KRISTINA M. DURANTE and JULIANO LARAN*

In examining how stress influences consumer saving and spending, the authors propose that consumers who experience a stressful situation allocate their resources strategically to gain control of their environment. A series of studies shows that this strategic allocation of resources occurs in two ways. Consumers experiencing stress may show increased saving behavior, which assures them that monetary resources will be available when needed. Alternatively, consumers experiencing stress may show increased spending behavior, directed specifically toward products that the consumer perceives to be necessities and that allow for control in an otherwise uncontrollable environment. This conceptualization and the related findings can inform assessments of when stress will lead to beneficial or impulsive consumer behaviors.

Keywords: stress, control, saving, spending

The Effect of Stress on Consumer Saving and Spending

Imagine how it feels to find that your work inbox is full of tasks that deserve immediate attention; give a speech to a room full of people; or take a test that will determine the fate of your entire professional career. All of these events can result in stress, which occurs when the demands of an event challenge a person's ability to cope with it (Lazarus 1966). The constant presence of stress in people's lives makes it surprising that only limited empirical research has examined the impact of feeling stressed on consumer behavior. In this research, we examine the influence of stress on how consumers use their personal resources, especially how they save or spend their money.

When consumers are stressed, a possible response is to avoid further action. This response can be useful in some situations, because inaction can prevent further harm caused by the stressor, which can help attenuate or even eliminate stress. Research has shown that both human and nonhuman organisms can withdraw and become immobile or passive in response to stress (De Boer et al. 1990; Henry 1992; Hobfoll 1989; Landau et al. 2011). The inaction response even may involve areas unrelated to the source of that stress, such as when a stressful event leads to a decrease in consumption (Popper et al. 1989; Stone and Brownell 1994; Torres and Nowson 2007). Other findings instead suggest that stress may lead to action (Duhachek 2005; Duhachek and Kelting 2009). As a consequence of the stress of everyday life, consumers sometimes show impulsive spending behaviors (e.g., Burroughs and Rindfleisch 2002; Faber and O'Guinn 1988; O'Guinn and Faber 1989), including the consumption of products such as alcohol and drugs (Heatherton and Baumeister 1991). The implication is that different perspectives offer divergent findings on whether stress leads to less or more consumption.

These divergent findings in turn can inform the development of a different view of the consequences of stress, which proposes that stress influences certain behaviors negatively but other behaviors positively. One characteristic of stress is that it leads people to perceive that they lack control over their environment (Botti and McGill 2011; Cohen 1988). For this reason, we propose that consumers may use their monetary resources strategically, to restore their sense of control in stressful situations. One way to do so is to save money. Saving monetary resources provides a sense of control because it guarantees that those resources will be available when needed. Another way to restore control is to spend money, but in a strategic way. Consumers who are under stress may be more willing to spend money on necessities (vs. nonnecessities), which provides a sense of control because it makes products that are useful for

*Kristina M. Durante is Associate Professor of Marketing, Rutgers Business School, Rutgers University (e-mail: kdurante@business.rutgers.edu). Juliano Laran is Professor of Marketing, University of Miami (e-mail: laran@miami.edu). The authors thank Chris Janiszewski for his many helpful comments on an initial draft of this article. James Bettman served as associate editor for this article.

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daily survival readily available. Congruent with this idea, we show that certain types of stress lead to spending on products that are typically not viewed as necessities, as long as the source of stress changes people's perceptions of how necessary those products are.

We investigate these predictions in seven experiments. A pilot experiment shows that stress leads consumers to save their money instead of using it to acquire nonnecessities. Experiment 1 reveals that stress makes consumers more willing to save money, but this willingness disappears if, after experiencing a stressful event, consumers believe that they have control over their lives (i.e., control is restored). Experiment 2 measures, rather than manipulates, stress to show that stress increases the importance assigned to acquiring necessities unless consumers perceive that they have control over their lives. Experiment 3 indicates that consumers sometimes face both high stress and high control over the outcomes of a situation, in which case stress does not lead to increased saving. Experiment 4 shows that stress increases willingness to buy products framed as necessities and decreases willingness to buy products framed as nonnecessities. Finally, Experiments 5 and 6 demonstrate that stress can sometimes lead to increased spending, such as when stress results from an event in which typical nonnecessities become necessities (Experiment 5) or consumers are led to believe that they cannot change the control they have over their environment (Experiment 6).

THE BEHAVIORAL CONSEQUENCES OF STRESS

Stress is a physiological and psychological reaction to the demands of an event that challenges a person's ability to cope (Lazarus 1966). Many events can cause stress in day-to-day lives, such as the need to deliver a convincing presentation at work or getting caught in traffic on the way to an important meeting (Wheaton 1990). Reactions are often psychological, such as those producing anxiety and general negative affect, but they are also physiological. Exposure to a stressor triggers an increase in the stress hormone cortisol, which historically has helped humans react quickly and effectively to a threat. In the modern world, the hassles of daily life can lead to elevated levels of cortisol and influence psychological functioning (Dickerson and Kemeny 2004; Sapolsky 2004).

These reactions also inform which psychological processes drive people's responses to stress. Research on human and nonhuman animals has implicated cortisol in social inhibition motivation. Studies have found that elevated cortisol during stress is associated with freezing behaviors in rats (Núñez et al. 1997) and primates (Kalin et al. 1998), which is an extreme form of behavioral inhibition. Additional studies in humans have demonstrated that elevated cortisol leads to social avoidance, defensiveness, and introversion (Brown et al. 1997; Kagan, Reznick, and Snidman 1987; Mehta and Josephs 2011; Smider et al. 2002).

Related to the findings associating stress, cortisol production, and inhibition, research has found that cortisol is positively correlated with hoarding behaviors (Landau et al. 2011). Hoarding is defined as the collection of and inability to discard a large number of possessions (Frost and Hartl 1996). From an evolutionary perspective, the tendency to hoard possessions in response to a stressful event is adaptive, because it can help ensure survival in times of uncertainty (Grisham and Barlow 2005). Behavioral responses to stress in the modern environment—which is replete with conveniences such as big box stores and restaurants—do not necessarily affect people's ability to stay alive rather than face death. However, performing strategic behaviors in response to stress may help people function in daily life. We discuss this possibility next.

Stress and Consumer Saving

People suffer from stress when they find it difficult to cope with the demands of an event. This experience is expected, because many stressful situations are caused by external factors that are out of people's control, which may trigger perceptions that they cannot control the current environment and the outcomes of their actions (Cutright 2012). A loss of control has important consequences for behavior (Cutright, Bettman, and Fitzsimons 2013), and a great portion of the behavioral consequences of a loss of control involves compensatory behavior to restore control. One such behavior is the endorsement of religious entities, which helps people feel that control is provided by a preestablished, divine plan (Kay et al. 2008), or governments, which helps people feel that control is provided by governmental authorities (Friesen et al. 2014; Kay and Eibach 2013). Another type of compensatory behavior involves adopting beliefs that create an illusion of predictability in the world, such as superstitions that add meaning to otherwise random phenomena (Burger and Hemans 1988; Pittman and Pittman 1980; Whitson and Galinsky 2008). Therefore, if stressful events lead to a perception that people do not currently have control over their environment, consumers may respond by performing behaviors focused on restoring control.

Research on stress and hoarding has supported the idea that consumers aim to restore control in response to a stressful event. Many hoarding behaviors are triggered by extreme stressors, such as the loss of a spouse, eviction, or divorce (Cromer, Schmidt, and Murphy 2007; Landau et al. 2011). When a person's sense of control is compromised, (s)he may find comfort and increased control through hoarding personal possessions (Hartl et al. 2005), whether these are product items acquired in the past or monetary possessions. Hoarding behavior is sometimes reflected in saving money to an unhealthy extreme (Canale and Klontz 2013; Klontz et al. 2012; Klontz and Klontz 2009). In this sense, money is a possession that can be hoarded in a bank, as a possession without physical form, or hidden around the home, whereby hoarders stuff money under mattresses and in other hiding spots (Canale and Klontz 2013).

These findings indicate that stress has implications for how consumers save and spend their monetary resources. Because stress often results in wanting to keep things, people who are under stress should show increased preference for saving their money over spending it on consumer products. Saving helps consumers reduce the unpredictability associated with an uncontrollable environment. Keeping money implies that the consumer can use it when necessary, so it affords control, which would not be possible if this resource were not available. Thus,

H_1: Stress leads to an increased willingness to save money.

An important question is whether stress always leads to increased saving. With our prediction that a response to stress aims at restoring control, increased saving may depend on how much control consumers sense over the outcomes of their actions when they are under stress. Low control is the more common consequence of stress, but the psychological response to stress associated with low control is distinct from the psychological response associated with a greater degree of control (Badia, Harsh, and Abbott 1979; Pervin 1963). For example, when the threat of a stressor and the expected outcome is unknown (vs. known), people experience more anxiety, helplessness, and a greater cortisol response (Averill, O'Brien, and DeWitt 1977; Mason et al. 1976; Monat, Averill, and Lazarus 1972; Voigt et al. 1990; Zakowski 1995). The experience of stress and feelings of control are two related but distinct constructs. As a result, we predict that consumers respond to stress by saving money when they have low control over the outcomes of their actions. When they have high control over the outcomes, even if the event is highly stressful, they should not exhibit an increased willingness to save, because there is no need to restore control.

Stress and Consumer Spending

Stress does not necessarily stop people from engaging in the routines of their daily lives, during which consumers make decisions about what types of products they will buy (i.e., what to spend money on). We propose that stress influences the specific type of spending in which consumers are willing to engage. If the function of behavior in response to stress is to restore control over an otherwise uncontrollable environment (Grisham and Barlow 2005; Leckman and Mayes 1998), then people under stress may be strategic about how they spend their money: they should use their monetary resources on products that can help them restore control.

Many products are considered necessities, while others are nonnecessities. Necessities are products that are generally considered more useful for people's survival in daily life, such as a stove, water, transportation, and housing in which to live. Nonnecessities are generally not as useful for daily survival, such as an entertainment center, carbonated beverages, cologne, or a designer bag. By the logic that suggests that saving money allows for control, necessities should have an advantage over nonnecessities when consumers are under stress. The lack of perceived control over the outcomes of actions makes the ability to survive on a daily basis a more important concern, compared with when people believe that they can control these outcomes (e.g., "If I do X, I will have result Y"). If some products seem necessary for daily life, the importance of acquiring them should increase under stressful situations. That is, people acquire necessities to make the environment more predictable, which is a commonly used strategy to restore a sense of control (Kay and Eibach 2013; Whitson and Galinsky 2008), as we noted previously. Therefore,

H_2: Stress leads to an increased willingness to spend on necessities.

This hypothesis is consistent with the idea that consumers under financial constraints (which can cause stress) are more likely to buy necessities (Cole, Thompson, and Tufano 2008). Yet another important question to ask is whether stress always leads to an increased willingness to spend on necessities. If stressed consumers increase spending on necessities because these products are more useful for overcoming the challenges of a stressful event, the nature of the stressor may shift which products are considered necessities. The nature of a stressor can vary (Lazarus 1966; Sinha 2001, 2008), and the most common stressors for adults are events related to work, interpersonal relationships, and finances (Kanner et al. 1981; Keyes, Hatzenbuehler, and Hasin 2011). We propose that products that are typically considered nonnecessities can be more useful in some stressful situations. For example, stress can be the consequence of a life change associated with starting a new job, or it can be related to a poor performance review. When faced with the possibility of spending on typical nonnecessities, a strategic response to stress may be to increase, rather than decrease, spending on these products (e.g., gifts for coworkers, nice clothes that improve reputation, cosmetics). This elasticity in how consumers view necessities under stress is congruent with Cutright, Bettman, and Fitzsimons's (2013) findings that consumers' sense of control generates flexibility in how they view broad versus narrow brand extensions.

In summary, we predict that stress leads to a loss of control and triggers strategies designed to restore control. As a result, stress will increase consumers' willingness to save money when they have the option of saving versus spending it on products. In addition, the effect of stress on consumer spending should be moderated by whether consumers (1) perceive a low or high level of control, (2) experience stress that renders certain products necessities when they would otherwise be nonnecessities, or (3) believe that efforts to restore control are likely to fail. We test the hypotheses in seven experiments.

PILOT EXPERIMENT: STRESS AND SAVING MONEY

A pilot investigation asked participants to write for two minutes either about all the things that stress them out in life right now (high stress condition) or about their typical day (neutral stress condition; Experiment 5 provides the detailed procedure for these conditions). This experiment also contained a condition in which participants wrote about all the things that make them sad in life right now (negative affect condition), added to differentiate the impact of stress from that of merely experiencing negative affect. A sample of participants from Amazon Mechanical Turk (MTurk; n = 162), after receiving thanks for their participation in the writing study, were told that they had the opportunity to receive a $.50 bonus, as long as they agreed to spend a portion of the additional payment on fun, entertainment-oriented products that we would present to them later. They were asked to indicate how much of the money they wanted to save versus spend on these products. Participants in the high stress condition indicated that they wanted to save more money (M = 33.07, SD = 11.11) than did those in the neutral stress (M = 26.98, SD = 10.49; $F(1, 159) = 8.59$, $p < .01$, d = .56) or the negative affect (M = 27.91, SD = 12.49; $F(1, 159) = 5.16$, $p < .05$, d = .44) conditions. The neutral stress and negative affect conditions did not differ from each other ($F < 1$). These results provide preliminary evidence for

the influence of stress on consumer saving using real behavior. Yet they do not offer evidence of the process driving the effect. The following series of six experiments provides additional evidence for the effect of stress and examines the process driving it.

EXPERIMENT 1: THE ROLE OF PERCEIVED CONTROL

Experiment 1 tests the relation between stress and saving, as well as the role played by perceptions of control. After participants experienced a stressful situation (believing that they were going to give a speech), they indicated their willingness to save money. Some participants, however, restored their sense of control after the stress manipulation by writing about something that happened to them because they had control over it (Cutright and Samper 2014). Restoring control in an unrelated task should attenuate the effect of stress on saving. Consistent with H_1, we predict that when control has not been restored, participants want to save more in high (vs. low) stress conditions. After control has been restored, there is no longer a need to behave strategically, which should decrease the desire to save money among participants in the high stress condition.

Method

Participants and design. Two hundred thirty undergraduate students (79 men) participated in return for course credit. Participants' ages ranged from 18 to 30 years (M = 20.41 years, SD = 1.21). The final sample excludes 43 participants who indicated that English was a language they did not understand well. This number of exclusions was surprisingly high, and including these participants did not change the results. However, this exclusion criterion is necessary, because it reflects the nature of our tasks. The manipulations involve writing and require precise comprehension of detailed instructions designed to induce stress. Therefore, only participants who indicated that English was a language they understood well remained in the data set for our final analyses. The design was a 2 (stress: neutral vs. high) × 2 (control: neutral vs. high) between-subjects design.

Procedure. Participants were told that the study examined how people process information and how this influences the ability to write arguments and summarize events. The stress manipulation is based on recommendations by Dickerson and Kemeny (2004), who demonstrate that having to give a speech out loud is the most effective way to manipulate stress and raise cortisol levels. Participants in the high stress condition were told that they would be preparing a speech to be delivered in front of everyone else in the lab, and 50% of the participants would be selected to give the speech. When they clicked on an arrow to proceed, they were told that the topic of the speech was "Property Crime Is a Serious Problem." The instructions asked them to begin writing a one-minute speech over the next ten minutes and explained that, later on, the experimenter might tap them on the shoulder to give the speech (for the complete instructions, see Appendix A). Participants in the neutral condition read a story about the process of doing laundry and were asked to write a summary of the story. All participants were thanked and asked to click on an arrow to move on to a different study.

In the second study, approximately half of the participants were randomly assigned to one of the two control conditions. Using a manipulation that has been shown to make people feel as if they are in control (Cutright and Samper 2014), participants in the high control condition read the following instructions: "Please try and think of something that happened to you in the past few months that you had control over. In other words, something that happened because you made it happen." They were then asked to take a few minutes to write about that situation. Participants in the neutral control condition went directly to the dependent measure.

After thanking them for their participation in the second study, we told participants we were interested in understanding their shopping decisions. Participants were asked to imagine that they had $300 in their wallet and to use a slide rule to indicate their response to "How much of the money would you keep for yourself (hang on to) instead of letting go of the money to buy things?" The portion of the $300 that participants indicated they would keep served as the dependent measure. Finally, participants learned the real purpose of the sequence of studies they had performed, were thanked for their participation, and were dismissed.

Pretest. A group of participants (n = 59) from the same population as that of the main study was exposed to either the stress manipulation or a neutral condition. We assessed their stress levels using a measure from previous research (Lovibond and Lovibond 1995; Selye 1956, 1974). On nine-point scales (1 = "Definitely disagree," and 9 = "Definitely agree"), participants indicated how much the following statements described how they were feeling at the moment: (1) "I find it hard to wind down," (2) "I find it difficult to relax," (3) "I have a lot of nervous energy," (4) "I am in a state of nervous tension," (5) "I find myself getting upset," (6) "I find myself getting agitated," (7) "I find that I am very irritable," and (8) "I feel that I am rather touchy." The items were collapsed into a composite measure of current stress ($\alpha = .95$), which showed that the stress manipulation elicited more stress than the neutral condition ($M_{neutral} = 3.21$, SD = 2.03; $M_{high\ stress} = 4.73$, SD = 2.27; $F(1, 57) = 7.31$, $p < .01$, d = .71).

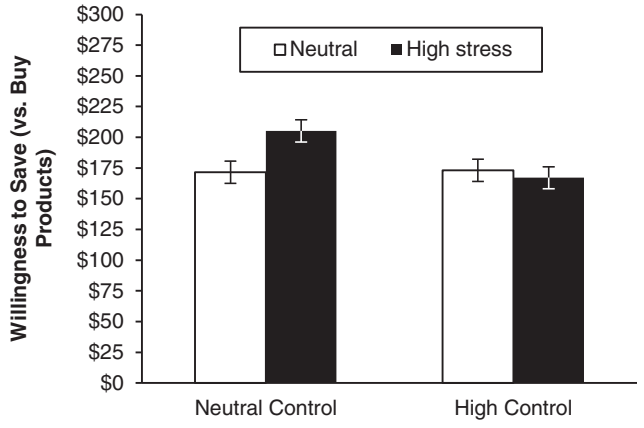
Results

An analysis of variance (ANOVA) revealed an interaction between stress and control ($F(1, 226) = 4.58$, $p = .03$; see Figure 1). As we predicted in H_1, in the neutral control condition, participants in the neutral stress condition (M = \$171.51, SD = \$63.73) were willing to save less money than those in the high stress condition (M = \$205.21, SD = \$59.77; $F(1, 226) = 6.58$, $p = .01$, d = .55). In the high control condition, participants in the neutral stress condition (M = \$173.05, SD = \$78.31) were willing to save as much as those in the high stress condition (M = \$167.07, SD = \$76.62; $F < 1$). The interaction was driven by the high stress condition, in that those in the neutral control condition were willing to save more money than those in the high control condition ($F(1, 226) = 8.24$, $p < .01$, d = .56).

Discussion

Experiment 1 provides support for the influence of stress on consumers' willingness to save money. Participants were

Figure 1
WILLINGNESS TO SAVE AS A FUNCTION OF STRESS AND RESTORED CONTROL (EXPERIMENT 1)



willing to save a higher proportion of money when they were in a stressful situation compared with when they were not. When participants had an opportunity to write about something they had control over, their willingness to save decreased, indicating that people no longer felt the need to restore control over their environment. These results provide evidence that stress increases willingness to save money and that this behavior may be a strategy to restore control.

However, restoring control might have made participants feel better, and any manipulation that made them feel better could have led to a decreased willingness to save. To examine this alternative, we ran a posttest (n = 89) in which half of the participants underwent the stress and control-restoring manipulation, while the other half went through the stress manipulation and then wrote about something positive that happened to them. Writing about something positive should not restore control, so we predict that this condition will reveal higher intentions to save compared with when control has been restored. In support of our theory, participants in the stress–high control condition were willing to save less (M = $142.22, SD = $64.94) than those in the stress–positive condition (M = $171.14, SD = $69.84; $F(1, 87) = 4.09$, $p = .04$, d = .43). We also measured perceived control (1 = "not at all," and 7 = "a lot") and found that the stress–high control condition led to higher control perceptions (M = 4.89, SD = 1.58) than the stress–positive condition (M = 4.23, SD = 1.43; $F(1, 87) = 4.28$, $p = .04$, d = .44). These results indicate that high control decreases saving because it decreases the need to restore control after a stressful event, rather than because it makes people feel better.

EXPERIMENT 2: MEASURED STRESS AND PERCEIVED CONTROL

With Experiment 2, we had three goals. First, we aimed to examine the influence of stress on willingness to spend money on specific types of products (H_2). Second, we wanted to examine the influence of stress in a different way. We used a common stress manipulation in Experiment 1, but it is important to show that the differences we found were not specific to the manipulation. In Experiment 2, we therefore measured how much stress the participants experienced at the moment of the experiment, as well as their perceptions of control. Third, we wanted to show the differences between stress and control. Stress represents difficulty in coping with the demands of an event; the perception that people cannot control the outcomes of their actions is a consequence of this difficulty. Because these are different concepts, some people may experience high stress but still perceive that they have control over the outcomes of their actions. In this case, merely having low control should not influence willingness to spend. Only those who are under high stress, in addition to perceiving that they have low control, should show differences compared with those who believe they have high control. Consistent with H_2, we predict that at high levels of current stress, people who are low on perceived control have an increased willingness to acquire necessities compared with those who are high on perceived control. Being high on perceived control, even in the presence of high stress, eliminates the need to acquire necessities. At low levels of stress, we predict no difference in willingness to acquire necessities between those who are high or low in perceived control.

Method

Participants. Seventy participants (30 men) were recruited from MTurk and paid a small monetary compensation of $.90. Participants' ages ranged from 19 to 67 years (M = 36.09 years, SD = 10.90).

Procedure. The experiment started with our dependent measure, which asked participants, "Right now, how important do you feel it is to acquire necessities (i.e., things you need on a day-to-day basis)?" (1 = "not at all important," and 7 = "very important"). Participants then were thanked and told that they would begin the second part of the survey, which examined individual differences in life experiences.

We assessed stress using the eight-item measure from the Experiment 1 pretest (Lovibond and Lovibond 1995; Selye 1956, 1974). We collapsed the items into a composite measure of current stress ($\alpha = .95$). To assess current perceived control (Cutright, Bettman, and Fitzsimons 2013), we asked participants to indicate, on nine-point scales (1 = "definitely disagree," and 9 = "definitely agree"), how much they agreed with the following statements: (1) "Right now, things are out of my control," (2) "Right now, I feel like I am not in charge of my own fate," and (3) "Right now, I feel like I have no control over things." The reverse-scored items collapsed into a composite measure of current perceived control ($\alpha = .94$). After completing these measures, participants responded to demographic questions and were thanked for their participation.

Results

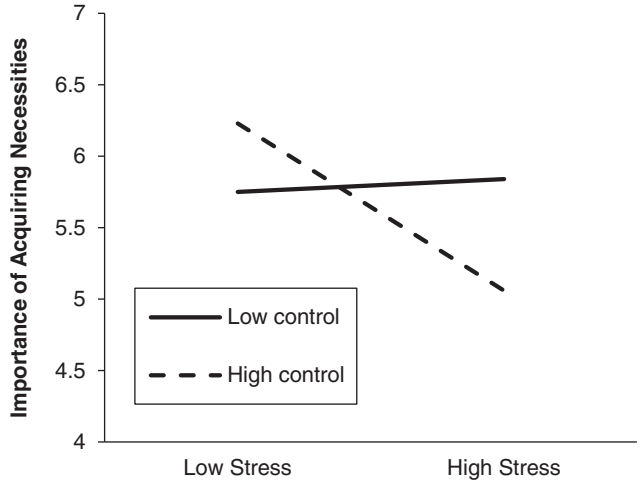
We first tested for multicollinearity, because of the expected correlation between stress and perceived control ($r = -.67$; $p < .01$). The variance inflation factors were less than 1.9, which is far below the standard threshold of 10. This result suggests no multicollinearity concerns. We regressed the importance of acquiring necessities on current

stress, perceived control, and their interaction (Aiken and West 1991; Irwin and McClelland 2001). This analysis revealed an interaction between current stress and perceived control ($\beta = -.31$; $p = .04$; see Figure 2). To test our predictions, we used Hayes's (2013, Model 1) PROCESS procedure to examine the effect of perceived control at one standard deviation below and above the mean of current stress. At low levels of stress (1 standard deviation below the mean), there was no difference in the importance of acquiring necessities between those who were low or high in perceived control ($M_{low\ control} = 5.75$ vs. $M_{high\ control} = 6.23$; $t(69) = .89$; $p = .37$). At high levels of stress (1 standard deviation above the mean), participants instead indicated that acquiring necessities was marginally more important when they perceived that they currently had low control than when they perceived that they currently had high control ($M_{low\ control} = 5.84$ vs. $M_{high\ control} = 5.06$; $t(69) = -1.72$; $p = .09$). The transition points of the Johnson–Neyman significance regions indicate that a stress level score greater than or equal to 6.35 is the point of transition for the effect of control on the importance of acquiring necessities ($t(69) = -2.00$; $p = .05$).

Discussion

Using an alternative method to assess stress and control, Experiment 2 demonstrates the influence of stress on willingness to spend on necessities. It also demonstrates that stress is not just a state of low control, because low control had an influence on willingness to spend only when participants experienced stress. When participants had high current levels of stress, at least relative to the average level of stress in our sample, they indicated that acquiring necessities was more important when they perceived that they did not (vs. did) have control over their environment. Therefore, the loss of control associated with being under stress appears to be an important driver of the influence of stress on the willingness to acquire necessities. When people perceive that they have control, even under high levels of stress, there is no need to restore control, and consumers no longer have increased preferences for acquiring items that can be useful in an uncontrollable environment.

Figure 2
IMPORTANCE OF ACQUIRING NECESSITIES AS A FUNCTION OF MEASURED STRESS AND PERCEIVED CONTROL (EXPERIMENT 2)



Notes: Importance of acquiring necessities measured on a seven-point scale (1 = "not at all important," and 7 = "very important").

EXPERIMENT 3: THE IMPACT OF STRESS UNDER HIGH CONTROL

Experiment 2 provides evidence that stress and control are different constructs by measuring current levels. In Experiment 3, we wanted to provide additional evidence by manipulating stress but allowing people to have control (or not) over the outcome of the stressful situation. This scenario kept stress high but also kept control high. When people are under stress and do not have control (high stress–low control), we expect to replicate the results from the previous studies, because people should be more likely to save money compared with those in a neutral condition. When people are under stress and have control over the outcome of the stressful situation (high stress–high control), we expect that they no longer save more than those in the neutral condition and that their saving is lower than the level in a high stress–low control condition.

Method

Participants and design. Two hundred ten undergraduate participants (111 men) were recruited in return for course credit. Participants' ages ranged from 18 to 49 years ($M = 19.46$ years, $SD = 2.67$). The design was a 2 (stress: neutral vs. high) × 2 (control: low vs. high) between-subjects design.

Procedure. The first task was the stress manipulation, which was similar to that used in Experiment 1, but with two important modifications. First, the theme of the speech that participants were asked to prepare was "Government and School Tuition" ("Please prepare a 1-minute speech that argues that the cost of tuition in higher education should be determined by the state where the university is located, both for public and for private institutions"). Second, to make the conditions more comparable, participants in the neutral stress condition were asked to prepare the same speech, but they were not told that they might be selected to give the speech. Before preparing their arguments, participants were told that once they were done, there would be a filler task designed to clear their minds for the next study. We provided additional instructions to manipulate control. In the low control condition, we explained, "You are performing this task because we may give one extra credit to people participating in this study. Whether you receive an extra credit will depend on the average performance on this task of all participants of this study." In the high control condition, we told them that getting an extra credit would "depend on your performance on this task." Therefore, giving a speech was a stressful situation, but participants had control (or not) over the outcome of the situation.

The second task, called "Shopping Decisions," provided the following instructions for all participants: "Imagine that you are going shopping today. You are wondering how

much money you should save or spend. Indicate below how much money out of $250 you would want to save (versus spend on products) when shopping." Underneath these instructions, a slider allowed them to indicate any amount from $0 to $250. Next, participants responded to questions checking for the efficacy of the control manipulation ("When performing the initial task, in which you prepared an argument, to what extent did you think you had control over the situation?" 1 = "did not have any control," and 7 = "had a lot of control") and stress ("How stressed out were you?" 1 = "not at all," and 7 = "a lot"), which enabled us to determine whether the control manipulation interfered with stress levels.

Pretest. We conducted a pretest (n = 78) using the neutral and high stress conditions but without the control manipulation, and we measured their influence on a series of variables. In addition to the stress scale we used in the pretest for Experiment 1 (though in Experiment 3, we used seven-point scales), we measured stress directly ("How stressed out are you right now?"), as well as task relevance ("How relevant was the initial task to you?") and mental energy ("How mentally tired are you right now?") (1 = "not at all," and 7 = "a lot"). The manipulation had an impact on stress, according to both the stress scale ($M_{neutral}$ = 3.36, SD = 1.18; $M_{high\ stress}$ = 4.15, SD = 1.36; F(1, 76) = 7.76, $p < .01$, d = .62) and the direct measure ($M_{neutral}$ = 3.29, SD = 1.62; $M_{high\ stress}$ = 4.30, SD = 1.91; F(1, 76) = 6.32, $p = .01$, d = .57). It did not have an effect on task relevance or mental energy (both ps > .23). These results indicate that the manipulation influenced how stressed participants were, not how relevant the task was or how mentally energized participants felt.

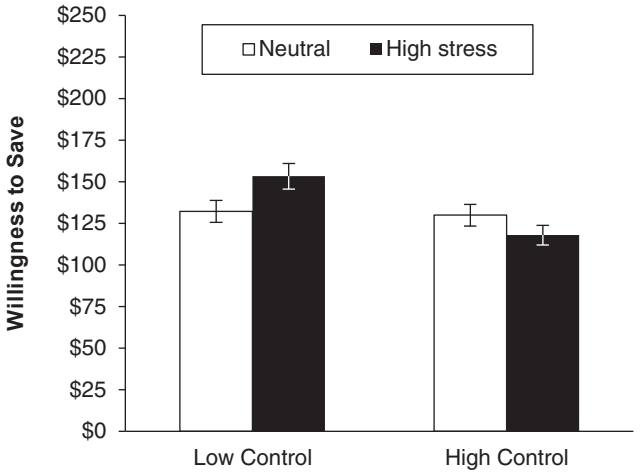
Results

Perceptions of control and stress. An ANOVA on perceived control revealed that participants in the low control condition indicated lower control (M = 4.02, SD = 1.88) than did those in the high control condition (M = 4.68, SD = 1.71; F(1, 206) = 7.13, $p < .01$, d = .37). We also found a main effect of the stress condition, such that participants in the neutral condition indicated higher control (M = 4.59, SD = 1.79) than did those in the high stress condition (M = 4.11, SD = 1.83; F(1, 206) = 3.85, $p = .05$, d = .27). The manipulation of control thus was efficacious in increasing perceptions of control, and the manipulation of stress, as we expected, also had an impact on perceptions of control. In the high stress condition, perceptions of control were higher in the high control (M = 4.53, SD = 1.84) than in the low control (M = 3.68, SD = 1.74; F(1, 206) = 5.52, $p = .02$, d = .47) condition.

An ANOVA on stress revealed only a main effect of the stress condition. Participants in the neutral condition indicated being under less stress (M = 2.82, SD = 1.69) than did those in the high stress condition (M = 3.73, SD = 1.92; F(1, 206) = 13.35, $p < .01$, d = .50). Altogether, these results indicate that participants in the high stress condition were under a higher level of stress, even when they perceived having high control over the situation.

Willingness to save. An ANOVA revealed an interaction between stress and control (F(1, 206) = 4.86, $p = .03$; see Figure 3). With low control, participants in the neutral stress condition (M = $132.13, SD = $61.02) were willing to save less than those in the high stress condition (M = $153.30, SD = $53.60; F(1, 206) = 4.00, $p = .05$, d = .37). With high control, however, participants in the neutral stress condition (M = $129.95, SD = $53.41) were willing to save as much as those in the high stress condition (M = $117.94, SD = $47.55; F(1, 206) = 1.26, $p > .26$, d = .28). As we expected, there was a difference in the high stress condition. Participants who were under high stress were willing to save less in the high control compared with the low control condition (F(1, 206) = 10.24, $p < .01$, d = .70). Also of note, the effect in the high stress condition led to a main effect of control, such that participants in the high control condition were willing to save less than those in the low control condition (F(1, 206) = 6.21, $p = .01$, d = .32).

Figure 3
WILLINGNESS TO SAVE AS A FUNCTION OF STRESS AND CONTROL OVER OUTCOMES (EXPERIMENT 3)



Discussion

Experiment 3 provides additional evidence that the effect of stress on consumer saving is driven by the loss of control associated with stress, but stress and control are different constructs. When people have control over the outcome of a stressful situation (i.e., the outcome depends on their performance), they are still under stress, but they have no need to restore control. In this case, intentions to save decrease. In Experiment 4, we provide evidence of the influence of stress on willingness to spend on necessities or nonnecessities.

EXPERIMENT 4: THE MEDIATING ROLE OF RESTORING CONTROL

In Experiment 4, we provide evidence that participants perceive acquiring necessities as a way to restore control and that this perception drives the effect of stress on spending. After the stress manipulation, we asked some participants to indicate how much they were willing to spend on necessities, while others indicated how much they were willing to spend on nonnecessities. We also measured the extent to which their spending behavior was associated with a willingness to restore control. Consistent with H_2, we

expect that stress leads participants to spend more on necessities but not on nonnecessities. In addition, participants under stress should indicate a higher willingness to restore control, which may mediate the relation between stress and spending on necessities.

Method

Participants and design. Two hundred twenty-three undergraduate participants (98 men) were recruited in return for course credit. Participants' ages ranged from 18 to 27 years (M = 20.09 years, SD = 1.54). The design was a 2 (stress: neutral vs. high) × 2 (product type: necessities vs. nonnecessities) between-subjects design.

Procedure. The first task was the stress manipulation, identical to that used in Experiment 3, except that we did not include the control manipulation that indicated participants could receive extra credit. The second task, called "Shopping Decisions," provided the following instructions in the necessities (nonnecessities) condition:

> Imagine that you are going shopping today for products that are useful in your daily life, like household goods, clothes for school/work, and other necessities (products that you do not necessarily use in your daily life, like entertainment goods, clothes for going out, and other treats). You are wondering how much money you should spend on these products. Indicate below how much money you would be willing to spend on these products when shopping.

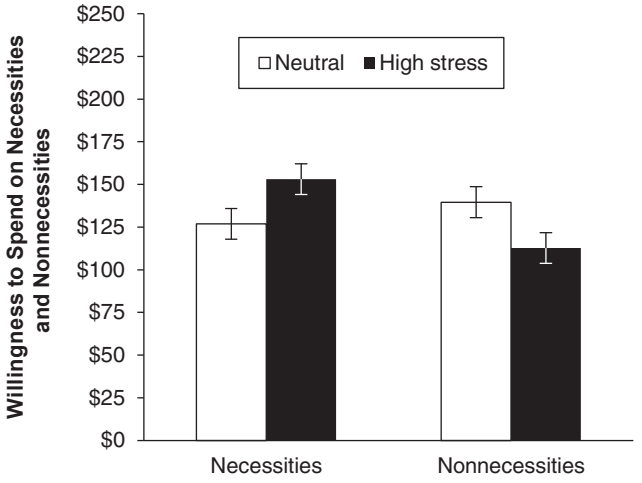
Underneath these instructions, there was a slider that participants could use to indicate an amount, varying from $0 to $250.

After assigning their responses, participants responded to several measures (1 = "not at all," and 7 = "a lot") designed to investigate the process driving their spending decisions. We asked "To which extent was your response to the spending question driven by..." our proposed mediator ("...what would allow you to have more control over your life right now?"), whether the stress manipulation made participants not want to think about shopping ("...what felt easier to do in terms of the thinking you would need to put into it?"), whether the stress manipulation led to risk aversion ("...what was less risky?"), and whether the stress manipulation led to willingness to decrease uncertainty ("...a need to decrease uncertainty in your life right now?"). We expected that the question about doing something that would allow them to have control would mediate the impact of stress on spending on necessities, but the other questions would not.

Results

Willingness to spend. An ANOVA revealed an interaction between stress and product type ($F(1, 219) = 8.52$, $p < .01$; see Figure 4). When we asked about necessities, participants in the high stress condition (M = $153.04, SD = $62.56) were willing to spend more than those in the neutral stress condition (M = $126.83, SD = $59.74; $F(1, 219) = 4.28$, $p = .04$, d = .43). When we asked about nonnecessities, however, participants in the neutral stress condition (M = $139.61, SD = $76.88) were willing to spend more than those in the high stress condition (M = $112.73, SD = $69.68; $F(1, 219) = 4.25$, $p = .04$, d = .37). The high stress condition drove this interaction, in that participants who responded about necessities were willing to spend more than those who responded about nonnecessities ($F(1, 219) = 9.11$, $p < .01$, d = .61).

Figure 4
WILLINGNESS TO SPEND ON NECESSITIES AND NONNECESSITIES AS A FUNCTION OF STRESS (EXPERIMENT 4)



Mediation by restoring control. The analysis of whether the decision was driven by a desire for control revealed only an effect of stress, such that participants in the stress condition indicated that their spending decision was driven more by what would allow them to have control (M = 4.48, SD = 1.56) than did participants in the neutral condition (M = 3.95, SD = 1.92; $F(1, 219) = 5.06$, $p < .05$, d = .30). With a mediation analysis, using model 14 in PROCESS (Hayes 2013), we assessed the prediction that the stress condition (i.e., independent variable) would influence perceptions of control (i.e., mediator) and that the influence of these perceptions on spending depends on the type of product (i.e., moderator). In support of this prediction, the pathway from stress to spending, through willingness to restore control, was significant and did not include zero in the necessities condition (indirect effect = 4.52; 95% confidence interval [CI] = [.32, 12.52]). It was not significant in the nonnecessities condition (indirect effect = 2.84; 95% CI = [−.87, 10.77]). These results indicate that the more participants wanted to restore control as a consequence of stress, the more they were willing to spend on necessities.

We conducted similar analyses using the other potential mediators (ease of thinking, risk, and uncertainty). Because a loss of control may generate uncertainty, we expected that people's willingness to spend might relate to more uncertainty in the stress condition. However, the manipulations did not influence any of these additional variables (all ps > .21). Stress, and the resultant perception that the environment cannot be controlled, might generate uncertainty, but it seems that willingness to spend is driven by attempts to restore control rather than gain a sense of certainty (see Shepherd et al. 2011).

Discussion

Experiment 4 provides additional evidence that stress leads people to spend on necessities. In addition, it shows that people's spending on necessities is driven by their willingness to restore control over their lives rather than by cognitive resource availability, risk aversion, or uncertainty. In the final two experiments, we demonstrate how a stressful situation may lead consumers to spend, rather than save, more money in general.

EXPERIMENT 5: WHEN A LIFE STATUS CHANGE LEADS TO MORE SPENDING

People under stress do not always believe that it is important to save money; they might instead engage in spending and impulsive behavior as a consequence of their stress. Experiments 5 and 6 aim to demonstrate that stress can sometimes lead people to spend, rather than save, more money.

Some of the most common stressors involve events or situations related to work (Kanner et al. 1981; Keyes, Hatzenbuehler, and Hasin 2011), but the nature of the stressor can vary (Lazarus 1966; Sinha 2001, 2008). As we discussed previously, the nature of the stressor may shift individual perceptions of which products represent necessities and thus lead to increased spending in a product category, even if that product category typically would not be viewed as a necessity. Stress related to starting a new job (vs. general job-related stress), for example, may lead to increased spending on nice, expensive clothing because this product category may become a perceived necessity when people face new job–related stress. We test these predictions in an experiment with participants who recently started a new job or not.

Method

Participants and design. Two hundred seventy-six participants (168 men) participated for monetary compensation of $.90 on MTurk. Participants' ages ranged from 18 to 70 years (M = 34.63 years, SD = 11.18). The design was a 2 (stress: neutral vs. high) × 2 (new job: yes vs. no) between-subjects design.

Procedure. Experiment 5 used a stress manipulation similar to the one in the pilot experiment. Participants initially read that the study would examine how people recount a narrative story and that we were interested in gaining a better understanding of individual differences in story summaries. The first part of the survey therefore would involve summarizing a particular story from their lives. Unlike the pilot experiment, however, Experiment 5 included four conditions specific to writing about a job.

To manipulate the type of job-related stress, prior to the start of the survey, we asked participants to respond "yes" or "no" to the following question: "Are you about to start a new job or have you started a new job within the last month?" Among the participants who answered "yes" (n = 119), approximately half were filtered into the new job stress condition, which asked them to "think about all the things that stress you out about your new job, or starting your new job, right now. This would be stressful things that are particularly troubling as you think about succeeding at your new job." Among the participants who answered "no" (n = 157), approximately half were filtered into the current job stress condition, which asked them to "think about all the things that stress you out about your job right now. This would be stressful things that are particularly troubling about work." Next, we asked the participants to "summarize these stressful things in your life in the space below over the next couple of minutes." In the neutral stress conditions, the other half of the participants in each condition were asked to "think about your new job. Please describe below what you think a typical day will be like at your new job or what your new job is like so far, and any other thoughts you may have about your new job" or "think about your current job (or your primary job if you have more than one). Please describe a typical day at work. This would be a day when not much out of the ordinary happens. It's just your average day." Participants then wrote for two minutes.

After this task, we explained that as part of a separate study, we were interested in participants' shopping decisions: "Imagine that you are going shopping for clothes today. You are wondering how much money you should spend on cheap clothes vs. more expensive, nicer clothes. Out of $300, please indicate (by using the slide rule below) how much of this money you would spend on nicer, more expensive clothes." After providing their responses, participants answered a question designed to capture the extent to which they perceived clothing as a necessity: "Right now, to what extent do you feel that spending money on clothes is a necessity?" (1 = "not at all a necessity," and 7 = "definitely a necessity"). Finally, participants reported "How stressed do you feel at the moment?" (1 = "not at all stressed," and 5 = "very stressed").

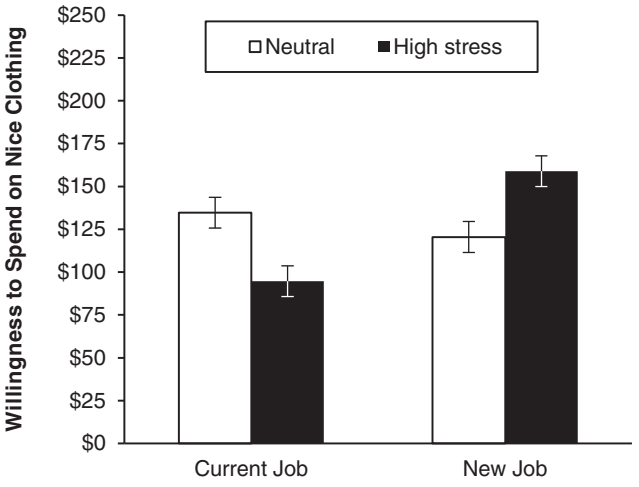
Results

Manipulation check. The high stress manipulation elicited significantly more stress than the neutral stress condition ($M_{neutral}$ = 1.70, SD = .97; $M_{high\ stress}$ = 2.50, SD = 1.23; F(1, 172) = 36.32, $p < .01$, d = .73). The two stress manipulations elicited similar amounts of stress ($M_{new\ job}$ = 2.62, SD = 1.25; $M_{current\ job}$ = 2.36, SD = 1.19; F = 1.35, $p = .22$).

Spending money on expensive clothing. An ANOVA revealed an interaction between job status and stress (F(1, 272) = 22.94, $p < .01$; see Figure 5). We replicated the previous results in the current job condition, such that participants in the neutral stress condition indicated that they would spend more money on nicer, expensive clothes (M = $134.71, SD = $69.76) compared with those in the high stress condition (M = $94.72, SD = $55.19; F(1, 272) = 10.48, $p < .01$, d = .64). In the new job condition, participants in the neutral stress condition instead indicated that they would spend less money on nicer, expensive clothes (M = $120.47, SD = $62.97) compared with those in the high stress condition (M = $158.87, SD = $78.32; F(1, 272) = 12.79, $p < .01$, d = .50). These results support the prediction that the nature of the stressor may lead to a strategic increase in spending in certain product categories.

Mediation by perceptions of clothing as a necessity. We expected that perceptions that clothing is a necessity would shift across the two stress conditions. Consistent with this prediction, in the new job stress condition, participants reported increased perceptions that spending on clothing

Figure 5
WILLINGNESS TO SPEND ON EXPENSIVE CLOTHING AS A FUNCTION OF THE TYPE OF STRESSOR (EXPERIMENT 5)



is a necessity (M = 4.30, SD = 1.44), compared with those in the current job stress condition (M = 3.44, SD = 1.89; $F(1, 272) = 7.73$, $p < .01$, d = .51). With a moderated mediation analysis, using model 8 in PROCESS (Hayes 2013), we tested the prediction that a new job (i.e., independent variable) influences spending on nicer, more expensive clothing (i.e., dependent variable) through a shift in the perception that spending on clothing is a necessity (i.e., mediator) and that the influence of these perceptions on spending depends on the stress condition (i.e., moderator). In support of this prediction, the pathway from having a new job to spending on expensive clothes, through perceptions of a necessity, was significant and did not include zero in the high stress condition (indirect effect = 7.24; 95% CI = [2.16, 15.57]), but it was not significant in the neutral stress condition (indirect effect = 2.74; 95% CI = [−2.66, 9.80]). The nature of the stressor thus can shift perceptions of the kinds of products that are necessities, leading to increased spending on products otherwise viewed as nonnecessities.

Discussion

Experiment 5 demonstrates one way that stress can increase the importance of spending on nonnecessities, rather than saving money. Stress can have this effect when the nature of the stressor shifts people's perceptions of what kind of products are necessities, such as when they believe that buying expensive new clothes is necessary for their job. These findings indicate that stress leads to strategic resource allocations, which can be malleable depending on the nature of the stress.

EXPERIMENT 6: WHEN NOT BELIEVING THAT CONTROL CAN BE RESTORED LEADS TO MORE SPENDING

If stress increases saving because it leads to a willingness to restore control, a reversal of our previous findings should occur when people believe that any attempt to restore control is unlikely to succeed. That is, people should perceive that saving is less important when they receive information that suggests they cannot restore control.

Method

Participants and design. One hundred seventy-four people participated for monetary compensation of $.90 on MTurk or in return for course credit. Participants' ages ranged from 18 to 65 years (M = 31.41 years, SD = 10.67). The design was a 2 (stress: neutral vs. high) × 2 (belief in restoring control: yes/neutral vs. no) between-subjects design.

Procedure. Experiment 6 used the same stress manipulation from the pilot experiment and the cover story from Experiment 5. To manipulate stress, we told approximately half of the participants to "think about all the things that stress you out in your life right now. This would be stressful things that have been particularly troubling." In the neutral stress condition, we asked them to "think about a typical day in your life. This would be a day when not much out of the ordinary happens. It's just your average day." Participants then proceeded to write for two minutes.

After the writing task, another page revealed that in the next part of the study, we were interested in people's memory for stories. Participants were told, "On the next page you will read a recent short article from the *New York Times*. Please read it carefully one time. You will then be asked a question related to your memory for the story." Participants were randomly assigned to one of the two conditions designed to manipulate perceptions of the extent to which people can control their environment. Participants in the positive/neutral belief in restoring control condition read a neutral article, titled "Why Popcorn Also Jumps," that explained why popcorn jumps when heated. Participants in the negative belief in restoring control condition instead read an article designed to diminish their beliefs that they could restore control, titled "Research Finds People Cannot Control Their Immediate Environment" (for the full text, see Appendix B). Immediately after reading the article, participants were asked to indicate the main finding of the study they read. For the neutral article, the options were "Popcorn doesn't just pop, it jumps" or "Popcorn can be difficult to digest." For the article designed to diminish beliefs in restoring control, the options were "People can control the good and bad things that happen to them" or "People cannot control the good and bad things that happen to them and usually fail." All participants were able to identify the main finding of the studies they read in each condition.

After this measurement, we told participants that as part of a separate study, we were interested in their shopping decisions. We asked, "Right now, how important do you think it is to save your money vs. spending it on products?" (1 = "not at all important to save," and 9 = "very important to save"). This was our dependent measure. To ensure that the stress manipulation elicited the appropriate levels of stress, we also asked participants to report, "How stressed did the writing task make you?" (1 = "not at all stressed," and 5 = "very stressed").

Results

Manipulation check. The stress manipulation elicited significantly more stress than the neutral stress condition

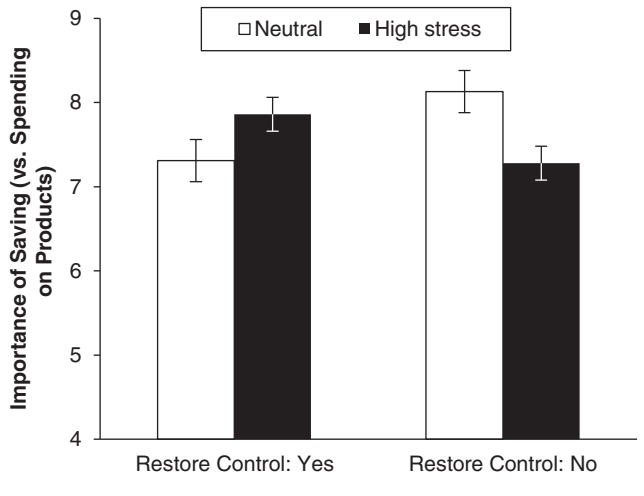
($M_{neutral}$ = 1.62, SD = .99; $M_{high\ stress}$ = 2.90, SD = 1.32; F(1, 172) = 48.04, $p < .01$, d = 1.09).

Saving money. An ANOVA revealed an interaction between stress and belief in restoring control (F(1, 170) = 8.65, $p < .01$; see Figure 6). In the positive/neutral belief in restoring control condition, participants in the high stress condition indicated that saving money was marginally more important (M = 7.86, SD = 1.49) compared with those in the low stress condition (M = 7.31, SD = 1.75; F(1, 170) = 3.30, $p = .07$, d = .34). In the negative belief in restoring control condition, however, participants in the high stress condition indicated that saving money was less important (M = 7.28, SD = 1.59) than did those in the low stress condition (M = 8.13, SD = 1.04; F(1, 170) = 5.35, $p = .02$, d = .63). From a different perspective, high stress led people to indicate that saving money was less important when they also read that attempts to restore control usually fail (F(1, 170) = 3.16, $p = .08$, d = .38).

Content of stress descriptions and saving. We wanted to test whether the content of the stress that participants wrote about (and specifically, whether they experienced stress because of financial problems) influenced their responses to the dependent measure. The descriptions of current life stressors focused on stress about work, money, or illness of the participants or their family members. For example, noting stressors surrounding finances, some participants wrote, "The only thing that I stress about is money. I never seem to have enough of it. No matter how hard I try to make more, it seems to always go away faster than I make it." Others wrote about stressors surrounding work and personal relationships: "I have a stressful job that demands my full attention 90% of the time. Things aren't going well at the office, which is making me have to pay attention even more than usual. My girlfriend wants to take things further than they are but I'm scared because I don't know if I want to change careers. It's all very stressful." Finally, others wrote about illness: "My father, who is 80, has been diagnosed with cancer. I live in New York, and he lives in Florida. I can't afford to take time off work to go and be with him. He may only have a few months to live. I will go and visit, but I wish I could be there every day. This is a very stressful time for me." Whether a participant wrote about financial stress or other forms of stress did not have a significant main effect on the dependent measure, nor did we find any interaction with the belief about restoring control condition (F < 1).

Figure 6

IMPORTANCE OF SAVING AS A FUNCTION OF STRESS AND PERCEIVED ABILITY TO RESTORE CONTROL (EXPERIMENT 6)



Notes: Importance of saving was measured on a nine-point scale (1 = "Not at all important to save," and 9 = "Very important to save").

Discussion

Experiment 6 demonstrates an additional way that stress can increase the importance of spending on nonnecessities, rather than saving money—namely, when people believe they cannot restore control. These findings again demonstrate a strategic resource allocation, because it would not be useful to save money in the face of stress if saving did not allow people to have more control over their environment.

GENERAL DISCUSSION

Stress is very common in daily life. It can be a consequence of any specific event that is difficult to cope with or of generally having too much to do and struggling to find ways to accomplish goals (Wilcox et al. 2016). Yet we know little about how stress influences consumer spending (Andreasen 1984; Moschis 2007). Some research has suggested that consumers react to stress by avoiding further action, including a possible decrease in consumption (Popper et al. 1989; Stone and Brownell 1994). Other research instead suggests that stress leads to more action, such as spending impulsively (Burroughs and Rindfleisch 2002; Faber and O'Guinn 1988; O'Guinn and Faber 1989). Because stress leads people to perceive that they have low control over their environment, we propose that consumers respond to stress in different ways, depending on the nature of the stress and whether they perceive that they can restore control over their environment. We find support for our hypotheses in seven experiments.

Stress leads consumers to prefer to save rather than spend money (pilot experiment and Experiments 1 and 3). When faced with the decision of how to spend money, they prefer to spend on necessities rather than nonnecessities (Experiments 2 and 4), and this effect is mediated by a willingness to restore control (Experiment 4). The effects of stress are attenuated by enhanced perceptions of control, whether with a manipulation (Experiments 1 and 3) or as measured (Experiment 2). Manipulating the nature of the stressor (new vs. current job stress) changes people's perceptions of items they typically might regard as nonnecessities, leading to increased spending on these items (Experiment 5). Finally, leading people to believe that efforts to restore control are likely to fail reverses the effect, diminishing the importance attributed to saving (Experiment 6).

Theoretical Implications

This research contributes to a better understanding of how stress, a relatively neglected but common experience, influences consumer behavior. At the outset of this article, we noted two critical behavioral responses to stress: decreasing versus increasing consumption (Duhachek 2005;

Faber and O'Guinn 1988; Kim and Gal 2014). These divergent patterns suggest that stress may not have singular effects on consumer behavior but, rather, its effect depends on consumers' perceptions of control over their environment.

Consumers who sense a low level of control in the face of stress are more likely to save money or spend it on necessities. Saving and spending on necessities seem to reflect consumers' attempts to manage stress actively and restore feelings of control, consistent with previous research showing that stress can lead to decreased consumption (Popper et al. 1989; Stone and Brownell 1994; Torres and Nowson 2007). Previous research does not explore the moderating effect of trying to restore control, however. Investigating behavioral responses to stress focused on control offers two important advantages. First, it implies that stress increases saving behavior only to the extent that it is accompanied by low control. Second, it predicts that products that are considered nonnecessities may become more valuable under stress, as long as these products are useful for managing the stress and temporarily become necessities.

This elasticity in the concept of necessities has interesting implications for what typically represents impulsive spending under stress. Spending on nonnecessities, such as designer clothes, may occur because the nature of the stressor has led consumers to perceive such products as necessities. Thus, the breadth of products that fall into the category of "necessities" remains to be seen. We have advanced knowledge with some of our findings, but it is important to broaden the scope of products and examine how the varying nature of stress expands and contracts the concept of necessities versus nonnecessities. An important question is whether any necessity that is helpful in restoring a stress-related loss of control also is helpful for restoring control that is not due to stress. For example, food items can help restore control in the presence of stress (i.e., they are necessities), but perhaps not as much when the loss of control is not caused by stress. For instance, a consumer who is put on hold while talking to the cable company, without knowing when (s)he will be helped, lacks control. This situation does not necessarily represent stress, though, and it is unlikely to lead to increased spending on necessities. Further research could examine different behaviors that result from a loss of control due to stress versus a loss of control due to other factors.

This research also contributes to literature pertaining to how external threats influence consumer spending (Roux, Goldsmith, and Bonezzi 2015; Rucker, Galinsky, and Dubois 2012; Sharma and Alter 2012; Tully, Hershfield, and Meyvis 2015). Whereas previous research considers a variety of threats (related to, e.g., power, scarcity, mortality salience), our research focuses on how stress uniquely affects spending. Various threats may be associated with high levels of stress. In Experiment 5, we prompted participants who were starting a new job to write generally about the new job or to focus on stressors surrounding it. The life change associated with starting a new job can be construed as a threat, in the sense that it represents a dramatic change in the person's current life status, but this threat was associated with high levels of stress only for those who focused on what was most stressful about the new job. Whether a threat induces high levels of stress thus may not depend solely on the threat but also on how the threat is interpreted. For example, a manipulation of resource scarcity or lower power may be threatening, but their influence on stress depends on which aspects of that scarcity or power threat consumers consider.

A related question is whether any sort of threat systematically influences spending. Our conceptualization predicts that this influence depends on (1) the level of control associated with the threat and (2) how the control influences perceptions of certain products as necessities. If certain threats lead to increased stress, they might influence spending in unique ways. Scarcity, for example, may lead to low control, but the consequences for spending would depend on the specific types of products that are scarce (Laran and Salerno 2013). Beer is not a necessity, but if a grocery store runs out of beer at the moment a shopper goes to buy provisions for a party that starts in one hour, the stress may cause additional spending on related products that now appear to be necessities. Social exclusion may lead to low control, which can result in such extreme consequences as considering consuming cocaine (Mead et al. 2011). Further research could investigate the stress induced by each threat with a novel, control-driven approach, which may reveal an array of interesting, as yet unexplored consequences for consumer saving and spending.

Finally, this research contributes to literature on how hormones influence behavior (Durante et al. 2011, 2014; Lens et al. 2012; Saad and Stenstrom 2012). Early animal-based studies have shown that cortisol becomes elevated only in situations in which there is no control over a stressful event. For example, cortisol increases with a lack of control over a high intensity noise or electric shock in both dogs (Dess et al. 1983) and monkeys (Hanson, Larson, and Snowdon 1976). Our findings suggest relations among cortisol, perceptions of control over the environment, and consumer spending. To our knowledge, this empirical investigation is the first to demonstrate a possible link between control and the consequences of stress in humans. Our findings are consistent with the notion that cortisol reactivity, and thus behavioral consequences of stress, are evident only among those people who believe they do not have control over their environment. Further research is needed to examine the link between perceptions of control and behaviors related to elevated stress (e.g., hoarding, depression), including direct measures of salivary cortisol reactivity.

Practical Implications

Our findings have important implications for consumers and marketers. For consumers, we show that stress can have both positive and negative influences on spending. To the extent that consumers are aware of a bias toward increased spending on certain types of products, they may be able to control excessive expenditures better. Excessive expenditures may include necessities (e.g., stockpiling household goods) but also products that some stressed consumers perceive as necessities (e.g., expensive clothes) or that are detrimental to their health (e.g., increased caloric consumption; Salerno, Laran, and Janiszewski 2014). Although helpful for restoring control, these products likely have harmful

long-term consequences, so managing their consumption at an adequate level is important.

For marketers, a potentially valuable insight is that daily stress can systematically influence consumer spending. The current research manipulates stress at the individual level, but variation in stress can be predicted more broadly across populations, as evidenced during times of traffic congestion, inclement weather, or other disasters. Our finding that consumers spend relatively more on necessities when under stress can be particularly useful for understanding trends, product planning, and improving market forecasts. Marketers may be able to reposition specific products in certain times of the year to alter perceptions that they are necessities or useful for restoring a sense of control over the consumers' lives.

CONCLUSION

Seven experiments reveal that stress leads consumers to save money in general but spend strategically on products that they perceive as necessities. This research contributes to our understanding of how stress influences consumer spending, including the role of people's sense of control in determining how stress affects consumer behavior. Moreover, this research contributes to growing literature on how the interplay of external (e.g., environmental) and internal (e.g., physiological) factors influences consumer decision making. We hope these findings open the door for continued research that combines the natural and consumer sciences to gain novel insights into human behavior.

APPENDIX A: STRESS INSTRUCTIONS IN EXPERIMENT 1

Participants were given the following initial instructions:

> On the next page you will be randomly presented with a particular issue and you will need to prepare an argument. This task will be similar to what you might do if you were participating in a debate. While everyone will prepare a 1-minute speech to deliver out loud, the researcher will randomly select only a few participants to stand up and deliver the speech. This means that you have a 50% chance of being selected to give your speech and a 50% chance of not having to give the speech at all. Should you be selected, your presentation will be evaluated by the other participants in the study and a graduate researcher. Once you have crafted your speech on the next page, you will complete an unrelated questionnaire to give us time to organize the selection process. Later on in the study you will find out if you will be delivering your speech. When you're ready to begin the presentation task, please click on the arrow to proceed.

On the following screen, participants learned that the topic of their speech was "Property Crime is a Serious Problem":

> This task will be similar to what you might do if you were participating in a debate task: Please prepare a 1-minute speech that argues that property crime (i.e., petty theft such as a stolen wallet or a vandalized car) is a serious problem in the United States and that each state should increase law enforcement in this area. Please begin to write your speech in the window below. You will be given approximately 10 minutes to craft your 1 minute speech. Please memorize your speech as best as you can because you will not be able to use your notes and your presentation will be evaluated based on your arguments. Later on in the study a research assistant may tap you on the shoulder if you are selected. You will then be prompted to stand and read your speech aloud. Begin writing now.

APPENDIX B: ARTICLE IN THE NEGATIVE BELIEF IN RESTORING CONTROL CONDITION (EXPERIMENT 6)

Research Finds People Cannot Control Their Immediate Environment

By MORGAN JAMESTON, Senior Times Writer

Researchers at Harvard University have found that people are unable to control the outcomes of the things they do in their lives. Despite the fact that people often go to great lengths to try to manage and control the good and bad things that happen to them, the effort people put toward changing their situation fails. In fact, trying to control things usually makes the situation worse.

Dr. Andrew Stevens, lead researcher on the study, hopes that this information might help people avoid efforts to control a situation that is unchangeable. The study followed over 5,000 people over a 30 year period. This study is the largest study that tracked how people's efforts to control the outcomes of their actions succeeded or failed over time. Across gender, age, and ethnicity, one clear finding emerged: even if people put effort toward controlling the outcome of a situation, people's efforts almost always failed.

"The main reason people fail when actively trying to manage situations is that all the good and bad things that happen to us are beyond our control," said Dr. Stevens. "We cannot do anything to control things that happen to us as a result of external forces. We are doomed to fail. It is better to just let life happen."

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