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Disordered environments prompt mere goal pursuit

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ABSTRACT

People have a strong need to perceive their environment as orderly and structured. Among the various strategies to defend against the aversive experience of disorder, the authors propose and test the novel hypothesis that people may reaffirm a sense of order by setting and pursuing goals that may be unrelated to the source of disorder. In a series of (lab and field) studies, the authors show that when environmental cues trigger an experience of disorder, or when people have a chronic need for order, and hence when they are motivated to restore perceptions of order, people are more attracted to clear, well-defined goals and motivated to attain them. Moreover, the authors show that the effect of a disordered environment on goal pursuit is driven by the need to reaffirm perceptions of order, and—conversely—that setting and pursuing goals is indeed functional in promoting a sense of order.

During the so-called “Blitz”—the terror bombing campaign on cities in Great Britain that created destruction, chaos and mayhem during the early years of World War II—the British government issued a propaganda campaign featuring large, bright red printed posters urging its citizens to “Keep Calm and Carry On”. Hence, the now iconic posters advocated people to control their nerves, and, importantly, to move on pursuing their daily, mundane, goals. Could such an advocacy to tend to one's daily business, which probably did nothing directly to remove the source of chaos and disorder, have been effective in restoring a sense of purpose and order in the British people of the time? While that may seem unlikely and while, to our knowledge, no systematic study has evaluated the impact of the campaign, the present research will demonstrate that such an advice to carry on pursuing one's goals even if these are unrelated to any environmental source of disorder might be less naïve and inadequate than may appear at first glance and may actually serve to promote a sense of order under these conditions.

In this research we ask whether and how an environmentally-induced need for order influences the likelihood that people set and pursue goals—regardless of the goals' relation to the source of disorder—as a means to cope with the experience of lack of order, predictability, and regularity. In addition, we examine the underlying assumption of whether a disordered compared to ordered environment indeed increases the need for order, thereby boosting the need to regain a sense of order, and that a high need for order drives the effect of a disordered environment on mere goal pursuit. In addition, we explore two logical extensions of our reasoning and test whether the effect mainly holds when the goal is clear rather than vague and whether cues signaling environmental disorder promote actual, overt goal pursuit. Finally, we test the functionality of the proposed mechanism and examine whether the mere pursuit of goals is an effective way to reaffirm perceptions of order after exposure to a disordered environment.

1. The need to reduce disorder

While individual, situational, and even cultural differences certainly exist, people are generally believed to have a fundamental need to view the world as an ordered and structured place composed of predictable cause and effect relations (Heine, Proulx, & Vohs, 2006; Jost, Banaji, & Nosek, 2004; Kay, Gaucher, Napier, Callan, & Laurin, 2008; Kruglanski, 1989; Landau et al., 2004). Such perceptions are considered one of the most important factors governing people's well-being. The experience of order and nonrandomness are key contributors to healthy psychological and physical functioning (Janoff-Bulman, 1992; Rothbaum, Weisz, & Snyder, 1982). In contrast, lacking understanding of the regularities that govern the environment and perceiving it as

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unmanageable and random is a highly aversive state triggering fear, apathy, and withdrawal (Whalen, 1998). Hence, it is not surprising that people actively try to avoid or remedy perceptions that the world is a disordered place, and strive to maintain beliefs in order and structure (Kelley, 1971; Skinner, 1996).

To protect themselves from the unsettling feelings that the experience of disorder may incite, people have developed a myriad of strategies to provide a comforting sense that the world is not ruled by chaos. Since it is not always feasible to directly address the source of such disorder (as in the case of British citizens facing the bombing attacks on their cities in WWII), people may rely on compensatory sources of order (Antonovsky, 1979; Kay et al., 2008), and more specifically on imbuing the self and/or the environment with increased power and influence (Kay et al., 2008; Sullivan, Landau, & Rothschild, 2010). For example, research shows that one particular response to a perceived lack of order is to see patterns in the environment, even if there are none (Proulx, Heine, & Vohs, 2010). More specifically, a threat to order has been found to make people prone to perceive illusory patterns in grainy images, or to increase susceptibility to conspiratorial and superstitious beliefs (Greenaway, Louis, & Hornsey, 2013; Whitson & Galinsky, 2008). An alternative response to lacking a sense of order is to have faith in abstract and controlling external forces, such as governments, institutions, and organizations (Jost et al., 2004; Shepherd & Kay, 2012), or an interventionist God (Kay et al., 2008). In sum, these studies suggest that a perceived threat to order and structure prompts responses aimed at regaining a sense of order by converting a fuzzy world into a more understandable and predictable one, thereby relying on compensatory strategies.

It is interesting to note that these and other studies that have examined responses to disorder mainly focused on the sometimes irrational, exotic, and even bizarre strategies that people resort to in order to regain a sense of order. But if maintaining a sense of order is so engrained in our nature, and if threats to order are so omnipresent in our environment (Antonovsky, 1979; Kelley, 1971), then a straightforward question that arises is: are these responses to see patterns in chaos or to revert to conspiracies, superstitions, or a controlling divine power the only, let alone the most prevalent strategies in our toolbox to cope with chaos and lack of environmental order? We propose that while certainly in our repertoire, a sole focus on these would obscure that there are more mundane, concrete, and probably more prevalent and typical strategies that we employ to regain a sense of order. More specifically, we propose that mere goal setting and goal striving (we use mere goal pursuit as an umbrella term) in and of itself has a powerful psychological effect in satisfying a need for order and hence will alleviate an environmentally induced sense of disorder. Importantly, we propose that goals and mere goal pursuit serve this function regardless of their specific objectives and hence also help in regaining a sense of structure and order when they are unrelated to the source of disorder. We develop our reasoning in the next section.

2. Goal pursuit provides order

Goals are typically conceived to be concrete, domain specific representations of desirable end states that people want to attain and/or undesirable ones that they try to avoid (Baumgartner & Pieters, 2008). As a motivational corollary, goal pursuit may provide a sense of order because it makes salient various intrapersonal 'anchors' that reduce the experience of disorder and lack of structure. More specifically, when people engage in goal pursuit, it highlights at least two reference points: where they come from and where they are going, but also what it is they are pursuing (goal content), how to do it (the operationalization of means), and why to do it (the motivational drive it serves; Baumgartner & Pieters, 2008). In sum, following Skinner (1996), goals and goal pursuit provide a sense of order because they specify concrete agents, means and ends, the building blocks of a perception of order and structure. As a result, engaging in mere goal pursuit, regardless of its specific objectives may contribute to experiencing an effective antidote to the perception of disorder – a perception of regularity, coherence, and structure.

The specific 'theatre of operations' of the notions outlined in the present paper is the consumer sphere and, more specifically, the extent to which contextual cues in the retail environment can induce a sense of chaos and disorder on the one hand, and the extent to which engaging in goal-directed consumer behavior on the other can provide perceptions of order. This context was selected because it provides a compelling illustration of the proposition that both threats to a sense of order and strategies to remedy them are not particular to exceptional events such as natural disasters or bombing attacks, but constitute frequently encountered, mundane phenomena that are part and parcel of modern life. An apt illustration of this point is the work by Cutright and colleagues (2012; Cutright, Bettman, & Fitzsimons, 2013) who have shown that marketing stimuli such as brand logos with clear boundaries can and indeed do provide people with a sense of structure. In addition and related, studies have also focused on the motivational (side) effects of architectural features of the retail environment (Doucé, Poels, Janssens, & De Backer, 2013). In this context, and in line with our notions, studies have shown that narrow store aisles lead to compensatory reactions aimed at regaining a sense of control (Chae & Zhu, 2014; Levav & Zhu, 2009). The notion that spatial confinement is associated with compensatory behavior dovetails nicely with the finding of Aylott and Mitchell (1999) that the most invasive stressors in the retail environment (i.e., crowding, bad store layout, and ambient noise) have one common denominator: disorder. Hence, these studies suggest that not only extreme threats to order but also subtle, omnipresent signs of disorder, in particular disorder cues people encounter each day in the retail environment, may induce a need for order. Moreover, this research suggests that people can remedy a sense of disorder by turning to compensatory responses in that retail context.

In sum, and integrating previous arguments, we propose that if the mere pursuit of goals satisfies a need for order, we should be able to observe two phenomena: 1. When exposed to a disordered environment people experience a heightened need for order which prompts an increased tendency to set and pursue goals, not necessarily related to the source of disorder and 2. To the extent that goal pursuit provides an effective means of coping with a sense of disorder, such goal pursuit should be able to reduce the acute need for order in response to environmental cues signaling disorder. By implication of course, when exposed to an ordered environment, and hence when there is no need to regain a sense of order, environmental cues should be less consequential for goal pursuit. Please note that our reasoning implies that we conceive of the causal relationship between goal pursuit and need for order as bidirectional, with need for order inducing a motivation for goal pursuit, and goal pursuit, in turn, satisfying (and hence lowering) an experienced need for order.

Taken together, the present research aims to extend previous research on compensatory control strategies and research on goal pursuit by integrating both streams of research and establishing the impact of perceptions of environmental disorder on goal pursuit. Moreover, this work examines the conditions under which this effect is more or less pronounced. In so doing, our research

contributes to the literature on environmental psychology in several ways. First, while earlier research on perceptions of order and disorder as a function of environmental cues has frequently focused on the effects of dramatic, and profound environmental phenomena such as the chaos provoked by natural and man-made disasters, the present work is among the few to focus on a more mundane, but far more prevalent source of disorder—environmental cues in the retail environment that people encounter almost daily, yet may have a profound effect on perceptions of order and disorder (see Doucé, Janssens, Swinnen, & Van Cleempel, 2014). Second, this work answers the call for field studies and "immersive" lab studies to supplement the vast reservoir of research employing either recalling idiosyncratic experiences or relying on scenarios to manipulate environmental (dis) order (Landau, Kay, & Whitson, 2015). Third, while research on strategies people employ in response to environmental disorder has surged recently, the bulk of that reservoir has focused on three such strategies—bolstering the self, relying on external systems acting on behalf of the self and creating structure-providing belief systems (Landau et al., 2015). With the present series of studies we extend this repertoire in a new direction—can people also rely on strategies that have no apparent bearing on the source of disorder? While such non-targeted structure seeking strategies have received some attention lately (Cutright, 2012), goal pursuit as one of its exponents has not. Moreover, to the extent that research *has* addressed goals and goal pursuit (e.g., Rutjens, Van Harreveld, & Van Der Pligt, 2010), it has examined the *content* of such goals and goal pursuit and how these might help to curb a state of disorder and restore a sense of order. Our research extends this work by positing that, while relevant, the specific content or core objective of the goal might not be the key attribute that make it suitable as a compensatory strategy. Rather, as argued and as we will demonstrate, because of the building blocks for order that it requires by necessity, the mere pursuit of any goal, including those that are unrelated to the source of disorder, may suffice to serve people's need for order.

Thus, this research introduces an intriguing, ubiquitous, yet overlooked strategy (i.e., goal pursuit) by which people seek order as a response to environmental disorder, and in so doing contributes to a growing body of research on compensatory control mechanisms (Antonovsky, 1979; Kay, Whitson, Gaucher, & Galinsky, 2009; Landau, Kay & Whitson, 2015; Wang, Whitson, & Menon, 2012). Moreover, by focusing on consumption as a means of coping with environmental chaos, our research adds to the literature on the impact of people's need for order and compensatory responses in the market place (e.g., Cutright, 2012; Cutright et al., 2013). The present work advances our knowledge on the impact of the physical environment on judgment and decision making. Even though people are regularly confronted with situations in which their need for order is threatened (Levav & Zhu, 2009; Meyers-Levi & Zhu, 2007; Ulrich et al., 1991), this work is one of the first to examine how subtle, omnipresent situational disorder cues affect goal pursuit.

3. Present research

We tested our hypotheses about the impact of (a sense of) disorder on goal pursuit in a series of field and lab studies. We used a variety of need for order measures and environmental (dis) order cues, and assessed both the motivation to pursue a goal and actual, overt goal pursuit in a realistic setting. Interestingly, the present work acknowledges the fact that, while in absolute sense the need for order may be considered a general human motive (Landau et al., 2015), in a more relative sense, individual, contextual, and cultural differences do exist and might directly affect the experience of (dis) order and the tendency to embrace mere goal pursuit as a compensatory strategy. Hence, we collected data in different cultures (i.e., the data for Study 1, 3 and 4 were collected in the Netherlands, while Study 2 was an online (MTurk) study using a US sample). These cultures were selected because they differ on dimensions that might be relevant for the issue under study. More specifically, in line with Hofstede's cultural difference taxonomy (Hofstede, 1984), the Netherlands and the US differ in the extent of uncertainty avoidance, with the Netherlands scoring higher on this attribute than the US (Minkov & Hofstede, 2014; see also Hofstede, 2015). In addition, the basic rationale behind our work is the notion that need for order is not an all or nothing affair but can be a function of situational influences (Study 1, Study 3, Study 4) or individual differences (Study 2).

In what follows, we first empirically examine the basic relationship between the need for order and goals. More specifically, we test whether experiencing disorder (Study 1) and chronic individual differences in need for order (Study 2) affect a preference for setting clear goals, and we expect both an acute experience or chronic need for order to induce an increased preference for such goals. We then seek to demonstrate that a disordered environment increases motivation in goal pursuit, and that the need for order is the underlying psychological process driving the effect (Study 3). Finally, we examine two direct implications of our reasoning. First, to the extent that goals indeed provide the building blocks of a perception of order and structure because they specify concrete agents, means and ends (Skinner, 1996), it follows that the impact of disorder on actual goal pursuit should be mainly (or only) observed when such building blocks are more pronounced, i.e., when cues specifying and monitoring the process of goal pursuit are more salient and unambiguous (Study 2, Study 4). Second, we examine the functionality of the compensatory strategy of goal pursuit in response to disorder by assessing the extent to which pursuing a goal is indeed capable of reaffirming a sense of order, and so is able to reduce an acutely experienced need for order (Study 4).

4. Study 1

Study 1 provides a preliminary investigation of the hypothesis that people's commitment to goals and structured goal pursuit is affected by acute experiences of disorder. More in particular, in this field study we examined whether people feel more attracted to a reward program with a clear goal—a well-defined end state—when they experience a greater lack of order due to environmental cues (i.e., crowdedness, noise, visual clutter).

4.1. Method

Forty-four individuals voluntarily participated in this part of a larger study. After excluding one participant of non-Dutch nationality who could not understand the Dutch materials, the final sample consisted of 43 consumers (mean age = 37.16, SD = 16.72; 40% male). Participants were randomly approached in a street of a mid-sized city by a trained interviewer (see appendix A), and so no systematic approach schedule of any kind was used. To ensure natural variation in experiences of disorder, participants were approached at different times of the day when levels of crowdedness, noise, and visual clutter would vary. They were asked to participate in a study about shopping which would only take one minute of their time.

After having indicated their gender and age, participants read the introduction of the one page questionnaire which stated that retailers employ different strategies to attract customers, for instance by using reward programs. After some filler questions,

participants' valuation of a goal with a clear endpoint was assessed using the statement "I prefer to participate in a program that clearly indicates the total number of points required to redeem for a reward" (1 = strongly disagree; 6 = strongly agree; $M = 4.07$, $SD = 1.88$). Next, participants' experience of disorder was measured with the statement "I get an unpleasant feeling from the crowdedness of the shopping street" (1 = strongly disagree; 6 = strongly agree; $M = 1.74$, $SD = 1.32$).

4.2. Results and discussion

We performed a correlation analysis to examine the relationship between participants' experience of disorder and their valuation of the goal. As expected, the experience of disorder and goal valuation were positively correlated ($r(43) = .37$, $p = .01$),[2] such that participants with higher experienced disorder felt more attracted to a reward program with a clear and specific endpoint. Of particular interest is the observation that the relationship was observed regardless of the specific desirability of the endpoint. Rather, it appears to be a well-defined endpoint per se, as a specific attribute of goals that offers a motivational benefit in the present context.

5. Study 2

The results of Study 1 suggest that people feel more attracted to goals when perceptions of order are threatened by a disordered shopping environment. In Study 2 we zoomed-in on the impact of chronic individual differences in need for order rather than an acute experience of disorder on reward program choice. Moreover, in extension of the previous study, we also systematically varied specific cues central to the process of goal setting and goal striving, and tested whether people with a high chronic need for order are more likely to choose a reward program with a clear, well-defined rather than ambiguous endpoint, and a clear rather than ambiguous, specification of the means to attain it.

5.1. Method

Seventy-eight residents of the United States, recruited through Amazon's MTurk, participated in this part of a larger study and were paid a small fee (mean age = 35.45, $SD = 12.82$; 44% male). Following previous research (Proulx et al., 2010; Whitson & Galinsky, 2008), we first assessed chronic individual differences in the need for order by administering the five-item need for order scale—a subset of the need for cognitive closure (Webster & Kruglanski, 1994) and need for structure scales (Thompson, Naccarato, Parker, & Moskowitz, 2001). Sample items include "I enjoy having a clear and structured mode of life" and "I find that establishing a consistent routine enables me to enjoy life more" (1 = strongly disagree, 7 = strongly agree). Scores were averaged to form a need for order index ($M = 3.81$, $SD = .78$; Cronbach's $\alpha = .88$) with higher scores indicating a higher perceived need for order.

After completion of the need for order scale and a filler task, participants were asked to imagine themselves being a customer of a retailer that offered two different reward programs. The first program was described as a reward program with a clear, well-defined endpoint and a clear specification of the means to attain it (i.e., as a program with a specific end-date at which members should have collected a specific number of points to redeem several specific rewards). The second program was described as a program with more ambiguous goals (i.e., as a continuous reward program without a fixed end-date, that offers the same rewards, but without specification of the required number of points). Note that the type or value of the rewards was held constant. Participants then learned that they were only allowed to become a member of one program and were asked to pick the reward program for which they would sign up. The two options were presented in random order. Finally, participants answered demographic questions and were thanked for their participation.

5.2. Results and discussion

We performed a binary logistic regression on choice using chronic need for order as a predictor. As hypothesized, participants' need for order was a significant predictor of their choice such that participants with a high need for order were more likely to choose the reward program with clear goals and means to attain them ($\beta = .63$, $SE = .32$, Wald = 3.82, $p = .05$, odds ratio = 1.87). Hence, the present findings extend the previous results by indicating that (chronic) high levels of need for order prompt an increased tendency to engage in focused goal pursuit, characterized by a clear end state and a well-structured path leading toward it.

6. Study 3

The results of studies 1 and 2 provide initial evidence that people feel more attracted to goals when experiencing a disordered environment (Study 1) and when people have a chronic need for order (Study 2). Because these studies carry with them certain limitations, and more specifically their correlational nature and the contribution of common method variance to the results, we moved in Study 3 to a more controlled setting and focused on inducing different levels of need for order by means of systematically exposing people to different in-store environments. More specifically, we examined whether disordered compared to ordered shelf layouts induce different levels of need for order. We included a neutral control condition to assess the direction of any effects found. Furthermore, as an extra challenge to the robustness of our propositions and findings, we extended the previous results by exposing our participants to the treatment in a subtle, incidental, almost implicit fashion (see below for details). Moreover, we aimed to test whether people's need for order affects only the preference for specific parts of the goal pursuit process (i.e., a well-defined end state and a clear specification of the means), as Study 1 and 2 have shown, or whether it also motivates people to actively engage in goal pursuit. In addition, the present study extends the previous results by directly testing the mediating role of the need for order in driving the impact of experiencing a disordered environment on people's willingness to actively engage in goal pursuit.

To examine the role of key alternate constructs in accounting for the effect of perceiving disorder on motivation in goal pursuit, we also included ancillary measures of mood, cognitive load, and of related constructs captured under the umbrella of the need for cognitive closure (i.e., decisiveness, discomfort with ambiguity, shortsightedness, preference for predictability; Webster & Kruglanski, 1994). If our reasoning is correct, we would expect the need for order rather than any of these other constructs to mediate any effects found.

[2] As a randomization check, we recorded the number of passersby approached before each actual participant in the study. To ascertain that the study was indeed void of any systemic sampling biases, we performed a regression analysis predicting goal valuation scores from the experience of disorder, while controlling for this number of preceding passersby. The results showed that the number of preceding passersby did not affect the outcome, goal valuation ($\beta = .-.08$, *n.s.*), and did not negatively affect the impact of the experience of disorder ($\beta = .37$, $p = .02$), thus attesting to the success of the procedure employed.

6.1. Method

6.1.1. Participants and design

We used a between-subjects design with three conditions (environment: disordered vs. ordered vs. neutral) in which 95 individuals, drawn randomly from an online Dutch panel (i.e., not Amazon's MTurk), voluntarily participated. We excluded five participants who failed to comply with the experimental instructions (Oppenheimer, Meyvis, & Davidenko, 2009), such that the final sample consisted of 90 individuals (mean age = 40.17, SD = 13.06; 29% male).

6.1.2. Materials and procedure

This study was part of a series of studies undertaken by different research teams. First, participants were asked to answer general questions about reward programs after which they were randomly assigned to the disorder, order, or neutral condition. In the next task, we measured participants' motivation in goal pursuit and their need for order. Participants, assigned to one of the three environment conditions, were exposed to four pictures of scenes depicting a disordered store environment (e.g., disorganized shelves and cloth racks), an ordered store environment (e.g., nicely organized shelves and cloth racks), or neutral pictures which were used as controls (see appendix B). From the start of the study these scenes functioned as the website's background, were presented in soft-focus, and were fixated at the center of the screen (Mitchell, Nosek, & Banaji, 2003). More specifically, they were slightly greyed out such that the study text in front of the scenes was easily readable. This manipulation of type of environment can be characterized as relatively subtle and implicit since the scenes were not explicitly introduced and the concepts of order and disorder were never explicitly brought to participants' attention.

At the start of the study, all participants were asked to imagine that they were participating in a reward program. They learned that they collected points for a reward of their choice from a catalog and that they were halfway in their pursuit of this goal. This ensured that motivation was not a function of the type or value of the specific reward or of participants being close to the initial or end state, which has been shown to produce strong motivational effects (Hull, 1932; Wiebenga & Fennis, 2014).

In order to assess motivation in goal pursuit, participants subsequently rated their agreement with the following Likert statements: "I am motivated to reach the end state", "Collecting credits is important to me", "I am inclined to buy more products in order to receive additional credits", "I want to finish the program", and "I would invest much effort in this program in order to qualify for the reward" (1 = strongly disagree, 6 = strongly agree). Scores were averaged (Cronbach's α = .87) with higher scores indicating higher motivation in goal pursuit. Next we assessed participants' need for order and related constructs using an adapted, 24-item need for cognitive closure scale (Cratylus, 1995; Van Kenhove, Vermeir, & Verniers, 2001; Webster & Kruglanski, 1994). The questionnaire included five items designed to capture the need for order (e.g., "I find that establishing a consistent routine enables me to enjoy life more" and "My personal space is usually messy and disorganized" (reversed); Cronbach's α = .80). The remaining items assessed the preference for decisiveness (five items, e.g., "When faced with a problem I usually see the one best solution very quickly"; Cronbach's α = .81), discomfort with ambiguity (four items, e.g., "It is annoying to listen to someone who cannot seem to make up his or her mind"; Cronbach's α = .45), shortsightedness (five items, e.g., "I do not usually consult many different opinions before forming my own view"; Cronbach's α = .71), and preference for predictability (five items, e.g., "I like to have friends who are unpredictable" (reversed); Cronbach's α = .83). Scores on the items representing need for order and the alternate constructs were averaged, with higher scores indicating higher levels of each of the constructs. Note that from the start until and including this stage of the experiment the background scenes representing our three conditions remained in place, but without them ever being alluded to explicitly.

Participants then moved to the final page, which showed a white background, and were presented with five semantic differential scale items. As a manipulation check, they were asked to what extent they thought the pictures they had seen in the background were disorganized/organized, chaotic/ordered, messy/tidy, littered/neat, and sloppy/sleek (on a scale anchored from 1 to 6). We averaged these five items to create an index of perceived orderliness of the pictures (Cronbach's α = .98) with higher scores indicating that the pictures were perceived as more ordered. Additionally, participants completed ancillary measures (one item of mood, 1 = very bad, 9 = very good; one item of cognitive load, "To what extent did you have to exert mental effort to perceive and process the background scenes?", 1 = I did not have to exert mental effort at all, 9 = I had to exert a lot of mental effort; Monga & Houston, 2006). After completion of the task, participants answered demographic questions, the instructional manipulation check, and questions to probe suspicion for our hypotheses. None of the participants was aware of the true hypotheses underlying this study. Finally, participants were debriefed and thanked for their participation.

6.2. Results and discussion

6.2.1. Manipulation check

To test whether our environment manipulation was successful, a one-way ANOVA was conducted. Three participants did not fill out the manipulation check and were therefore excluded from this analysis. Results revealed a significant effect of environment on perceived orderliness ($F(2,84) = 379.81$, $p < .001$). Pairwise comparisons confirmed that participants in the disordered environment condition perceived the pictures as less ordered ($M = 1.49$, $SD = .53$) than participants in the ordered environment condition ($M = 5.78$, $SD = .42$; $t(57) = 34.71$, $p = < .001$) and neutral condition ($M = 5.11$, $SD = .83$; $t(49) = 18.20$, $p < .001$). Furthermore, the pictures presented in the ordered environment condition were perceived as more ordered than those presented in the neutral condition ($t(62) = 4.21$, $p < .001$). These findings indicate that participants had noticed the (subtle) background scenes and that the manipulation was effective, despite its deliberate subtlety.

6.2.2. Motivation in goal pursuit

Next, and more importantly, a one-way ANOVA showed the expected effect of environment on motivation in goal pursuit ($F(2,87) = 3.28$, $p = .04$). Tukey post hoc comparisons (one-sided) revealed that participants assigned to the disordered environment condition were more motivated to engage in goal pursuit ($M = 4.04$, $SD = 1.08$) than participants assigned to the ordered environment condition ($M = 3.36$, $SD = 1.25$; $t(57) = 2.15$, $p = .03$) or neutral condition ($M = 3.32$, $SD = 1.00$; $t(52) = 2.51$, $p = .03$). The ordered environment and neutral conditions did not differ ($t < 1$).

6.2.3. Need for order

A second one-way ANOVA revealed a significant effect of environment on participants' need for order ($F(2,87) = 4.07$, $p = .02$). Tukey post hoc comparisons (one-sided) indicated that the need for order was higher for participants in the disordered environment condition ($M = 4.50$, $SD = .93$) than for participants in the ordered environment condition ($M = 3.73$, $SD = 1.14$; $t(57) = 2.69$, $p < .01$)

and neutral condition ($M = 3.88$, $SD = .96$; $t(52) = 2.35$, $p = .04$). Again, the latter two conditions did not differ ($t < 1$).

6.2.4. Mediation analysis

To further explore whether need for order acted as a mediator of the relationship between environment and motivation in goal pursuit, and following Hayes and Preacher (2014), we created two dummy variables (the first dummy variable for the disordered environment condition and the second dummy variable for the ordered environment condition) for the three-level categorical independent variable treating the neutral group as the reference category. A first regression analysis with motivation in goal pursuit as dependent variable and the environment dummies as independent variables replicated the previous ANOVA results and indicated that a disordered environment indeed promoted motivation in goal pursuit compared to the neutral condition ($\beta = .27$, $t(87) = 2.31$, $p = .02$; for the ordered environment dummy, $t < 1$). A similar regression analysis with participants' need for order as dependent variable revealed that a disordered environment increased the need for order compared to the neutral condition ($\beta = .25$, $t(87) = 2.16$, $p = .03$; for the ordered environment dummy, $t < 1$). A third regression analysis indicated that the previously significant positive effect of a disordered environment on motivation in goal pursuit was reduced to non-significance when need for order was included in the model ($\beta = .20$, $t(86) = 1.73$, *n.s.*), whereas need for order remained a significant predictor ($\beta = .28$, $t(86) = 2.64$, $p = .01$).

We also estimated the 95% bias corrected [BC] confidence interval [CI] for the indirect effects of the two dummy variables on motivation in goal pursuit via need for order using a bootstrapping analysis (Hayes & Preacher, 2014; Preacher & Hayes, 2004) with 10,000 re-samples. The analysis confirmed that need for order acted as a significant mediator of the relationship between perceiving a disordered environment and motivation in goal pursuit as the 95% confidence interval for the indirect effect did not include zero (BC 95% CI, .04 to .45). Corroborating the previous results, for the ordered environment condition, the confidence interval for the indirect effect did include zero (BC 95% CI, −.26 to .09). These results indicate that it is indeed a disordered and not an ordered environment that accounts for the mediated effect on motivation in goal pursuit.

Stated differently, these results indicate that a disordered environment prompts increased motivation in goal pursuit via its impact on elevated levels of need for order, rather than an ordered environment doing the opposite— prompting decreased motivation in goal pursuit via decreased need for order.

6.2.5. Ancillary measures

To examine whether any of the effects found, could be accounted for by differences in mood, cognitive load, or constructs related to the need for cognitive closure, additional analyses were conducted. Separate one-way ANOVAs with each of these constructs as dependent variables and type of environment as independent variable indicated that only cognitive load was related to the environment manipulation ($F(2,87) = 3.38$, $p = .04$; for all other variables, $F < 2.21$, *n.s.*). However, cognitive load was unrelated to motivation in goal pursuit ($r = .09$, *n.s.*) and hence could not mediate the effect of environment on motivation in goal pursuit (i.e., the confidence intervals for both environment conditions contained zero, BC 95% $CI_{disorder}$, −.11 to .48, BC 95% CI_{order}, −.13 to .03).

6.2.6. Discussion

In sum, the present results show that the impact of type of environment on motivation to actively pursue specific goals is driven by disordered environments inducing an increased need for order, which in turn affects the tendency to engage in goal pursuit. Importantly, neither mood, cognitive load, or any of the four related motives were able to account for the observed relationship, thus ruling these out as alternate accounts of our findings. The discomfort with ambiguity scale showed a relatively low alpha. Nevertheless, while that may pose a challenge to the reliability of this scale, note that none of the dimensions related to the need for cognitive closure could account for the effects reported, despite the other three (and the need for order) all possessing satisfactory reliability. Hence, this failure to account for the observed effects is likely not due to the low alpha of discomfort with ambiguity.

Study 3 thus provides converging evidence for our notions. The results integrate the findings of Study 1 and Study 2 by demonstrating that the experience of a disordered environment induces elevated levels of need for order which in turn prompt an increased motivation to pursue goals, regardless of their relationship to the source of such disorder. It is interesting to note that we used the need for order items in a mediating role. Being derived from the need for structure and closure scales (Thompson et al., 2001; Webster & Kruglanski, 1994), these items were originally designed to assess chronic individual differences. While that may suggest that they may not be sensitive to acute environmental influences, recent findings on the trait-state distinction, captured by latent state-trait theory (Schneider, Otto, Alings, & Schmitt, 2014; Steyer, Ferring, & Schmitt, 1992; Steyer, Schmitt, & Eid, 1999) show that observed scores on a chronic measure reflect not only stable person-specific effects, but also situational influences because measurement always takes place in a specific situational context. Indeed, empirically, the present findings also demonstrate that the need for order items were able to pick up acute situational influences. Hence, in line with previous research using a similar approach of using chronic beliefs to assess situational effects (Schmeichel, Harmon-Jones, & Harmon-Jones, 2010), we consider our findings a fairly conservative test of our notions. Nevertheless, the critical reader might argue that assessment of acute differences in need for order might more suitably be captured by a measure that is specifically tailored to that task. To assess the robustness of our findings, this issue will therefore be addressed in the next study.

In addition, although the pictures of a disordered, ordered, and neutral environment and the neutral pictures were never brought explicitly to people's attention and they were never asked to respond to the background stimuli, subtly encountering disorder rather than order or neutral cues resulted in an increased motivation to pursue goals. More specifically, disorder cues compared to order and neutral cues led to a higher need for order, which accounted for the impact of environment on motivation in goal pursuit. Our analyses also indicate that it is the disordered and not the ordered environment that was responsible for the effects.

7. Study 4

The previous findings indicate that when situational cues threaten a sense of order (rather than an ordered environment providing it), or when people have a chronic need for order, and hence when they are motivated to regain a sense of order, people feel more attracted to clear, well-defined goal endpoints and well-defined means to get there—even when these goals are unrelated to the source of disorder and regardless of their intrinsic desirability. In addition they show increased motivation to engage in the pursuit of those goals, that is, motivated to follow the clear road map to get there.

Nevertheless, the previous studies, although insightful, were still limited in that they relied on self-reports of our key construct—mere goal pursuit. Hence, the purpose of Study 4 was to replicate and extend these findings by examining the effect of a disordered compared to ordered environment on actual, overt goal pursuit in a realistic, "immersive" context. Second, we wanted to replicate and extend the notion that engaging in goal pursuit in response to cues signaling disorder is not fueled by the desirability of the end state to be attained. In Study 4 we therefore kept the value goal constant and focused on a direct implication of our reasoning. As mentioned earlier, to be successful as a compensatory strategy in response to disorder cues, goal setting and goal striving require the specification of concrete agents, means and ends (Skinner, 1996). Consequently, the impact of disorder on goal pursuit should be more pronounced when cues specifying and monitoring the process of goal pursuit are more salient and unequivocal. Stated differently, mere goal pursuit may not be invariantly successful as a compensatory strategy, but particularly when such goal pursuit can counter the adverse impact of disorder, i.e., when monitoring information about the goal pursuit process is unambiguous rather than ambiguous. This effect should be attenuated in an ordered environment where, as the previous results show, there is no need to regain a sense of order. Therefore, in the present study, we extended the results of Study 2 by manipulating the extent to which participants received unambiguous, unequivocal monitoring information about the pursuit of their goal. Third and finally, we aimed to test whether pursuing goals is indeed an effective way to reaffirm the experience of order, that is, to test whether the process of goal pursuit indeed satisfies the need for order induced by a disordered environment. If goal pursuit is indeed employed as a compensatory strategy that people resort to cope with a situation of chaos and disorder, it can only be deemed functional and successful in that role to the extent that it reduces an acute need for order in that situational context, a notion tested in the present study.

In sum, the present study tests a moderated mediation model where we aim to demonstrate how actual, overt goal pursuit as a function of disordered environments may serve to restore a sense of order and hence to reduce an acute need for order. In keeping with the reasoning of our paper, we thus expect an indirect, mediated effect where a disordered environment would prompt actual, overt goal pursuit, which, in turn would prove to be functional to the extent that it would succeed in lowering an acute need for order. Moreover, we posit that such a (mediated) effect would be particularly likely when the constituent components of such goal pursuit are more unequivocal, hence, when monitoring cues are unambiguous rather than ambiguous. As noted previously, this study also addresses the implication of our conceptualization of the causal relationship between goal pursuit and need for order as bidirectional, such that we extend the results of Study 3 which tested the need for order → goal pursuit sequence by focusing on the complementary causal direction. We tested our notions using a different, state-dependent, need for order measure and environment manipulation (i.e., environmental noise; Kruglanski & Webster, 1996) than used in the previous studies.

7.1. Method

7.1.1. Participants and design

This study used a 2 (type of environment: quiet vs. noisy) × 2 (monitoring information: unambiguous vs. ambiguous) between-subjects factorial design in which 99 students from a mid-sized university participated in exchange for partial course credit or monetary compensation. We excluded three participants who did not adhere to the instructions given for the manipulation task (i.e., they did not wore the required headphones, see below for details), and two participants whose responses were three or more standard deviations removed from the mean of our goal pursuit measure since they would distort the results obtained (Judd, McClelland, & Ryan, 2009; see below for details). The analyses reported below use the remaining 94 responses (mean age = 19.50, SD = 2.11; 60% male).

7.1.2. Materials and procedure

Participants were informed that the study consisted of several unrelated parts and were randomly assigned to one of the four conditions. For the first task, which entailed the environment and monitoring information manipulations, participants learned that they could earn additional money by solving anagrams. We measured actual, overt goal pursuit as time spent on an unsolvable anagram (Goldsmith & Dhar, 2013; Holland, Wennekers, Bijlstra, Jongenelen, & Van Knippenberg, 2009; Huang & Zhang, 2011). After having completed this part of the study, participants were presented with questions assessing their need for order. Finally, participants answered demographic questions, and were thanked, compensated, and debriefed.

For the anagram task, participants were informed that the task involved different word unscrambling puzzles and that by solving them quickly yet accurately they could earn additional money on top of the normal compensation for participation in the study. Words appeared one by one on a computer screen, and participants were told that they had to rearrange the letters of the presented word in order to produce a new word using all the existing letters only once. The words were presented in a fixed sequence with increasing difficulty such that the first trials consisted of simpler words with fewer letters than the later trials. Participants completed 20 trials. The first three trials were practice trials, after which they received performance feedback.

In addition, participants were exposed to unambiguous or ambiguous monitoring information indicating their progress toward the end state which was presented above the anagram. When such monitoring information was unambiguous, participants saw the text "This is anagram 1 of 17" (and so on) indicating their progress toward the end state. In contrast, when monitoring information was ambiguous, participants read "This is anagram 1 of {totalwords = unknown}" (and so on) and hence were left uncertain about their level of progress toward the end state. Following previous research (Goldsmith & Dhar, 2013), we assessed goal pursuit by measuring time spent persisting on an unsolvable anagram (measured in seconds), which was the twelfth anagram in the sequence. In line with Study 3, this position was chosen to ensure that overt goal pursuit was not a function of participants being close to the initial or end state.

Before the anagram task started, participants were led into separate cubicles and all were asked to put on headphones which were connected to a computer. They learned that they were not allowed to take off their headphones until they were notified to do so. The manipulation of type of environment started after the general instruction and once the anagram task commenced. In the noisy environment condition participants experienced the ambient sound of a shopping mall, whereas in the quiet environment condition participants were not submitted to noise. The ambient sound of the shopping mall was retrieved from http://www.freesfx.co.uk ("Ambience Shopping Mall Internal Busy 001") and featured the following technical specifications: duration 28.87s, bitrate 141 kbps, sample rate 44.1 khz, moderate sound level (75 dB on average, measured using an SPL meter; see Mehta, Zhu, & Cheema, 2012). Previous research has shown that exposing participants to environmental noise while performing a task is a validated and

reliable paradigm to induce elevated levels of need for order (Kruglanski & Webster, 1996).

When the participants had finished the anagram task they responded to the following need for order questions: "At the moment I need consistency and routine" and "At the moment I need organization and structure" (1 = strongly disagree, 7 = strongly agree; Van Kenhove et al., 2001). The items are similar to those used in the previous studies, but the wording was slightly adapted to tap more into the acute nature of participants' need for order. Scores were averaged to create a need for order index ($r(94) = .69$, $p < .001$) with higher scores indicating higher need for order. Participants also answered seven items measuring stress and agitation (e.g., "I felt agitated during the anagram task", 1 = strongly disagree, 7 = strongly agree; Cronbach's $\alpha = .80$). A one-way ANOVA indicated that neither environment, nor monitoring information, nor their interaction affected feelings of stress and agitation (all F's < 1) and so this will not be discussed further.

7.2. Results and discussion

7.2.1. Analysis of variance results

As a first step to assess whether the data fit the moderated mediation model, we conducted a set of two analyses of variance. A 2 (environment) x 2 (monitoring information) ANOVA with goal pursuit as dependent variable did not show any main effects (F's < 1) but did reveal the environment by monitoring information interaction ($F(1,90) = 6.90$, $p = .01$).[3] In addition, a similar full factorial ANOVA on need for order showed did not yield significant effects of either type of environment ($F < 1$) or monitoring information (F (1,90) = 1.15, *n.s.*). Similarly, the interaction effect between environment and monitoring information, also failed to reach significance ($F(1,90) = 2.77$, $p = .10$). Importantly, these analyses thus showed that while there is an interaction effect of environment and monitoring information on the proposed mediator (goal pursuit), there is no such interaction on the proposed outcome (need for order), thus rendering a moderated mediation model more plausible than a mediated moderation model.

7.2.2. Moderated mediation analysis

To probe the effects found and to test the full postulated model, we proceeded to examine the effect of actual goal pursuit behavior as a function of type of environment and type of monitoring information on participant's need for order. Hence we tested a moderated mediation model using a series of regression analyses (Hayes, 2013). First, we regressed the outcome, participants' need for order, on the proposed mediator, actual goal pursuit. As expected, goal pursuit and need for order were negatively related ($\beta = -.30$, $t(92) = 3.00$, $p < .01$), such that participants who engaged more extensively in goal pursuit subsequently indicated to have a lower need for order.

Next, following the recommendations of Preacher, Rucker, and Hayes (2007; Edwards & Lambert, 2007), we tested the complete moderated mediation model where monitoring information is posited to moderate the effect of type of environment on the mediator—goal pursuit (indicated by our measure of time spent on the unsolvable anagram)—which in turn influences the need for order. The previously reported results had established that type of environment and monitoring information interacted in the prediction of actual, overt goal pursuit. Hence, to test our moderated mediation model, we performed a regression analysis to test whether mere goal pursuit significantly predicted need for order, while controlling for the environment by monitoring information interaction and all main effects. This proved to be the case ($\beta = -.27$, $t(89) = 2.57$, $p = .01$).

The third and final step in the analysis confirmed the mediating role of mere goal pursuit. More specifically, a bootstrapping procedure with 10,000 re-samples revealed that the 95% confidence interval for the conditional indirect effect—the value of the indirect effect of environment on need for order via goal pursuit conditioned on the moderator, monitoring information—did not include zero (unambiguous monitoring information: BC 95% CI, −.27 to −.01; ambiguous monitoring information: BC 95% CI, .01 to .28). Hence, the first confidence interval indicates that a disordered environment positively affects mere goal pursuit when monitoring information is unambiguous, which subsequently alleviates or satisfies the need for order. Interestingly, the latter finding shows the opposite process when monitoring information is ambiguous. That is, it shows that a disordered (noisy) environment produces lower levels of goal pursuit (i.e., less time spent on the unsolvable anagram) when monitoring information is ambiguous, which, in turn, fails to reduce the need for order.

7.2.3. Discussion

In sum, using a different environmental manipulation and need for order measure, these results replicate and extend the previous findings in several ways. First, by manipulating whether actual goal pursuit could restore a sense of order as a function of type of environment and monitoring information, this study showed that—when monitoring information is unambiguous—a disordered environment could prompt increased actual overt goal pursuit, which converges with the findings of Studies 1–3. Second, we showed that under these conditions, mere goal pursuit actually enables people to reaffirm a sense of order. In addition, when monitoring information is ambiguous, our results suggest that when the process of goal pursuit adds to the experience of disorder because its constituent components suggest lack of order themselves, then the effect of environmental disorder on goal pursuit is attenuated.

8. General discussion

People have a strong need to perceive their environment as an orderly place. In the present research, we aimed to contribute to the literature on environmental psychology by studying the link between exposure to a disordered environment, the need for order, and mere goal pursuit. Specifically, extending previous research, we expected both acute experiences of disorder and chronic high need for order to increase the perceived attractiveness of well-defined goals, well-defined means to attain them, and to promote (motivation in) goal pursuit. We further proposed that the need to reaffirm a sense of order is the underlying mechanism driving the effect of a disordered environment on goal attractiveness and goal pursuit. More specifically, we hypothesized that a disordered environment would increase the need for order, and that setting and pursuing goals would be an effective way to reaffirm the experience of order, that is, to satisfy the need for order. In addition, we extended earlier findings by focusing on a mundane, almost trivial, class of environmental stimuli—the hustle and bustle of cues encountered daily in the retail environment, and examined the impact of both visual (Study 3) and auditory (Study 4) environmental cues. Furthermore we assessed

[3] Correlation analyses showed that while there is a correlation between time spent on previous anagrams and number of previous anagrams solved on the one hand, and time spent on the unsolvable anagram on the other ($r = .24$, $p = .02$ and $r = .35$, $p < .001$, respectively), including both as covariates did not affect the significance of the interaction between type of environment and monitoring information ($F(1,88) = 4.34$, $p = .04$).

the influence of environmental (dis)order cues both on the motivation to pursue goals (Study 3) and on actual, overt, goal pursuit (Study 4). Moreover, the present findings highlight that the actual content of the goal pursued need not necessarily be relevant to any source of disorder for goal pursuit to be effective as a compensatory strategy.

The findings of a series of studies were in line with our predictions and proved robust across various methodological and conceptual variations. More in particular, we found the predicted effects in the field and in more controlled settings, assessing need for order as a state and a trait variable and using a student sample and more heterogenous samples of European and American participants. Further, we exposed participants to various environmental disorder cues, ranging from a crowded street and messy store shelves, to the ambient noise of a shopping mall. The findings were obtained using both hypothetical and real goals and across different indices of goal pursuit (i.e., motivational intentions, choice, and overt goal pursuit behavior). Across all these variations we consistently found that situationally induced and chronic differences in need for order produce increased levels of (motivation in) goal pursuit.

8.1. Summary and implications of key findings

Studies 1 and 2 showed support for the association between disorder and goals. More specifically, Study 1 found that people felt more attracted to a clear reward program when they experienced a greater lack of order due to environmental cues. Measuring need for order as an individual difference variable, Study 2 extended this result and showed that chronic high need for order individuals were more likely to choose a reward program with clear rather than ambiguous goals. Study 3 provided evidence for the assumption that the need for order is the psychological process driving the proposed effect of environmental disorder on (motivation in) goal pursuit. Finally, Study 4 underscored the bidirectional nature of this causal relationship and showed that actually pursuing goals using unambiguous monitoring information is an effective way to restore a sense of order.

Together, these findings offer several important theoretical contributions. First, this research contributes to our understanding of compensatory control mechanisms by offering a new perspective on how people seek order as a response to disorder threats (Kay et al., 2008; Landau et al., 2015; Ulrich et al., 1991; Whitson & Galinsky, 2008). Although previous work has focused on more extreme and irrational strategies such as the development of superstitions and relying on supernatural or conspirational forces as ways of regaining a sense of order, the current findings reveal another more typical and mundane route by which people can restore the belief that the world is not ruled by chaos—goal setting and goal pursuit. In addition, we add to the literature on compensatory control mechanisms by showing that the motivational consequences of threats to order are dynamic and more diverse than might be expected based on previous research. That is, the present work is among the first showing that effects of disorder extend to behavioral intentions and overt behavior rather than being limited to the cultivation of certain beliefs aimed to restore a sense of structure and order. In addition, this work contributes to the reservoir of findings highlighting the role of external agents such as God, or the government as sources of compensatory strategies. In extension, we show that the experience of disorder can be remedied by a source of internal origin: setting and pursuing a goal, even when that goal has no relation with the disorder experience as such and the end state is not particularly rewarding or desirable. Moreover, our results suggest that the process of goal setting and goal striving might be triggered outside conscious awareness and so may be considered a fairly implicit form of self-regulation.

Second, this research extends work on the fundamental human motivation to perceive the world as an orderly, sense-making place by considering its effect in the less explored context of consumer behavior (Cutright, 2012; Cutright et al., 2013). This work illustrates that both disorder threats and strategies to remedy experiences of disorder are ingrained in (consumer) life, and hence do not remain limited to such extreme, exceptional events as natural disasters or terrorist attacks. Moreover, by examining the role of the need for order in the marketing and consumer sphere, our work also adds to the growing literature on how consumers use the consumption context to buffer against and respond to self-threatening events (Gao, Wheeler, & Shiv, 2009; Rindfleisch, Burroughs, & Wong, 2009; Rucker & Galinsky, 2008).

Finally, the present work advances our knowledge of the impact of environmental cues in the retail environment on consumption, and more specifically, goal pursuit. Most studies on these so-called store atmospherics have examined how specific environmental factors affect judgments and, only occasionally, behavior (Doucé et al., 2013; Levav & Zhu, 2009; Meyers-Levi & Zhu, 2007; North, 1996). The present work investigates the effect of (dis)order as a common denominator underlying a variety of retail environmental, atmospheric variables on actual behavior, and demonstrates that subtle, incidental disorder cues people frequently encounter significantly impact real-life behavior, regardless of whether they specifically relate to noise, store layout, or (social and visual) clutter. In so doing, this work adds to our understanding of cues signaling order and disorder in the (retail) environment and of their consequences for judgment, decision making, and behavior.

8.2. Limitations and directions for future research

Although our subtle environmental cues reliably triggered the motive to achieve order which in turn affected goal pursuit, it remains an open question whether more extreme and dramatic circumstances will produce the same effect, for instance in war situations or a natural disaster. Will people then respond similarly? Although extreme disorder might attenuate the motivation for goal pursuit, it may also be that such conditions still would trigger elevated levels of goal setting and goal pursuit, and it would be interesting to assess whether similar types of goals or also more fundamental ones, serving longer term values and beliefs might then be adopted. This might be a fruitful avenue for future research.

In addition, the values on our measure of the experience of disorder in Study 1 indicate a skewed distribution. However, that need not be problematic in and of itself. More specifically, as noted, we focus on relatively subtle, omnipresent signs of disorder, in particular disorder cues people encounter each day in the retail environment. Hence, it is reasonable and plausible to assume that perceptions in response to such subtle cues are also subtle and non-disturbing and indeed, the descriptive statistics on our measure of the experience of disorder reflect this assumption. Nevertheless, the distribution of this measure may signal that explicit, self-report measures may have their limitations and may be supplemented with more implicit measures of the experience of disorder, an observation that is also plausible in light of the findings of Study 3, which point to the implicit nature of the processes examined in the present work. Indeed, such implicit measures rely less on the participant's conscious awareness and his/her ability to accurately articulate his/her mental state, which might have been challenging given the subtlety of the type of cues encountered in this retail environment (cf. Nisbett & Wilson, 1977).

Reviewing the set of findings, the reader might wonder whether the representativeness of the MTurk, panel and student samples might pose a challenge to the robustness of our findings. Interestingly, there is by now a considerable literature on the attributes and representativeness of MTurk samples. Most notably, as highlighted by Berinsky, Huber, and Lenz (2012) and others (e.g., Paolacci & Chandler, 2014) MTurk respondents are typically more representative of the U.S. population than in-person convenience samples, although they are sometimes also less representative than participants in national probability samples. The sample used in Study 3 was drawn from a Dutch panel that is representative of the Dutch population. However, as can be seen from the gender distribution of that study, the sample drawn from this panel itself deviated from the Dutch national gender distribution. Additionally, the sample used in Study 4 was a convenience sample consisting of undergraduate students of the university where data collection took place. Although for all studies one might rightfully point out that they might not be fully representative with regard to national census data, it should be noted that the basic pattern of findings was in line with our notions and fully converged across studies and across samples. Hence, any deviation from national census data need not be deemed problematic per se as these deviations do not appear to have posed a serious threat to the construct validity of the present studies.

In addition, it is striking to note that while there are meaningful cultural differences in uncertainty avoidance between the two countries where the data collection for the present research took place (the Netherlands and the US), these differences proved inconsequential since the pattern of results was equivalent across both cultures. While on the one hand this attests to the assumed universality of the need for order construct (Landau et al., 2015), on the other it may well be that contrasting these cultures with others that are substantially less avoidant of uncertainty (e.g., Asian or Mid-Eastern cultures, Hofstede, 1984) might show meaningful moderation by culture. If so, this may imply that our findings mainly hold up in Western, highly structured societies. Indeed, while retail contexts in these societies can be characterized as relatively well-structured, this is not a cultural constant. In some cultures more crowded, disordered and noisy retail contexts may not signal disorder, but, in contrast, signal a properly functioning, structured market place (as can be observed in several Middle East and Oriental cultures). Future research may profitably examine how cultural norms interact with consumers' experiences in shaping the need for order and its (re)affirmation.

A related issue pertains to the roles that chronic need for order might play. In Study 3 we used the need for order items in a mediating role. However, as noted, these items were originally designed to assess chronic individual differences. While they demonstrated to be susceptible to acute environmental influences, future research might explore individual differences in need for order in a moderating role, i.e., qualifying rather than mediating any effects of environmental disorder cues on goal pursuit. It may well be that the findings observed in the present series of studies are more pronounced for individuals with higher as opposed to lower chronic need for order, corroborating the notion that the effects presented in the present paper might indeed be moderated by cultural and/or personality factors.

An additional question is whether achieving a sense of structure and regularity is always beneficial and functional as our current findings suggest, or whether there are also instances in which cultivating a perception of disorder may yield positive outcomes. A case in point might be creativity where a sense of order and structure may not be beneficial and may even hamper creative, original, non-standard idea generation (Aries, Veitch, & Newsham, 2010; Mehta et al., 2012). Given that (both 'high' and 'low') culture and corporate life thrive on creativity, providing a sense of order and structure might not necessarily be a worthwhile end in itself for politicians or marketers aiming to capitalize on people's perceptions of order and disorder.

How people try to cope with order-related threats is dependent on the compensatory strategies available to them (Kay et al., 2008). In our research, goal pursuit was the only means by which participants could restore a sense of order. Future research could examine whether goal pursuit is indeed the strategy of choice when people's toolbox includes more than one way to deal with the threat, or whether alternative, external sources of structure and order (such as God or the government) are then relied upon.

8.3. Concluding thoughts

We started this article by noting that during the darkest hours of the Blitz, the British were encouraged by their government to pursue their daily goals and remain calm while carrying them out. Although in the current research we embedded disorder threats within a much more mundane consumer context, it is striking to note that the advocacy was probably giving people the right advice at the right time. We now know that the bombing campaign destroyed cities, but could not destroy the morale of the British people. Perhaps a slight proportion of that resilience can be explained through this iconic advocacy—carry on pursuing unrelated goals to restore a sense of order.

Appendix A

Picture of a street when chaotic and noisy (Study 1).

Appendix B

Stimulus material used in Study 3.

Disordered environment

Ordered environment

Neutral pictures

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