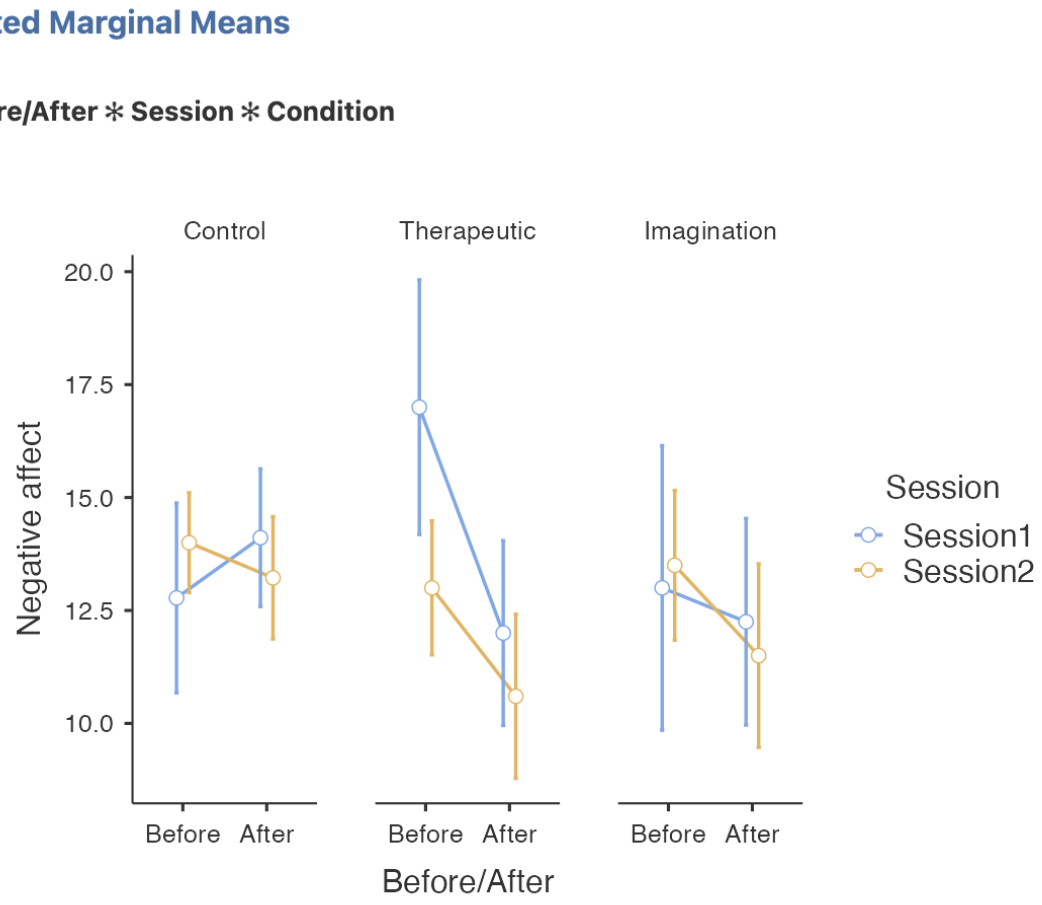
between Session, Before/After, and Condition was not significant, $F(2, 15) = 1.1041$, $p = 0.357$. The lack of significant main effects and interactions for negative affect may be a result of a multitude of factors, sample size chief among them, but previous research (Baumeister et al., 2001) has indicated that negative affect, impressions, and emotions are more resistant to change and are more calcified than positive affect.

A plot of Estimated Marginal Means revealed a few interesting trends in the data, although such trends are marginal and very likely spurious. To my surprise, participants in the control condition reported a slight increase of negative affect in the first session, followed by an expected decrease of negative affect in the second session. While the increase in negative affect in the first session was unexpected, the overall trends were in line with my hypothesis that the control writing task of journaling would have little to no effect on participants across sessions. This makes intuitive sense, as depending on how eventful or uneventful a participant's day was, participants may not necessarily need or be able to relieve negative emotions or mood in journaling. Likewise, depending on whether or not participants had a 'good' or 'bad' day overall, a simple recounting of the day without any instruction to reflect or process such events may have simply reinforced participant affect and mood at that time. This interpretation may account for the original increase in negative affect during the first session.

Participants in the Therapeutic condition reported a consistent decrease of negative effect after writing about achieving long term goals. Again, this is a replication of an effect noted in Austenfeld, Paolo and Stanton, 2006**,** in which participants in the 2006 study reported decreased levels of hostility over a three month period. Again it must be restated that the therapeutic writing task adapted from Austenfeld, Paolo and Stanton, was in actuality the less effective of the two experimental writing tasks investigated in the 2006 study, and yet within the pilot study by

far appears to be the most effective of the three conditions at decreasing negative affect and mood. These observations and interpretations of the graph of estimated marginal means, however, do not supersede the lack of significant differences between conditions reported earlier. This observed decrease in negative affect was observed across both session one and session two, departing from my predictions that participants may have an inability to elaborate on a goal setting which may have resulted in increased levels of frustration and subsequently increased levels of reported negative mood.

Participants in the imagination condition reported a slight decrease of negative affect in line with my hypothesis across both sessions. It must be noted that any trends reported or interpreted within the graph are not indicators of significant differences between sessions or before and after the writing task for any condition. While most definitely an intriguing trend, only future surveys, follow-ups and their subsequent analyses may yield an explanation for the initial pattern seen in this pilot survey.

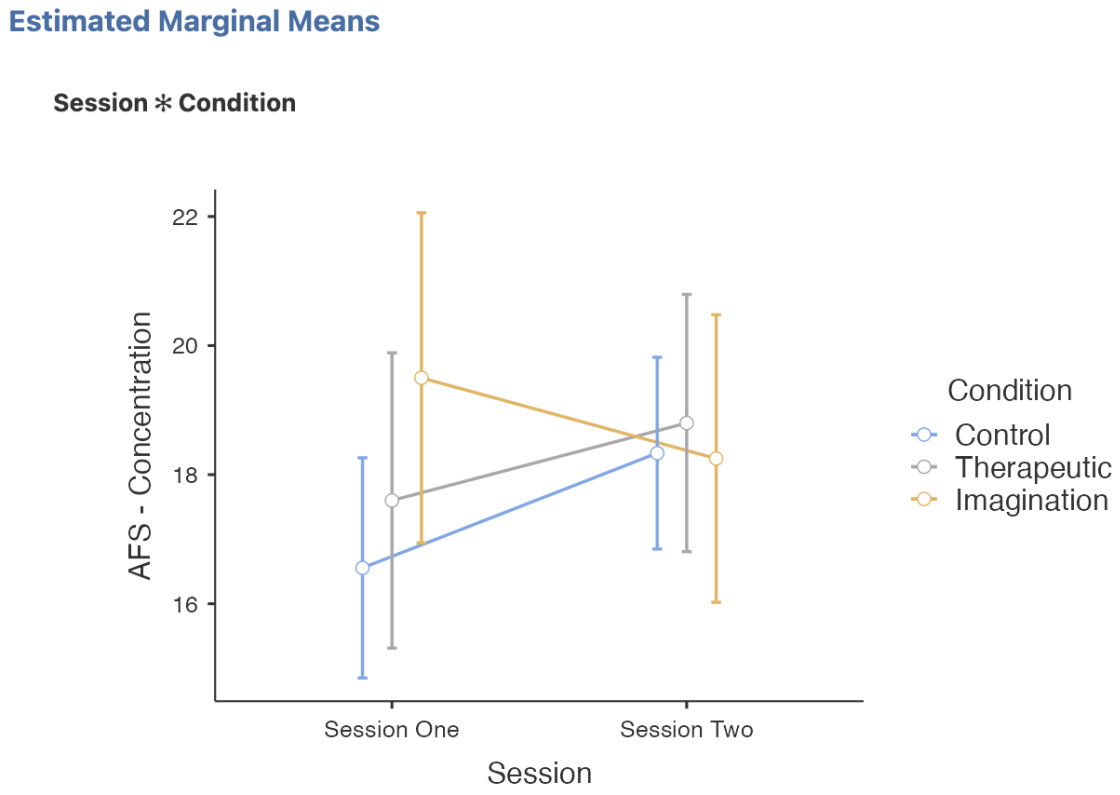


AFS Scores I ran four separate, pre-registered 3x2 ANOVAS split among the different AFS conditions of Concentration (CO), Transformation of Time (TT), Loss of Self-Consciousness (SC), and Autotelic Experience (AE). While running four separate ANOVAs may increase the alpha rate for false significant differences, it was necessary in this case as the different scales between each AFS condition were not the same.

Concentration

A 3x2 (Condition x Session) ANOVA revealed no main effect of Condition, F (2, 15) = 0.835, p = 0.454 or Session F (1,15) = 0.916, p = 0.354 on AFS-CO (Concentration) scores. In addition, there was no statistically significant interaction between Session and Condition on Concentration scores as well, F (2, 15) = 2.225, p = 0.143.

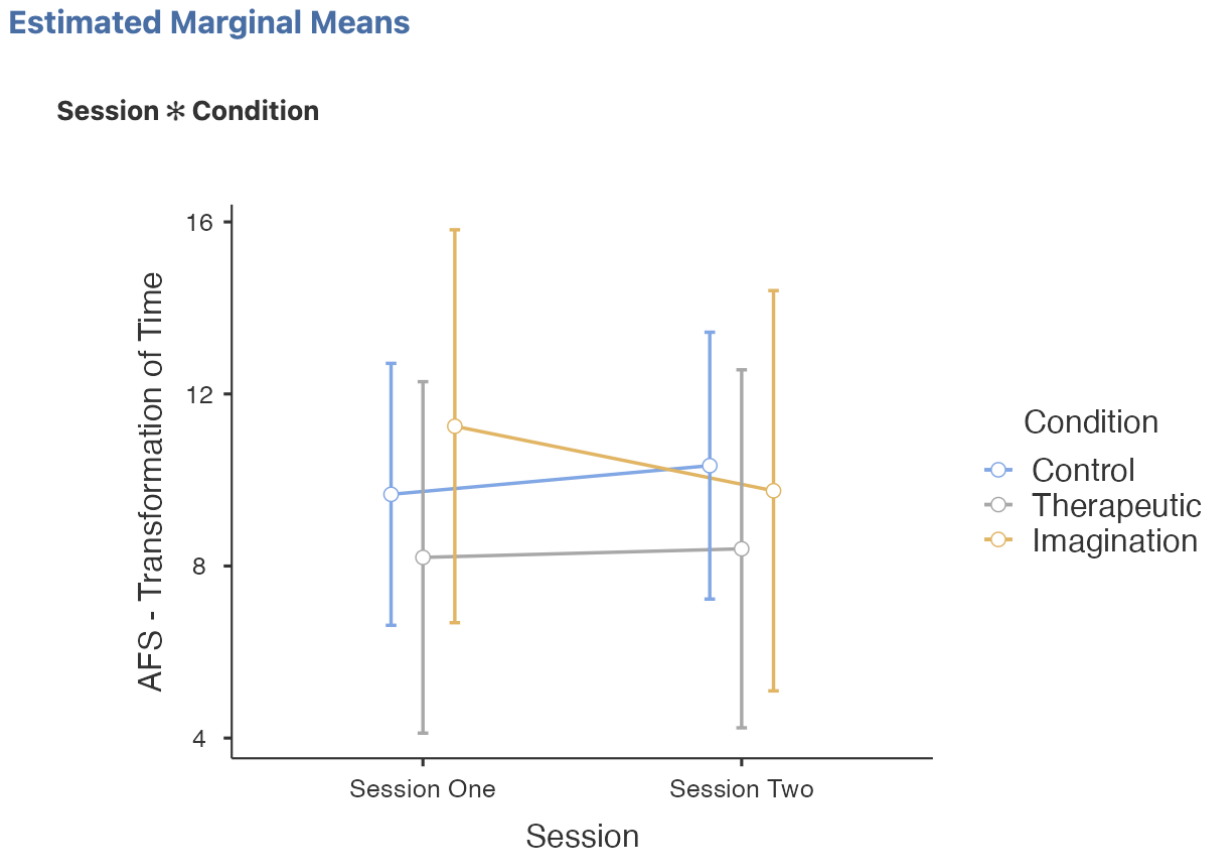
An analysis of estimated means revealed that participants assigned to the Therapeutic and Control conditions reported that their concentration increased across the two sessions. Participants within the imagined narratives condition, however, reported decreased concentration scores in session two in comparison to session one. While the trends -- and data -- do not represent any significant differences between condition or session, the curious track of decreased concentration seemingly isolated to the imagined narratives condition may yield a promising direction for future research. Namely, when activating the imagination, is it oxymoronic to actually ask for or expect an *increase* in concentration? Could participants in this pilot study, actually been engaging with their imagination, and subsequently rated their own engagement with the *writing* lower? More research may be required to better understand this direction, if these results are not spurious.



Transformation of Time

A 3x2 (Condition x Session) ANOVA found no main effect of Condition, $F(2,15) = 0.415$, $p = 0.668$ or Session, $F(1,15) = 0.061$, $p = 0.808$. There was no statistically significant interaction between Session and Condition. $F(2, 15) = 0.5608$, $p = 0.582$.

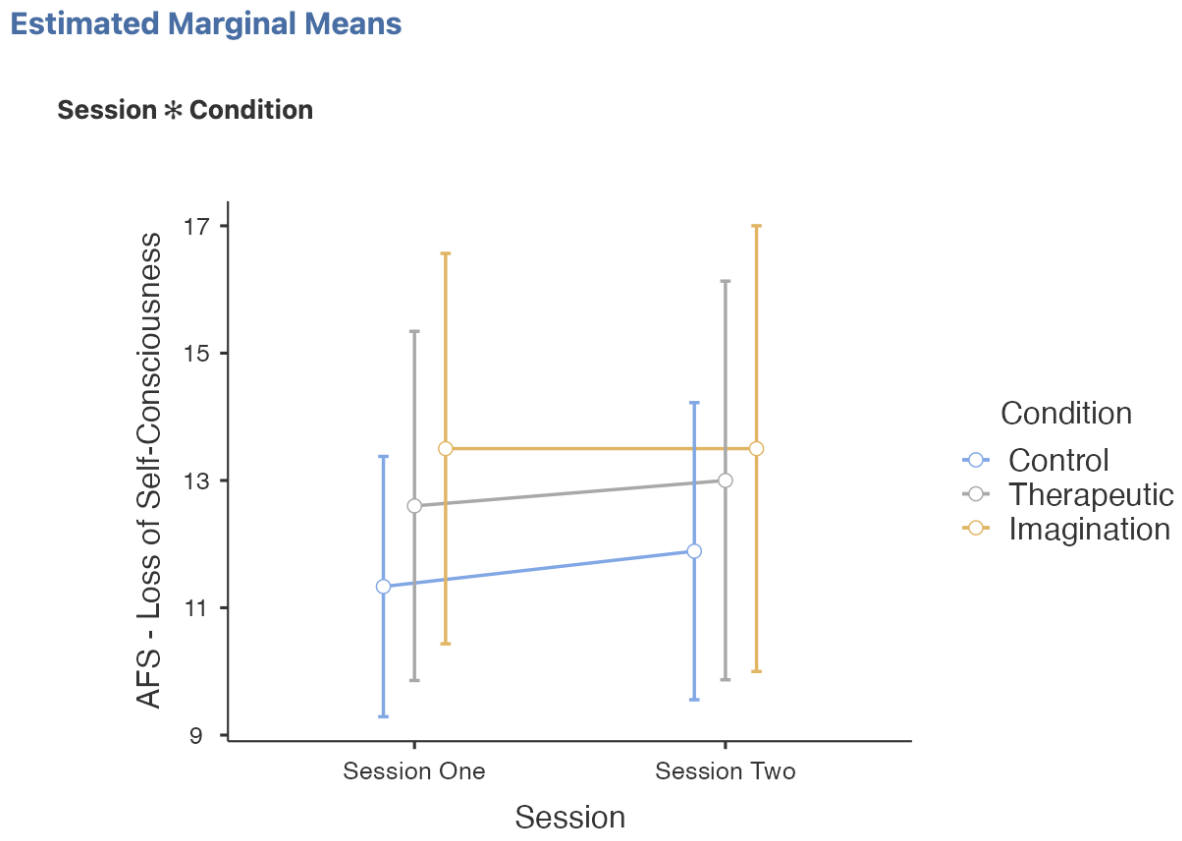
An analysis of estimated means revealed no discernible trends across the dataset. The plot displays a minor, non-significant difference in participant ratings of transformation of time between session one ($M = 9.61$, $SD = 4.17$) and session two ($M = 9.67$, $SD = 4.19$), $t(17) = 0.070$, $p = 0.944$. The plot also appears to show a decrease of transformation of time for the imagined narratives condition, but the astronomically high alpha rate in tandem with no trace of a significant effect



Loss of Self-Consciousness

A 3x2 (Condition x Session) ANOVA found no main effect of Condition, $F(2, 15) = 0.651$, $p = 0.536$ or Session, $F(1, 15) = 0.440$, $p = 0.517$ on participant ratings of loss of self-consciousness. There was no statistically significant interaction between Session and Condition. $F(2, 15) = 0.116$, $p = 0.891$ on ratings of loss of self-consciousness.

An analysis of estimated means found no notable trends in data. Scores of SC seemed to remain constant across both sessions.



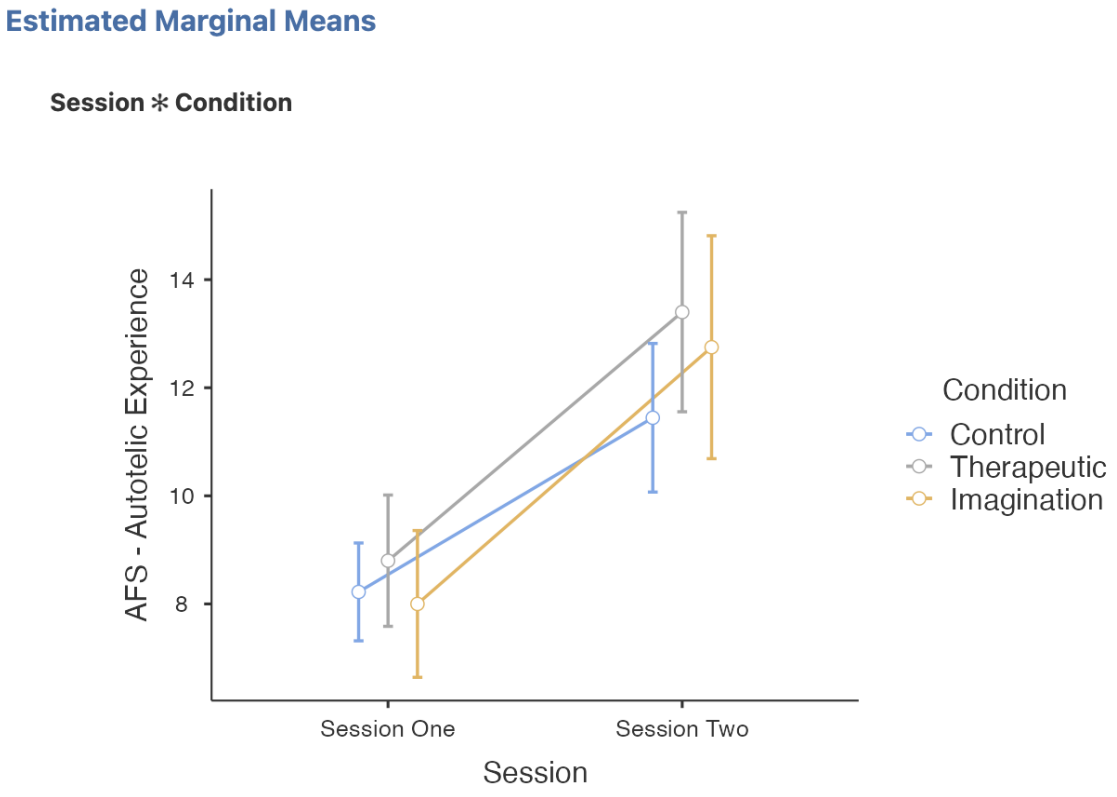
Autotelic Experience

A 3x2 (Condition x Session) ANOVA found no main effect of Condition, $p = 0.290$ on ratings of Autotelic Experience (how much the participant enjoyed the writing task). The ANOVA found a main effect of Session, $F(1, 15) = 92.850$, $p < 0.001$, $\eta p^2 = 0.596$.

A subsequent t-test confirmed this effect. Participants consistently rated the second writing task ($M = 12.830$, $SD = 2.020$) higher than the first ($M = 8.330$, $SD = 1.240$), $t(17) = 9.310$, $p = 0.001$, $d = 2.190$.

There was no statistically significant interaction between Session and Condition. F (2, 15) = 1.56, $p = 0.243$.

An analysis of estimated means a consistent increase in AE scores across all three conditions between sessions, in support with the significant main effect found regarding Session. While this seems to support the idea that participants generally enjoyed the writing task more during the second session, this autotelic effect may also be associated aspects of the survey length itself. That is, as a result of participants no longer needing to complete an extended demographic survey at the beginning of the second session, they may have rated their autotelic experience higher as the second session was a great deal shorter than the first.



Discussion

This pilot study investigated the effects of three different styles of writing on participant mood. Participants responded to three tasks in which they journaled, wrote to a therapeutic exercise, and created an imagined narrative. In creating these tasks for participants to write to, I was informed by previous literature which found that developing self-narratives contextualizes and guides participants through taxing and traumatic experiences (McAdams & McLean, 2013). In order to better understand and apply the previous research of narratives to writing in general, I asked participants in two experimental conditions to create two different types of narratives: one group wrote to an adapted therapeutic prompt in which participants wrote a pathway or narrative in which they achieved their standing goals (Austenfeld, Paolo & Stanton, 2006). The other wrote a narrative using their imagination, likewise informed by previous research that activating the imagination while reading may lead to benefits in engagement and experience taking, and mood (Kaufman & Libby, 2012, Hsu, Chang, Liang, 2015). I was primarily interested in whether these effects of imagination could be found in the act of writing.

In addition to the efficacy of the three writing tasks on increasing participant mood, I was curious to see if participant engagement varied across the three different conditions of journaling, therapeutic writing, and imagined narrative writing. In the pilot study, participants reported their levels of enjoyment, engagement, and concentration on the writing task using an Activity Flow State (AFS) scale, likewise informed by previous research that activation of flow is a signifier of tasks that are more productive and enjoyable than more robotic or otherwise monotonous tasks (Miles, 2013, Nakamura, & Csikszentmihalyi, 2009). The AFS was used in order to determine which of the three writing tasks were actually more palatable or enjoyable than the others.

The pilot study found no statistical support for the original hypothesis that an activation of the imagination in writing would lead to a higher positive affect and a decreased negative affect than journaling or directed writings. Likewise, there was no statistical evidence to corroborate the secondary hypothesis that the inclusion of the imagination would lead to an increase of flow state activation compared to journaling or explicit directed writings. However, due to the nature of this study as a pilot, the lack of statistical support for hypotheses may have been a result of the abysmal sample size of $n = 24$, rather than an outright rejection of the hypothesis.

If the hypotheses are true, and the results found within this pilot are a statistical fluke, then the pragmatic aspects of the imagination ought to be used to inform not only future therapeutic exercises (think: *imagine* your happy place) but also may also give strength and motivation to new directions in research and exploration. The imagination is a murky concept, and support that activating it may lead to greater positive affect would likely shine new light onto the benefits of not only reading but writing as well -- both fairly imagine-intensive activities. In particular, the implications for writing would be fairly grandiose as well. While whether or not a definitive 'answer' as to the exact mechanisms in play that cause authors and writers to find joy in the arts is a worthwhile pursuit, if there were to be sufficient support that the imagination has a positive effect on mood, this could lead to the writing of narratives and stories becoming a recognized form of self-care. Evidence that supports that the writing to activate the imagination increases mood may allow an entire population that would normally dismiss writing or even ignore it to become more involved with reading and writing, as well as having a broader impact on how the education system distinguishes between aspects and styles of writing when designing courses and assignments for students. After all, an increase of flow when working has led

learners and readers to be much more effective at retaining information (Miles, 2013). A shift to a more engaging form of teaching, in which lessons are told as narratives to follow instead of being directive facts to recount could drastically promote and improve aspects of learning and teaching not only within academia but within student's ability to empathize and change beliefs and values as well (Kaufman & Libby, 2012).

However, the very underlying aspects that may cause the imagination to increase mood may also be interpreted as a form of escapism, the shirking of obligations and commitments to the 'real' world, and the subsequent *need* or addiction to constantly daydream instead of make tangible improvements to life in the real. This discourse is at the forefront of technologies today, as such forms of escapism are used to create dependencies on video game platforms, mobile games, and even seems to be the goal of the recent 'Metaverse' proposal by the company formerly known as Facebook. Granted, much of this is pure speculation on my part, but if the imagination allows us to better connect to realms and stories that are not quite 'attached' to reality, then that increase in positive affect could theoretically become a lure that leads us down troubling roads.

The results of this pilot study do not seem to support my hypotheses, and so perhaps a few of these concerns may be allayed for the time being. While I am certain that there are aspects of the imagination that are yet to be explored and ought to be investigated, there seems to be a great deal more nuance regarding the way that these the different elements at play interact. While possibly an incomplete picture, I will treat the found statistical results of this study as accurate for the time being, and explain possible reasonings as to why they did not support my hypothesis.

Throughout the course of the study, I observed a replication of the therapeutic writing task used in Austenfeld, Paolo and Stanton's 2006 study. This replication found that the act of

writing or describing a pathway to a desired goal has a positive effect on participant's mood and decreases participants' negative affect in tandem. This replication was observed despite an incredibly small sample size and indicates the effectiveness of the 2006 'Best Possible Self' (BPS) task. These findings are also in-line with the broader research on narratives conducted by Dan McAdams & Kate McLean in 2013. By constructing a narrative about the self, participants in the 2013 study were able to more effectively sort through traumatic moments and contextualize their own personal experiences in a vastly more constructive way than simply recounting a sequence of events (McAdams & McLean, 2013).

When cast into context with the other two conditions -- the therapeutic task, which instructed participants to construct a narrative pathway to achieving a desired goal, now seems intuitively more effective than the other two tasks. The previous research on narration supports the idea that aligning ideas and moments into a narrative would be more personally affective than simply recounting the events of a day (as in the control condition), or even the construction of an imagined narrative, in which the author or writer would be detached from any necessary personal connection to the story.

I attempted to account for the level of personal connection, enthusiasm and engagement with the writing tasks by asking questions about the level of flow that participants experienced throughout the survey. However, a complete and utter lack of any main effect of condition across the different flow state aspects seems to indicate that the participant levels of enthusiasm and engagement were not statistically different from each other, regardless of condition. The main effect of session noted in the personal satisfaction (autotelic experience) segment of the flow state survey furthers my concerns that participants may have been responding to aspects of the *survey* itself rather than the writing task when responding to the Activity Flow State scale.

Personal connection and relevance seems to be the most important aspect of how much participants will take away from their own writing. When asking participants to create an imagined narrative, I did not take into consideration -- or perhaps did not realize how absolutely crucial such an aspect would be -- the level of interest participants would have in their own writing. When talking about a goal, or dream, participants -- people in general -- already have a lot to say. It's in the nature of having a dream or a goal. Perhaps, the changes in mood participants experienced while writing to the therapeutic task were a simple consequence of being able to write about a particularly passionate area of life 'to' the researcher. However, for the Control or Imagined Narratives tasks, this enthusiasm is not necessarily present to begin with.

This aspect of personal connection seems to be evident even in the formal ways and techniques that participants actually used to write to the separate tasks. While this is not by any means an analytical or statistical analysis, it should be noted that across the Therapeutic and Control condition, all responses were in the first person. Meanwhile, all but one participant in the Imagined Narratives condition wrote their responses in *third* person. This change in perspective -- writing from a first as compared to writing in the third person -- could also be a measure of the amount of personal connection participants are *able* to glean from their writing as well. While intriguing, at the present moment these aspects are not able to be interrogated. I did not run statistical tests or ask a battery of questions that would be able to investigate these aspects within the pilot survey.

Limitations Understanding this empirical work as a pilot and a step forward towards a stronger, more robust study is key, not only to frame the difficulties and challenges experienced here in a proper context, but also to maintain the researcher's (my) sanity.

Lack of Funding

Lack of funding ultimately proved to be the most difficult obstacle in the execution of this project. Due to funding constraints in combination with the large amount of time it takes to complete the writing tasks, sample size was severely limited to an initial pool of twenty-four participants.

Technical Issues -- Online distribution

A significant limitation which may have drastically altered all aspects of the study was the mode of distribution. For any writing task, the decision to have participants write in-person, write on a computer or hand write responses may drastically affect any result. Ideally, participants would have written in person, so as to better isolate and control for any confounding factors such as environmental distractions and even the time frame in which participants wrote. However, again due to funding constraints, the only way to ensure that the study was completed at all was to push for an online pilot in far from ideal conditions. An online survey completely removes the possibility of a handwritten response to the writing task, which previous research has shown may be more effective at eliciting engagement and thoughtfulness in responses, as well as promoting increased retention and improving memory, which would have been useful in the longitudinal aspects of this study (Muller & Oppenheimer, 2014). In the current survey, participants began the survey both in normal daylight hours and also at random points late into the night/early -- such as two in the morning. While not expected, time of completion, weather, even where the participant is sitting in their own home may act as confounding factors that cannot be accounted for or corrected for online. Online surveys likewise require a vastly larger amount of time to complete -- up to three times the ‘recommended’ or estimated amount of time it should take to complete. This excess of time is a necessary compromise to give participants

ample time to give thoughtful responses, but also acts as a major confounding factor which would not be present in a laboratory or clinical setting.

At least one major error occurred during data collection in which a participant's response was not logged until five full days after the first round of surveys had closed and was subsequently not included in analysis or recontacted for the second session due to time constraints.

In addition to the plethora of confounding factors and possible technical glitches that distributing surveys online introduce, using an online service for longitudinal surveys introduces a level of randomness concerning who will and will not respond to the second round of questioning. This includes the potential capture of spam accounts, bots, or distracted participants who do not give adequate or thoughtful responses, all of which can be better accounted for in a controlled, in-person setting.

Participant Attrition and Exclusion

Already beginning with a tiny sample size, it was absolutely imperative to retain as many participants across both sessions. Managing participants and participant attrition was another limitation that affected the overall quality and the amount of analyses that were able to be run on the data. Participant attrition was an expected factor that I hoped to counter by offering increased compensation on the second survey. However, in garnering some direct feedback from participants on the platform, I discovered that the amount I was offering -- even with increased compensation -- was far below the expected standard. This further shows how important funding can be in terms of allowing or throttling prospective research.

Three participants, all in the Imagined Narratives condition, did not return for the second round of writing. In another consequence of the online survey, there is no way to determine if participants were not contacted, or were not interested in completing the survey.

Additionally, this project was too 'inclusive' regarding its 'exclusion criteria'. Due to a wording on the approved consent form, participants were only excluded from compensation if they failed the attention check. In at least one instance, a participant passed the attention check, but simply copied and pasted the prompt into the 'response' box for the writing task. Due to a strict adherence to the consent form, the participant was compensated for the first task, but not contacted for the second. On an already tight budget, compensating what may have been a spam bot or worse, a malicious participant only added insult to injury.

Failure of Random Assignment

Encountering the data revealed a failure of random assignment for positive affect. Before any tasks were conducted, participants in the Imagined Narratives condition reported lower levels of positive affect (M = 23.8, SD = 5.380) than in the Therapeutic (M = 30.800, SD = 5.170) or Control condition (M = 28.600, SD 3.570).

Activity Flow State (AFS) Score Effectiveness

As mentioned previously, I am concerned that the AFS sections used in the survey may have been affected by aspects of the survey design instead of the writing task. This may quickly be fixed and remedied by simply being more specific with instructions for subsequent surveys. However, the AFS survey does not directly account for aspects of personal connection to produced writings. It simply accounts for a more generalized state of engagement and attention that may not be specifically linked to the writing activity itself.

COVID-19

As with any survey conducted within the realm of the ongoing (2019 -- 2021/22) pandemic, COVID measures and safety protocols played a key factor in having aspects of this survey take place online. While I cannot account for the role that COVID has played in participants' lives or how it may have affected their responses, suffice it to say that these strange times cast a long shadow over most research being done during this period.

Future Direction After this pilot study, the natural progression of the research would involve correcting or accounting for the limitations mentioned previously. This includes but is not limited to an in-person study, which opens the possibility of handwritten responses, and for tasks and responses to be completed in a controlled environment without unwanted distractions. In-person versions of this study open up all sorts of new directions to interrogate *how* stories are told. The differences between a hand-written, digitally typed, or voice-recorded writing task could prove incredibly interesting, again using similar methodology. In interviews with faculty at Bard college, a number of successful Written Arts professors report that they insist on continuing to hand-write notes and work in pen and paper instead of using the computer or other modern conveniences. Oral traditions and the archetype of telling stories by the fire seem to indicate that performance may even play a role in any effect the imagination may have, least of all the amount of flow that is activated during a more physical act. Perhaps the difference in tactility could yield a new line of questioning.

Other corrective measures may standardize the time of day that responses are written, increase funding for the project overall, and decrease participant attrition with further compensation for subsequent sessions.

What is more interesting, however, is the mode of interrogation that this pilot study opens up. Results notwithstanding, the methodology used within this study could be used on more

specific populations. Perhaps, when used to interrogate specific populations, slight trends discovered in the pilot study such as the marginal effects of session and the main effect of condition would be more firmly cemented depending on the population's area of interest. For instance, STEM centric participants could yield very different results than humanity or art-centric participants. Of particular interest to me are the possibilities of eventually concentrating this study in a population that already has a high vested interest in writing -- such as professional writers and authors. This may have an equalizing effect on the aspects 'personal connectivity' that may have been at play here.

This idea of personal connectivity, relevancy, and attachment to produced writing is an entirely new factor that only became apparent to me after the survey was conducted, in an attempt to grapple with the data. For subsequent surveys, researchers ought to take this into consideration and generate questions to account for participant's level of connection or rating of their writing's personal relevance.

In keeping with this idea of personal relevancy and connectivity, I would also encourage other researchers to look into the distinct effects that narration has in order to better understand how organizing and contextualizing information in a narrative sense affects participants. In a similar study, changing only the prompts to have participants write narratively versus descriptively could prove intriguing.

A related change to methodology could scrutinize how differences in perspective (such as first or third person writing) may alter the effectiveness of writing. This interrogation could be a direct continuation to aspects introduced in the McAdams and McLean 2013 study, as well as offering up an interesting new take on the writing samples used in Kaufman and Libby's 2012 study concerning experience taking, which discussed how readers were able to alter beliefs based

on reading. Albeit, subsequent studies using this methodology would continue to focus more on writing than reading.

Additionally, future studies which break out of the Western Educated, Industrialized, Rich and Democratic (WEIRD) samples and focus on alternate cultures. Non-WERD participants may yield different results due to differences regarding ambition or the imagination, or even storytelling in general may affect engagement and takeaways between the different writing tasks. Although, using populations outside of WEIRD cultures yields its own distinct set of challenges -- and benefits. Running this survey in different languages may uncover particularities that are unique to non-english participants.

In keeping with slight adjustments of methodology for future studies, a similar-minded but fundamentally different future approach could explore the differences between different forms of imaginative writings entirely -- such as poetry, prose, and screenwriting, or other similar distinctions. This, in combination with new included questions regarding personal distance and relevance-to-self could begin to shed light on the field of writing as a whole.

Finally, moving away from the imagination, the replication observed in the therapeutic condition opens up additional avenues of inquiry which may be used to investigate, replicate or challenge different therapeutic interventions. Although I observed a replication of the Best Possible Self (BPS) writing task used by Austenfeld, Paolo & Stanton in 2006, the researchers then had already begun investigating more effective therapeutic tasks to improve on the effects observed in their research.

Conclusion

The purpose of this pilot study is to offer a first, tentative step towards better understanding if, how, and what kinds of writing affects us. As stated before, the general

question as to how imagined writings and psychology interact has gone largely unaddressed. While this may be changing, any new direction or light that explores this unexplored area of psychology and what it may yield in the interim is worthwhile. The foundational research which inspired this study is promising -- the ability to make sense of the world and mitigate damaging experiences through constructing narratives (McAdams & McLean, 2013) showcases the importance of telling stories to ourselves. Through more abstract narratives, we may be able to explore concepts, stressors, and work through problematic areas of our lives.

Likewise the ability to change our own beliefs and gain experience and empathy while reading has promising implications (Kaufman & Libby, 2012). The findings in the Kaufman study were further elaborated in early 2021: nearly nine years after the initial 2012 study, in which researchers found that exposure to fictional characters led to greater incorporation of said fictional character traits into participants' own self-identity (Broom, Chavez, & Wagner, 2021). In activating our imaginations, we are able to immerse ourselves in stories, are better able to connect with characters, learn from situations, and take directly from written work to inspire and create change in our own lives (Miles, 2013, Hsu, Chang & Liang, 2015, Schutte & Malouff, 2020). Yet still little research has been done what effects *writing* and creating those same moments has to offer an author or creator.

Following through with this study has only led to more questions than answers, more ways and directions to explore than before. Certainly, an improved sample size may yield better results, but that cannot account for the new questions about personal relevance and connectivity to writing -- a term that I get to coin as there has been so little prior research in this field that technical terms and jargon *do not exist yet*. Conducting this pilot has led me to realize that it is unwise to ask the question of 'What do imagined narratives do?' before first more completely

investigating and clarifying the effect of a narrative, and then likewise of the imagination. While I cannot here and now express any semblance of an answer or even a completely informed wager on how that research will proceed, what I am certain of is this: The most effective way to elicit change, both in our society, and for ourselves, is to learn from stories. Stories are but less technical terms for narratives, and it is these stories that inflame us, inspire us, and comfort us. Whether they are written in response to a burst of spontaneous creativity, at the direction of a therapeutic session, or are encountered on bookshelves and on televisions and on the news or in movie theatres or wherever else, we cannot ignore them and their impacts on our lives. And of the best stories, those world-shaking, belief-changing types, the best are written with true dedication and heart. I realize now, after a twelve month journey, that the key to a successful, impactful story does not depend on the amount of imagination, or even the amount of 'Flow' generated and felt by a participant. It has something to do with a very unscientific term called 'passion' -- dedication without any expectation of reward or focus on the productivity or final product, but rather completely yielding to the idea that an act is worthwhile in and of itself. For, rather paradoxically, it is only then that I believe that we create the best possible work we can. It is in this direction that I hope that future research will trend towards: uncovering how best to manifest and nurture this feeling in as many artists and people in general. Yes -- not everyone who participates in this study or its future iterations will be a writer, and no, not everyone will want to or have the patience to write or even read worthwhile stories. But that does not mean that this sort of research ought to be neglected. Writing is the way to enshrine those moments worth preserving. At the end of the day, while a small pilot study may be relegated to a dust-bin, or the drawer of insignificant results, a profound thought or idea may reverb across centuries. All we

have to do is put forth the proper and necessary conditions so that it may be imagined and created in the first place.

References

Austenfeld, J. L., Paolo, A. M., & Stanton, A. L. (2006). Effects of writing about emotions versus goals on psychological and physical health among third-year medical students. *Journal of personality*, *74*(1), 267–286. https://doi.org/10.1111/j.1467-6494.2005.00375.x

Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is Stronger than Good. Review of General Psychology, 5(4), 323–370. https://doi.org/10.1037/1089-2680.5.4.323

Burton, C. M., & King, L. A. (2004). The health benefits of writing about intensely positive experiences. Journal of Research in Personality, 38, 150–163.

Broom, T. W., Chavez, R. S., & Wagner, D. D. (2021). Becoming the king in the north: Identification with fictional characters is associated with greater self–other neural overlap. *Social Cognitive and Affective Neuroscience*, *16*(6), 541–551. https://doi.org/10.1093/scan/nsab021

Godart, Frédéric and Seong, Sorah and Phillips, Damon J., The Sociology of Creativity: Elements, Structures, and Audiences (July 2020). Annual Review of Sociology, Vol. 46, pp. 489-510. http://dx.doi.org/10.1146/annurev-soc-121919-054833

Haslam, S. A., Adarves-Yorno, I., Postmes, T., & Jans, L. (2013). The Collective Origins of Valued Originality: A Social Identity Approach to Creativity. *Personality and Social Psychology Review*, *17*(4), 384–401. https://doi.org/10.1177/1088868313498001

Hennessey, B. A., & Amabile, T. M. (2010). Creativity. *Annual review of psychology*, *61*, 569–598. https://doi.org/10.1146/annurev.psych.093008.100416

Kaufman, G. F., & Libby, L. K. (2012, March 26). Changing Beliefs and Behavior Through Experience-Taking. Journal of Personality and Social Psychology. Advance online publication. doi: 10.1037/a0027525

Kellogg, R. T. (1994). *The psychology of writing.* Oxford University Press.

McAdams, D. P., & McLean, K. C. (2013). Narrative Identity. *Current Directions in Psychological Science*, *22*(3), 233–238. https://doi.org/10.1177/0963721413475622

Miles, S. E. (2013). In the flow: A mixed-methods phenomenological study of optimal experience in adolescent literacy [ProQuest Information & Learning]. In *Dissertation Abstracts International Section A: Humanities and Social Sciences* (Vol. 74, Issue 2–A(E)).

Mueller, P. A., & Oppenheimer, D. M. (2014). The Pen Is Mightier Than the Keyboard: Advantages of Longhand Over Laptop Note Taking. *Psychological Science*, *25*(6), 1159–1168. http://www.jstor.org/stable/24543504

Nakamura, J., & Csikszentmihalyi, M. (2009). *Flow theory and research.* In S. J. Lopez & C. R. Snyder (Eds.), *Oxford library of psychology. Oxford handbook of positive psychology* (p. 195–206). Oxford University Press.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of personality and social psychology*, *54*(6), 1063–1070. https://doi.org/10.1037//0022-3514.54.6.1063

Payne, B. R., Jackson, J. J., Noh, S. R., & Stine-Morrow, E. A. L. (2011). *Activity Flow State Scale (AFSS)* [Database record]. APA PsycTests. https://doi.org/10.1037/t06855-000

Schutte, N. S., & Malouff, J. M. (2020). Connections between curiosity, flow and creativity. *Personality and Individual Differences*, *152*, 109555. https://doi.org/10.1016/j.paid.2019.109555

Smyth, J. M., & Catley, D. (2002). Translating research into practice: Potential of expressive writing in the field. In S. J. Lepore & J. M. Smyth (Eds.), The writing cure: How expressive writing promotes emotional health and well-being (pp. 199– 214). Washington, DC: American Psychological Association.

Suhr, M., Risch, A. K., & Wilz, G. (2017). Maintaining Mental Health Through Positive Writing: Effects of a Resource Diary on Depression and Emotion Regulation. Journal of clinical psychology, 73(12), 1586–1598. https://doi.org/10.1002/jclp.22463

Yuling Hsu, Chi-Cheng Chang & Chaoyun Liang (2015) The effects of creative personality and psychological influences on imagination, Innovations in Education and Teaching International, 52:6, 587-598, DOI: 10.1080/14703297.2013.808404

Appendix

Appendix A: Consent Form

Informed Consent

BARD

A College of the Liberal Arts and Sciences
Division of Science, Mathematics & Computing

INFORMED CONSENT AGREEMENT

Title: Writing At the Horizon: How Producing Imagined Narratives Affects Mood
Principal Investigator: David Liang, Psychology Department (Undergraduate)
Institution: Bard College

Background. In the current research study, we are interested in how telling or recounting stories affects engagement and mood.

What you will do in the study. You will answer some questions about yourself, and then spend 25 minutes writing. You'll then answer some more questions about yourself. In five days, we will invite you back to answer more questions and complete a second writing task. Each session should take about 30 minutes.

Risks and Benefits. There is no known risk involved in this study.

However, responses may be shared with OSF (Open Science Framework). Open Science Framework is a research collaboration platform that allows researchers to share all aspects of the research process, including methodology, design, and anonymous data. By participating and sharing aspects of this study with OSF, we ensure researcher transparency and best practices. Any responses posted to OSF will be posted anonymously. If you have concerns about the content of your responses or would not like your anonymous responses posted to OSF, you may opt out of having your responses shared with OSF.

In order to opt out of having your responses posted to OSF, please indicate as such below on the consent form. If you change your mind after reviewing your responses, you may indicate as such on the brief survey after your second response. Opting out has no impact on your compensation. In addition, you are free to continue developing or exploring any train of thought that you wish on your own time after the study.

Compensation. In exchange for participating in the experiment, you will receive payment of $3.75 for the first session. through Amazon payment. For the second session participants will be compensated 5.00. Throughout the study there will be several questions to ensure that you are reading and comprehending the questions fully. If these answers are incomplete you may not receive payment.

Your rights as a participant. Your participation in this experiment is completely voluntary, and you may withdraw from the experiment at any time without penalty. You can skip any questions that you do not

wish to answer. You may withdraw by simply closing the computer browser. If you complete the first session only, you will be compensated only for that session.

At the end of the study we will tell you more about the study and our hypotheses at the end of the session and provide contact information if you have further questions.

Contact: If you have questions about this research, please contact David Liang at dl1785@bard.edu Kristin Lane, Associate Professor of Psychology, Bard College, at lane@bard.edu.If you have questions about your rights as a participant please contact irb@bard.edu.

Confidentiality. You will not provide your name in this study and we will not know the identity of any participant. Thus, your data will be anonymous. Data from the study may be posted (without mTurk ID identification numbers) at the Open Science Framework.

Agreement. The nature and purpose of this research have been sufficiently explained and I agree to participate in this study. I understand that I am free to withdraw at any time without incurring any penalty. **I certify that I am at least 18 years of age.**

Open Science Framework.

By checking the box below, I am indicating that I would like to OPT OUT of having my responses shared with the Open Science Framework.

[ ] I would like to OPT OUT of having my responses posted to OSF

By checking the box below, I am indicating that I am in agreement with the above statement of consent.

[ ] I am at least 18 years of age and provide my informed consent to participate in this survey

[ ] I am not at least 18 years of age or do not provide my informed consent to participate in this survey

Appendix B:
Debriefing Form

Thank you for participating!

The primary goal of this study was to examine the effects different types of writing may have upon mood and engagement.

Participants in this study were randomly assigned to three different writing conditions: The first condition asked participants to journal or diary about the last few days. The second condition asked participants to imagine themselves in a 'best case' scenario -- and place themselves in a narrative in which lifelong dreams had come true, and the obstacles leading to those dreams had been overcome. The third asked participants to create a structured imagined scenario, which they could develop in any direction they wished.

We are interested in how the psychological processes activated in the different writing conditions expressed themselves as a function of mood or engagement. These two facets -- aiming to increase involvement with the activity itself, in tandem with the goal of cultivating positive affects as a result of the writing exercises -- are key in developing the most effective possible writing prompts and directions which may in turn inform future therapies and treatment.

Previous research has indicated that all three of the writing conditions have had varying levels of impact on mood. For instance, it has been shown that journaling or writing a diary may help process recent events that may improve mood in the short and long term. However, of particular interest were the distinct effects of 'narratives' and the 'imagination'. Placing considerable emphasis on the way life can be structured as a narrative has been shown to have positive long term effects in the ways that people address stressful situations and contextualize events.

Likewise, the imagination -- as it is expressed and encountered everyday in popular culture and media -- has been shown to have the potential to lead to high amounts of engagement and involvement. However, the exact effects and benefits of activating the imagination in a psychological context are not yet known.

While research into these specific aspects of writing is relatively novel, such data may be invaluable in shaping how these writing treatments are shaped and developed in the future. As such, a sincere thanks for participating in this study.

Due to the fact that the purpose of the study is sensitive to the performance of the participants, please do not share this debriefing form or any information about the study with any other students, as this could negatively impact the study.

If you have any questions, concerns, or would like to learn more about the study and its results, contact David Liang at dl1785@bard.edu or Kristin Lane at lane@bard.edu. If you have any questions about your rights as a participant, contact the Chair of the Institutional Review Board, Bard College at irb@bard.edu.

Thank you again for participating in this study!

Appendix C:
Demographic Questionnaires

[ONLINE VERSION]

1. What is your age? _____

2. What is your gender? ___Male ___Female ___Other

3. What is your race?

    a. American Indian or Alaska Native
    b. Asian
    c. Black or African American
    d. Native Hawaiian or Other Pacific Islander
    e. White
    f. Other

4. What is your ethnicity?
    a. Hispanic or Latino
    b. Not Hispanic or Latino

5. Education (highest degree completed):
    a. 12th grade or less
    b. Graduated high school or equivalent
    c. Some college, no degree
    d. Associate degree
    e. Bachelor's degree
    f. Post-graduate degree

6. What best describes the broad area of interest/occupation area you hold?
    a. I work in an area or am interested in pursuing a profession that is broadly centered around STEM
    b. I work in an area or am interested in pursuing a profession that is broadly centered around the Humanities
    c. I work in an area or am interested in pursuing a profession that is broadly centered around the arts
    d. Other ____

7. In what context do you write, if you write at all?
    a. Academic, as required
    b. Occupational, as required
    c. Recreational, on my own time
    d. I do not write.

8. How much writing is required of your profession or area of interest?

    a. Large amount/primary focus of occupation or area of interest
    b. Moderate amount/aspect of occupation or area of interest
    c. Small amount/minor aspect or part of occupation or area of interest
    d. No amount/inconsequential aspect of occupation or area of interest

9. Do you enjoy writing?
    a. I enjoy writing to a large degree
    b. I have no strong opinion on writing, neither positive or negative
    c. I do not enjoy writing at all

10. By checking the box below, you will opt OUT of having anonymous data shared with OSF.

[ ]

Appendix D:

Explicit measures

D-1

PANAS Survey All participants will complete a Positive and Negative Affect Schedule (PANAS) to measure participants's mood. The PANAS measures self reported positive and negative affect using a five point likert scale, rating items from 1 "Very slightly or not at all", 2 "A little", 3, "Moderately", 4, "Quite a bit", and 5 "Extremely".

The PANAS as presented to participants will ask how participants felt over different durations of time. For the first PANAS, participants will be asked how they felt over the past day, and then they will be asked to fill out the PANAS after the two separate writing exercises are complete.

The sample PANAS initially presented to the participants is as below:

> Please indicate the extent you have felt this way over the past day.

Interested

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Distressed

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Excited

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Upset

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Strong

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Guilty

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Scared

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Hostile

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Enthusiastic

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Proud

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Irritable

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Alert

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Ashamed

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Inspired

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Nervous

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Attentive

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Determined

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Jittery

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Active

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

Afraid

1_ Very Slightly or not at all || 2_ A little || 3_ Moderately || 4_ Quite a bit || 5_ Extremely

D-2

Activity Flow State Scale (AFS) All participants will complete a selection from the Activity Flow State Scale (AFS) after responding to their writing prompts in order to measure the degree of flow participants experienced while writing. AFS items are rated on a 5-point Likert ranging from 1 (strongly disagree) to 5 (strongly agree).

Here is the AFS format as will be incorporated into the study:

My attention was focused entirely on what I was doing.

1 (Strongly Disagree) * * * 5 (Strongly Agree)

It was no effort to keep my mind on what was happening.

1 (Strongly Disagree) * * * 5 (Strongly Agree)

I had total concentration.

1 (Strongly Disagree) * * * 5 (Strongly Agree)

I had no difficulty concentrating.

1 (Strongly Disagree) * * * 5 (Strongly Agree)

Time seemed to alter (either slowed down or sped up).

1 (Strongly Disagree) * * * 5 (Strongly Agree)

I lost my normal awareness of time.

1 (Strongly Disagree) * * * 5 (Strongly Agree)

The way time passed seemed to be different than normal.

1 (Strongly Disagree) * * * 5 (Strongly Agree)

I was not concerned with how others might be evaluating me.

1 (Strongly Disagree) * * * 5 (Strongly Agree)

I was not concerned with how I was presenting myself.

1 (Strongly Disagree) * * * 5 (Strongly Agree)

I was not worried about what others might be thinking of me.

1 (Strongly Disagree) * * * 5 (Strongly Agree)

I really enjoyed the experience.

1 (Strongly Disagree) * * * 5 (Strongly Agree)

The experience left me feeling great.

1 (Strongly Disagree) * * * 5 (Strongly Agree)

The experience was extremely rewarding.

1 (Strongly Disagree) * * * 5 (Strongly Agree)

Appendix E:
Landing Survey

Did you enjoy writing to the prompt?

a. I thoroughly enjoyed responding and writing to the prompt
b. I did not mind responding to the prompt
c. I had no real opinion one way or another
d. I did not enjoy responding to the prompt
e. I absolutely did not enjoy responding to the prompt

Would you like to elaborate?

a. ___
b. n/a

Did your response surprise you in any way?

a. Yes, I did not expect to respond in such a way
b. No.

Was responding to your prompt easy?

a. Yes, responding to the prompt was quite easy and natural
b. Yes, responding to the prompt was moderately easy
c. Yes, responding to the prompt was easy
d. No, responding to the prompt was difficult
e. No, responding to the prompt was moderately difficult
f. No, responding to the prompt was quite strenuous and difficult

Were you frustrated at any point in responding to the prompt?

a. Yes, I was often frustrated in crafting a response
b. Yes, I was occasionally frustrated in crafting a response
c. No, I was not frustrated in crafting a response

Would you want to continue writing in this manner after the survey concludes?

a. Yes
b. No

Did you wish for more time to write at the close of the writing period?

a. Yes -- a significant amount more
b. Yes -- a small amount more
c. No

How thoughtful would you rate your responses to the prompt?

a. Very thoughtful
b. Mildly thoughtful
c. Somewhat thoughtful
d. Not very thoughtful
e. I was just waiting for the time to end.

Did you pay much attention to the task while you were writing? Your response will have no effect on your compensation.

a. Yes. I attempted the task for the required amount of time
b. Sort of... I had the page open, but my mind was elsewhere/I was not really engaged for those 35 minutes
c. No. I did a bit of writing, but ultimately I let the time pass. Twenty Five minutes is a long time!

Open Science Framework (If you have indicated your preferences on the consent form you need not respond again):

[ ] By checking this box, I am OPTING OUT of having my responses shared with Open Science Framework.

[ ] By checking this box I CONSENT to sharing my responses with Open Science Framework.

IRB Approval: Original

Bard College Institutional Review Board

Date: June 29, 2021
To: David Liang
Cc: Kristin Lane, Deborah Treadway, Brandt Burgess
From: Tom Hutcheon, IRB Chair
Re: Writing at the Horizon: How Producing Imagined Narratives Affects Mood

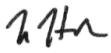
DECISION: APPROVED

Dear David,

The Bard Institutional Review Board has reviewed your revisions and approved your proposal entitled "Writing at the Horizon: How Producing Imagined Narratives Affects Mood." Your proposal is approved through June 29, 2022 and your case number is 2021JUNE29-LIA.

Please notify the IRB if your methodology changes or unexpected events arise.

We wish you the best of luck with your research!



Tom Hutcheon
IRB Chair
thutcheo@bard.edu

IRB Approval: Revisions

Bard College

Institutional Review Board

Date: September 24, 2021
To: David Liang
Cc: Kristin Lane, Deborah Treadway, Brandt Burgess
From: Tom Hutcheon, IRB Chair
Re: Proposed Amendments to 2021JUNE29-LIA

DECISION: APPROVED

Dear David,

The Bard Institutional Review Board has reviewed and approved the amendments you submitted to your protocol on September 23, 2021. Your case number remains: 2021JUNE29-LIA.

Please notify the IRB if your methodology changes or unexpected events arise.

Tom Hutcheon
IRB Chair
thutcheo@bard.edu