Coping with Chaos: How Disordered Contexts Promote Stereotyping and Discrimination

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Coping with Chaos: How Disordered Contexts Promote Stereotyping and Discrimination

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Being the victim of discrimination can have serious negative health- and quality-of-life–related consequences. Yet, could being discriminated against depend on such seemingly trivial matters as garbage on the streets? In this study, we show, in two field experiments, that disordered contexts (such as litter or a broken-up sidewalk and an abandoned bicycle) indeed promote stereotyping and discrimination in real-world situations and, in three lab experiments, that it is a heightened need for structure that mediates these effects (number of subjects: between 40 and 70 per experiment). These findings considerably advance our knowledge of the impact of the physical environment on stereotyping and discrimination and have clear policy implications: Diagnose environmental disorder early and intervene immediately.

There is substantial evidence that discrimination has serious negative consequences for those who are discriminated against, as well as for society in general (*1*–*3*). A neglected possible source of stereotyping and discrimination is physical disorder. The environment can affect the relative accessibility of important goals (*4*, *5*), and recently it has been found that physical disorder in particular can, through shifting the relative accessibility of goals, increase littering, trespassing, and even stealing (*6*). But can physical disorder also lead to increased stereotyping and even discrimination? We have reason to believe that it does, because physical disorder is likely to increase the need for structure, thereby boosting the goal to create order, leading to the use of highly simplified categories and judgments (stereotypes), which, in turn, may trigger discriminatory behavior.

There is some evidence that stereotyping is goal-driven (*7*–*9*), and there is even evidence that when people's desire for structure and predictability is high, they are more likely to engage in stereotyping than when it is low (*10*–*13*). Thus, disorder can be expected to increase the need for structure and make the goal to perceive order more salient, a goal that can, at least temporarily, be satisfied by stereotyping. Seen in this light, stereotyping is a way to cope with chaos, a mental cleaning device in the face of disorder. In many situations, discrimination is a likely correlate of stereotypes. Stereotypical behaviors are often activated along with stereotypical traits, (*14*) and they can be discriminatory in the dealings with members of lower-valued outgroups. Members of such outgroups are linked to many negative stereotypical traits that are salient in public encounters (such as danger or contagiousness), in evaluative situations (such as laziness or incompetence), and in situations of neediness (such as unworthiness or undeservedness) (*15*). Linked to these stereotypical traits are stereotypical reactions, such as keeping one's distance, excluding someone from membership or position, or declining help to someone in need (*16*).

We tested our hypothesis about the impact of disorder on stereotypes and their discriminatory behavioral correlates in a series of field and lab experiments, using a variety of explicit and covert disorder primes and stereotyping measures. In our two field experiments, we tested the impact of real-world situations of disorder on stereotyping and its behavioral correlates. In the three lab experiments, we subsequently tested the proposed mechanism itself. In all experiments, we tested for effects of participants' gender and mood. Because we did not find any significant effects of these two variables, we will not report them in the remainder of this article (*17*).

In our first field experiment, we interviewed travelers in a train station. In this experiment the dependent variable consisted of a judgmental measure (a survey of trait judgments about some social groups) and a behavioral measure (discrimination measured as physical distance from a member of an ingroup versus outgroup while filling out the survey). We predicted that in a dirty train station people stereotype more and would choose to sit further away from an outgroup confederate than in a (relatively) clean train station. A recent strike by the cleaners of Utrecht train station in the Netherlands provided a unique opportunity to test the impact of considerable physical disorder on stereotyping against the impact of physical orderliness in the same public location. Utrecht station is a train hub in the middle of the Netherlands, where thousands of travelers pass through on a daily basis. Thus, during the cleaners' strike, the train station quickly turned into a dirty and disordered environment. After the station had not been cleaned for a few days in a row, we asked 40 travelers [mean age = 32 years; 50% female, all Caucasian (*17*)] who were waiting for their train to participate in this study in return for a candy bar or an apple. They were asked to judge (on a nine-point scale, ranging from 1 = not at all to 9 = very much) the extent to which they thought certain traits applied to a particular group (in our case, Muslims, homosexuals, and the Dutch) (*17*).

To get a behavioral measure of discrimination related to stereotyping, travelers were asked to fill out the short questionnaire in an area where there were six chairs lined up. Respondents (who were all Caucasians) could choose any chair, except that the first chair in the row was already taken by either a black (Dutch-African) or white (Dutch-Caucasian) confederate. Through random assignment, for half of the participants this confederate

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was a 20-year-old male Dutch-African (black) person, and for the other half, the confederate was a (20-year-old) male Dutch-Caucasian (white) person. Pretests had shown that these two confederates were judged as equally intelligent, friendly, attractive, and approachable. The dependent variable was the distance in number of chairs (zero to four) between the chair with the confederate and the chair the participant chose to sit on. A week later, after the cleaners had returned to work and the train station looked clean and orderly again, we returned and repeated the experiment (again with 40 subjects, 50% female, all Caucasian).

For the purpose of presentation and because, as expected, the pattern of means for the positive- and negative-stereotyping measures (*18*) was very similar for each of the three social groups, we combined the means in one stereotype judgment score ($\alpha = 0.76$). An analysis of variance showed the predicted effect of environment on stereotyping: $F_{1,78} = 13.11$, $P < 0.01$. When the train station had not been cleaned for several days, participants stereotyped significantly more (mean $M = 5.12$, standard deviation $SD = 1.01$) than when it looked nice and clean ($M = 4.28$, $SD = 1.03$). Thus, people's tendency to use stereotypes in their social judgments clearly increased with physical disorder.

Importantly, this stronger stereotyping in the disorder condition was accompanied by a significant increase in the distance the respondents chose to put between themselves and the black confederate, compared with the order condition (see Fig. 1): $F_{1,78} = 7.23$, $P < 0.01$. When the train station had been cleaned, however, participants' choice of seat was not significantly affected by the confederate's ethnicity ($F < 1$). This clearly suggests that the tendency for behavior to be driven by preexisting knowledge structures (*18*), such as representations of stereotypical reactions ("distance yourself from people belonging to group X"), increases with physical disorder. In a disordered environment, people are more likely to distance themselves from outgroup members than in a clean and ordered environment.

Were the results of this first study actually due to disorderliness, or were they rather a reaction to "uncleanness"? In the second field experiment, we tried to address this issue by manipulating environmental disorder while keeping cleanness constant (*17*). We did this by approaching 47 passersby (mean age = 42; 57% female, all Caucasian) on a street in an affluent neighborhood in a Dutch city and asking them to fill out a stereotyping questionnaire (see first field experiment) in return for 5 Euros. Disorder was manipulated by some subtle environmental interventions. We took out and misplaced some of the tiles in the pavement of the sidewalk, put a badly parked car (with two wheels on the sidewalk, windows open) near the spot were respondents were interviewed, and put a bicycle on the street, as if it had been abandoned. When respondents had completed the questionnaire, they were given 5 euros (three coins of 1 euro, four coins of 50 eurocents), and asked to donate (some of) that money to the "Money for Minorities" fund (identified as an initiative to help members of minority groups—such as immigrants, homeless people, and people from other countries—to live better and successful lives). The amount of contribution to this fund (0 to 5 euros) was our behavioral measure. In the control condition (that was run a day later), the same pavement, car, and bicycle were there, but everything looked nice and neat. The prediction was that, compared to a control condition, respondents stereotype more and donate less money for minorities when they are interviewed in a disorderly environment. As expected, an analysis of variance revealed that disorder respondents ($n = 24$) scored significantly higher on the stereotyping measure ($M = 5.07$, $SD = 0.98$) than did control participants ($n = 23$; $M = 4.29$, $SD = 1.00$): $F_{1,45} = 7.17$, $P < 0.01$. The analysis also showed, as predicted, that people who were in a disordered environment gave significantly less money to the Money for Minorities fund ($M = 1.70$, $SD = 0.96$) than did participants who were in the control condition ($M = 2.35$, $SD = 0.93$): $F_{1,45} = 5.71$, $P < 0.05$. Thus, the results of the second field experiment support the results of the first field experiment.

The results of the two field experiments show the same pattern, but are they really due to differences in the need for structure and, thus, differences in the relative weight of the goal to create order? In the next experiment, we addressed this question directly. We first exposed people to a series of four pictures of events and scenes depicting disorder (e.g., a book case with chaotically stacked books), order (e.g., a book case with nicely stacked books), or neutral pictures (e.g., pictures of a table, chair, or ball). We predicted that disorder would lead to more stereotyping and that an increase in the need for structure is an important force behind this effect (*17*). Forty-seven students (mean age = 20, 64% females, all Caucasian) were randomly assigned to a disorder, order, or neutral priming condition. Participants were asked to look at the set of four pictures and become familiar with them and to be prepared to answer questions about the pictures later in the session. After participants had finished this task, in an ostensibly different study, their need for structure was assessed using eight items of the personal-need-for-structure scale (*18*, *19*) ["It annoys me when I get into situations in which I do not know what to expect," "I do not like situations that are uncertain," "I need structure," modeled after (*17*) and (*18*)] on nine-point scale (1 = completely disagree, 9 = completely agree) ($\alpha = 0.77$). Finally, stereotyping judgments were measured as before (see field experiments). As can be seen in Fig. 2, both the need for structure and stereotyping are considerably higher in the disorder condition than in the order or neutral conditions. These effects are significant [$F_{2,44} = 7.06$, $P < 0.01$ and $F_{2,44} = 4.48$, $P < 0.05$, respectively].

In support of the hypothesis that the need for structure mediates the impact of disorder on stereotyping, we found that the need for structure and the need for stereotyping were highly correlated ($r = 0.69$, $P < 0.01$). Next, a covariance analysis indicated that the effect of condition on stereotyping was no longer significant when the need for structure was included as a covariate: $F_{2,43} = 1.10$, $P = 0.34$ (t test covariate = 7.57, $P < 0.01$). In addition to this covariance analysis, we used the bootstrapping method for testing mediation proposed by Preacher and Hayes (*20*) to test to what extent structure striving and/or cognitive load mediated the effects of disorder on stereotyping. This analysis revealed the need for structure (and not cognitive load) as a significant mediator for the effect of disorder on stereotyping [see supporting online material (SOM) for detail] (*17*).

The first lab experiment shows the stereotyping effect for scenes of disorder. Would the effect on stereotyping also hold for unconscious exposure to concepts of disorder? We conducted a second lab experiment to find out (*17*). Fifty-eight students (mean age = 20, 67% females, all Caucasian) were randomly assigned to a disorder,

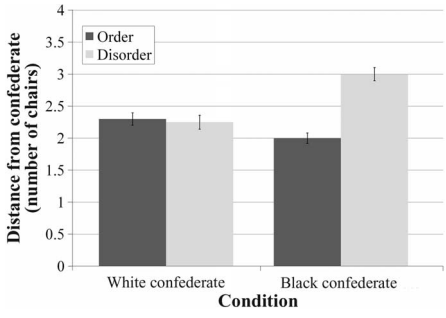

Fig. 1. Behavioral measure of discrimination (with error bars indicating SE). The distance subjects chose to put between themselves and the Dutch-Caucasian (white) or Dutch-African (black) confederate (measured in number of chairs) as a function of an orderly (clean) or disorderly (trash-littered) environment.

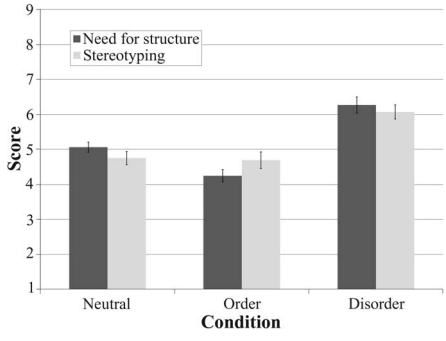

Fig. 2. Need for structure and degree of stereotyping (with error bars indicating SE) as a function of order condition (e.g., a neutral picture with a table, a picture of an orderly stacked book case, a picture of a chaotically stacked book case).

order, or neutral priming condition in a parafoveal vigilance task in which words were presented outside of awareness (*21*). The words that were presented in 20 of the disorder and order trials and in all of the neutral priming trials, were neutral words (e.g., table, chair, ball). In the remaining 40 disorder trials, disorder words (e.g., chaos, anarchy, mess) or order words (e.g., structure, clarity, neat) were presented. We used the same measures for need for structure and stereotyping as in the first lab experiment. The results of the analysis of variance looked almost identical to those of the first lab experiment. Disorder participants reported a significantly higher need for structure (M = 6.16, SD = 1.54) than both order (M = 4.29, SD = 1.88) and neutral participants (M = 4.67, SD = 1.09): $F_{2,55}$ = 7.90, P < 0.01. Disorder respondents also scored significantly higher on the stereotyping measure (M = 5.95, SD = 1.13) than both order (M = 4.38, SD = 1.50) and neutral participants (M = 4.89, SD = 1.32): $F_{2,55}$ = 7.09, P < 0.01.

In support of the hypothesis that the need for structure mediates the impact of disorder on stereotyping, we found that the need for structure and stereotyping were highly correlated (r = 0.77, P < 0.01). Next, a covariance analysis indicated that the effect of condition on stereotyping was no longer significant when the need for structure was included as a covariate: $F_{2,55}$ = 1.13, P = 0.33 (t test covariate = 6.02, P < 0.01).

A crucial element in the mechanism we suggested is that the act of stereotyping does reduce the need for structure (*22*, *23*). Is this indeed the case? If so, the effect should also hold for disorder per se and not depend on meaningfulness (such as trash, broken street tiles, the word "anarchy," etc). In our third and final lab experiment, we set out to address this issue as follows: After order versus disorder was primed, participants completed a filler task or a stereotyping measure, and their need for structure was assessed. The prediction was that even abstract disorder increases the need for structure and that stereotyping can satisfy this need. Thus, the need for structure should be lower when a disorder prime is followed immediately by a stereotyping measure, compared to when people have not been given the opportunity to stereotype.

Upon arrival in the room where the study took place, participants (all students, n = 66, mean age = 20, 50% female, all Caucasian) were given a sheet of paper on which a number of circles, squares, and triangles were displayed. In the disorder condition, these symbols were displayed randomly and chaotically across the page; in the order condition, these symbols were displayed in a neat and symmetric pattern. Pretesting had revealed that the disordered figure was indeed perceived as more "chaotic" and "random" than the ordered figure. Participants were asked to look at the pictures, become familiar with them, and be prepared to answer questions about the pictures later in the session. Next, participants were given either the stereotyping measure or a filler task (rating the attractiveness of a number of Western European cities), and their need for structure was subsequently assessed. Results of the analysis of variance show that even disorderly abstract patterns can increase stereotyping. We observed significantly higher stereotyping in the disorder condition (M = 5.62, SD = 0.83) compared with the order condition (M = 4.40, SD = 0.99): $F_{1,28}$ = 13.03, P < 0.01. We also found, as expected, that stereotyping satisfies the need for structure. In the disorder condition, need-for-structure scores were significantly higher when participants had not been able to engage in stereotyping (M = 6.14, SD = 1.35) than when they did have this opportunity (M = 5.13, SD = 0.99). When order was primed, the need for structure was relatively low, independent of whether or not people could engage in stereotyping (M = 5.33, SD = 1.05; versus M = 4.88, SD = 1.09). This interaction was significant: $F_{1,56}$ = 6.40, P < 0.05.

People are very sensitive to their experience of disorder. In five studies, we obtained evidence that there are important links between the experience of disorder, the need for structure, and stereotyping/discrimination. Environments that are perceived as disordered invite people to apply stereotypes in their reactions to others more readily than do environments that are perceived as relatively orderly and structured. This was demonstrated in field as well as in lab experiments, using a variety of methods to activate perceptions of disorder (or order) and using judgmental as well as behavioral measures of the stereotyping tendencies. We interviewed people in a dirty (or clean) train station and in a disorderly (or orderly) looking street, and we primed people with pictures, words, and abstract symbols that represent disorder or order. We consistently found that disorder activated the tendency to stereotype and to discriminate others. Moreover, we also provided strong evidence for the mechanism behind this effect: Environmental cues can temporarily change the relative weight of an important goal (*4*, *6*); in this case, the goal to create order. The findings reported here clearly show that the disorder-to-stereotyping effects were not driven by a lack of cleanliness itself, but by disorder affecting the need of structure. In the SOM that supports this article, we report an experiment with strong evidence that these effects can also not be explained in terms of disorder increasing the use of stereotypes by increasing cognitive load. In this additional experiment, we show that cognitive load also increases the need for structure and that load-based stereotyping effects (*24*) may best be explained in terms of changes in structure striving (*17*).

Our studies show that disorder increases the need for structure and, thus, the goal to create order. The study also shows that stereotyping is an effective mental way to reach this goal; that is, to satisfy the desire for structure that is activated by physical disorder. Stereotyping is a mental cleaning device that helps people to cope with physical chaos.

Effects of disorder on stereotyping and discrimination can occur virtually everywhere: in neighborhoods, public places, public transportation, hospitals, schools, firms, sport clubs, and arenas. Thus, the message for policy-makers is clear: One way to fight unwanted stereotyping and discrimination is to diagnose environmental disorder early and to intervene immediately by cleaning up and creating physical order. Signs of disorder such as broken windows, graffiti, and scattered litter will not only increase antisocial behavior (*6*), they will also automatically lead to stereotyping and discrimination. Thus, constantly avoiding that such signs become salient, investing in repair and renovation, and preventing that neighborhoods fall into disarray, may be relatively inexpensive and effective ways reduce stereotyping and discrimination.

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