Productivity, counterproductivity and creativity: The ups and downs of job insecurity

Tahira M. Probst1*, Susan M. Stewart2, Melissa L. Gruys3 and Bradley W. Tierney1

1Washington State University Vancouver, USA
2University of Puget Sound, USA
3Wright State University, USA

Organizations frequently downsize in the hopes of creating a 'lean and mean' company able to be flexible and quick to adapt to changing environmental needs. The purpose of the current research was to assess the effects of job insecurity on productivity, counterproductivity, and creativity in a simulated organizational environment and a field setting. In the first study, 104 non-traditional undergraduate students (M = 30.48 years) participated in a laboratory experiment that manipulated the threat of lay-offs (job insecurity) and measured creativity and productivity over two time periods. Compared to control group participants, results indicate that participant productivity increased in the condition of higher levels of job insecurity, whereas creative problem solving decreased. In the second study, 144 employees in five organizations completed a survey measuring their job insecurity perceptions, enactment of counterproductive work behaviours, and creative problem-solving ability. Regression analyses indicate that job insecurity predicted lower creativity scores, yet was also related to lower numbers of counterproductive work behaviours. Taken together, these studies suggest that job insecurity may have adverse effects on creativity, yet moderately beneficial effects on productivity. Results are interpreted in light of the increasing prevalence of job insecurity and organizational downsizing in today's workplace.

Commercial rivalries around the globe, government deregulation of industry, and the ever-increasing pace of organizational technology change have led organizations worldwide to take extreme measures in order to remain competitive. Organizational restructuring in the form of corporate downsizing, mergers and acquisitions, plant closings, and workforce reorganizations affect millions of workers each year. According to the Society for Human Resource Management (2001), 43% of US organizations conducted employee lay-offs in 2000 and 2001, with corporate reductions averaging 10–15% of the workforce.

* Correspondence should be addressed to Tahira M. Probst, 14204 NE Salmon Creek Avenue, Vancouver, WA 98686, USA (e-mail: Probst@vancouver.wsu.edu).

DOI:10.1348/096317906X159103
These corporate reductions are often undertaken with the aim of producing a ‘lean and mean’ organization – one that is flexible, ‘able to turn on a dime’, and quick to adapt to changing environmental needs (Landsbergis, Cahill, & Schnall, 1999). Indeed, the move away from large, hierarchical, rigid organizations was prompted by a perceived need to be smaller, more flexible, and agile in order to be competitive in today’s global market place (Bahrami, 1992; Lewin & Johnston, 2000). While there has been extensive research conducted on the health and psychological outcomes of these organizational changes (e.g. Kuhnert, Sims, & Lacey, 1989, Roskies & Louis-Guerin, 1990; Sverke, Hellgren, & Naswall, 2002), relatively little research has been conducted that assesses the extent to which they may influence creativity, productivity, or counterproductive workplace behaviours. The current research provides insights into an under-explored area by examining these variables using a multimethod approach in both the context of a simulated organizational laboratory experiment as well as in a field study.

**Threat of lay-offs, downsizing, and job insecurity**

Although these terms are often used somewhat interchangeably, it is important to note that the threat of lay-offs, downsizing, and job insecurity are separate yet highly correlated constructs (Ashford, Lee, & Bobko, 1989; Kinnunen, Mauno, Näätä, & Happonen, 2000; Rubach, 1995; Sverke, Hellgren, & Naswall, 2006). Downsizing is an organizational practice involving the voluntary or involuntary reduction of the company’s workforce. Often, actual organizational downsizing is preceded by the threat of lay-offs via formal announcements or the spreading of rumours of such plans. Actual downsizing and the threat of lay-offs have been repeatedly found to result in subsequent employee perceptions of job insecurity (e.g. Ashford, Lee, & Bobko, 1989; Probst, 2003; Roskies & Louis-Guerin, 1990). Thus, while these terms should not be used interchangeably, it is largely agreed upon by researchers in the field that downsizing, mergers and acquisitions, lay-offs, or even the threat of lay-offs all result in a workforce worried about their job security. In the current study, we not only examine how creativity and productivity are influenced by an explicitly stated threat of lay-offs in a laboratory experiment, but we also examine in a field study how self-reported levels of job insecurity are related to creative problem-solving and counterproductive behaviours at work.

**Threat of lay-offs, job insecurity, and creativity**

Creativity involves the production of original solutions to novel, ill-defined problems of relatively high complexity (Besemer & O’Quin, 1999; Lubart, 2001; Scott, Leritz, & Mumford, 2004). The foundation of creativity and creative problem solving is often argued to be divergent thinking, or the ability to ‘think outside the box’ to produce novel solutions (Vincent, Decker, & Mumford, 2002). It involves gathering information from multiple sources and recognizing unusual connections (Oldham & Cummings, 1996).

Employee creativity is vital for entrepreneurial activities and long-term economic growth (Amabile, 1997; Simonton, 1999; Wise, 1992). In addition, many of today’s occupations – ranging from marketing (Rickards & Freedman, 1979), business management (Basadur, Wakahayashi, & Takai, 1992), and educational administration (Burstiner, 1973) to medicine (Estrada, Isen, & Young, 1994), engineering (Basadur, Graen, & Scandura, 1986) and negotiations (Carnevale & Probst, 1998) – encourage and depend upon creativity (Scott et al., 2004).

However, while many organizations cite increased flexibility and enhanced innovation as benefits of restructuring and downsizing, many researchers argue the exact opposite may occur. Pech (2001) reasons that while organizations may claim to
encourage innovation and creative behaviour, organizational cost cutting and downsizing serve to counter such behaviour. Similarly, researchers have argued that innovation is likely to suffer as a result of downsizing due to an increase in risk-averse thinking (Cascio, 1995) and behavioural rigidity (Cameron, Sutton, & Whetton, 1988). Another possibility is that this increased rigidity is not intentional, but rather reflects an underlying loss of cognitive flexibility (Carnevale & Probst, 1998).

In the first study to assess the effects of downsizing on employee creativity, Amabile and Conti (1999) found that the work environment for creativity significantly declined during organizational downsizing. Specifically, in their study of 754 employees, respondents reported significantly less freedom, challenge, access to resources, supervisory encouragement, work-group support, and organizational encouragement following the implementation of organizational downsizing.

It should be noted that while the Amabile and Conti (1999) study was the first to empirically assess the relationship between downsizing and creativity, there are a few limitations to their data. First, their measures of creativity were self-report assessments of the work environment for creativity and self-report assessments of actual creative output. Therefore, there was no independent evaluation of the extent to which actual creativity may have declined. Second, due to organizational constraints imposed during their data collection, they were not able to collect data from the same employees over the course of their longitudinal study. Therefore, their data are between-subjects data rather than within-subjects data.

The current study addresses these two limitations by administering a creative problem-solving task to participants in a laboratory experiment who are threatened with lay-offs, as well as to a control group of participants who are not threatened with lay-offs. In this manner, one can compare the actual ability to solve a creative problem-solving task between those who have been threatened with lay-offs with those who have not, but are otherwise in an identical organizational setting. Additionally, in a field study, actual measures of employee creativity, rather than self-reports, are utilized and then correlated with employee perceptions of their job insecurity. In order to address the second limitation of the Amabile and Conti (1999) study, the current laboratory study uses a within-subjects research design to track participant productivity before and after the threatened lay-off.

While there has been little research to assess the relationship between the threat of lay-offs or job insecurity on creativity, we expect that there will be a negative relationship. According to Ironson (1992), job insecurity is one of the most significant organizational stressors encountered by employees. Farr and Ford (1990) argue that such stress can be expected to interfere with novel or creative processes due to attentional conflict (Baron, 1986) and distraction while engaging in complex creative task performance (sanders & Baron, 1975). In support of this, Van Dyne, Jehn, and Cummings (2002) found that psychological strain was related to lower levels of workplace creativity among a sample of hair salon stylists, where creativity in styling hair was rated by the employee’s supervisor. Further, Higgins, Qualls, and Couger (1992) found that anxiety can negatively affect creativity during any of the four stages of the creative problem-solving process (preparation, incubation, illumination, and verification). Based on these ideas and the empirical findings reviewed above, we propose:

Hypothesis 1a: In the laboratory experiment, participants who are threatened with lay-offs will score lower on a test of creative problem solving than participants who are not threatened with lay-offs.
Hypothesis 1b: In the field study, employees who perceive their jobs to be insecure will score lower on a test of creative problem solving than employees who perceive their job to be more secure.

**Threat of lay-offs and productivity**

There exists a fair amount of published research that examines the impact of downsizing on corporate-level performance measures, such as company stock price and other financial indicators, yet little research has been conducted on what happens to individual performance in the wake of threatened lay-offs. For example, two recent American Management Association surveys found that downsizing was not related to subsequent increased organizational productivity or profitability (as cited in Madrick, 1995 and Rubach, 1995). Similarly, Morris, Cascio, and Young (1999) found no consistent evidence that downsizing led to improved financial performance. Therefore, a second purpose of the current research is to assess the effect of job insecurity on individual, not corporate, performance.

Although there is plenty of evidence suggesting that job insecurity has negative effects on worker health and attitudes (e.g. Kuhnert *et al.*, 1989, Roskies & Louis-Guerin, 1990; Sverke *et al.*, 2002), the relationship between job insecurity and performance is less clear. In their meta-analysis on the causes and consequences of job insecurity, Sverke *et al.* (2002) found no main effect for job insecurity on performance. However, they point out that there are two possible reasons why a relationship between job insecurity and performance was not observed: (1) there is, in fact, no relationship or (2) job insecurity leads to enhanced performance in certain contexts, but decreased performance in other contexts. We would add to this that performance itself can be measured and defined in many different ways (see Campbell, 1990). According to Jex (1998), one reason for the inconsistency in past performance research may be due to an overly general conceptualization of job performance or inappropriate comparisons between different types of performance (e.g. work effort vs. task proficiency).

For example, in a laboratory experiment investigating the threat of lay-offs and safety behaviours and productivity, Probst (2002) found that participants were more productive (as measured by the number of paintings they produced as part of their assigned job task) when threatened with lay-offs, but those increased outputs were rated as lower in quality and accompanied by more safety violations, compared with participants who were not threatened with lay-offs. Thus, performance increased as a function of lay-off threat when performance was measured as the quantity of outputs, but decreased when operationalized as quality and safety behaviours.

The above findings illustrate the importance of clearly specifying the definition of performance. In our current laboratory experiment, we operationalized performance as job-specific task proficiency (i.e. productivity) which was measured by how effectively participants were able to complete a series of assigned copy-editing tasks. Based on the research reviewed above, we hypothesized that:

Hypothesis 2: In the laboratory experiment, participants who are threatened with lay-offs will display higher levels of productivity than participants who are not threatened with lay-offs.

Theoretical work on the relationship between job stress and performance further supports this hypothesis. Farr and Ford (1990) suggest that stress can cause employees to focus on well-learned and habitual actions at work (such as those involved in routine tasks). Other researchers suggest that in times of job insecurity, employees will focus...
their attention on those aspects of performance that are typically rewarded by the organization in an effort to retain their job (Probst & Brubaker, 2001).

**Job insecurity and counterproductive work behaviour**

Counterproductive work behaviour may include harmful acts that are targeted towards individuals, such as verbal harassment, assault, and the spreading of rumours, as well as harmful acts directed against the company or its systems, such as sabotaging equipment, stealing, and wasting resources (e.g. Hollinger, 1986; Neuman & Baron, 1997; O’Leary-Kelly, Griffin, & Glew, 1996; Robinson & Bennett, 1995). There is some evidence to support the idea that when job insecurity is high, employees might engage in higher levels of counterproductive work behaviour. However, other anecdotal evidence suggests that in the same situation, employees might engage in lower levels of counterproductive work behaviour. We explore each of these ideas below.

**Job insecurity – More counterproductivity**

Employees in job insecurity and lay-off conditions experience considerable stress, frustration, and anxiety (e.g. Brockner *et al.*, 1994; Jacobson, 1987). Research suggests that stressful working conditions may contribute to employees engaging in counterproductive work behaviours (Burroughs, Bing, & James, 1999) including withdrawal behaviours, such as absenteeism and tardiness (Chisholm, Kasl, & Eskenazi, 1983; Gupta & Beehr, 1979), interpersonal aggression, hostility, sabotage, and complaints (Chen & Spector, 1992). Results have been similar for those who experience frustration in the workplace (Fox & Spector, 1999; Spector, 1975, 1978; Storms & Spector, 1987).

Research suggests that individuals may engage in counterproductive work behaviour in an attempt to regain control over their environment (Bennett, 1998). It is very possible that this might take place in a job insecurity context. Indeed, Lim (1996) found that employees with higher levels of perceived job insecurity were more likely to engage in ‘noncompliant job behaviours’ (Puffer, 1987).

**Job insecurity – Less counterproductivity**

Alternatively, heightened perceptions of job insecurity may lead employees to engage in less counterproductive work behaviour. This may be due to a fear of termination and the associated financial ramifications with potential job loss. In short, employees who fear that they might be laid off may be more likely to try to avoid any behaviour that would increase the likelihood of losing their positions. This would especially be the case for counterproductive work behaviours that are directly banned by organizational rules or policies.

Research suggests that both the perceived certainty of receiving organizational sanctions upon engaging in deviant behaviour and the perceived severity of those sanctions are inversely related to counterproductive behaviours, such as employee theft (Hollinger & Clark, 1983) and sexual harassment (Dekker & Barling, 1998). Thus, in a job insecurity situation, if employees feel that if they engage in counterproductive work behaviour they will receive sanctions by the organization and those sanctions will be severe (in the case of job insecurity, the sanction may be loss of a job), then they will be less likely to engage in such behaviour. Furthermore, employees in insecure job situations have been found to be more risk adverse (Cascio, 1993); again suggesting that employees would be less likely to engage in activities that could put their jobs in jeopardy.
Since the evidence regarding the relationship between job insecurity and counterproductive work behaviour is contradictory, the following research question was posed and explored in our data analyses:

**Research Question:** In the field study, will employees who perceive their jobs to be insecure engage in more or fewer counterproductive work behaviours than employees who perceive their job to be more secure?

**STUDY 1: THE LABORATORY EXPERIMENT**

**Method**

**Participants and research design**
One hundred and thirty-one upper-division, non-traditional undergraduate students enrolled in psychology courses at a small university located in the north-western region of the USA were invited to participate in the laboratory experiment. Students in the classes were offered extra credit for their participation in addition to the compensation described in the Procedure section. Of the 131 students invited, 104 elected to participate resulting in a 79.4% participation rate. Seventy per cent were female and the mean age was 30.48 years. Out of the total number of participants, 81% were employed (56% full-time) and 68% held or had held a supervisory position at work. In the past, 20% had been laid-off and 16% had been responsible for laying off subordinates.

The research design was a 2 (between-subjects) × 2 (within-subjects) laboratory experiment, involving two conditions (experimental condition that received a threat of lay-offs and control group) and two work periods (baseline and post-lay-off announcement). Participants were assigned randomly to either the experimental group or the control group. Work productivity was assessed over two work periods; the first work period gathered baseline performance data, whereas the second measured productivity following the lay-off announcement. Finally, creativity was assessed once following the lay-off announcement (or after a brief break following the first work period in the control condition).

**Measures**

**Creativity**
In order to assess creative problem-solving ability, one of Duncker’s (1945) functional-fixedness tasks, which reflect fundamental processes in problem solving (Adamson & Taylor, 1954) was used. In this task, participants are told that they must devise a solution whereby a candle can be affixed to a bulletin board such that no wax drips to the floor using only the following materials: a bulletin board, a candle, one match, and a box of tacks. Participants were asked to write their solution on a piece of paper. The creative solution, identified by Duncker, is to remove the tacks from the box, tack the box to the bulletin board, and use it as a platform for the candle. The solution to Duncker’s candle task requires the ability to see new aspects of the objects presented or to see among them potential relationships other than the existing ones (Glucksberg & Danks, 1968).

**Procedure**
Each participant took part in one of two trials lasting approximately 1 hour each. All participants were informed that they had been selected for a copy editor position.
Participants were given an information packet containing the simulated newspaper’s history, its pay and benefits, vacation policy, daycare facilities, and promotion policy. Participants were also told that as part of the experiment they would have the opportunity to have their names entered into a drawing to earn $10 cash prizes based on their performance.

Participants were offered compensation for their editing work during the study in order to foster interest in the study and more closely mimic real-world employment situations. They were told that they would receive one lottery ticket for each point they earned in performance on copy-editing tasks. At the end of the experiment, all lottery tickets would be collected, from which four tickets worth $10 each would be drawn. Thus, the better each participant performed, the higher his or her chances of winning a cash prize. Participants were aware of the number of participants in each trial (approximately 25) and could roughly assess their chances of winning.

Participants were given information about their assignment, told that the experiment was interested in the way individuals work under pressure, and informed about the importance of working as quickly and accurately as possible. Their work responsibilities were stated as follows: ‘(a) Make sure the article you submit to your manager is factually correct; (b) Be sure that your article has no spelling errors; and (c) Check your article for grammatical mistakes.’

**Baseline performance**

After a question and answer period, participants were given the correction sheet that would be used to edit the newspaper articles and monitor participants’ performance. During the first work period, participants were given an article to be copy-edited and had 5 minutes to find and correct as many spelling, grammatical, and factual errors as possible. Performance was assessed using the following equation: 

\[ \text{Performance} = \text{(# of spelling errors identified and corrected)} + \text{(# of grammar errors identified and corrected)} - \text{(# of uncorrected facts left in the article).} \]

Based on their performance, the corresponding number of lottery tickets was allocated to participants immediately following the first work period.

**Manipulation**

After the first work period, participants in the randomly assigned experimental group were then given an ‘urgent company memo’ stating that ‘due to low sales of our newspapers and declining advertising revenues’, 50% of the editors would be laid off after a second work period. No mention of any lay-offs was made to the randomly assigned control group. The lay-offs would be based on their editing performance and the laid off participants’ role in the experiment would end. It was again stressed that the money in the lottery drawing was real, but that a laid off editor could not enter any earned lottery tickets into the drawing.

After the memo was distributed (or after a brief break in the case of the control trials), the Duncker candle task was handed out and presented as a filler task while the experimenters prepared the following work period’s editing tasks. Participants were given no time limit to solve the task. Furthermore, they were also told that there was no right or wrong solution to the task and that their performance on the task did not affect their chances in the lay-offs or lottery drawing.

After the Duncker candle task was completed, the second work period was conducted following the same procedures described for the first work period. Performance was assessed and lottery tickets were allocated.
Following the second work period, a post-task questionnaire was administered that assessed demographic information, a manipulation check, and hypothesis guessing in the experiment. After completing the post-task questionnaire, participants were told that their participation in the experiment had ended. Finally, participants were debriefed and told there would, in fact, be no lay-offs. The lottery drawing was then conducted and questions were answered.

Results

Manipulation checks

In order to assess the impact of the lay-off manipulation, participants in the experimental conditions were asked if they believed that lay-offs would actually take place. Eighty-eight per cent of the participants responded that they believed the lay-off manipulation, $\chi^2(1) = 29.82, p < .001$. In addition, when asked if they believed that they would actually have a chance to earn money in the experiment, 93% of all participants indicated that they believed the lottery involved real money, $\chi^2(1) = 74.94, p < .001$. Therefore, the lay-off manipulation was credible and participants realized that real money was at stake. Finally, in response to an open-ended question assessing ‘hypothesis-guessing’, no participants correctly identified (or even came close to identifying) the purpose of the study or our hypotheses. Additionally, none of the participants expressed any prior familiarity with the Duncker candle task.

Performance changes

A repeated measures ANOVA was utilized to assess performance changes over time for the control and experimental group participants. As can be seen in Table 1, results indicate that there was a significant main effect for performance, $F(1, 102) = 38.43, p < .001 (\eta^2 = .27)$, such that performance improved for both groups over time. This was to be expected as a function of task familiarity. More interestingly, there was the expected significant interaction between experimental condition and time, $F(1, 102) = 7.81, p < .001 (\eta^2 = .07)$. As can be seen in Table 1, performance in the group threatened with lay-offs improved significantly more from Work Period I to Work Period II compared with the performance in the control group.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work period I performance</td>
<td>1.64</td>
<td>2.37</td>
</tr>
<tr>
<td>Lay-off condition</td>
<td>1.30</td>
<td>2.33</td>
</tr>
<tr>
<td>Control condition</td>
<td>2.02</td>
<td>2.38</td>
</tr>
<tr>
<td>Work period II performance</td>
<td>3.09</td>
<td>2.41</td>
</tr>
<tr>
<td>Lay-off condition</td>
<td>3.34</td>
<td>2.55</td>
</tr>
<tr>
<td>Control condition</td>
<td>2.79</td>
<td>2.22</td>
</tr>
</tbody>
</table>

$F(1, 102) = 38.43, p < .001$ (main effect for time)

$F(1, 102) = 7.81, p < .001$ (interaction effect for time × condition)

<table>
<thead>
<tr>
<th></th>
<th>Correct solution</th>
<th>Incorrect solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duncker candle task performance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lay-off condition</td>
<td>25 (45%)</td>
<td>31 (55%)</td>
</tr>
<tr>
<td>Control condition</td>
<td>31 (65%)</td>
<td>17 (35%)</td>
</tr>
</tbody>
</table>

$\chi^2(1) = 4.14, p < .05$
Effects on creativity
Table 1 also shows the percentage of participants in each condition who were able to
solve the creative problem-solving Duncker candle task. Across both conditions, 54% of
participants were able to identify the creative solution to the candle task. However, as
anticipated, results indicate that the solution rate to the Duncker candle task was
significantly lower among individuals threatened with lay-offs (45%) than among the
control group participants (65%), \( \chi^2(1) = 4.14, p < .05 \).

Discussion
In this laboratory experiment, we examined the effects of the threat of lay-offs on
individual work performance and creativity. We found that participants who were
threatened with lay-offs increased their performance (after being threatened with lay-
offs) compared with the control group which saw relatively stable levels of performance
from Time I to Time II. Furthermore, the participants threatened with lay-offs were
significantly less likely to be able to solve the creative problem-solving task than their
counterparts in the control group.

These results provide initial evidence that the threat of lay-offs has a significant effect
on creative problem-solving ability. However, because laboratory experiments suffer
from limited ecological validity, we conducted the following field study which examines
the relationship between job insecurity and creativity. While a correlational field study
does not allow one to make causal inferences, it does have the advantage of greater
ecological validity. Therefore, if the results are consistent across the two different
research methodologies, a more compelling case could be made that: (a) job insecurity
affects creativity (and not the other way around) and (b) this relationship not only
occurs in an artificial laboratory setting, but also generalizes to the field.

STUDY 2: THE FIELD STUDY

Method
Participants and procedure
One hundred and forty-four employees from five organizations – a state-funded
elementary school for the disabled, a technical vocational college, a dental clinic, a bank
branch, and a computer chip manufacturer – participated in the second study. Participants
were given the survey in a large manila envelope at work which contained
all the measures described below, as well as a cover letter that addressed the
confidentiality and anonymity of the data (i.e. no names or ID numbers were to be
placed on the surveys). At most sites, participants were allowed to complete the survey
during working hours. When the survey was completed, participants placed it back in
the envelope, sealed the envelope, and in most cases, returned it by mail to the
researcher or the researcher collected the surveys in person. In a few cases, a
representative from the organization administered the survey and returned the
completed surveys to the researcher. The same procedure of sealed envelopes was used
to ensure that individual responses could not be connected to a specific person and that
no one within the organization accessed the surveys’ contents.

Several of the participating organizations were considered particularly relevant for
the current study as researchers have previously identified the educational and medical
professions as two that require high levels of creativity for optimal performance (Burstiner, 1973; Estrada et al., 1994). The elementary school had undergone severe budget cuts in the prior 3 months and had downsized its workforce as a result through early retirements and forced lay-offs. The dental clinic was one in a chain of 30 clinics managed by out-of-state owners. The clinic had not undergone any lay-offs; however, there was a great deal of mistrust of the corporate owners and their intended future plans for this particular clinic. Similarly, the vocational college had not experienced many lay-offs, but was experiencing uncertainty with regards to budget constraints, pending retirements, and student enrolments. The bank branch had not experienced any lay-offs, whereas the chip manufacturer had had several reductions in force.

Fifty employees from the elementary school (60% response rate), 32 employees from the technical vocational college (58% response rate), 25 dental clinic employees (60% response rate), 25 chip manufacturing employees (50% response rate), and 12 employees of the bank branch (80% response rate) participated in the study. The median age category of participants was 35–39 years, 65% were female and 26% were race/ethnic minorities. The average organizational tenure was 6.08 years (SD = 5.86 years) and there were 34 managers (24% of the sample).

It should be noted that we originally collected data from multiple organizations in order to examine differences in employee job insecurity perceptions across organizations. We thought that the mean level of perceived job insecurity for employees may vary from one organization to the next due to differences in the level of threat of lay-off, downsizing history, etc. However, we did not find that the mean level of job insecurity perceptions differed across samples, therefore, the decision was made to combine them into one sample.

**Measures**

**Job security**

Nine items from the Job Security Index (JSI, Probst, 2003) were used to measure perceptions of job insecurity. The JSI assesses an employee's cognitive appraisal of the future of his or her job with respect to the perceived level of stability and continuance of that job. Respondents indicated on a 3-point scale (yes, ?, no) the extent to which the nine adjectives or phrases described the future of their job (e.g. ‘unpredictable’, ‘stable’, ‘unknown’, ‘my job is almost guaranteed’, ‘uncertain’). Responses were scored such that higher numbers reflect more job insecurity. The Cronbach’s α reliability of the scale was .92.

**Creativity**

In order to assess creativity, we used seven items from the remote associates test (RAT) developed by Bowers, Regehr, Balthazard, and Parker (1990), a measure of the ability to see relationships between ideas that are remote from each other. This test has been used in previous studies as indices of creativity (e.g. Bennett, 1975; Gall & Mendelsohn, 1967; Mednick, 1962, 1964; Mednick & Mednick, 1967), creative problem solving (Bowers, 1971), and intuition (Bowers et al., 1990). Items were chosen to span all difficulty levels based on normative data on these items gathered by Shames (1994). Participants were given seven sets of words and asked to identify a word that would fit with each set of words. A sample set was ‘Broken... Clear... Eye’, where the correct answer was ‘Glass’. Although each RAT item was scored a 1 if the respondent indicated the answer
provided in the scoring key (e.g. ‘glass’ in the previous example), participants were informed that there were no ‘correct or incorrect answers’ in order to alleviate any test anxiety and to remove any incentive for co-workers to consult with each other in finding the correct answers. The Cronbach’s $\alpha$ reliability of the scale was .86. Scores could range from 0 to 7, with higher numbers reflecting more creativity.

**Counterproductive work behaviours**
Employee enactment of counterproductive work behaviours was measured using 12 items from the Bennett and Robinson (2000) organizational deviance scale. Respondents indicated on a 5-point scale the frequency with which they engaged in such behaviours as ‘taking property from work without permission’ and ‘putting little effort into your work’. Responses were scored such that higher numbers reflect higher engagement in counterproductive behaviours. The Cronbach’s $\alpha$ for the scale was .79.

**Demographic variables**
We also asked participants to report their gender, age, race, and other demographic information as part of the survey.

**Results**

**Descriptive statistics and variable intercorrelations**
Table 2 presents descriptive statistics for and intercorrelations among the study’s main variables. As can be seen, job insecurity was negatively related to the enactment of counterproductive work behaviours. Age was positively related to creativity scores and negatively related to counterproductivity. Finally, minority status was negatively related to creativity scores, such that racioethnic minorities scored lower than White/non-Hispanics.

**Table 2.** Descriptive statistics and intercorrelations among variables in Study 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>$M$</th>
<th>$SD$</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>5.25</td>
<td>2.27</td>
<td>-.13</td>
<td>.08</td>
<td>.18*</td>
<td>-.20*</td>
<td></td>
</tr>
<tr>
<td>2. Minority status</td>
<td>1.26</td>
<td>.44</td>
<td>-.01</td>
<td>-.18*</td>
<td>-.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Job insecurity</td>
<td>1.97</td>
<td>1.01</td>
<td>-.15</td>
<td>-.21*</td>
<td>.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Creativity</td>
<td>3.26</td>
<td>2.43</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Counterproductivity</td>
<td>1.62</td>
<td>.49</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. *$p < .05$; Minority Status 1 = White/Non-Hispanic; 2 = Racioethnic Minority.

**Regression analyses**
Due to significant correlations with the dependent variables of interest, age and minority status were included as control variables in the regression analyses. In addition, because there were significant differences across organizations in creativity scores and self-reports of counterproductive work behaviours, organizational site was also entered as a control, multivariate $F(8, 272) = 3.11, p < .005$. Hierarchical multiple regression analyses were conducted entering the control variables in block one (i.e. age, minority status, organizational site) and the predictor in block two (i.e. job insecurity). Creativity and counterproductive work behaviours were regressed onto the predictors in separate analyses. The results can be seen in Table 3.
Creativity
As can be seen in Table 3, minority status was significantly related to creativity scores ($\beta = -0.20$, $p < .05$), whereas age and site were not. Entering job insecurity perceptions into the equation accounted for an additional 3% of the variance. Job insecurity was a significant predictor of creativity scores on the remote associates test ($\beta = -0.17$, $p < .05$), suggesting that greater perceptions of job insecurity were related to lower scores on the creativity test.

Counterproductive work behaviours
Organizational site ($\beta = 0.24$, $p < .01$) was a significant predictor of counterproductive work behaviours (CWB). Including job insecurity perceptions into the analysis accounted for an additional 3% of the variance, such that greater perceptions of job insecurity were related to fewer self-reports of engaging in counterproductive work behaviours ($\beta = -0.18$, $p < .05$).

Additional exploratory analysis
In order to further explore the relationship between job insecurity and counterproductive work behaviours, we examined the data scatterplot (see Figure 1) and observed an interesting pattern. Although job insecurity was negatively related to counterproductive behaviours ($r = -.21$), it also appeared that the variance of CWBs changed with differing amounts of job insecurity. Specifically, the correlation between perceptions of job insecurity and the corresponding variance in reports of CWBs was $r = -.29$. This suggests that higher levels of job insecurity may be related to greater suppression of the variability in the expression of these behaviours.

Discussion
In this field study, we examined whether perceptions of job insecurity were predictive of counterproductive work behaviours as well as one’s creative ability to solve a series of remote associate tests. The field study findings comport with the laboratory data by
suggesting that higher levels of job insecurity were related to fewer correct responses on a creative problem-solving test. Like in the laboratory study, participants did not make the connection between the creativity test and the other measures. In fact, it was reported that most participants viewed the creativity test questions as ‘fun’ distractor items.

We also found that individuals who perceived their jobs to be insecure were less likely to engage in counterproductive work behaviours than individuals who reported being relatively more secure in their positions. One intriguing explanation for this finding was suggested by the examination of the relationship between job insecurity and variability of CWBs. When employees perceived their jobs to be secure, the full range of CWBs was exhibited. However, as employees increasingly perceived their jobs to be insecure, the range of CWBs was increasingly restricted to the lower end of the range. This suggests that not only is job insecurity related to fewer CWBs, but it is also related to less variability. This lends support to the notion that perhaps employees engage in fewer CWBs when they perceive their jobs to be insecure in an attempt to retain their job. On the other hand, when employees perceived their jobs to be secure, a wide range of counterproductive behaviours (perhaps a more natural distribution of behaviours) was observed.

**GENERAL DISCUSSION**

The purpose of the current research was to examine empirically the relationship between job insecurity, creativity, and two aspects of work performance: productivity (assessed in the laboratory experiment) and counterproductivity (assessed in the field study). Taken together, the consistent results of the two studies provide support for the hypotheses and insight into the research question.

**Creativity**

The possibility that the threat of losing one’s job may have a negative impact on creative problem-solving abilities is provocative. Our results demonstrate that this is the case, and provide support for previous theorizing on the negative effects of downsizing on creativity (Cameron et al., 1988; Cascio, 1993; Staw, Sandelands, & Dutton, 1981) while
complementing the aforementioned Amabile and Conti (1999) field study findings by addressing the main limitations of their data. Most importantly, at a time when organizations are increasingly citing enhanced innovation and creativity as benefits of downsizing (Cascio, 1993; Heenan, 1989), the current data suggest that the opposite may in fact be true.

There are a number of plausible explanations for why job insecurity has a detrimental effect on creativity. Creativity levels may have decreased due to a drain in working memory resources. In a study of negotiation outcomes, Carnevale and Probst (1998) found that negotiators who were faced with a competitive upcoming negotiation were less able to solve similar creative problem-solving tasks and exhibited less flexible cognitive thinking than negotiators who were led to expect a cooperative negotiation. Similarly, Shanteau and Dino (1993) found a negative relationship between environmental stress (e.g. disrupted sleep patterns, noise, and overheating) and the ability to solve novel creative tasks. However, these same participants were able to complete rote decision-making tasks. They concluded that stress impairs performance on novel tasks, but not routine ones due to the increased cognitive requirements for the novel tasks. In this study, the creativity tasks were unrelated to their normal job duties and were novel tasks to the participants. Thus, perhaps individuals in our study who were preoccupied with the attentional demands of a threatened lay-off (a contentious anxiety-provoking situation) experienced similar cognitive difficulties in completing the (novel) creative problem-solving tasks, but did not experience such cognitive difficulties on the (routine) copy-editing work tasks.

On the other hand, Amabile and Conti (1999) conclude that a negative impact on creativity is due to a decline in the work environment support for creativity. However, in our study, there was no connection between the participant’s creativity scores and job-related outcomes. Therefore, changes in the level of support for creativity in the work environment cannot fully account for the observed results. Rather, it appears that participants truly had more cognitive difficulty finding the creative solution when threatened with a lay-off or preoccupied with their job security. It may be, as theorized by other researchers (e.g. Carnevale & Probst, 1998; Staw et al., 1981), that the threat of lay-offs actually leads to increased cognitive rigidity and a dysfunctional restriction in information processing.

Clearly, there needs to be additional research to determine the exact reason for the decline in creativity among individuals with a high sense of job insecurity. However, while the mechanisms for the observed effect may not be fully understood, the data are clear in that they suggest creativity is negatively impacted by the threat of lay-offs. Therefore, organizations planning to downsize in the hopes that increased flexibility and enhanced innovation will result may need to consider the possibility that the opposite, in fact, may occur.

Productivity and counterproductivity

When it comes to individual work performance, job insecurity appears to have a somewhat beneficial effect. Across both the laboratory and field studies, it was found that job insecurity improved productivity and decreased negative, counterproductive work behaviours. What might explain these findings? Eysenck and Calvo’s (1992) processing efficiency theory would suggest that anxiety (such as is expected to result from high perceptions of job insecurity) can either (a) drain working memory resources leading to a decrease in performance or (b) increase cognitive arousal thereby serving as a
motivational source that results in performance improvement. It may be that performance increases in the short term because of an enhanced level of cognitive arousal. For example, in our laboratory study, participants may have increased their performance in an attempt to retain their job using the only means they knew. On the other hand, how can the performance gains witnessed in this study be reconciled with the fairly definitive studies showing that macro-level organizational performance is not enhanced by downsizing?

The answer may be found in the Probst (2002) experiment reviewed in the Introduction. In that study, the threat of lay-offs did not only result in productivity gains, but also resulted in lower product quality and more violations of organizational safety rules. Thus, one may have individual gains in productivity, whereas macro-level organizational gains are not observed given an increase in worker compensation claims due to increased injuries and a decrease in overall product quality.

**Strengths, limitations and directions for future research**

A main advantage of the current research lies in its use of complementary methods to examine the relationship between the threat of lay-offs, job insecurity, creativity, and performance. The laboratory study allowed for experimental manipulation and random assignment of participants to conditions, and the field study offered ecological validity and realism. Thus, the strength of our conclusions may be bolstered given the consistency of our findings across these two very different methods.

Nonetheless, despite the use of multiple methods, there are certain limitations in our studies that must be acknowledged. First, in the laboratory experiment, the participants knew that this was a simulated organization, and was of course not their real place of employment. In addition, the number and length of the work periods was limited due to time constraints. In short, the ecological validity of the experiment was somewhat low. However, according to Mook (1983), laboratory experiments are useful because they demonstrate the power of a phenomenon by showing it can happen even under artificial laboratory conditions. The fact that we found lay-off effects on creativity and performance despite the fact that this was not a real job and the negative consequences of being ‘laid off’ were not financially devastating only attests to the power of the phenomenon. If effects of this size are observed in a laboratory, one could argue that the effects in the field where real jobs and large dollar amounts are at stake would be much greater. Therefore, while the amounts of cash incentives were relatively small and the work periods were conducted within an hour, we would argue that these results only attest to the impact that the threat of job loss has, even under the most artificial of conditions.

In the field study, we were limited by the use of self-report perceptions of job insecurity because we could not manipulate the actual threat of lay-offs. Common method variance may then account for a certain amount of the variability observed between the self-report measures of job insecurity and CWB. However, common method variance is unlikely between the job insecurity measure and creativity, since creativity was measured with an actual test of creative problem-solving ability. In fact, we believe that actually measuring creative problem-solving ability, rather than relying on self or supervisor assessments of creativity, is a strength of the study. Furthermore, there may be unmeasured variables that could potentially account for the observed effects (in terms of providing additional explanations for our results). Hence, we recommend that future research on this topic consider the inclusion of additional variables so that they may be examined and potentially controlled for.
A final criticism that may be levelled against the field study concerns its use of a cognitive, rather than an affective, measure of job insecurity. One might argue that not all people react to perceptions of job insecurity in the same fashion, and therefore, an affective measure may have been more appropriate. However, research has shown that the correlation between cognitive and affective measures of job insecurity is extremely high (r = 0.71; Probst, 2003) and indeed, in this study, where we had both cognitive and affective measures for a subset of the field participants (N = 75), the correlation was 0.87. Nonetheless, in order to better determine the actual amount of conceptual similarity between the threat of lay-offs in the laboratory experiment and the perception of job insecurity in the field study, future research should include both cognitive and affective measures to assess whether the same phenomenon is being measured in both settings.

Conclusion
There are many reasons that organizations may conduct lay-offs, ranging from simple cost-cutting measures to more focused strategic efforts. Regardless of the rationale for conducting lay-offs and other actions that may increase job insecurity, it should be noted that such a situation undoubtedly has an impact on creativity, productivity, and counterproductivity. The very creativity and flexibility that is hoped for as a goal of downsizing may not materialize. While productivity may increase and counter-productivity may decrease in job insecurity conditions, these effects may be time limited such that over time these effects may disappear. While the mechanisms for these observed effects may not be fully understood, the data are clear in that they suggest individuals are impacted by the threat of lay-offs.

References


Received 31 August 2005; revised version received 25 September 2006