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Brandi L. Dilgard
Ashland University

Cassandra G. Mosely
Ashland University

Melissa D. Welch
Ashland University

Jessica L. Bates
Ashland University

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Participation in a Priming Task Predicts Persistence

Brandy L. Dilgard, Cassandra G. Mosley, Melissa D. Welch, Jessica L. Bates,
Nicolle R. Valentine, Lauren E. Goossens, & Diane B. V. Bonfiglio

Ashland University

Abstract

Though previously considered to be a relatively stable factor, emerging research suggests that optimism may be manipulated. Since research suggests a link between optimism and task persistence, the manipulation of optimism may result in greater task persistence. This paper describes two experiments. In both experiments, researchers examined whether participants primed for optimism persisted longer on a difficult anagram-solving task than did participants who were not primed for optimism.

Experiment 1 used a future thinking task to prime optimism, whereas Experiment 2 used a scrambled sentences task to prime optimism. Results suggested a trend for participants primed for optimism to persist longer on the anagram-solving task. Though these experiments were limited by small sample sizes, trends in the data suggest a relationship between the priming of optimism and task persistence.

Keywords: Optimism, Priming, Tasks, Persistence, Undergraduate, Life Orientation Test

Introduction

Scheier and Carver (1992) define dispositional optimism as an expectation that in the future, good things will be more plentiful than bad things. Optimism is associated with a wide variety of psychosocial benefits (Peterson, 2000). Some of those benefits may be mediated by choices that optimists are likely to make with respect to coping. Optimism appears to be related to choice of coping style (Aspinwall & Taylor, 1997; Scheier, Carver, & Bridges, 1994). Optimists may be likelier than others to use adaptive strategies that aid them in persisting until they reach a satisfactory outcome (Scheier, Carver, & Bridges, 1994).

Under particular conditions, optimism appears to be related to persistence on certain types of tasks. Highly optimistic people differ from less optimistic people with respect to how long they will persist in seeking solutions to anagrams (Aspinwall & Richter, 1999). This experimental finding is consistent with Carver and Scheier's (1981) view of optimism, which stemmed from their work on a self-regulatory model of goal-pursuit, which suggests that how long a person is likely to persist on a task is related to whether or not they think they will eventually be able to successfully complete it. One who believes that a successful resolution lies ahead is likelier to persist. Since optimists are likelier to believe that the future will hold positive things (such as the successful completion of goals), they are likelier than others to persist in the pursuit of goals, even when that pursuit proves difficult (Carver & Scheier, 1981).

Previous research examining the relationship between optimism and persistence has typically measured participants' levels of optimism, rather than attempting to manipulate optimistic thoughts. This

stems from the traditional understanding of optimism as a relatively stable characteristic (Fosnaugh, Geers, & Wellman, 2009). The term "dispositional" itself suggests that optimism is a fixed quality of the self. Emerging research proposes that future-thinking manipulations and priming tasks may influence optimistic thoughts and produce results detectable on what is understood to be a dispositional measure of optimism (Fosnaugh et al.). If there is room to manipulate optimism, then it may be possible to bolster task persistence through such a manipulation.

Interestingly, though many people tend to think of optimism and pessimism as opposite ends of a single spectrum, there is evidence to suggest that the two are distinct, negatively-correlated constructs (Mahler & Kulik, 2000; Robinson-Whelen, Kim, MacCallum, & Kiecolt-Glaser, 1997). Examinations of Scheier and colleagues' measure of optimism, the Life Orientation Test- Revised (LOT-R; Scheier, Carver, & Bridges, 1994) lend support to this idea. The LOT-R consists of positively-worded and negatively-worded items pertaining to optimism which are scored on a Likert-type scale, along with four non-scored filler items not included in scoring. In their early work on the construction of the LOT, Scheier and colleagues conceptualized it as being a unidimensional measure, but factor analytic studies have supported a two-factor (optimism and pessimism) structure (Mahler & Kulik; Robinson-Whelen et al.). Further, the constructs may be associated with different outcome variables (Mahler & Kulik). Given this, it is possible that while an optimism manipulation may influence persistence, a pessimism manipulation may not necessarily influence persistence in an equivalent reciprocal way. A pessimism manipulation may differently influence persistence, or may not influence it at all.

In the present work, two experiments were conducted. The experiments were partial replications of the procedures from Fosnaugh and colleagues' (2009) work on the manipulation of optimism, with a few important departures. The first experiment incorporated the future thinking manipulation employed by Fosnaugh and colleagues, but extended this work by examining participants' task persistence following the manipulation. The second experiment incorporated the scrambled sentences manipulation, but also included a pessimism priming condition, and extended the work by examining participants' task persistence following the manipulation. Additionally, to examine the potential role of affect in task persistence, positive and negative affect were assessed in the second experiment. In both experiments, we hypothesized that, compared to participants who were not primed for optimism, participants who were primed for optimism would spend more time working on the difficult task that followed the priming manipulation.

Experiment 1

Method

Participants

Participants were 49 undergraduate students, 73% of whom were female. Forty-eight of these participants self-identified as White/Caucasian and one self-identified as Black/African-American. Participants ranged in age from 18 to 43 years (mean = 19.25 years). They were recruited from introductory psychology courses using Psychology Study Participant Manager (PSPM), an online participant pool management system developed at the University of Northern Iowa. Participants received partial course credit as compensation for participation in the study. Participants were randomly assigned to experimental condition.

Instruments

Instruments used in Experiment 1 included a future thinking priming manipulation, a task persistence assessment, and a set of questionnaires.

Future thinking manipulation. The future thinking manipulation used in this study was modeled after the manipulation described by Fosnaugh and colleagues (2009). Depending on the participant's assigned condition, he or she completed either a positive future thinking questionnaire or a negative future thinking questionnaire. As in the Fosnaugh and colleagues study, these questionnaires were based on Weinstein's (1980) questionnaire, and asked the participants to rate the likelihood that certain future events would happen to them. The positive

future thinking questionnaire included 18 positive events, including getting a postgraduate job and living past the age of 80 years. This version of the questionnaire, then, was intended to prime optimism. The negative future thinking questionnaire included negative events, including developing cancer and being fired from a job. Participants were asked to rate the likelihood of each event on a scale from one to ten, where one indicated that it was highly unlikely the event would happen to them and ten indicated that the event was certain to happen to them.

Task persistence assessment. The method of task persistence assessment used in this study adapted from the procedure used by Aspinwall and Richter (1999). The participants were given a set of anagrams (used in previous research by Mattingly & Lewandowski, 2012). Eight of the anagrams included in the set were solvable and eight were unsolvable. Participants were instructed to return the puzzle sheet back in to the research assistant when they were "done working on" the puzzles. Importantly, participants were not instructed to "finish" or "complete" the puzzles, permitting them to disengage from the task when they no longer wanted to work on them. Participants were allowed up to 30 minutes to work on the anagrams. They were timed using a discreetly held stopwatch.

Questionnaires. Participants then completed the Life Orientation Test- Revised (LOT-R; Scheier, Carver, & Bridges, 1994), the positive and negative affect subscales of the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988), and a demographic questionnaire.

Procedure

Each participant was first given a consent form, briefly describing the study. The participant then completed a demographic questionnaire. Next, the participant completed either the positive future thinking questionnaire or the negative future thinking questionnaire, depending on to which condition the participant had been randomly assigned. Once the participant completed the questionnaire, he or she was given the anagram puzzle sheet. The participant was discreetly timed on how long he or she spent working on the anagrams. Each participant was tested individually so that he or she would not be influenced by how much time other participants spent working on the puzzles. After the participant returned the anagram set to the researcher, the participant completed the LOT-R. The participant was then debriefed and credited for participation.

Results

The positive future thinking group persisted on the anagram task for a mean of 16.74 minutes ($SD = 9.20$), whereas the negative future thinking group persisted for a mean of 13.24 minutes ($SD = 8.76$). A t -test revealed that the difference in group means approached, but did not reach, statistical significance, $t(46) = 1.35, p = 0.09$. Cohen's d for this difference was 0.394 which indicates a small to medium effect.

The mean score of the LOT-R for the positive group was 21.84 ($SD = 4.84$), whereas the mean score of the LOT-R of the negative group was 19.84 ($SD = 4.63$). A t -test revealed that the means of these groups were not statistically significantly different $t(47) = 1.47, p = 0.074$, but did suggest a trend in the expected direction. Cohen's d for this difference was 0.42 which indicates a small to medium effect.

Discussion

Though the difference in the mean time spent on the anagram puzzles did not reach statistical significance, the data did exhibit a clear trend in the expected direction. Participants in the positive future thinking condition (i.e., those primed for optimism) persisted, on average, more than three minutes longer on the anagrams than did the participants in the negative future thinking condition. The effect size for this comparison suggested a not negligible relationship between priming condition and persistence. Additionally, the raw data suggest that participants primed for optimism tended to score higher on the LOT-R, although again, this trend did not reach statistical significance.

Experiment 2

Method

Participants

Participants were 43 undergraduate students, 60.5% of whom were female. Thirty-five of these participants self-identified as White/Caucasian, five as Black/African-American, one as Hispanic, one as Native American, and one as Middle Eastern. Participants ranged in age from 18 to 50 years (mean = 20.0 years). They were recruited from introductory psychology courses using PSPM. Participants were not able to participate in this study if they had participated in Experiment 1. Participants received partial course credit as compensation for participation in the study. Participants were randomly assigned to experimental condition.

Instruments

Instruments used in Experiment 2 included a scrambled sentences priming task, a task persistence assessment, and a set of questionnaires.

Scrambled sentences task. Participants completed scrambled sentence puzzles (Fosnaugh, Geers, & Wellman, 2009; Srull & Wyer, 1979) particular to their assigned conditions. For these tasks, participants were given a list of fifteen five-word combinations, and were asked to construct a grammatically-correct sentence using four of the five given words. In the optimism priming condition, ten of the items included an optimism-related word (e.g. certain, confident, optimism, hopeful) as the unused fifth word. In the pessimism condition, the items were exactly the same as in the optimism condition, except that the ten target optimism words were replaced with pessimism-related words (e.g. suspicion, skeptical, pessimism, despairing). In the neutral condition, the items were exactly the same as in the other conditions, except the ten target words were replaced with neutral words (e.g. lanterns, lawn, manner, cabinet). After completing the scrambled sentence puzzles, participants were given an anagram-solving task based on the task used by Aspinwall and Richter (1999).

Task persistence assessment. The method of task persistence assessment used in this study adapted from the procedure used by Aspinwall and Richter (1999). The participants were given a set of anagrams (used in previous research by Mattingly & Lewandowski, 2012). Eight of the anagrams included in the set were solvable and eight were unsolvable. Participants were instructed to return the puzzle sheet back in to the research assistant when they were "done working on" the puzzles. Importantly, participants were not instructed to "finish" or "complete" the puzzles, permitting them to disengage from the task when they no longer wanted to work on them. Participants were allowed up to 30 minutes to work on the anagrams. They were timed using a discreetly held stopwatch.

Questionnaires. Participants then completed the Life Orientation Test- Revised (LOT-R; Scheier, Carver, & Bridges, 1994), the positive and negative affect subscales of the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988), and a demographic questionnaire.

Procedure

Each participant was first given a consent form, briefly describing the study. The participant then completed a demographic questionnaire. Next, the participant completed either the optimism version

of the scrambled sentences task, the pessimism version of the scrambled sentences task, or the neutral version of the scrambled sentences task, depending on to which condition the participant had been randomly assigned. Once the participant completed the scrambled sentences task, he or she was given the anagram puzzle sheet. The participant was discreetly timed on how long he or she spent working on the anagrams. After the participant returned the anagram set to the researcher, the participant completed the LOT-R. The participant was then debriefed and credited for participation.

Results

Analysis of the data revealed that the mean time spent on the anagram puzzles in the optimism priming condition was 26.00 minutes ($SD = 10.21$); the mean time spent in the pessimism priming condition was 22.00 minutes ($SD = 9.73$); the mean time spent in the neutral priming condition was 18.50 minutes ($SD = 7.97$). One-way ANOVA revealed no statistically significant main effect of experimental condition on persistence on the puzzles ($F(2, 40) = 2.32, p = 0.11$). However, post-hoc LSD analyses suggested a mean difference in persistence between the optimism priming condition and the neutral condition ($p = 0.037$). The mean LOT-R scores following the tasks for the optimism priming, pessimism priming, and neutral conditions were 21.00 ($SD = 4.19$), 20.50 ($SD = 4.36$), and 20.00 ($SD = 4.54$), respectively. One-way ANOVA revealed no statistically significant difference among the conditions with respect to these scores ($F(2, 40) = 0.19, p = 0.82$). The conditions did not differ with respect to positive affect ($F(2, 40) = 0.99, p = 0.38$) or negative affect ($F(2, 40) = 1.88, p = 0.17$) following the tasks.

Discussion

Interestingly, participants who experienced the optimism priming task persisted longer on the impossible anagram puzzles than did participants who experienced the neutral task. Contrary to expectations, the optimism priming, pessimism priming, and neutral groups did not differ with respect to their self-reported dispositional optimism following the tasks. This suggests that the priming manipulation did influence persistence, but that the effect was not mediated by a change in dispositional optimism that could be detected by the LOT-R. Further, the persistence appeared not to be related to changes in affect.

Summary and Concluding Discussion

These experiments were partial replications of the procedures from Fosnaugh and colleagues' (2009) work on the manipulation of optimism using future thinking and scrambled sentences tasks. These experiments extended that work by examining participants' task persistence following those manipulations, and, in Experiment 2, adding a condition in which participants were primed for pessimism. These data suggest that both tasks may, in fact, influence task persistence, though it is less clear that they result in a robust change in optimism levels as measured by the LOT-R.

Limitations

A few important limitations of these data must be noted. First, the small sample sizes used in each of the experiments likely limited our ability to obtain statistically significant results. Further, the lack of diversity of our samples may limit our ability to generalize our findings widely. Additionally, it is possible that other factors, not assessed by our tools, unduly influenced task persistence among the participants in our experiments. In particular, a student participant's motivation to leave the academic building at the end of a long school day may have caused participants scheduled on a Friday afternoon to rush through the puzzles. Other factors may also have influenced our dependent variable, including personal factors such as a participant's self-esteem (McFarlin, Baumeister, & Blascovich, 1984) or ability to focus (Andersson & Bergman, 2011).

Additionally, the timing of the administration of the LOT-R may be problematic in this study. We chose not to administer the LOT-R immediately following the priming task, because we did not want the LOT-R itself to prime optimistic thoughts. Rather, we chose to administer the LOT-R following the anagram task, which was typically 20 minutes or more after the completion of the priming task. If primed changes in optimism were particularly short-lived, they may have dissipated during the impossible anagram task and thus not shown up on the LOT-R, which was administered following the anagram task.

Future Directions

Future work in this area could include investigating other types of optimism manipulations, as well as further investigations into the robustness and the longevity of any effects of such manipulations. Branching out a bit further, future work in this area could be beneficial for our understanding of academic success. Task persistence may be an important factor in student success.

Andersson and Bergman (2011) defined task persistence as the ability to continue to work on a task through distractions. In their study, they examined the importance of task persistence and its relationship to educational achievement later in life. They determined that participants with high task persistence received better grades than those who had lower task persistence. They also concluded that

being naturally smart is not enough; people must have the ability to focus and persist on a particular task. Given the importance of task persistence for academic success, and optimism's potential relationship to persistence, optimism then becomes an area of interest for people interested in student success. Future work could examine the relationship between optimism and college student retention.

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