The Effect of Stress on Consumer Saving and Spending

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ABSTRACT

This paper examines how stress influences consumer saving and spending. The authors propose that consumers who experience a stressful situation allocate their resources strategically in order 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 the consumer that monetary resources will be available when needed. Alternatively, consumers experiencing stress may show increased spending behavior. Spending, however, is directed specifically toward products the consumer perceives to be necessities, which are products that allow for control in an otherwise uncontrollable environment. This conceptualization and findings can inform when stress will lead to beneficial vs. impulsive consumer behaviors.

Keywords: stress, control, saving, spending
Imagine how it feels to find a desk at work full of tasks that deserve immediate attention, give a speech in front of a room full of people, or take a test that will determine the fate of your professional career. All of these events can result in stress, which occurs when the demands of an event challenge an individual’s ability to cope with it (Lazarus 1966; Lazarus and Folkman 1984). Given the constant presence of stress in our lives, it is surprising that 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. This is consistent with findings showing that both human and nonhuman organisms can withdraw, becoming immobile or passive in response to stress (de Boer et al. 1990; Henry 1992; Hobfoll 1989; Landau et al. 2011). The inaction response to stress may even involve areas unrelated to the source of 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, however, suggest that stress may also lead to action (Duhachek 2005; Duhachek and Kelting 2009). As a consequence of the stress of everyday life, consumers may sometimes show impulsive spending behavior (e.g., Burroughs and Rindfleisch 2002; Faber and O’Guinn 1988; O’Guinn and Faber 1989), including consumption of products such 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 can inform the development of a different view of the consequences of stress, which proposes that certain behaviors are negatively influenced by stress, whereas other behaviors are positively influenced. One characteristic of stress is that it leads people to perceive that they currently lack control over their environment (Botti and McGill 2011; Cohen 1988). For this reason, we propose that consumers may use their monetary resources strategically in order to restore control in situations of stress. One way to do this is to save money. Saving one’s monetary resources provides a sense of control because it guarantees that these resources will be available when needed. Another way to do this 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 one’s daily survival readily available. Congruent with this idea, we will also show that certain types of stress may lead to spending on products typically not seen as necessities, as long as the source of stress changes perceptions of how necessary these 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 shows that stress makes consumers more willing to save money, but that this willingness disappears if, after experiencing a stressful event, consumers are led to 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 they have control over their lives. Experiment 3 shows that sometimes consumers face high stress but also high control over the outcomes of the 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. This may occur when stress is caused by an event where typical nonnecessities may become necessities (Experiment 5) or when 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 an individual’s ability to cope (Lazarus 1966). There are many events that can cause stress in our 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 negative affect in general, but 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 our modern world, the hassles of everyday life can lead to elevated levels of cortisol and influence our psychological functioning (Dickerson and Kemeny 2004; Sapolsky 2004).

These reactions can inform which psychological processes will drive people’s response to stress. Research on human and nonhuman animals implicates cortisol in social inhibition motivation. Studies have found that elevated cortisol during stress is associated with freezing behaviors in rats (Nunez et al. 1997) and primates (Kalin et al. 1998), which is an extreme form of behavioral inhibition. Additional studies in humans demonstrate 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, cortisol is positively correlated with hoarding behaviors (Landau et al. 2011). Hoarding is defined as the collection and inability to discard of 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, as it can help ensure survival in times of uncertainty (Grisham and Barlow 2005). Behavioral responses to stress in our modern environment—replete with conveniences such as big box stores and restaurants—do not necessarily affect one’s ability to stay alive versus face death. However, performing strategic behaviors in response to stress may help an individual function in day-to-day life. We discuss this possibility next.

**Stress and Consumer Saving**

People suffer from stress when they find it hard to cope with the demands of an event. This is expected given that many stressful situations are caused by external factors that are out of our control, which may trigger the perception that we cannot control the current environment and the outcomes of our actions (Cutright 2012). A loss of control has important consequences for behavior, as demonstrated in recent research (Cutright, Bettman, and Fitzsimons 2013). This evidence shows that 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 individuals feel that control is afforded by a supposedly preestablished divine plan (Kay et al., 2008), and governments, which helps individuals feel that control is afforded by governmental authorities (Friesen et al. 2014; Kay and Eibach 2013). Another type of compensatory behavior is supporting 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 one does not currently have control over their environment, consumers may respond to stress by performing behaviors focused on restoring control.

The research on stress and hoarding mentioned above supports the idea that consumers may seek to restore control as a response to a stressful event. In fact, many hoarding behaviors are triggered by extreme stressors such as loss of a spouse, eviction, and divorce (Cromer, Schmidt, and Murphy 2007; Landau et al. 2011). This suggests that when an individual’s sense of control is compromised, they may feel comfort and increased control through hoarding any personal possessions (Hartl et al. 2005). These could be product items that have been acquired in the past, but also monetary possessions. Hoarding behavior is sometimes reflected in saving money to an unhealthy extreme (Canale and Klontz 2013; Klontz and Klontz 2009; Klontz et al. 2012). In this sense, money is considered 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 other hiding spots (Canale and Klontz 2013).

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

**H1:** Stress leads to an increased willingness to save money.

An important question to ask is whether stress will always lead to increased saving. Given our prediction that a response to stress aims at restoring control, increased saving may
depend on whether consumers feel low control over the outcomes of their actions when they are under stress. While low control is the more common consequence of stress, the psychological response to stress associated with low control is distinct from the psychological response to stress associate with a greater degree of control (Badia et al. 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 et al. 1972; Voigt et al. 1990; Zakowski 1995). This suggests that the experience of stress and feelings of control are two related but distinct constructs. As a result, consumers will 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 have an increased willingness to save as 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, in which consumers need to make a decision about what type of product they will buy (i.e., what to spend money on). We propose that stress will influence 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 individuals 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 considered nonnecessities. Necessities are products that are generally considered more useful for an individual’s survival in daily life, such as a stove, water, transportation, and a house to live. Nonnecessities are generally
considered not as useful for an individual’s survival in daily life, such as an entertainment center, soda beverages, cologne, or a designer bag. By the same logic 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 one’s actions makes the ability to survive on a daily basis a more important concern compared to when the individual believes they can control these outcomes (e.g., “If I do X, I will have result Y.”). If some products are seen as necessary for one’s daily life, then the importance of acquiring this type of product should increase under stressful situations. Therefore, people acquire necessities in order to make the environment more predictable, which, as discussed earlier, is a commonly used strategy to restore a sense of control (Kay and Eibach 2013; Whitson and Galinsky 2008). Thus:

**H2:** 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, an important question to ask is whether stress will always lead 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, then the nature of the stressor may shift what products are considered necessities. Research finds that 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, Coyne, Schaeffer, and Lazarus 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. In this case, 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 co-workers, nice clothes that improve reputation, cosmetics). This “elasticity” in how consumers view necessities under stress is congruent with the findings of Cutright et al. (2013), who show that consumers’ sense of control generates flexibility in how they view broad vs. 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 vs. spending it on products. In addition, the effect of stress on consumer spending should be moderated by whether consumers (a) perceive a low or high level of control, (b) experience stress that renders certain products necessities when they would otherwise be nonnecessities, or (c) are led to believe that efforts to restore control are likely to fail. We test our hypotheses in seven experiments.

PILOT EXPERIMENT: STRESS AND SAVING MONEY

A pilot investigation asked participants to write for two minutes about all the things that stress them out in life right now (high stress condition) vs. their typical day (neutral stress condition; Experiment 5 provides a detailed procedure for these conditions). This experiment also had 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 merely experiencing negative affect. A sample from Amazon’s Mechanical Turk (MTurk; n = 162) was thanked for their participation in the writing study and 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 were going to present to them later. They were asked to
indicate how much of the money they wanted to save vs. 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 \((M = 26.98, SD = 10.49; F(1, 159) = 8.59, p < .01, d = .56)\) and the negative affect conditions \((M = 27.91, SD = 12.49; F(1, 159) = 5.16, p < .05, d = .44)\). The neutral stress and negative affect conditions did not differ from each other \((F < 1)\). The results provide preliminary evidence for the influence of stress on consumer saving using real behavior. Yet, they do not provide evidence for 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 tested the relation between stress and saving, and the role played by perceptions of control. After participants went through a stressful situation (believing 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 hypothesis 1, we predicted that, when control was not restored, participants would want to save more under high (vs. low) stress. When control was restored, there should no longer be a need to behave strategically, which should decrease the desire to save money for participants in the high stress condition.

**Method**
Participants and design. Two-hundred and thirty undergraduate students (79 men) participated in return for course credit. Participants’ ages ranged from 18 to 30 years ($M = 20.41$ $SD = 1.21$). This was the final sample after excluding 43 participants who indicated that English was a language they did not understand well. While the number of exclusions was surprisingly high in this study, and including these participants did not change the results, this criterion had been established based on the nature of our tasks. The manipulations involved writing and required the precise comprehension of detailed instructions designed to induce stress (see procedure below). Therefore, only participants who indicated that English was a language they understood well were retained in the data set for final analysis in our studies. The design was a 2 (stress: neutral vs. high) by 2 (control: neutral vs. high) between-subjects design.

Procedure. Participants were told that the study examined how people process information and how this influences writing arguments and summarizing events. The stress manipulation was based upon recommendations made by Dickerson and Kemeny (2004), who demonstrated that having to give a speech out loud is the most effective way to manipulate stress and raise cortisol levels. Participants in the stress condition were told that they would be preparing a speech to be delivered in front of everyone else in the lab, as 50% of the participants would be selected to give the speech. Once they clicked on an arrow to proceed, they were told that the topic of the speech was “Property Crime is a Serious Problem.” They were asked to start writing a one-minute speech over the next 10 minutes, and that later on the experimenter might tap them on the shoulder to give the speech (see the Appendix for the complete instructions). 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 as they would now move to a different study.
In the second study, roughly half of the participants were randomly assigned to one of the two control conditions. Following a manipulation that has been shown to make people feel 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 being thanked 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. They were asked to use a slide rule to indicate “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 $300 participants indicated they would keep served as the dependent measure. Participants were told about the real purpose of the sequence of studies they had performed, were thanked for their participation, and dismissed.

Pretest. A group of participants \(n = 59\) from the same population as that of the main study was exposed to the stress manipulation described above and a neutral condition. Afterwards, stress level was assessed using a measure from previous research (Lovibond and Lovibond 1995; Selye 1956, 1974). On 9-point scales (1 = Definitely Disagree, 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), and showed that the stress manipulation elicited more stress than the neutral condition 
(M_{neutral\ stress} = 3.21, SD = 2.03 vs. M_{high\ stress} = 4.73, SD = 2.27; F(1, 57) = 7.31, p < .01, d = .71).

Results

An ANOVA revealed an interaction between stress and control (F(1, 226) = 4.58, p = .03; fig. 1). As predicted by hypothesis 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, however, 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, as 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 willing to save a higher proportion of money when they were in a stressful situation compared to when they were not. When participants were given an opportunity to write about something they had control over, 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.

One could argue, however, that restoring control made participants feel better, and therefore any manipulation that made them feel better would lead to decreased willingness to save. To examine this alternative, we ran a posttest (n = 89) where half of the participants went
through the stress and control restoring manipulation, while the other half went through the stress manipulation and were asked to write about something positive that happened to them. Writing about something positive should not restore control, therefore this condition should indicate higher intention to save compared to when control was restored. Supporting 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, $p = .04, d = .43). We also measured perceived control (1 – Not at All, 7 – A Lot), and the stress – high control condition indicated having higher control ($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, not because it makes people feel better.

**EXPERIMENT 2: MEASURED STRESS AND PERCEIVED CONTROL**

Experiment 2 had three goals. First, we sought to examine the influence of stress on willingness to spend money on specific types of products (hypothesis 2). Second, we wanted to examine the influence of stress in a different way. While we used a common stress manipulation in the first study, it was important to show that the differences we found were not specific to the manipulation we used. For this reason, we simply measured how much stress participants were under at the moment of the experiment. We also measured participants’ perceptions of control.

Third, we wanted to show the differences between stress and control. While stress represents difficulty in coping with the demands of an event, perceiving that we cannot control the outcomes of our actions is one consequence of this difficulty. Because these are different concepts, some people may experience high stress but still perceive they have control over the
outcomes of their actions. If this is the case, then 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 to those who believe they have high control. Therefore, consistent with hypothesis 2, we predicted that at high levels of current stress, people who were low on perceived control would have an increased willingness to acquire necessities compared to those who were high on perceived control. Being high on perceived control, even in the presence of high stress, would eliminate the need to acquire necessities. At low levels of stress, we predicted no difference in willingness to acquire necessities between those who were high vs. low in perceived control.

Method

Participants. Seventy participants (30 men) were recruited from Amazon’s MTurk and paid a small monetary compensation of $0.90. Participants’ ages ranged from 19 to 67 years ($M = 36.09, 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, 7 = Very Important). Participants were thanked and told that they would begin the second part of the survey, which examined individual differences in life experiences.

We then assessed stress using the eight item measure of stress used in the Experiment 1 pretest (Lovibond and Lovibond 1994; Selye 1956, 1974). The items were collapsed into a composite measure of current stress ($\alpha = .95$). To assess current perceived control (Cutright et al. 2013), on 9-point scales (1 = Definitely Disagree, 9 = Definitely Agree), participants indicated 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 items were reversed scored and 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 issues given the expected correlation between stress and perceived control ($r = .67; p < .01$). The variance inflation factors were under 1.9, which are much lower than the standard threshold of 10. This result suggests no multicollinearity concerns. We then regressed 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 ($\beta = -.31; p = .04$; fig. 2). To test our predictions, we used the Hayes (2008, 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 importance of acquiring necessities between those who were low and 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), however, participants indicated that acquiring necessities was marginally more important when they perceived they currently had low control than when they perceived they currently had high control ($M_{low\ control} = 5.84$ vs. $M_{high\ control} = 5.06$; $t(69) = -1.72; p = .09$). An examination of the transition points of the Johnson-Neyman significance regions indicates a score greater than or equal to 6.35 on stress level as 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 way of assessing 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, as low control only had an influence on willingness to spend when participants were under stress. When participants were currently under high levels of stress, at least relative to the average level of stress within our sample, they indicated acquiring necessities was more important when they perceived they did not (vs. did) have control over their environment. This again indicates that the loss of control associated with being under stress may be an important driver of the influence of stress on the willingness to acquire necessities. When people perceive they have control, even under high levels of stress, there is no need to restore control, and consumers no longer have increased preference for acquiring items that can be useful in an uncontrollable environment.

**EXPERIMENT 3: THE IMPACT OF STRESS UNDER HIGH CONTROL**

Experiment 2 provided 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 (vs. not) over the outcome of the stressful situation. This kept stress high while also keeping control high. When people were under stress and did not have control (high stress – low control), we expected to replicate the previous studies, as people should be more likely to save money compared to a neutral condition. When people were under stress and had control over the outcome of the stressful situation (high stress – high control), we expected that people would no longer save more than under a neutral condition, and that saving would be lower than that under a high stress – low control condition.

*Method*
Participants and design. Two-hundred and ten undergraduate participants (111 men) were recruited in return for course credit. Participants’ ages ranged from 18 to 49 years ($M = 19.46$, $SD = 2.67$). The design was a 2 (stress: neutral vs. high) by 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 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, in order to make the conditions more comparable, participants in the neutral stress condition were asked to prepare the same speech, but were not told that they might be selected to give the speech aloud. Before preparing the argument, participants were told that once they were done there would be a filler task designed to clear their mind for the next study. We provided additional instructions in order to manipulate control. In the low control condition, we told them “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 was called Shopping Decisions, and 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.” Below these instructions, there was a slider
that they could use to indicate an amount varying from $0 to $250. After assigning their responses, participants responded to a question 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, 7 = Had a lot of control) and a question about stress (“How stressed out were you?,” 1 = Not at All, 7 = A Lot), which allowed us to see if the control manipulation interfered with levels of stress.

Pretest. We conducted a pretest (n = 78) using the neutral and high stress conditions, without the control manipulation, and measured their influence on a series of variables. In addition to the stress scale used in the pretest to Experiment 1 (this time we used 7-point scales), we had questions (1 = Not at All, 7 = A Lot) measuring stress more directly (“How stressed out are you right now?”), task relevance (“How relevant was the initial task to you?”), and mental energy (How mentally tired are you right now?). The manipulation had an impact on stress using the stress scale (M_{Neutral Stress} = 3.36, SD =1.18 vs. M_{High Stress} = 4.15, SD =1.36; F(1, 76) = 7.76, p < .01, d =.62) and the direct measure (M_{Neutral Stress} = 3.29, SD =1.62 vs. 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 and mental energy (both ps > .23). These results indicate that the manipulation influenced how stressed participants were, but 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). There was also a main effect of 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, $SD = 1.83; F(1, 206) = 3.85, p = .05, d = .27$). These results indicate that the manipulation of control was efficacious in increasing perceptions of control, while the manipulation of stress, as expected, also had an impact on perceptions of control. Also of note, in the high stress condition, perceptions of control were higher in the high control ($M = 4.53, SD = 1.84$) compared to the low control condition ($M = 3.68, SD = 1.74; F(1, 206) = 5.52, p = .02, d = .47$).

An ANOVA on stress revealed only a main effect of stress condition, such that 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 to have high control over the situation.

**Willingness to save.** An ANOVA revealed an interaction between stress and control ($F(1, 206) = 4.86, p = .03; \text{fig. 3}$). Under 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 ($M = \$153.30, SD = \$53.60; F(1, 206) = 4.00, p = .05, d = .37$). Under 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 expected, there was a difference in the high stress condition, as participants who were under high stress were willing to save less in the high control compared to 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 ($F(1, 206) = 6.21, p = .01, d = .32$).

**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 that stress and control are different constructs. When people had control over the outcome of a stressful situation (i.e., the outcome depended on their performance), they were still under stress, but there was no need to restore control. In this case, intentions to save decreased. In Experiment 4, we provide additional evidence for the influence of stress on willingness to spend on necessities and nonnecessities.

**EXPERIMENT 4: THE MEDIATING ROLE OF RESTORING CONTROL**

In Experiment 4, we provide mediating evidence that acquiring necessities is perceived as a way to restore control, and that this perception drives the effect of stress on spending. After the stress manipulation, we had some participants 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 hypothesis 2, we expected that stress would lead participants to spend more on necessities, but not on nonnecessities. In addition, participants who were under stress should indicate a higher willingness to restore control, which should mediate the relation between stress and spending on necessities.

**Method**

*Participants and design.* Two-hundred and twenty-three undergraduate participants (98 men) were recruited in return for course credit. Participants’ ages ranged from 18 to 27 years ($M = 20.09$ $SD = 1.54$). The design was a 2 (stress: neutral vs. high) by 2 (product type: necessities vs. nonnecessities) between-subjects design.
Procedure. The first task was the stress manipulation, which was identical to that used in Experiment 3, except that we did not use a control manipulation indicating that participants could receive extra credit. The second task was called Shopping Decisions, and 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.” Below these instructions, there was a slider that they could use to indicate an amount varying from $0 to $250.

After assigning their responses, participants responded to several measures (1 = Not at All, 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?”), a question measuring whether the stress manipulation simply 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?”), a question measuring whether the stress manipulation led to risk aversion (“…what was less risky?”), and a question measuring 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, while the other questions would not.

Results
**Willingness to spend.** An ANOVA revealed an interaction between stress and product type \(F(1, 219) = 8.52, p < .01; \text{fig. 4} \). 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 interaction was driven by the high stress condition, as those asked about necessities were willing to spend more than those who were asked about nonnecessities \((F(1, 219) = 9.11, p < .01, d = .61)\).

**Mediation by restoring control.** An analysis of the decision being driven by wanting to have 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 \((M = 3.95, SD = 1.92; F(1, 219) = 5.06, p < .05, d = .30)\). A mediation analysis used model 14 in PROCESS (Hayes 2013), and predicted that the stress condition (i.e., the independent variable) would influence perceptions of control (i.e., the mediator), and that the influence of these perceptions on spending would depend on the type of product (i.e., the moderator). Supporting 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% CI: .32 to 12.52), but was not significant in the nonnecessities condition (indirect effect = 2.84; 95% CI: -.87 to 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.
Similar analyses were conducted using the other potential mediators (easiness to think, risk, and uncertainty). Because a loss of control may generate uncertainty, we expected that people’s willingness to spend might be related to more uncertainty in the stress condition. The manipulations, however, did not influence any of these additional variables (all ps > .21). While stress, and the consequent perception that the environment cannot be controlled, might generate uncertainty, it seems that willingness to spend was driven by trying to restore control rather than trying to 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 this spending on necessities is driven by a willingness to restore control over one’s life, and not 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**

It is likely that people who are under stress do not always believe that it is important to save money. In fact, many times people engage in spending and impulsive behavior as a consequence of stress. Experiments 5 and 6 seek to demonstrate that sometimes stress can lead people to spend, rather than save, more money.

While some of the most common stressors involve events or situations related to work (Kanner et al. 1981; Keyes, Hatzenbuehler, and Hasin 2011), the nature of the stressor can vary (Lazarus 1966; Sinha 2001, 2008). As discussed earlier, the nature of the stressor may shift an individual’s perception of which products represent necessities and, in turn, lead to increased
spending in that product category, even if the product category is not typically seen as a necessity. Stress related to starting a new job (versus general job-related stress), for example, may lead to increased spending on nice, expensive clothing because this product category may be seen as a necessity when people face stress at a new job. We test these predictions in an experiment with participants who have recently started a new job versus not.

Method

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

Procedure. Experiment 5 used a similar stress manipulation as that of the Pilot Experiment. Participants were initially told that the study examined how people recount a narrative story and that we were interested in gaining a better understanding of individual differences in the summary of stories. Participants were further told that the first part of the survey would involve summarizing a particular story from their life. Unlike the Pilot Experiment, Experiment 5 had four conditions specific to writing about one’s job.

To manipulate the type of job-related stress, prior to the start of the survey participants were asked 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?” If a participant answered “yes” ($n = 119$), roughly half were filtered into the “new job stress” condition, which asked participants 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.” For participants who answered “no” ($n = 157$), roughly half were filtered into the
“current job stress” condition, which asked participants 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.” Participants were next told to “please summarize these stressful things in your life in the space below over the next couple of minutes.” In the “neutral stress” conditions, roughly half of the participants 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.” The remaining participants were asked to “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 proceeded to write for two minutes.

After this task, participants were told that as part of a separate study we were interested in their 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 assigning their responses, participants responded to 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, 7 = Definitely a Necessity).” Finally, participants reported “How stressed do you feel at the moment?” (1 = Not At All Stressed, 5 = Very Stressed).

Results

Manipulation check. The high stress manipulation elicited significantly more stress than the neutral stress condition ($M_{Neutral\ Stress} = 1.70$, $SD = .97$ vs. $M_{High\ Stress} = 2.50$, $SD = 1.23$ $F(1,
In addition, the two stress manipulations elicited similar amounts of stress ($M_{\text{New Job Stress}} = 2.62, SD = 1.25$ vs. $M_{\text{Current Job Stress}} = 2.36, SD = 1.19$; $F = 1.35, p = .22$).

**Spending money on expensive clothing.** An ANOVA revealed an interaction between job status and stress ($F(1, 272) = 22.94, p < .01$; fig. 5). We replicated our 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 = $69.76) compared to the high stress condition ($M = $94.72, $SD = $55.19; $F(1, 272) = 10.48, p < .01, d = .64$). In the new job condition, however, participants in the neutral stress condition indicated that they would spend less money on nicer, expensive clothes ($M = $120.47, $SD = $62.97) compared to those in the high stress condition ($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 within certain product categories.

**Mediation by perceptions of clothing as a necessity.** We expected that the perception that clothing is a necessity would shift across the two stress conditions. Consistent with this, in the new job stress condition, participants reported increased perceptions that spending on clothing is a necessity ($M = 4.30, SD = 1.44$) compared to the current job stress condition ($M = 3.44, SD = 1.89; F(1, 272) = 7.73, p < .01, d = .51$). A moderated mediation analysis used model 8 in PROCESS (Hayes 2013), and predicted that a new job (i.e., the independent variable) would influence spending on nicer, more expensive clothing (i.e., the dependent variable) via a shift in the perception that spending on clothing is a necessity (i.e., the mediator), and that the influence of these perceptions on spending would depend on the stress condition (i.e., the moderator). Supporting 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 to 15.57), but was not significant in the neutral stress condition (indirect effect = 2.74; 95% CI: -2.66 to 9.80). These results suggest that the nature of the stressor can shift perceptions of what kind of products are necessities, leading to increased spending on products otherwise seen as nonnecessities.

Discussion

Experiment 5 demonstrated one way in which 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 perceptions of what kind of products are considered necessities, such as when buying expensive new clothes is necessary for one’s job. These findings indicate that stress leads to strategic resource allocation, which can be malleable depending on the nature of the stress.

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

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

Method

Participants and design. One-hundred and seventy-four participants participated for a monetary compensation of $.90 on Amazon’s MTurk or in return for course credit. Participants’ ages ranged from 18 to 65 years ($M = 31.41$ $SD = 10.67$). The design was a 2 (stress: neutral vs. high) by 2 (belief in restoring control: yes-neutral vs. no) between-subjects design.
Procedure. Experiment 6 used the same stress manipulation as that of the Pilot Experiment and the same cover story as Experiment 5. To manipulate stress, we told roughly 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 told participants 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, participants were taken to another page where they were told 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 “belief in restoring control: yes-neutral” condition read a neutral article, which was titled “Why Popcorn Also Jumps,” and explained the mechanism behind the jumping of popcorn when heated. Participants in the “belief in restoring control: no” condition read an article designed to diminish beliefs that one can restore control, titled “Research Finds People Cannot Control Their Immediate Environment.” (see the Appendix for the full text of this article). 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” vs. “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” vs. “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 about in each condition.

After this measurement, participants were told that as part of a separate study we were interested in their shopping decisions. They were 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, 9 = Very Important to Save). This was our dependent measure. Finally, to ensure that the stress manipulation was eliciting the appropriate levels of stress, participants reported “How stressed did the writing task make you?” (1 = Not At All Stressed, 5 = Very Stressed).

Results

Manipulation check. The stress manipulation elicited significantly more stress than the neutral stress condition ($M_{Neutral\ Stress} = 1.62, SD = .99$ vs. $M_{High\ Stress} = 2.90, SD = .32$) ($F(1, 172) = 48.04, p < .01, d = 1.09$).

Saving money. An ANOVA revealed an interaction between stress and belief in restoring control ($F(1, 170) = 8.65, p < .01$; fig. 6). In the “belief in restoring control: yes-neutral” condition, participants in the high stress condition indicated that saving money was marginally more important ($M = 7.86, SD = 1.49$) compared to the low stress condition ($M = 7.31, SD = 1.75$; $F(1, 170) = 3.30, p = .07, d = .34$). In the “belief in restoring control: no” condition, however, participants in the high stress condition indicated that saving money was less important ($M = 7.28, SD = 1.59$) than those in the low stress condition ($M = 8.13, SD = 1.04$; $F(1, 170) = 5.35, p = .02, d = .63$). Looked at differently, high stress led people to indicate that saving money was less important when they 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 examine whether the content of the stress participants wrote about, and more specifically whether they were in stress because of financial problems, influenced their responses to the dependent measure. The descriptions of current life stressors were focused on stress about work, money, or illness diagnosed for self or family members. For example, some people wrote about stressors surrounding finances: “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 eighty 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 everyday. This is a very stressful time for me.” Whether a participant wrote about financial stress or other related stress did not have a significant main effect on the dependent measure, nor was there an interaction with the “belief about restoring control” condition ($F s < 1$).

Discussion

Experiment 6 demonstrated an additional way in which stress can increase the importance of spending on nonnecessities, rather than saving money. Stress can increase the importance of spending when people believe they cannot restore control. These findings again demonstrate strategic resource allocation, as it would not be useful to save money in the face of stress if saving would not allow people to have more control over their environment.
GENERAL DISCUSSION

Stress is very common in everyday life, as it can be a consequence of any specific event that is hard to cope with, or of generally having too much to do and struggling to find ways to accomplish our goals (Wilcox et al. 2016). Yet we know little about how stress influences consumer spending (Andreasen 1984; Moschis 2007). Some research suggests that consumers may react to stress by avoiding further action, including a possible decrease in consumption (Popper et al. 1989; Stone and Brownell 1994). Other research, however, suggests that stress may lead 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 proposed that consumers may respond to stress in different ways depending on the nature of the stress and whether or not they perceive they can restore control over their environment. We supported our hypotheses in seven experiments.

Stress led consumers to prefer to save rather than spend money (Pilot Experiment, Experiments 1 and 3). When faced with the decision of where to spend money, they preferred to spend on necessities rather than nonnecessities (Experiments 2 and 4), and this effect was mediated by a willingness to restore control (Experiment 4). The effects of stress, however, were attenuated when perceptions of control were enhanced, both with a manipulation (Experiments 1 and 3) and measurement (Experiment 2). Manipulating the nature of the stressor (new job versus current job stress) changed perceptions of items typically perceived as nonnecessities, which led to increased spending on these items (Experiment 5). Finally, leading people to believe that efforts to restore control would likely fail reversed the effect, decreasing 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 paper we discussed two critical behavioral responses to stress – decreasing versus increasing consumption (e.g., Duhachek 2005; Faber and O’Guinn 1988; Kim and Gal 2014). These divergent patterns suggest that stress may not have a singular effect on consumer behavior, and that its effect may depend on consumers’ perceptions of control over their environment.

We found that consumers who felt a low level of control in the face of stress were more likely to save money or spend it on necessities. Saving and spending on necessities seems to be a reflection of consumers’ attempts to actively manage stress and restore feelings of control. This is consistent with previous research showing that stress can lead to a decrease in consumption (Popper et al. 1989; Stone and Brownell 1994; Torres and Nowson 2007). This previous research, however, does not explore the moderating effect of trying to restore control. A view of behavioral responses to stress focused on control offers two important advantages. First, it predicts that stress will increase saving behavior only to the extent the stress is accompanied by low control. Second, it predicts that products that are considered nonnecessities may also become more valuable under stress, as long as these products are useful in managing the stress, temporarily becoming a necessity.

This elasticity in the concept of necessities has interesting implications for what is typically believed to represent impulsive spending under stress. Spending on nonnecessities, like 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. While we have advanced knowledge with some of our findings, 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. One important question is whether any necessity that is helpful in restoring stress-related loss of control is also helpful in restoring control that is not due to stress. Food items, for example, are helpful in restoring control in the presence of stress (they are necessities), but perhaps not as much when the loss of control is not caused by stress. For instance, a consumer may be put on hold when talking to the cable company without knowing when they will be helped, which means they have no control. This situation does not necessarily represent stress, and it would likely not lead to an increase in spending on necessities. Further research could examine differences in behavior resulting from a loss of control due to stress versus a loss of control due to alternative factors.

This research also contributes to the literature on how external threats influence consumer spending (Roux, Goldsmith, and Bonezzi 2015; Rucker, Galinksy, and Dubois 2012; Sharma and Alter 2012; Tully, Hershfield, and Meyvis 2015). Whereas previous research has considered a variety of threats (e.g., threats related to power, scarcity, mortality salience), our research focused on how stress uniquely impacts spending. Various threats may or may not be associated with high levels of stress. In Experiment 5, we prompted participants who were starting at a new job to either write generally about their thoughts surrounding the new job or to focus on the stressors surrounding it. If the life change associated with starting a new job can be construed as a threat, in the sense that it can represent a dramatic change in one’s current life status, this threat was associated with high levels of stress only for those who focused on what is most stressful about the new job. This suggests that whether a threat induces high levels of stress may not depend uniquely on the threat, but on how the threat is interpreted. For example, a manipulation
of resource scarcity or lower power may be threatening, but their influence on stress will depend on which aspects of the scarcity or power threat consumers focus on.

A related question is whether any sort of threat will systematically influence spending. Our conceptualization predicts that this influence will depend on (a) the level of control associated with the threat, and (b) how this control influences the perception of certain products as necessities. Therefore, if some threats do lead to increased stress, they can each 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). For example, beer is not a necessity, but if a grocery store runs out of beer when one is having a party in one hour, this stress may cause additional spending on related products that may now be typically considered necessities. Social exclusion may also lead to low control, but the consequences can be as extreme as considering consuming cocaine (Mead et al. 2011), which is not a necessity. Future research could investigate the stress induced by each of these threats and adopt a novel, control-driven approach, and find an array of interesting consequences for consumer saving and spending not yet explored.

Finally, this research contributes to the literature on how hormones influence behavior (Durante et al. 2011, 2014; Lens et al. 2012; Saad and Stenstrom 2012). Early studies in the animal literature found that cortisol becomes elevated only in situations in which there is no control over a stressful event. For instance, cortisol was elevated when there was no control over a high intensity noise or an electric shock in dogs (Dess, et al. 1983) and monkeys (Hanson, Larson, and Snowdon 1976). Our findings suggest a relation between cortisol, perceptions of control over one’s environment, and consumer spending. To our knowledge, this is the first empirical investigation 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 the behavioral consequences of stress, are evident only for those individuals who feel they do not have control over their environment. Future research is needed to further examine the link between perceptions of control and behaviors related to elevated stress (e.g., hoarding, depression), including a direct measure 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 consumers are aware of a bias toward increased spending on certain types of products, they may be able to better control excessive expenditures. These excessive expenditures may include necessities (e.g., stockpiling household goods), but also products that some stressed consumers perceive to be necessities (e.g., expensive clothes), or products that are detrimental to one’s health (e.g., increased caloric consumption; Salerno, Laran, and Janiszewski 2014). Although helpful for restoring control, these products may have harmful long term consequences, therefore managing their consumption to an adequate level is important.

For marketers, a potentially valuable insight is that everyday 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. Given the finding that consumers may spend relatively more on necessities when under stress, this information can be useful for understanding trends, product planning, and improving market forecasts. Marketers may also be able to reposition specific products in certain times of year to alter the perception that a particular product is a necessity or useful in restoring a sense of control over one’s life.
Conclusion

Seven experiments found that stress leads consumers to save money in general, but spend strategically on products that are perceived to be necessities. This research contributes to our understanding of how stress influences consumer spending, including the role an individual’s sense of control plays in how stress affects consumer behavior. Moreover, this research contributes to the growing literature on how the interplay of external (e.g., environmental) and internal (e.g., physiological) factors impacts consumer decision-making. These findings, we hope, will open the door for future research that combines the natural sciences with consumer science to gain novel insights into human behavior.
APPENDIX

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.”

ARTICLE READ BY “BELIEF IN RESTORING CONTROL: NO” CONDITION IN 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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FIGURE 1

WILLINGNESS TO SAVE AS A FUNCTION OF STRESS AND RESTORED CONTROL

(EXPERIMENT 1)
FIGURE 2

IMPORTANCE OF ACQUIRING NECESSITIES AS A FUNCTION OF MEASURED STRESS AND PERCEIVED CONTROL (EXPERIMENT 2)
FIGURE 3

WILLINGNESS TO SAVE AS A FUNCTION OF STRESS AND CONTROL OVER OUTCOME

(EXPERIMENT 3)
FIGURE 4

WILLINGNESS TO SPEND ON NECESSITIES AND NONNECESSITIES AS A FUNCTION OF STRESS (EXPERIMENT 4)
FIGURE 5
WILLINGNESS TO SPEND ON EXPENSIVE CLOTHING AS A FUNCTION OF TYPE OF STRESSOR (EXPERIMENT 5)
FIGURE 6

IMPORTANCE OF SAVING AS A FUNCTION OF STRESS AND PERCEIVED ABILITY TO

RESTORE CONTROL (EXPERIMENT 6)

![Graph showing the importance of saving versus spending on products under different stress conditions and control restoration levels.](image-url)