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Does Being Bored Make Us More Creative?

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Boredom has traditionally been associated with a range of negative outcomes, both within the workplace and outside it. More recently, however, it has been suggested that boredom can have positive outcomes, one of which might be increased creativity. This study addressed this proposition by examining the relationship between boredom and creative potential on a range of tasks. Two studies were carried out; the first involved 80 participants taking part in either a boring writing activity or not (control group) followed by a creative task. The second study involved a further 90 participants who varied in the type of boring activity they undertook (either a boring written activity, a boring reading activity, or a control) and the type of creative task that followed. Results suggested that boring activities resulted in increased creativity and that boring reading activities lead to more creativity in some circumstances (such as convergent tasks) than boring written activities. The role of daydreaming as a mediator between boredom and creativity is discussed and implications are outlined.

Contrary to popular wisdom, boredom is not the result of having nothing to do. It is very hard to come up with a situation where a person's options are so limited that he or she literally can do nothing. Rather, boredom stems from a situation where none of the possible things that a person can realistically do appeal to the person in question. This renders the person inactive, and generally unhappy. Thus, boredom is the result of having nothing to do that one likes, rather than nothing to do per se. For most people, boredom is a negative experience; even described in one study as "an extremely unpleasant and distressing experience" (Martin, Sadlo, & Stew, 2006, p. 193).

Some researchers have attempted to define boredom although there is no real consensus. What is agreed about boredom is that it is a "complex phenomenon" (Martin et al., 2006, p. 196). Hebb (1996) defined it as a "state in which the level of stimulation is perceived as unsatisfactorily low" (in Drory, 1982, p. 141). Lack of external stimulation leads to increased neural arousal in search of variety—failure to satisfy this leads to the experience of boredom. Many argue that boredom is a distinct emotional state, leading Fisher, one of the forerunners in boredom research, to define boredom as "an unpleasant, transient affective state in which the individual feels a pervasive lack of interest in and difficulty concentrating on the current activity . . . [such that] it takes conscious effort to maintain or return attention to that activity" (Fisher, 1993, p. 396).

Despite the variations in definitions, there is surprising consensus in laypeople's descriptions of the experience of boredom. A qualitative study by Martin et al. (2006) reported that all respondents described boredom as "feeling stressed, agitated, yet at the same time lethargic" (p. 208). This concurs with a study of teachers in which respondents described being bored as tiring, miserable, and frustrating (Mann and Robinson, 2009). Indeed, boredom has been associated with a range of negative outcomes both at work and beyond. Negative consequences at work include: poor work performance (Vodanovich, 2003), correlations with anger (Vodanovich, 2003), accidents (Branton, 1970; Drory, 1982), absenteeism (Brisset & Snow, 1993), more errors (Cox, 1980; Drory, 1982; O'Hanlon, 1981), stress, increased risk taking/thrill seeking (e.g., Hamilton, 1983), sleepiness (Grose, 1989), stress-related

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health problems, e.g., heart attacks (e.g., Alfredsson, Karasek, & Theorell, 1982), job dissatisfaction (Caplan, Cobb, French, van Harrison, & Pinneau, 1975), and property damage (Drory, 1982). Some of these consequences are clearly symptoms of the boredom experience; accidents, mistakes, sleepiness, etc. are all the result of being unable to sustain attention. Other consequences are a result of the ways that individuals try to cope with their boredom by either refocusing attention on the task or seeking additional stimulation.

In education, boredom has been linked with diminished academic achievement and school dissatisfaction (e.g., Maroldo, 1986). For example, students who rated themselves as often bored had generally lower scores on academic tests than those who were sometimes bored (Mikulas & Vodanovich, 1993). Student boredom has also been shown to be a contributor to truancy (e.g., Watt & Vodanovich, 1992). For example, boredom is one of the most frequently identified causes for students leaving school temporarily (e.g., skipping classes, feigning illness) or permanently (Farmer & Sundberg, 1986; Larson & Richards, 1991). Students who do not miss classes have been shown to have higher performance scores (e.g., Farmer & Sundberg, 1986; Grabe, 2005; Handelsman, Briggs, Sullivan, & Towler, 2005; Maroldo, 1986; Mikulas & Vodanovich, 1993).

IS BOREDOM ALWAYS BAD?

As the previous review suggests, research shows that being bored is generally a negative experience. Yet boredom, like most emotions, has a purpose and, despite widely held views about its negative connotations, it is speculated that there are potentially many benefits to being bored. These include that of communicating to others interests, values, and beliefs, and for communicating lack of presence—that the bored person does not want to be here, functioning as an excuse or justification (Scott & Lyman, 1968) for noninvolvement or respite. Boredom might also communicate a desire to be stimulated by others, as well as providing an adaptive mechanism against societal noise or information overload (Klapp, 1986). Boredom might also be a "shield against self-confrontation" (Hoover, 1986, p. 43); a means to avoid discomfort or new knowledge (Dehlinger, 1975).

Like most emotions, boredom is likely to have had evolutionary value; as a stimulus proves itself neither dangerous nor reinforcing, people would simply lose interest in it and turn attention to other stimuli. If humans did not bore of things, it would be impossible to habituate to the continued minutiae of life and everyone would be constantly preoccupied with every minor stimulus to such an extent that they might not attend to real threats.

A final function or benefit of boredom is that it might stimulate the "production of fantasies, awakening creativeness" (Brisset & Snow, 1993, p. 243). Boredom is, paradoxically, a motivating force/catalyst for action: "Boredom . . . is an alerting phenomenon that all is not well and something must be done" (Gaylin, 1979, p. 129). Boredom might stimulate the need to redecorate, take up a new hobby, or look for a new job. The feeling, then, can induce challenge-seeking behavior, and therein lies the paradox that boredom, associated by many with lethargy, can actually be energising, inspiring a search for "change and variety" (Harris, 2000, p. 578).

BOREDOM, CREATIVITY AND DAYDREAMING

This idea that boredom can lead to a search for variety was taken up by Bell (2011), who suggested that boredom may well boost creativity. When individuals are bored, they find it difficult to focus their attention on the task, and thought processes shift to other areas that can provide more stimulation. When the bored individual cannot physically escape the task to undertake a more engaging one, this attention shift is often from an external focus on the task, to a more internal focus on inner thoughts, feelings, and experiences. This inner focus allows a way of gaining the stimulation that is being craved and that is missing from the boring task. This internal focus could involve a search for new ways to carry out the boring task to make it more engaging (Toohey, 2011) or could involve thinking about unrelated problems or ideas the consideration of which is more appealing than the boring task at hand. It is this attention-shifting that is termed *daydreaming*, and is thus a common by-product of boredom (Smallwood & Schooler, 2006). Indeed, previous research has shown that individuals use daydreaming to regulate boredom-induced tension (Tushup & Zuckerman, 1977), thus suggesting that daydreaming is used as a coping strategy for dealing with the unpleasant state of boredom (Smith, 1981).

In concordance with this, Singer (1975) described daydreaming as shifting attention from the external situation or problem to the internal representation of situations, memories, pictures, unresolved things, scenarios, or future goals. Smallwood (2011) more recently explained the process of daydreaming as "a state of decoupled processing in which attention to ongoing perceptual information is reduced often in favor of the active consideration of internally generated thoughts and feeling" (p. 63). Schank (1982) proposed that daydreaming is a part of dynamic memory. Dynamic

memory is the ability to reevaluate information and possible solutions with the reexamining of a problem or unresolved scenario (Schank, 1999). The act of daydreaming can thus provide individuals with the opportunity to reexamine a problem or situation that is preoccupying their minds as many times as they wish, in varied ways and each time incorporating new information and possible solutions. The benefit of daydreaming, then, is that seemingly illogical ideas can be explored in ways that may not be practically feasible and through this exploration a new or more suitable solution to problems or unresolved situations may be found. This, then, can lead to creative problem-solving (Singer, 1981) and suggests a link between daydreaming and creativity (Singer, 1975). This theme was taken up more recently, in an article in *Newsweek* (Begley, Bailey, Sone, & Interlandi, 2009) which described daydreaming as a "propitious mental state for creativity, insight and problem solving" (Begley et al., 2009, p. 36) in which "truly novel solutions and ideas emerge" due to the daydreaming brain being able to bring together unrelated facts and thoughts.

THE PRESENT STUDIES

Our studies explored the hypothesis that boring activities lead to increased creativity. The first study used a boring writing task to induce boredom and a divergent thinking task to measure creative potential. Divergent tasks are where there are no set answers to creative problems, but divergent thinkers can come up with a range of novel answers; these are among the most common means of assessing creative potential. Divergent thinking tasks require the individual to think creatively by using lateral thinking to produce various solutions to a given problem (Plucker & Renzulli, 1999) and lend themselves to boredom research given the daydreaming element of boredom (Smallwood et al., 2006).

The writing task might hinder the daydreaming thought to be necessary for creativity to be enhanced, due to it interfering with the propensity for attention to wander. This was suggested by previous research; for example, doodling when bored improved cognitive performance for students and it is thought this was due to it interfering with daydreaming (Andrade, 2010). Thus, the second study introduced a boring reading task in addition to the writing task.

Divergent thinking is not the only form of assessment in creativity, however, and has not been without its critiques (Weisberg, 2006). Part of the criticism of divergent thinking as a measure of creative potential has been in the scoring of divergent thinking tasks, in particular with the commonly used method of frequency and uniqueness scoring, which simply looks at the number and rarity of the answers—rather than taking into consideration how useful or creative the answers are (Silvia et al., 2008). This can lead to confounding results, as with more answers there is a higher probability of there being unique answers (Silvia et al., 2008). To address this limitation, both frequency (number of answers) and creative usefulness (in terms of the range of creative uses of the responses that were generated), were assessed independently by two raters, as suggested by Silvia et al. (2008), in these studies. The use of more than one creative divergent thinking task also addressed the concerns that Silvia et al. (2008) had in relation to the problems of reliability in using only one task. In addition, Study 2 also introduced a convergent creative task (where there are definite answers to a problem) to further address any possible limitations.

STUDY 1

This study investigated the impact of undertaking a boring writing activity (copying telephone numbers from a phone directory) on subsequent levels of creativity shown in a divergent thinking task (to come up with as many uses for a pair of polystyrene cups as possible). The independent variable (IV) was the precreativity activity—either a boring task or not. The dependent variables (DVs) were the number of answers produced in the creative potential task and the degree of creative usefulness of those answers.

The participants were from an opportunity sample from a community church local to one of the researchers. No ages were recorded; however, all participants were over 18. There were 80 participants (40 control condition and 40 boredom condition) with an even split of gender for each condition. Two raters were used to assess the level of useful creativity (i.e., the degree of creativity in coming up with different uses of the objects) of the answers provided. These raters were colleagues of one of the authors, but blind to the hypotheses of the study.

Materials/Apparatus

The participants in the boredom condition received an information briefing sheet, pages from a telephone book, and a recording sheet on which to write down the telephone numbers. After this, participants in both the boredom and the control conditions underwent the same creative task. Both sets of participants received the same instruction sheet for this task, two polystyrene cups, the recording sheet to write down their list of different uses for the cups, and a postprocedure information sheet containing the researcher's contact information.

The boredom task was created especially for this study; however, the creative uses task was an adapted

version of Guilford's Alternative Uses Brick Task (1967, cited in Silvia et al., 2008), which has been widely used and has become an accepted measure of divergent thinking.

The raters were provided with the instruction sheets briefly explaining the study and the criteria, the participants answer sheets from the creative task, and a recording sheet to record the scores.

Procedure

The participants in the boredom condition were asked to write down telephone numbers from a phone book for 15 min. Once the time had elapsed, they were asked to rate how boring they found the activity as a manipulation check, on a 5-point Likert scale (1 = *not boring*, 5 = *extremely boring*) and participants with scores below 4 did not continue with the study, to ensure that the participants were experiencing a boring task.

Participants were also asked to state if they noticed that they daydreamed at any point during the boring task. Only those who admitted to daydreaming continued on to the creative task.

The creative potential task consisted of the participants being given 3 min to list as many different uses for the two polystyrene cups they were provided with. Once the 3 min had elapsed, the participants were asked to circle their two most creative uses of the cups. The participants were then fully debriefed. All the answers were compiled and given to two raters to assess the two most creative answers.

The experimenter was on hand at all times to answer any queries. The rater began by eliminating any duplicate answers from the list and then rated the two most creative answers on a 5-point Likert scale (1 = *no creativity*, 5 = *high creativity*). They were assessing the answers for both quality (jn terms of how useful the suggestions were) and how unusual the answers were. They then recorded the average score for the two most creative answers and recorded it on the sheet provided.

Results

The mean Kappa coefficient (0.82) revealed a high reliability (Kappa result over 0.70), so no alterations were made to the rater procedures. The rater scores were averaged and an overall score was assigned to each participant.

The mean frequency and standard deviation were obtained for the number of answers provided (Table 1).

An independent *t*-test was used to investigate the mean frequency of the number of answers provided. The results revealed that there was a significant difference between scores for the two conditions ($t = -4.316$, $df = 78$, $p < 0.0005$), indicating that the number of answers were higher for participants who completed a boredom task followed by the creative task than for participants who completed the creative task alone (control condition). This is also confirmed by the mean scores (see Table 2). An independent *t*-test was used to investigate the mean creativity of answers provided. The results revealed that there was a nonsignificant difference between scores for the two conditions ($t = -4$. $df = 78$, $p > 0.05$).

TABLE 1
Mean Frequency and Standard Deviation Scores for the Number of Answers Provided After Completing a Creative Task Across a Control and Boredom Condition

	Mean	*SD*
Control	7.33	2.01
Boredom	10.63	4.4

TABLE 2
Mean Frequency and Standard Deviation Scores for the Level of Creativity of the Two Most Creative Answers Provided After Completing a Creative Task Across a Control and Boredom Condition

	Mean	*SD*
Control	3.58	0.68
Boredom	3.65	0.98

Results from Study 1 suggested then that the boring writing task did increase the number of responses produced, which is one measure of creative potential; however, being bored did not appear to lead to more creative answers. These results led to the adaption of new techniques for Study 2.

STUDY 2

The second study attempted to investigate further the hypothesis that boredom leads to enhanced creativity by making changes to the design of Study 1. In Study 2, a second boredom task was introduced (a boring reading task), as well as two extra creative potential tasks (one of which was a convergent task). The extra creative potential tasks were added as a way of ensuring generalizability of findings. It was further predicted that participants' creativity would be higher following the reading boredom task than following the written boring task and the control, because of the greater opportunities for daydreaming afforded by reading over writing (Andrade, 2010).

Participants

Participants were recruited on an opportunistic basis at the same venue as Study 1, but individuals who had

taken part in Study 1 were excluded. They were randomly assigned to the various conditions by selecting a time slot. Again, no ages were recorded but all participants were over 18. There were 90 participants for Study 2: 30 in the control condition, 30 in the written boredom condition, and 30 in the reading boredom condition, with an even split of gender for each condition.

Materials/Apparatus

The participants in the two boredom conditions (written or reading) received an information sheet and pages from a telephone book. Participants in the written boredom condition also received a recording sheet to write down the telephone numbers.

All conditions received an instruction sheet for Creative Potential Task 1 (which was the same task as in Study 1), two polystyrene cups, and the recording sheet to write down their list of different uses for the cups. Once Creative Potential Task 1 was completed, they underwent Creative Potential Task 2 and received an instruction sheet and recording sheet to write a list of different consequences to global narcolepsy (a chronic sleep disorder that can include excessive sleepiness and sleep attacks).

Once Creative Potential Task 2 was completed, they moved onto the last task. They received an instruction sheet and recording sheet for Creative Potential Task 3, which consisted of a series of word problems. After all the tasks were completed, the participants were given a postprocedure information sheet containing the researcher's contact information.

The boredom tasks were created especially for this study; however, the creative uses task was an adaptation from other research. Creative Potential Task 2 was adapted from Christensen, Merrifield, and Guilford's Consequences Task (1953, cited in Furnham, Crump, Batey, & Chamorro-Premuzic, 2009); Creative Potential Task 3, a convergent creative task, was created for this study and adapted from Mednick and Mednick Remote Associations Test (1962, 1967, cited in Isen, Daubman, & Nowicki, 1987) and involved completing as many answers as possible (in 3 min) to a series of 40 word problems. Participants were permitted to answer them in any order. They consisted of three stimulus words and were asked to generate the fourth word that combined with each of the stimulus words. They could combine to form a compound word/phrase, a shared meaning word or a shared relationship. For example the answer to the three stimulus words *MEASURE, WORM*, and *VIDEO* would be *TAPE* (tape measure, tape worm, and video tape).

These methods of assessing creative thinking have been widely used as a measure of creativity (Furnham et al., 2009; Isen et al., 1987; Silvia et al., 2008) and by using more than one creative task, it increases the reliability of the results (Silvia et al., 2008).

The raters were provided with the instruction sheets that were used in the pilot study, the participants answer sheets and three copies of the recording sheets.

Procedure

The tasks were conducted in the same manner as in Study 1. The participants in the written boredom condition were asked to write down telephone numbers from a phone book for 15 min, and in the reading boredom condition were asked to read the telephone numbers for 15 min. Once the time had elapsed, they were asked to rate the boredom activity on a 5-point Likert scale ($1 = not\ boring$, $5 = extremely\ boring$) and participants with scores below 4 did not continue with the study. Those who rated the task as boring and indicated that they daydreamed continued on to do the three creative potential tasks. Participants in the control condition undertook the three creative potential tasks without either of the telephone numbers tasks.

Before beginning, each creative potential task the participants received an instruction sheet. The experimenter was on hand to answer any queries. Each task was 3 min long and, once the time had elapsed, participants were asked to circle their two most creative answers. Once this was completed, they moved on to the next task.

Once all the tasks were completed, all the answers were compiled and given to two raters to assess the two most creative answers. This followed the same procedure as Study 1.

Results

The mean boredom score (for how boring they found the boredom task) for those that took part in the written boredom task condition was 4.3 and the mean score for those taking part in the reading boredom task was 4.5.

The mean frequency and standard deviation were obtained for the number of answers provided for each of the first two tasks of creative potential and for the number of correct answers in the third creative task (Table 3).

A one-way between-subjects analysis of variance was (ANOVA) conducted for Task 1 to see if the mean number of answers on this task differed for each of the three conditions. The results revealed a significant effect of condition, $F(2,\ 87) = 14.45$, $p = 0.000$, $\eta^2 = 0.25$. Post hoc Bonferroni paired comparisons tests suggested that the written and reading conditions did not differ significantly from each other ($p = 0.062$), but written differed significantly from the control condition ($p = 0.01$) and

TABLE 3
Mean Frequency and Standard Deviation Scores for the Number of Answers Provided After Completing a Series of Creative Tasks (1, 2 and 3) Across a Control, Written Boredom and Reading Boredom Condition

	Creative Task						
	Task 1		*Task 2*		*Task 3*		
Task Group	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Row Mean*
Control	8.03	2.83	6.73	1.95	6.47	0.82	7.08
Written boredom	10.03	2.09	8.70	1.95	6.97	0.81	8.57
Reading boredom	11.60	2.74	11.60	2.71	7.10	1.00	10.10
Column mean	9.89	2.94	9.01	2.99	6.84	0.91	

the reading different significantly from the control condition ($p = 0.000$).

A one-way between-subjects ANOVA was conducted for Task 2 to see if the mean number of answers on this task differed for each of the three conditions. The results revealed a significant effect of condition, $F(2, 87) = 36.098$, $p = 0.000$, $\eta^2 = 0.45$. Post hoc Bonferroni paired comparisons tests suggested that the reading and writing conditions differed significantly ($p = 0.000$) from each other, the reading and control differed significantly ($p = 0.000$) and that the writing and control differed significantly ($p = 0.003$).

A one-way between-subjects ANOVA was conducted for Task 3 to see if the mean number of correct answers on this task differed for each of the three conditions. The results revealed a significant effect of condition, $F(2, 87) = 4.334$, $p = 0.016$, $\eta^2 = 0.09$. Post hoc Bonferroni paired comparisons tests suggested that the only significant differences lay between the reading and control conditions ($p = 0.019$).

The level of creativity of answers given in the creative tasks 1 and 2 was examined next (but not for Task 3, which involved only supplying right or wrong answers); see Table 4.

Two one-way ANOVAs were performed to investigate the differences between scores for each task across the three conditions.

TABLE 4
Mean Frequency and Standard Deviation Scores for the Level of Creativity of the Two Most Creative Answers Provided After Completing a Series of Creative Tasks (1 and 2) Across a Control, Written Boredom and Reading Boredom Condition

	Task 1		*Task 2*	
	Mean	*SD*	*Mean*	*SD*
Control	2.67	0.66	2.73	0.83
Written boredom	3.17	0.79	3.47	0.86
Reading boredom	3.43	0.86	3.67	0.66
Column mean	3.09	0.83	3.29	0.88

The Task 1 ANOVA revealed that there was a significant effect of the condition, $F(2, 87) = 7.574$, $p = 0.001$, $\eta^2 = 0.15$. Post hoc Bonferroni paired comparisons tests suggested that the control group differed significantly from the written condition ($p = 0.043$) and the reading condition ($p = 0.001$) but that the written and reading conditions did not differ significantly from each other ($p = 0.56$).

The Task 2 ANOVA revealed that there was a significant effect of the condition, $F(2, 87) = 11.67$, $p = 0.000$, $\eta^2 = 0.2$. Post hoc Bonferroni paired comparisons tests suggested that the control group differed significantly from the written condition ($p = 0.002$) and the reading condition ($p = 0.000$), but that the written and reading conditions did not differ significantly from each other ($p = 0.98$).

DISCUSSION

The aim of the two studies reported here was to examine the effects of boredom on creative potential. Two different methods of inducing boredom were used (written task in Study 1 and both reading and writing tasks in Study 2) and creative potential was measured with a range of different tasks.

Study 1 revealed that participants came up with significantly more answers to a creative task following a written boredom task than without such a task. However, although more answers were produced following the boring task, these were not judged to actually be more creative. This suggests that being bored can lead to increased creativity in terms of quantity, but not necessarily in terms of quality. This dichotomy could be due to the writing task interfering with the ability to daydream, because the active act of writing is likely to have the role of refocusing attention on the task (and thus inhibiting daydreaming) in accordance with Andrade's (2010) finding that doodling inhibited daydreaming.

Study 2 thus introduced a reading boring task in addition to the written boring task, but the results suggested that the number of creative answers and their level of creativity in Task 1, although higher for the reading condition, were not significantly higher. This suggests that boring reading tasks do not lead to significantly more creativity (at least for this type of task) than boring writing tasks do and thus suggests that either the written task did not inhibit daydreaming enough for it to effect creativity or that daydreaming is a not as important a moderator of the boredom-creativity link as hypothesised.

However, the boring tasks, whether written or read, did lead to an increase in both the number of creative answers produced in Task 1, as well as their level of

creativity (in terms of how useful they were), when compared to the control (nonboring) condition. These findings contradict those of Study 1, which found that level of creativity did not significantly increase after the reading boring task and demonstrates the need for more research in the area.

Study 2 also introduced two new creative potential tasks to investigate whether the type of creative task makes a difference. In Task 2, the number of answers (but not their level of creativity) did differ significantly between the reading and writing conditions such that more answers were produced in the reading condition. This supports the idea that fluency (or number of ideas) does not necessarily equate to originality and creativity of those ideas because previous researchers (e.g., A. Snyder, Mitchell, Bossamaier, & Pallier, 2004) have suggested that adding more ideas within the same category, is not necessarily as creative as adding new categories. It also lends some support to the hypothesis that boring reading tasks facilitate more daydreaming than boring written tasks—and it is this daydreaming that leads to an increase in creativity. Both conditions also produced significantly more answers than in the control group. Like in Task 1, these answers were significantly more creative in the two boring conditions than in the control group. The use of Task 2 then, like Task 1, clearly showed a link between boredom and creativity; Tasks 1 and 2, which were both creative uses or divergent tasks, showed similar findings in that preceding them with a boring task increased both the number of creative answers and the level of creativity of those answers.

Task 3 was a totally different type of creative task that could produce only right or wrong answers (a convergent task). Here, only the reading boring task, and not the written boring task, led to a significant increase the number of correct responses. This again lends further support to the hypothesis that writing inhibits daydreaming (Smallwood et al., 2006) and that daydreaming is a mediator of boredom and creativity (e.g., Klinger 1987). It could be that daydreaming is more significant a factor in the stimulation of creative thoughts with convergent creative tasks than with the divergent tasks; daydreaming might be more useful in creative problem-solving tasks in which there are finite solutions to be found, than in more imaginative creative tasks where there are infinite possible outcomes.

Implications of Study

The findings have implications for the way that boredom is viewed both by society at large and by communities, such as within the work or education spheres. Until recently, boredom has been viewed as a negative emotion with only negative outcomes, but these studies add weight to the evidence that suggests that boredom can sometimes be a force for good. This means that it might be a worthwhile enterprise to allow or even embrace boredom in work, education, and leisure. On an individual basis, if one is trying to solve a problem or come up with creative solutions, the findings from our studies suggest that undertaking a boring task (especially a reading task) might help with coming up with a more creative outcome.

Limitations and Implications for Future Research

Within the two studies, there was one contradictory finding; in Study 1, the level of creativity in the answers given did not increase (when compared with the control group) following the writing boredom task, but they did when using the same task in Study 2. This suggests the need for further replication using much larger numbers of participants. It would also be useful to explore the role of daydreaming as a mediator of the proposed boredom-creativity link further by more in-depth measurement of daydreaming during boring tasks followed by regression techniques.

It should also be considered that the method of asking respondents to select their own most creative answers might be flawed in that previous research has suggested that individuals are poor at doing this; asking independent raters to do this might have produced more clarity in the results (Runco & Smith, 1992). There may also have been some confusion as how respondents selected their two responses reflecting the most creative use of the cups and how these were subsequently rated by the raters. Previous studies have simply used usefulness of the responses, so introducing the word term *creative usefulness* may have confused matters such that it cannot be certain that the most useful responses were being selected and rated, as oppose to the most creative responses (which might not be the same thing). Usefulness is considered by some to be more important than creativity, as ideas that are bizarre and impractical are not always seen as evidence of creativity when compared with ideas that have practical value (Zeng, Proctor, & Salvendy, 2011).

Future studies could also examine originality of answers, which was alluded to in our studies but not objectively measured, or other more objective measures such as those encompassed in A. Snyder et al.'s (2004) *creativity quotient*, which incorporates both fluency and flexibility of ideas. Zeng et al. (2011) reviewed a range of DT measures of creative potential and concluded that assessing appropriateness and novelty are key.

A further important limitation in Study 2 was in the temporal relation of the three creative tasks with the boredom task. The boredom task was carried out first, then Creative Task 1, then Creative Task 2, then

Creative Task 3. This meant that by Creative Task 3, two creative tasks had intervened since the boring task and this might have negated the effects of the boring task. It would be useful in future studies to precede each place, namely a church. Although the relationship between religiosity and creativity has rarely been explored in the literature, links between them have been theoretically proposed (Zysberg & Schenck, 2013), so future research could ensure greater external validity by ensuring a wider mix of participants.

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