

Fencing Off the Deviant: The Role of Cognitive Resources in the Maintenance of Stereotypes

Vincent Y. Yzerbyt

Catholic University of Louvain at Louvain-la-Neuve

Alastair Coull

Catholic University of Louvain at Louvain-la-Neuve
and Belgium National Fund for Scientific Research

Steve J. Rocher

Catholic University of Louvain at Louvain-la-Neuve

The role of cognitive resources in stereotype maintenance was examined. It was hypothesized that people's cognitive resources would condition the maintenance of stereotypes by affecting the ability to dismiss inconsistent target information. In Experiment 1, distracted and nondistracted participants formed an impression of a deviant target. As predicted, distraction was associated with less stereotypical views about the group. Experiment 2 replicated this finding using 3 deviant targets and 4 levels of distraction. Results also revealed that the perceived atypicality of the deviants mediated stereotype maintenance. Experiment 3 further showed that stereotypes remained intact only when participants were not distracted and when they had also received neutral information about the target. The discussion focuses on the role of cognitive resources in stereotyping and the effectiveness of exposure to disconfirmation in achieving stereotype change.

There is a common mental device that permits people to hold to prejudgments even in the face of much contradictory evidence. It is the device of admitting exceptions . . . contrary evidence is not admitted and allowed to modify the generalization; rather it is perfunctorily acknowledged but excluded. (Allport, 1954, p. 23)

When the concept of *contact hypothesis* entered the lexicon of social psychologists some 40 years ago, the optimism of researchers could not be mistaken (Allport, 1954; Amir, 1969; Dovidio & Gaertner, 1986; Hewstone & Brown, 1986; Miller & Brewer,

1984; Pettigrew, 1986; Rose, 1981). The basic thrust of that line of research was that interactions with members of stereotyped groups offered a means to reduce the level of discrimination and improve intergroup relations. In fact, contact-hypothesis researchers took for granted the fact that new evidence about members of a stereotyped group would contradict people's expectations and instigate a change in the content of their stereotypes. Unfortunately, the strategy of providing people with an opportunity to interact with stereotype-disconfirming members of the other group generally met with little success. An impressive body of research shows that stereotypes are often maintained even in the face of intense manipulation involving cooperation with deviant members of the group over extended periods of time (Stephan, 1985).

As the above quotation indicates, however, Allport (1954) was well aware of one process that could account for this amazing persistence of prejudice. He used the term *refencing* to describe the strong tendency displayed by people to appraise disconfirming behavior as being performed by exceptions in the group. More generally, he suggested that judging the deviants to be atypical and not representative members of the category offers an excellent strategy to maintain preexisting beliefs.

In our opinion, the refencing process identified by Allport (1954) in the stereotype domain has much in common with the way an audience reacts to a counterattitudinal message. After all, in both cases, people encounter new information that challenges their current viewpoint. The evidence accumulated in the attitudinal literature indicates that any factor usurping people's cognitive resources is likely to inhibit recipients' dominant cognitive responses (Petty & Cacioppo, 1986). For instance, if the message is poorly constructed, the audience may end up rejecting its content less when made cognitively busy than when their processing capacity is fully available (Osterhouse & Brock, 1970).

Vincent Y. Yzerbyt and Steve J. Rocher, Department of Psychology, Catholic University of Louvain at Louvain-la-Neuve, Louvain-la-Neuve, Belgium; Alastair Coull, Department of Psychology, Catholic University of Louvain at Louvain-la-Neuve and the Belgium National Fund for Scientific Research.

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Correspondence concerning this article should be addressed to Vincent Y. Yzerbyt, Department of Psychology, Catholic University of Louvain at Louvain-la-Neuve, Place Cardinal Mercier, B-1348 Louvain-la-Neuve, Belgium. Electronic mail may be sent to yzerbyt@upso.ucl.ac.be.

Interestingly, although the above conclusion is common knowledge in the persuasion field, its import in the area of stereotyping suggests a somewhat counterintuitive prediction: Perceivers may well need cognitive resources to maintain their stereotypes when confronted with a deviant member of a group. Although stereotypes have much to hate about them, a rich body of literature also stresses the fact that people may derive some benefit from their a priori views about a series of social groups (for reviews, see Fiske, 1998; Leyens, Yzerbyt, & Schadron, 1994; Macrae, Stangor, & Hewstone, 1996). If it is assumed that people strive to perpetuate their expectations, then encounters with a deviant member of one of these groups should trigger a series of reactions aimed at keeping the stereotype of the group as a whole largely intact. The core idea of the present research is thus that people who lack the necessary cognitive resources are less able to dismiss stereotype-inconsistent evidence. As a result, they may rely on the disconfirming information and change their stereotype more when they are distracted than when they can count on abundant cognitive resources. We designed a series of three studies in order to address these issues.

When the Deviant Becomes an Exception

Research on stereotyping provides ample empirical evidence that perceivers are notoriously efficient at confirming their a priori views about others (Bodenhausen & Macrae, 1998; Fiske & Neuberg, 1990; Leyens et al., 1994; Macrae et al., 1996; Von Hippel, Sekaquaptewa, & Vargas, 1995). Indeed, people have been found to insulate their expectations against change through selective encoding, partisan search, and biased construal of the data. The present efforts focus on refencing as another key process by which perceivers keep their stereotypes mostly intact.

In their cognitive analysis of stereotype change, Weber and Crocker (1983) and, more recently, Johnston and Hewstone (1992) showed that exposure to group members characterized by stereotype-disconfirming attributes produced less stereotype change when these attributes were concentrated in a small number of group members who could then be relegated to a subtype than when they were dispersed over a large number of group members who could not be readily confined to a subtype (for a review, see Hewstone, 1994). This finding is in line with other research indicating that people generalize a stereotype-disconfirming attribute less from otherwise disconfirming than from otherwise confirming group members (Rothbart & John, 1985; Rothbart & Lewis, 1988; Wilder, 1984). Supposedly, in both cases, the minimal influence of disconfirming information is a consequence of the weak relationship between the representation of deviant group members and the category as a whole.

In a recent series of studies, Kunda and Oleson (1995) made a number of suggestions regarding the way people engage in stereotype-maintenance processes when faced with a counterstereotypical target. According to these authors, when perceivers encounter individuals who violate their expectations, they are motivated not to change their stereotype. As a result, they try to find subjectively satisfactory reasons not to take deviants into account (Kunda, 1990). In this context, the judgment of atypicality may facilitate stereotype maintenance because it provides a justification for fencing off the disconfirming members. Any piece of information, however neutral, that would appear to facilitate the isolation of the deviant individuals can be used as valid evidence

for leaving the stereotype of the group unaffected. Kunda and Oleson's participants listened to an interview of a successful yet shy lawyer. As expected, people changed their view of lawyers as being extroverted when they were confronted with a deviant, introverted lawyer. In contrast, the provision of either one of two previously neutral but contrasting attributes ("works in a small firm" vs. "works in a large firm") failed to produce a generalization from the deviant introverted lawyer to the category of lawyers. Additional data revealed that the experimental participants actually perceived both pieces of neutral information to be atypical of lawyers in general and therefore likely to be associated with the deviance. Such reinterpretation of the neutral information, Kunda and Oleson concluded, allowed participants to escape generalization. In other words, stereotypes remained intact when participants thought that they could explain away the inconsistency of the target. These findings strongly suggest that neutral attributes can be used to dismiss deviant group members.

In our opinion, Kunda and Oleson's (1995) studies stress two important aspects that may have been somewhat neglected in recent research on stereotyping. First, these authors provide new evidence of the importance of construal in information processing (Hastorf & Cantril, 1954; Lord, Ross, & Lepper, 1979; Ross & Nisbett, 1991). Most notably, whereas traditionally researchers have directed their attention toward the confirming and disconfirming pieces of information (for a review, see Hamilton & Sherman, 1994), Kunda and Oleson's findings reveal the potential role of nondiagnostic information in the maintenance of stereotypic beliefs. Nondiagnostic information is especially likely to help perceivers in fencing off the deviant when it is rich and easy to combine with additional pieces of information. Hilton and Fein (1989) coined the term *pseudorelevant* to refer to information that is both nondiagnostic and rich (see also Yzerbyt, Leyens, & Schadron, 1997). In sum, perceivers confronted with counterstereotypic information are likely to be much more creative than has been generally conceded. Specifically, they may easily come up with ad hoc justifications for fencing off deviants using the available pseudorelevant information.

Second, these studies also suggest that the maintenance of stereotypes may require that perceivers engage in some inferential processing of the information in order to reach a desired conclusion. In other words, perceivers' attempts at discounting the deviant target and thereby saving their stereotypic beliefs appear to be determined by the availability of cognitive resources. This means that a relative absence or decrease of cognitive resources should prove detrimental to the preservation of stereotypic expectations about the group to which the deviant target belongs. Said otherwise, perceivers' stereotypes about a given group may be altered more easily when they meet a deviant target and are cognitively busy than when their cognitive resources are not taxed.

In the present series of experiments, we compared the way distracted and nondistracted participants reacted to deviant group members. Our main hypothesis was that distracted people would be less able to discount the deviant target. In addition, we predicted that perceivers would maintain their stereotypic expectations only insofar as they could construe the counterstereotypical target as an atypical member of the category. We thus also investigated the mediating role of participants' cognitive activity by measuring the perceived typicality of the deviant. Finally, in line with Kunda and Oleson's (1995) results, we also wanted to see whether the presence of pseudorelevant information was influential in allowing

perceivers to construe the deviant target as being an atypical representative of the social category.

Experiment 1

We argue that stereotype maintenance requires some elaboration of target evidence in order to dismiss the inconsistent information. It stands to reason that this process would be a resource-consuming activity. A reduction in the amount of available cognitive capacity should therefore disrupt this work and allow for a larger impact of the disconfirming information. In other words, participants whose cognitive resources are usurped should end up producing less stereotypic judgments of the group than nondistracted participants.

To test our hypotheses, Experiment 1 presented participants with a taped interview of a target person whose characteristics deviated from the stereotype. The information given in the interview was rich and complex, leaving much opportunity for elaboration. We manipulated cognitive load by asking half of the participants to engage in a secondary task while listening to the information about the target person. The remaining participants simply listened to the interview. Also, whereas some participants rated the target person, others rated the group as a whole. We expected all participants to be able to notice the disconfirming behavior. Because stereotype maintenance should involve inferential work on the part of the perceiver, our prediction was that distracted participants would lack the cognitive resources needed to explain away the disconfirming attributes of the target person. As a consequence, we expected their perception of the group to be altered in the direction of the disconfirming information. We anticipated a different pattern in the no-distraction conditions. These participants should enjoy sufficient cognitive resources to account for the disconfirming information. As a result, their perception of the group should remain largely unaffected by the presentation of the deviant member.

Method

Participants and design. Undergraduate students enrolled at the Catholic University of Louvain at Louvain-la-Neuve were randomly approached in public places. Fifty-six students volunteered to take part in an experiment on impression formation. Participants were randomly distributed in one of the four conditions ($n = 14$) of a 2 (distraction during impression formation: absent vs. present) \times 2 (type of judgment: category vs. target person) factorial design. An additional 13 participants were included in a stand-alone control condition.

Materials. On the basis of extensive pretesting involving participants from the same population as the experimental participants, we selected a social category associated with a moderately polarized stereotype ("computer engineers are introverted") and a series of counterstereotypical traits or behaviors (characteristics associated with extroversion).

To select the category to be used in the experiment, as a first exploratory step we asked 10 participants to list traits that they most strongly associated with a series of 22 professional occupations (e.g., salesperson, airline pilot, accountant, computer engineer). A cursory look at these data suggested that most participants considered computer engineers to be introverted (7 participants mentioned at least one of the following traits: calm, reserved, inhibited, cold, introverted).

We then proceeded to test more specifically the extent to which introversion was associated with the category of computer engineers. Thirteen participants were asked to rate the category of computer engineers on a series of behavioral and trait-based scales designed to assess introversion. First, they used a 7-point Likert-type scale ranging from 1 (*not at all*) to 7 (*completely*) to rate the congruence of 24 behaviors with the category of

computer engineer. Six behaviors were diagnostic of introversion (e.g., "In general, do they tend to have lunch alone?"), 6 were diagnostic of extroversion (e.g., "In general, do they enjoy attending rock concerts?"), and the remaining 12 were fillers. Ratings on these scales were used to form a global introversion index (the overall mean of the ratings of the 6 behaviors diagnostic of introversion and the reversed ratings on the 6 behaviors diagnostic of extroversion) ranging from 1 to 7. Compared with the scale midpoint, mean scores on this index showed a significant, albeit moderate, trend toward introversion ($M = 4.40$, $SD = 0.58$), $t(12) = 2.48$, $p < .05$.

To further ascertain¹ the perceived introversion of computer engineers, we asked the same participants to rate the category on a series of 12 traits using Likert-type scales ranging from 1 (*not at all*) to 7 (*completely*). Three traits were diagnostic of introversion (discrete, inner-directed, introverted), 3 were diagnostic of extroversion (communicative, extroverted, sociable), and the remaining traits were fillers. Again, a global introversion score ranging from 1 to 7 was computed by adding the introversion items to the reversed extroversion items and dividing this sum by the total number of relevant items (6). In line with expectations, the results showed that computer engineers were perceived as moderately but significantly introverted ($M = 4.74$, $SD = 0.87$), $t(12) = 3.09$, $p < .01$.

A last pretest was used to collect materials for the ostensible interview of the target. Twenty-two participants from the same population as the experimental participants rated a series of traits or behaviors on an extroversion scale ranging from -3 (*extremely less extroverted than the average computer engineer*) to +3 (*extremely more extroverted than the average computer engineer*). Five traits or behaviors were selected as being diagnostic of extroversion (overall $M = 0.58$, $SD = 0.47$), comparison with the scale midpoint $t(21) = 5.86$, $p < .001$. These items (e.g., "talks a lot," "is not shy," etc.) were included in the portrait in order to disconfirm the stereotype of introverted computer engineers. Five traits or behaviors were selected as diagnostic of neither introversion nor extroversion (overall $M = 0.11$, $SD = 0.77$), comparison with the scale midpoint, $t(21) < 1$. Finally, the portrait included items implying that the target was a competent computer engineer with a long-lasting interest in the field (e.g., "has always been attracted to logic," etc.). These items were mixed together and used to prepare an audiotaped interview involving an anonymous interviewer and the target person, Mr. Echard.

Procedure and dependent measures. When participants arrived at the laboratory, the experimenter informed them that the study concerned "people's capacity to form an impression of a stranger on the basis of a limited amount of information." The task of the participants was to form an impression of an unknown person using excerpts that participants were informed were taken from an interview session.

Specifically, participants listened to a 2-min interview of Mr. Echard concerning various aspects of his social life as well as of his professional occupation. The tape unambiguously described Mr. Echard as a successful computer engineer. Moreover, the interview was carefully prepared in order to contain five pieces of information that disconfirmed the stereotype of the introverted computer engineer.

Participants in the no-distraction condition simply listened to the taped interview. Participants in the distraction condition were asked to play a simple computerized visual-tracking game while they listened to the tape.¹

¹ This computer-based tracking game was written in BASIC and was played on a Macintosh Plus computer. The principle was the following: A letter *X* moved erratically along a horizontal line ranging from the left end to the right end of the screen. Participants had no control over the movements of this letter. Beneath the letter, a string of five letters, forming a short line, was also moving horizontally on the screen. By pressing the space bar on the computer keyboard, participants could reverse the direction of this line. Their goal was to guide the line in such a way that the letter *X* would always be localized between the two extremities of the line. Whenever either the letter *X* or the line reached the end of the screen, it would simply reverse direction automatically.

Immediately after the end of the tape, half of the participants rated the extroversion of the category of computer engineers on a scale ranging from 1 (*introverted*) to 9 (*extroverted*). The remaining participants used the same scale to rate the target person, Mr. Echard, instead of the category of computer engineers. It should be noted that all participants were pressed to make their ratings immediately after the end of the tape in order to avoid any refencing activity's taking place after the distraction (for a similar procedure, see Gilbert & Osborne, 1989). The control participants rated the category of computer engineers in general on the same scale as used by experimental participants but did so without having listened to the interview.

After the collection of participants' judgments, the experimenter announced that the experiment was over. Participants were thoroughly debriefed, thanked for their help, and dismissed.

Results

Participants' ratings were analyzed using a 2×2 analysis of variance (ANOVA) with distraction during impression formation and type of judgment as two between-subjects factors (see Figure 1).² The main effect of type of judgment was highly significant, $F(1, 52) = 61.50, p < .001$, which confirmed the fact that the target person was perceived to be much more extroverted than the category of computer engineers as a whole. No significant effect emerged for the distraction manipulation, $F(1, 52) = 2.59, p < .12$, although the means suggested, if anything, that the distracted participants tended to be more sensitive to the presence of disconfirming information than the no-distraction participants.

In line with expectations, the interaction effect involving distraction and type of judgment was significant, $F(1, 52) = 4.04, p < .05$ (see Figure 1). The analysis of the simple effects revealed that the distraction manipulation did not affect the rating of the specific computer engineer presented to the participants ($M_s = 6.50$ and $6.64, SD_s = 1.29$ and 1.55 for the distraction and no-distraction participants, respectively), $F(1, 52) < 1, ns$. In contrast, the distraction manipulation had a significant impact on the judgments of the computer engineers in general ($M_s = 4.43$ and $3.14, SD_s = 0.94$ and 1.46 for the distraction and no-distraction participants, respectively), $F(1, 52) = 6.55, p < .013$.

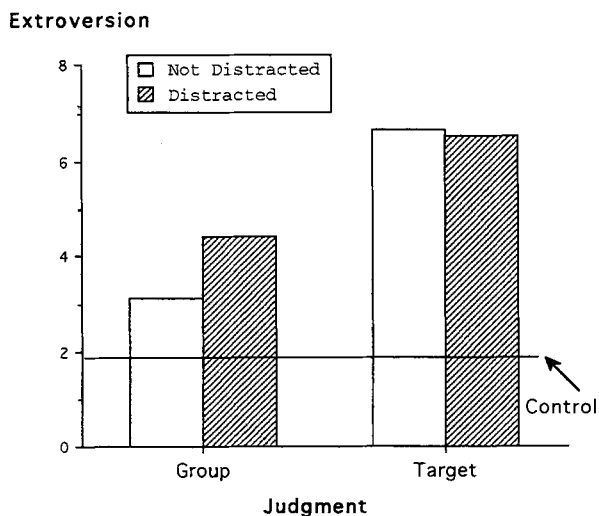


Figure 1. Judgments of extroversion as a function of the type of judgment and the absence or presence of distraction.

In order to ascertain the specific impact of the distraction manipulation on the evaluation of the computer engineers in general, we relied on a series of *t* tests to compare the judgments obtained in the category-judgment conditions with the stereotypic judgments expressed by our control participants ($M = 2.85, SD = 1.14$). As expected, the judgments of the group made by our distracted participants proved significantly less stereotypic than those provided by the control participants, $t(25) = 4.10, p < .001$. In contrast, nondistracted participants and control participants clearly rated the group in equally stereotypic terms, $t(25) = 0.60, ns$.

Discussion

The goal of Experiment 1 was to test the impact of cognitive load on the way perceivers deal with a deviant member of a stereotyped social category. We assumed that participants confronted with a deviant group member would be motivated to maintain their stereotype of the category as a whole. Moreover, we expected that participants would succeed in doing so only if they possessed the necessary cognitive resources to explain away the disconfirming information. Our results support this hypothesis. The stereotype of the group was altered in the direction of the disconfirming information only when participants had been moderately distracted during the impression-formation task.

We also expected all participants to perceive the specific target person as being extroverted, a characteristic that happens to conflict with the stereotype of the category as a whole. This was the case whether or not the participants had been distracted during the presentation of the interview. It is important to note that this finding indicates that the distraction manipulation we used did not preclude participants' intake of the evidence during the impression-formation task. In other words, the fact that the ratings of the target person remained impervious to the distraction manipulation suggests that the level of distraction was not such that participants were prevented from noticing the counterstereotypical information.

The results of Experiment 1 provide encouraging support for the idea that cognitive load may prevent perceivers from explaining away the disconfirming information. As a consequence, cognitively busy participants were not in a position to maintain their stereotypic expectations and modified their a priori views on the basis of the deviant member. In contrast, the availability of cognitive resources gave participants the opportunity to explain away stereotype-disconfirming information. One intriguing aspect of our findings, however, concerns the nature of the underlying mechanism. A potential factor driving stereotype maintenance is the extent to which people consider the target to be an exception and therefore not a threat to the overall stereotype. In other words, the more perceivers can construe the target person as being an atypical

² We also analyzed the data from our experimental and control participants by means of a one-way ANOVA including all five conditions. As expected, this analysis revealed the presence of very significant differences between means, $F(4, 64) = 26.95, p < .001$. In order to simplify the presentation of the results and limit the number of planned comparisons, we decided, however, to rely on the 2×2 factorial design and to compare the category conditions with the control condition using specific *t* tests. Of course, planned comparisons using the results of the one-way analysis fully confirm the findings.

(i.e., exceptional) instance of the category, the more they will resist changing their stereotypic view of the group as a whole. We designed a second experiment in which we asked distracted and nondistracted participants to make typicality judgments about targets to examine the specific effect of this judgment on stereotype maintenance.

As in Experiment 1, we expected that cognitively busy participants would change their stereotype more than nondistracted perceivers. In addition, we predicted that this effect would be mediated by the perceived atypicality of the deviant. Because nondistracted participants were thought to possess cognitive resources in abundance, we anticipated that they would easily work out a way to see the deviant as being atypical. As a result, their stereotypes of the general category would not change. In contrast, distracted participants would lack the cognitive resources to construe the target as an exception and would consequently be unable to dismiss the disconfirming information. Therefore, these participants were expected to change their view of the group and report less stereotypic judgments.

Experiment 2

The findings of Experiment 1 indicate that the cognitive demands imposed by the concurrent task prevented participants from maintaining their stereotypes. Although these data strongly support the idea that cognitively busy people might alter their stereotypic expectations because they fail to properly account for the disconfirming information, they have little to say about the nature of the underlying cognitive process. What is needed to support our specific claim is an indicator of the extent to which the disconfirming targets are considered to be atypical members of the category. The main goal of Experiment 2 was to ascertain the mediating effect of typicality judgments on stereotype change by asking participants to rate the perceived atypicality of the deviant target.

In addition to addressing the role of perceived target typicality in a direct manner, Experiment 2 also aimed at generalizing the findings of Experiment 1. To that end, we used a different distraction manipulation, presented participants with a set of three disconfirming members instead of only one, and conducted the experiment in the context of a large classroom rather than in the laboratory.

Method

Participants and design. Participants were 112 undergraduate psychology students at the Catholic University of Louvain at Louvain-la-Neuve. The experiment took place in a large classroom immediately before the start of the lecture. Participants were randomly assigned to one of six conditions. Nineteen participants were excluded from the analyses because they did not answer all questions, because they did not follow the instructions properly, or because they did not fully understand the meaning of either the word *archivist* or the word *extroversion*, leaving a total of 93 participants.

Materials. Participants were confronted with three individuals who displayed traits or behaviors contradicting the stereotype of the category of archivists. The pretest sessions used to select a category and generate materials included in the descriptions of targets followed the same rationale as those conducted for Experiment 1. In short, pretests of the category of archivists indicated that participants associated this profession with a rather introverted personality (pretest score on a 9-point bipolar scale of introversion–extroversion: $M = 4.04$, $SD = 1.49$). Conversely, pretests of the material used as target descriptions indicated that the descriptions con-

veyed an impression of rather extroverted persons (pretest score on a 9-point bipolar scale of introversion–extroversion: $M = 6.68$, $SD = 1.00$) and were thus globally disconfirming the stereotype of archivists. Specifically, participants read booklets that they were informed contained self-descriptive texts providing each target's name, age, and profession, as well as some professional and social activities that the targets liked to engage in. The self-descriptions comprised two pieces of disconfirming information relating to hobbies and favorite activities (playing music, watching television with friends, inviting neighbors for dinner, etc.). For instance, Paul indicated that he loved games involving several persons and liked to cook for his friends. John acknowledged being a chatterbox. Patrick said he played in a blues band. In order to make target descriptions look credible, all three texts provided information showing how competent each target was with regard to the profession of archivist. Finally, one pseudorelevant piece of information was included in all three texts, neutral with regard to the stereotype of archivists as introverts—namely, that the targets were married.

Procedure. Participants read a cover sheet explaining that the study focused on perception of information. More specifically, the study was said to examine whether summaries of interviews convey the same impressions of the interviewee as do full transcripts of the interview (for similar instructions, see Kunda & Oleson, 1995). Because the questionnaires were distributed in the context of a classroom, the experimenter also informed participants that anonymity was assured, that the study was in no way to be considered as a test, and that no memory test would be conducted at the end of the study.

Participants' task was to form an impression of three different targets, all archivists, by reading three very short self-descriptions. Before starting to read the interviews, participants were asked to think about the profession of archivist as well as the personality traits they could possibly associate with it. This was intended to activate the stereotype of archivists prior to the distraction manipulation and ensure that distracted and nondistracted participants had the same level of stereotype activation at the moment of target presentation. After reading the information about the three targets, participants rated the category of archivists as well as the set of targets on a series of dependent measures.

The distraction manipulation took place immediately after participants had been asked to think about the profession of archivist for about 20 s. The memorization of a number while performing another task has proved to be a successful manipulation of cognitive busyness (e.g., Gilbert & Osborne, 1989; Gilbert, Pelham, & Krull, 1988; Uleman, 1987). In addition to being very simple to implement, this manipulation allows several conditions to be tested within the same group session provided written instructions are used. Nondistracted participants were assigned to Condition 0 and were not asked to mentally rehearse any number. Distracted participants were assigned to Conditions 4, 6, and 8 and were given instructions to memorize a four-, a six-, or an eight-digit number, respectively. They were informed that they would be asked to write down their number at a later point in the experiment and that the best way to perform well was to mentally rehearse their number while they were reading the three self-descriptions to be presented next. After they had finished reading the target self-descriptions, distracted participants were instructed to write down the number. They then started filling in the dependent measures. In other words, participants were not distracted when they rated the category and the set of targets.

As in Experiment 1, we wanted to make sure that the participants rated the extroversion of the targets similarly whether they were distracted or not. Control participants were therefore assigned to one of two additional conditions, similar to the 0 and 8 experimental conditions. In the control 0 condition, participants were not asked to rehearse any number while they were reading the self-descriptions of the targets. In the control 8 condition, participants were asked to rehearse an eight-digit number while reading the texts. It is important to note that the self-descriptions of the targets were the same as in the experimental conditions except that the category label of archivist was missing. The control conditions thus secured a measure of the

extroversion of the targets that was uncontaminated by the knowledge of their category membership.

After all participants had completed their questionnaire, the experimenter explained the purpose of the study and answered all remaining questions. The students were then thanked for their participation and dismissed.

Dependent measures. Participants in the experimental conditions first rated the extent to which they believed archivists in general to be extroverted. Two bipolar scales were used for this judgment. The first scale ranged from 1 (*introverted*) to 9 (*extroverted*) and the second from 1 (*reserved*) to 9 (*warm*). Participants then indicated the extent to which the three targets as a set were typical of archivists in general on a scale ranging from 1 (*atypical*) to 9 (*typical*). Using the same two extroversion items, control participants first rated the three targets and then rated two categories, one filler (lawyers) and the archivists. Because the ratings of the archivists on the two extroversion items correlated very significantly (Pearson $r = .71, p < .0001$), we used the average of the two items as a global extroversion score.

Finally, a series of questions was administered as a check on the clarity of our instructions. Participants indicated whether they knew what extroversion means and what sort of work an archivist does. They also reported whether they thought that they had correctly followed the instructions.

Results

Extroversion of the targets. Our two control conditions provide an estimate of the extroversion of the target information that is uncontaminated by the category information. Consistent with expectations that participants would perceive the targets to be equally extroverted whether they had been distracted ($M = 6.85, SD = 0.98$) or not ($M = 6.46, SD = 1.03$), a one-way ANOVA yielded no significant difference, $F(1, 28) = 1.12, p > .29$.

Extroversion of archivists in general. After they rated the extroversion of the three targets, participants in the two control conditions also provided us with their impression of the level of extroversion of archivists in general. It was thus possible to compare the ratings of archivists in general in the two control conditions and in the four experimental conditions. To examine this issue more closely, we first performed a one-way ANOVA using all six conditions. A significant effect of condition emerged, $F(5, 87) = 14.15, p < .0001$. As expected, the evaluations of archivists in the two control conditions did not significantly differ from one another ($M_s = 3.41$ and $4.04, SD_s = 1.19$ and 1.49 for the control 8 and control 0 conditions, respectively), $F(1, 87) = 1.51, p > .22$. More interestingly, a planned contrast revealed that the ratings of extroversion collected in the two control groups were significantly different from those observed in the experimental 0 condition ($M = 5.27, SD = 1.87$), $F(1, 87) = 12.34, p < .001$. This finding suggests that the provision of several deviant members of the category did have an impact on participants' a priori views and contrasts with what happened in Experiment 1 with only one deviant.

Ratings of experimental participants. Our main hypothesis was that, because distracted participants would be prevented from explaining away the disconfirming targets, they would have to change their evaluation of the category as a whole. However, nondistracted participants, whose attentional resources were plentiful, should have no difficulty explaining away the disconfirming information and should therefore maintain their stereotypic expectations.

Looking at the four experimental groups, we conducted a

one-way ANOVA that confirmed the presence of a significant impact of the level of distraction on the global extroversion score, $F(3, 59) = 2.80, p < .05$ (see Figure 2). A planned contrast comparing the no-distraction condition with the three distraction conditions proved to be significant, $F(1, 59) = 6.48, p < .02$. More important, we checked for the presence of a linear trend in the ratings. In line with predictions, the linear trend was statistically significant, $F(1, 59) = 4.55, p < .04$, suggesting that group ratings were more changed as the drain on cognitive resources was increased.

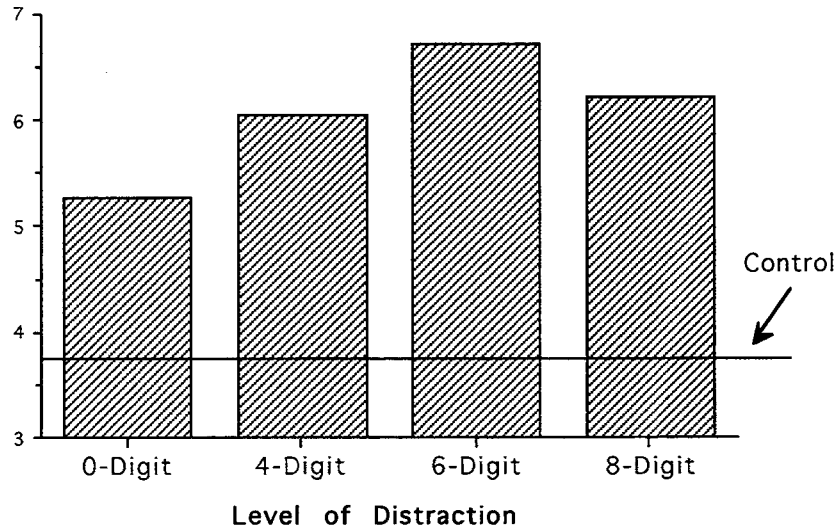
Typicality of the targets. We expected that high levels of distraction would prevent participants from explaining away inconsistent information and would thus prevent the judgment of the deviants as being atypical members of the group. The typicality ratings of the targets provided a useful indicator in this respect. We predicted that the deviant members would be rated as fairly typical group members when cognitive resources were depleted but less so as cognitive resources increased.

A one-way ANOVA yielded a significant overall effect for distraction level, $F(3, 59) = 3.36, p < .03$ (see Figure 2). The pattern of results fully matched our predictions. As was the case for the extroversion score, a planned contrast comparing the 0-digit condition to the three other conditions resulted in a significant difference, $F(1, 59) = 9.18, p < .004$. As expected, the typicality judgments also revealed the presence of a significant linear trend, $F(1, 59) = 8.85, p < .005$. The less participants were cognitively busy (because they had fewer or no digits to rehearse), the more they judged the targets to be atypical of the category.

Mediational analyses. We hypothesized that the judgment of typicality of the targets mediates the impact of distraction on stereotype change. In order to test our hypothesis, we conducted a series of mediational analyses following the procedures outlined by Baron and Kenny (1986). We used the number of digits to represent the four levels of distraction—that is, 0, 4, 6, and 8. The mediator (i.e., the judgments of typicality of the targets) was significantly related to the global extroversion score ($\beta = .37, p < .003$). Also, we found a significant impact of the independent variable (i.e., the level of distraction) on the judgments of typicality ($\beta = .38, p < .003$), and on the global extroversion score ($\beta = .29, p < .02$). After controlling for the typicality of the targets, a regression analysis revealed that the effect of distraction on the global extroversion score decreased to a nonsignificant level ($\beta = .18, p > .16$). More important, the mediational effect of typicality on the global extroversion score decreased but remained significant ($\beta = .30, p < .03$; see Figure 3).

Using the number of digits as an indicator of the level of distraction involves some degree of arbitrariness. In an alternative analysis, we coded the distraction levels using $-3, -1, 1,$ and 3 as the successive weights in the regression analyses. This modification did not alter the impact of the judgments of typicality on the global extroversion score ($\beta = .37, p < .003$). Again, we found a significant impact of the level of distraction on the judgments of typicality ($\beta = .36, p < .005$) and on the global extroversion score ($\beta = .27, p < .04$). A regression analysis controlling for the typicality of the targets confirmed that the effect of distraction on the global extroversion score fell short of significance ($\beta = .15, p > .23$). Again, the mediational effect of typicality on the global extroversion score, though slightly weaker, remained clearly significant ($\beta = .32, p < .02$).

Extroversion of Archivists



Typicality of Targets

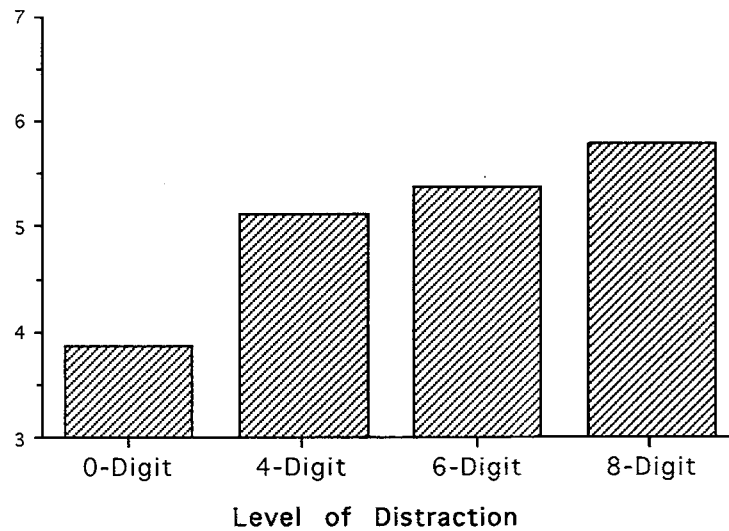


Figure 2. Judgments of extroversion of the category of archivists (top) and typicality of the targets (bottom) as a function of the level of distraction.

Discussion

The present study was designed to replicate the findings of Experiment 1 regarding the impact of cognitive load. Interestingly, we managed to find the same results even though we explicitly instructed our participants to think about the profession of archivist and the associated personality traits before they were confronted with the deviant target. The inclusion of this instruction allowed us to address one possible confound inherent in Experiment 1. As a matter of fact, two equally plausible explanations could be provided to account for the different judgments expressed by distracted and nondistracted participants in Experiment 1. Besides differences in the amount of cognitive work among distracted and

nondistracted participants, it is also possible that the distracted participants overlooked the information about the category membership. By activating the stereotype of archivists prior to the distraction manipulation, we ensured that distracted and nondistracted participants had the same level of stereotype activation at the moment of target presentation. The consistency of the data across the two studies supports the idea that the differential judgment of the category is indeed a consequence of the detrimental effect of distraction on information processing.

An even more important goal of Experiment 2 was to collect information about the underlying mechanism by which the availability of cognitive resources may influence the maintenance or

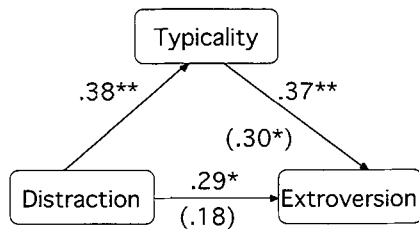


Figure 3. Direct effects and effects mediated by typicality ratings of the deviant targets of level of distraction on judgments of extroversion of archivists. Coefficients appearing above lines are beta weights for uncorrected paths. Coefficients in parentheses appearing below lines are beta weights for corrected paths. * $p < .05$. ** $p < .01$.

change of category-based expectations. Our reasoning led us to expect that persons whose cognitive resources are depleted would be less effective in dismissing the deviant members of a group as being atypical. As a consequence, they would have to take the disconfirming information into account in the representation of the group and alter the stereotype. Our findings fully support these predictions. The mediational analyses provide encouraging evidence in favor of the idea that cognitive resources indeed allow perceivers to maintain category-based expectations to the extent that they construe disconfirming targets to be atypical members of the category.

It is interesting to note that the disconfirming information had an impact on the stereotypic evaluations even in the nondistracted condition. This finding does not exactly match the pattern obtained in Experiment 1. One explanation for this discrepancy may reside in the specific set of stimuli we presented to our participants in both experiments. Whereas participants in Experiment 1 were confronted with only one deviant target, participants in Experiment 2 faced three disconfirming individuals. Such a situation may prove somewhat more challenging for perceivers. As it happens, the situation used in Experiment 1 very much resembles the concentrated condition in the classical subtyping paradigm (stereotype disconfirmation is localized). As for the setting of Experiment 2, it is not unlike the dispersed condition (Johnston & Hewstone, 1992; Weber & Crocker, 1983). The difficulty of dismissing three deviant members of a stereotyped group could therefore explain why we found a difference between the general stereotype and the judgment of the category even when participants were not cognitively depleted.

Kunda and Oleson (1995) suggested that people may maintain their stereotypic views about social groups to the extent that they can construe grounds for dismissing the counterstereotypical group members. Experiments 1 and 2 confirmed our main prediction that such preservation work indeed requires cognitive resources. Experiment 2 further showed that perceivers' mental capacity was used in order to fence off the deviant. In other words, the cognitive work underlying the maintenance of stereotypes is at least partly devoted to perceiving the target as an atypical member of the group. According to Kunda and Oleson, however, construal of the deviant and, ultimately, stereotype maintenance should also depend on the availability of pseudorelevant information. Indeed, these authors observed no stereotype change when pseudorelevant information was added to the counterstereotypic description. In contrast, their participants altered their stereotypic views in the direction of the counterstereotypic evidence when no pseudorel-

evant information was included in the description. As it happens, in Experiments 1 and 2, participants were always confronted with counterstereotypic members about whom neutral information was given along with the disconfirming evidence. To further test the idea that cognitive resources affect the ability to fence off the deviant, we conducted a study in which participants would or would not be given pseudorelevant information while being made more or less cognitively busy.

Experiment 3

The central idea of the present line of work is that people confronted with disconfirming members of a group use their cognitive resources to single them out as exceptions, thereby leaving the stereotype of the group largely unchanged. A straightforward test of the nature of the cognitive work initiated by perceivers on meeting a deviant group member consists in manipulating the presence of pseudorelevant information (Hilton & Fein, 1989; Yzerbyt et al., 1997). In line with Kunda and Oleson (1995), whereas nondistracted perceivers should be able to fence off the unexpected individual when pseudorelevant information is present, they should not be able to explain away the disconfirming evidence when pseudorelevant information is absent. We expected quite a different pattern for the distracted participants. This time, whether or not pseudorelevant information is present, distracted participants should always be influenced by the counterstereotypical member and modify their view of the group accordingly. We designed Experiment 3 in order to investigate the viability of this hypothesis of interaction.

Method

Participants and design. Participants were 72 undergraduate law students of the Catholic University of Louvain at Louvain-la-Neuve. The experiment took place in a large classroom immediately before the lecture started. Participants were randomly assigned to one of four conditions. The design was a 2 (distraction: present vs. absent) \times 2 (pseudorelevant information: present vs. absent) between-subjects factorial design. The first factor was distraction. Half of the participants were simply instructed to read the description and form an impression of the deviant target. The remaining participants were also asked to rehearse a six-digit number while they were forming an impression. The second factor concerned the pseudorelevant information. Half of the participants read a profile of an archivist that included a pseudorelevant piece of information (i.e., "He is a 35-year-old bachelor"). The remaining participants were not given this additional information.

Materials. As in Experiment 2, we used the category of archivists. This time, however, participants were confronted with only one deviant target.

The pseudorelevant piece of information was selected on the basis of a pretest indicating the lack of diagnosticity of this data regarding extroversion. Specifically, 21 people from the same population as the experimental participants were given a scale ranging from 1 (*less*) to 9 (*more*) and asked to indicate the degree of extroversion revealed by this information compared with what is typically found in the population. In line with requirements, the average rating revealed no significant difference from the midpoint of the scale ($M = 4.76$), $t(2) = -0.62$, *ns*. As was the case in Kunda and Oleson's (1995) study, we included this additional piece of information at the end of the description.

As for the rest of the target profile, the description started with the target's name and profession printed using large fonts. These two pieces of information were presented once more at the end of the description, again using large fonts. This repetition ensured that participants would not simply forget about the membership category of the target. In addition to

stereotype-inconsistent pieces of information about the target, we provided participants with evidence that was consistent with the profession of archivist. As before, this was done in order to make the target look both credible and competent as an archivist.

Procedure. The cover story and the instructions were the same as for Experiment 2. Participants were informed that they would have to form an impression of a target. Before they read the description, however, participants were asked to think about the profession of archivist as well as about the typical personality traits associated with it. This instruction ensured that the stereotype of archivists had been activated before participants read about the deviant target and the manipulation of cognitive busyness was introduced.

After the impression-formation task, the distracted participants were asked to write down the six-digit number. This was done because we did not want participants to be cognitively busy while answering the questions that followed the impression-formation task. Next, all participants answered a series of dependent measures. When participants had completed the questionnaire, they were asked to wait silently until everybody had finished. Finally, the experimenter collected the materials, provided a brief explanation about the experiment, thanked the participants for their help, and left the classroom.

Dependent measures. Participants were asked to express their view of the introversion or extroversion of the group of archivists in general. They did this on a 9-point bipolar scale ranging from 1 (*introverted*) to 9 (*extroverted*). Our second dependent variable was the perceived typicality of the target. Participants expressed their judgment on a scale ranging from 1 (*not typical*) to 9 (*typical*).

Results

Our main hypothesis was that the conformation with the deviant target would fail to alter participants' stereotype about archivists when two particular conditions are met: (a) Participants are not distracted when they encounter the target information, and (b) pseudorelevant information is included in the description of the deviant target. We expected this pattern to emerge because the joint absence of distraction and presence of pseudorelevant information should allow participants to construe the target as being an atypical member of the group. We thus predicted that the nondistracted participants given the additional piece of pseudorelevant information would differ from the other three conditions on both the evaluation of typicality of the target and the judgment of the group.

Extroversion of archivists in general. A 2 (distraction: absent vs. present) \times 2 (pseudorelevant information: absent vs. present) ANOVA on the stereotype of the archivists revealed the presence of a significant difference among the means, $F(3, 68) = 2.71, p < .05$. Next, we examined the predicted a priori contrast opposing the critical condition in which our participants were not distracted and had received the pseudorelevant piece of information to the three remaining conditions (see Table 1). In line with our hypothesis, this contrast proved to be highly significant $F(1, 68) = 7.54, p < .008$, residual $F(2, 68) < 1, ns$. As such, this result confirmed that the absence of either cognitive resources or pseudorelevant information led to more stereotype change than occurred when both cognitive resources and additional pseudorelevant information were available.

Typicality of the target. A 2 \times 2 ANOVA for the judgment of typicality of the target again revealed the presence of at least one significant difference among the means, $F(3, 68) = 4.63, p < .005$. The same a priori contrast as above yielded a significant effect, $F(1, 68) = 13.6, p < .001$, residual $F(2, 68) < 1, ns$. As can be

Table 1
Judgments of Extroversion of the Category of Archivists and Typicality of the Target as a Function of the Presence of Pseudorelevant Information and Distraction

Distraction	Pseudorelevant information			
	Absent		Present	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Absent				
Extroversion	4.06	1.35	2.87	1.13
Typicality	3.89	1.68	2.13	0.92
Present				
Extroversion	4.25	1.80	3.89	1.56
Typicality	4.10	1.92	4.16	2.22

Note. Judgments were made on 9-point scales (extroversion: 1 = *introverted*, 9 = *extroverted*; typicality: 1 = *not typical*, 9 = *typical*).

seen in Table 1, the pattern of means confirms that the target was perceived to be much less typical when participants were provided with the additional piece of pseudorelevant information and had sufficient cognitive resources.

Mediational analysis. As in Experiment 2, we hypothesized that the impact of cognitive load and neutral information manipulations on the judgment of the category as whole should be mediated by the perceived typicality of the deviant. To address this issue in a mediational analysis (Baron & Kenny, 1986), we recorded our two independent factors into one four-level factor. The condition that we expected and found to be different from the other three conditions was coded 3. The other three conditions were coded -1 (see Figure 4).

The mediator (i.e., the judgment of typicality of the target) was significantly related to the global extroversion score ($\beta = .50, p < .0001$). The more the target was perceived to be typical of the category of archivists, the more archivists in general were perceived to be extroverted. The independent variable (the combination of cognitive load and pseudorelevant information) had a significant impact on the judgments of typicality ($\beta = .41, p < .001$) and on the judgment of the extroversion of the category ($\beta = .32, p < .01$). When controlling for the typicality of the target, the regression analysis reveals that the effect of cognitive load and presence of pseudorelevant information on the global extroversion score drops to a nonsignificant level ($\beta = .14, p > .23$). As was the case in Experiment 2, the mediational effect of typicality on the judgment of extroversion of archivists in general remains significant after controlling for the impact of the independent variable ($\beta = .44, p < .0002$). To ascertain the validity of our findings, we also performed an alternative mediational analysis using typicality ratings as the dependent variable and extroversion judgments as the mediator. This analysis failed to produce any conclusive evidence for mediation. In other words, the impact of the experimental conditions on the typicality ratings was found to be highly significant even after controlling for the extroversion scores. From these results, we can safely conclude that the perception of typicality of the target indeed mediates stereotype change.

Discussion

As a set, the pattern of data collected in Experiment 3 unambiguously supports our hypothesis. The joint presence of cognitive

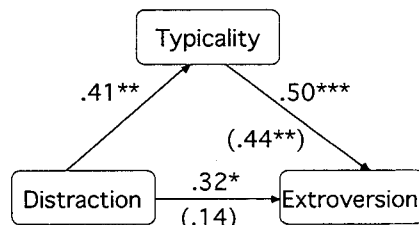


Figure 4. Direct effects and effects mediated by typicality ratings of the deviant target of the combination of distraction and pseudorelevant information on judgments of extroversion of archivists. Coefficients appearing above lines are beta weights for uncorrected paths. Coefficients in parentheses appearing below lines are beta weights for corrected paths. * $p < .01$. ** $p < .001$. *** $p < .0001$.

resources and additional pseudorelevant information about the deviant target precluded change in the judgment of the category as a whole. In sharp contrast, the absence of either cognitive resources or additional pseudorelevant information about the deviant led to a less stereotypic view of the larger group. Experiment 3 also replicated the mediational pattern observed in Experiment 2. As predicted, those participants who were provided with pseudorelevant information and had sufficient cognitive resources to engage in explanatory work managed to construe the deviant target as being an atypical member of the out-group. As a consequence, they did not have to modify their conception of the larger category. In our view, this last study provides us with even more conclusive evidence that the differences we observed between distracted and nondistracted participants are driven by the latter's ability to think of the deviant as atypical.

General Discussion

The goal of the present studies was to examine the conditions leading people to maintain or to alter their stereotypic beliefs. Early perspectives on stereotyping and intergroup contact identified the process of *referencing* (Allport, 1954) as an important strategy by which perceivers maintain their expectations about a group. Individuals who disconfirm the group stereotype are set aside as atypical members of the group (i.e., exceptions to the rule), leaving the stereotype of the group by and large unaffected. Although making someone atypical may well protect stereotypes from change, we reasoned that such a process should also require a sizable amount of cognitive resources on the part of perceivers. In other words, only those perceivers who enjoy enough of their attentional resources should be able to dismiss the counterstereotypical information and maintain their stereotypes intact.

In three studies, participants either were or were not distracted by a moderately demanding secondary task while processing stereotype-disconfirming information. The results of Experiment 1 are congruent with the idea that cognitive load disrupts the inferential work that people engage in when they are dealing with a deviant category member. Indeed, distracted participants changed their overall representation of the category significantly more than nondistracted participants. This happened despite the fact that the specific deviant target was perceived as being equally counterstereotypic by distracted and nondistracted participants. Experiment 2 replicated these findings and further showed that the perception of typicality mediates the effect of cognitive load on stereotype

change. This result strongly suggests that nondistracted perceivers engage in cognitive work that takes the form of *referencing*.

In Experiment 3, we obtained conclusive evidence that cognitive resources are likely to serve the maintenance of the stereotypic expectations only when the information provided about the deviant target also offers some room for interpretation. We presented participants with a description of a deviant target that was restricted to the stereotypical and counterstereotypical information or also contained pseudorelevant information. Whether pseudorelevant information was present or absent, distracted participants changed their view of the group, thereby demonstrating that a sizable amount of cognitive resources is needed to deal with the disconfirming information. As for nondistracted participants, they were able to maintain their stereotype in the presence but not in the absence of pseudorelevant information. Thus, it is clear that perceivers' ability to explain away the inconsistent information by building on pseudorelevant information is a key factor in the amazing endurance of stereotypes. In line with this conclusion, the atypicality judgments collected in Experiment 3 confirmed that the counterstereotypical member of the group was seen to be less typical of the group as a whole when abundant cognitive resources and additional neutral information were both available. Globally, the data provide unequivocal evidence that perceivers' ability to find grounds for discarding stereotype-inconsistent information contributes to the persistence of stereotypes. The message to be derived from our data is thus extremely clear. Once people perceive stereotype-inconsistent information, they need resources to dismiss the relevance of the disconfirming individuals for their stereotypes.

Cognitive Resources and Stereotyping

A major lesson of the stereotype activation and application literature is that a lack of cognitive resources is linked to people's tendency to rely on stereotypes (for a recent review, see Fiske, 1998). Perceivers fall back on their a priori expectations significantly more when they confront a cognitively exacting environment than when they face a less demanding situation (Bodenhausen, 1988; Bodenhausen & Wyer, 1985; Bodenhausen & Lichtenstein, 1987; Devine, 1989; Gilbert & Hixon, 1991; Macrae, Hewstone, & Griffiths, 1993; Stangor & McMillan, 1992). Clearly, these research efforts proved extremely beneficial for the circumscription of the conditions under which stereotypes tend to be activated and used. Moreover, social psychologists amassed invaluable information as to some of the cognitive benefits of stereotypes (e.g., Macrae, Milne, & Bodenhausen, 1994). Not only do the accumulated data emphasize the advantage of possessing a priori knowledge when dealing with an overwhelming amount of information, they also stress the fact that stereotypic knowledge may indeed be functional because it leads to the preservation of otherwise useful cognitive resources.

Apparently, the above message is at odds with the present finding that people may need cognitive resources to maintain their stereotypes intact. We think, however, that the paradox is more apparent than real. A better understanding of the interplay between the salience of the unexpected evidence and perceivers' readiness to notice the disconfirming information makes it possible to reconcile these two viewpoints. It is important to emphasize that all participants in our experiments were made well aware of the discrepancy between the category and the targets. In many set-

tings, however, perceivers may find themselves largely overwhelmed by incoming information or may lack the resources or motivation to examine the information (Fiske & Neuberg, 1990). Relying on stereotypic knowledge in a heuristic way constitutes a crude yet very efficient stereotype-maintenance strategy in that kind of situation. A number of other processes further contribute to the imperialism of stereotypic knowledge. For instance, recent studies indicate that inconsistent information is likely to be automatically inhibited during impression formation, leading perceivers to literally ignore that kind of evidence (Dijksterhuis & Van Knippenberg, 1995, 1996; Macrae, Bodenhausen, & Milne, 1995; for a review, see Bodenhausen & Macrae, 1998). In attending to new information, perceivers also monitor the intake of information so as to support their *a priori* beliefs (Ditto & Lopez, 1992; Yzerbyt & Leyens, 1991) and selectively resort to confirmatory search of the information, thereby precluding massive confrontation with disconfirming information (Darley & Gross, 1983; Johnston, 1996; Snyder, 1984). In all these circumstances, counterstereotypical information does not constitute a threat to the stereotype—because it simply remains largely unnoticed.

In other situations, however, perceivers may not always be in a position to avoid the discrepant target information. As our target-judgment data from Experiment 1 reveal, this is exactly what happened in the present studies. But how do people cope with the discrepancies between the target information and their group-related expectations when they are forced into perceiving the inconsistency? How do they manage to keep their stereotype about the group intact? It is our view that, given sufficient intellectual resources, perceivers may want to construe the individual as an atypical representative of the group (Kunda & Oleson, 1995). Of course, such refencing is but one of a variety of strategies aimed at rescuing preexisting beliefs. For example, an alternative strategy could be to engage in attributional processes whereby the cause of disconfirming behaviors is located in accidental features of the situation (Crocker, Hannah, & Weber, 1983; Hamilton, 1988; Kulik, 1983; Pyszczynski & Greenberg, 1981, 1987). In fact, the dispositional tone of the refencing process and the more situational attribution can both be used as means to maintain *a priori* beliefs. The latter process identifies exceptional circumstances that can lead to disconfirming behaviors and would leave the stereotyped expectations concerning the target unchanged. In contrast, the former process explains the inconsistency by means of dispositional characteristics of a so-called exception to the rule (Wilder, Simon, & Faith, 1996).

Interestingly, whereas the stereotype activation and application literature very much focuses on the judgment of the target, the stereotype change literature typically features an interest in the impact of the inconsistent information on perceivers' stereotypes. Rather than opposing these two streams of research, we would like to stress their complementarity. After all, stereotypes seem to take advantage of both the absence or the presence of cognitive resources. In the first case, the unique features of the target are overlooked or neglected because the cognitive resources are too scarce to thoroughly examine the incoming data. In the second case, the stereotype persists despite the inconsistency because perceivers have all the necessary resources to build a case against the typicality of the target. A better knowledge of the conditions in which cognitive resources may be at the service of prejudice is a most important goal for future stereotyping research.

We already noted the resemblance between situations in which people face counterstereotypical information about members of stereotyped groups and persuasion settings. In both instances, people are confronted with information that contradicts their convictions. Although the exact labels and the specific operating conditions may vary depending on one's favorite theoretical account, contemporary wisdom in the attitude change literature takes for granted the idea that people will be differentially influenced by a persuasive message because they vary in the extent to which they have the capacity to question what they are being told. The demonstration that the maintenance of stereotypic beliefs through the reinterpretation of disconfirming information requires cognitive resources provides evidence for the relevance of the analogy and may therefore open new avenues of research. The message from our data can also be related to recent findings in the attribution domain. Most notably, Gilbert and his colleagues (for a review, see Gilbert & Malone, 1995) provided convincing evidence that the correspondence bias may be the consequence of people's not having the cognitive resources to correct their initial dispositional inference in order to take into account the impact of the situational forces on behavior.

Interestingly, Gilbert's (1998) attribution experiments offer some insight as to another aspect of our experiments. Indeed, although these studies revealed that distracted participants fell prey to the overattribution bias more than did nondistracted participants, results also indicated that the bias was greatly (but not entirely) reduced when participants were later asked to think again about the information they had received (Gilbert et al., 1988). In our own studies, we made sure that our participants reacted to the deviant target(s) immediately after they had encountered the counterstereotypical information. Our findings indicate that the distracted participants were influenced by the inconsistent information and changed their views of the group as a whole, but the question remains as to the durability of this modification. We suspect that the consecutive availability of time and resources may help participants, especially when they are strongly attached to certain stereotypic views, to quickly return to the comfort of their previous beliefs. Whether stereotype recovery happens and, if it happens, whether this takes place with a noticeable impact of the inconsistent information is a fascinating question for future research.

The present set of studies focused on the consequences of a lack of cognitive resources for stereotype change. Besides cognitive resources, current dual-process models in the attitude change and attribution literature also point to motivation as an important factor. Indeed, research indicates that higher levels of motivation lead to more thorough processing of the arguments of a persuasive communication (Chaiken, 1987; Petty & Cacioppo, 1986) or to more correction of the dispositional inference by means of the situational information (Webster, 1993). Within the stereotype-change context, motivational factors are also likely to play a role in the modification of the maintenance of preexisting beliefs. Clearly, individuals who have a vested interest in a stereotyped view of a group should be very motivated toward stereotype maintenance and probably very efficient in dealing with counterstereotypical information. In contrast, perceivers may also want to adopt a more critical set and be ready to reevaluate the validity of their stereotypic views (for a review, see Fiske, 1998). Obviously, the availability of cognitive resources will have very different consequences in one or the other case (Devine, 1989; Kruglanski, 1989). At the very least, the present findings point to the possi-

bility that prejudiced people may devote a sizable amount of their cognitive resources to maintaining their stereotypic views of significant social groups at the expense of other cognitive activities.

Ironically, the fact that stereotypes facilitate perceivers' lives by providing them with ready-made tools for the interpretation of the social world can be seen as a most sensible incentive for people to resist changing their stereotypes every time that some contradicting information is encountered. In other words, the relative conservatism of our a priori views about others may prove to be a profitable investment in the long run. On the basis of the present empirical data, we argue that this attachment to their stereotypic conceptions can cost people a sizable amount of cognitive resources. This is because people are not free to conclude whatever they want. Instead, they need to do their best to appear rational when they construct a justification for their desired conclusion, especially when the observed fails to match the desired. As was suggested by Kunda (1990), people are likely to draw the desired conclusion only if they can muster the evidence to support it (see also Darley & Gross, 1983). In our studies, people reached their desired conclusions if they were able to neutralize the inconsistent information encountered when facing a deviant. This can be accomplished by making the target an atypical member of the group. And given the obvious cognitive dividends of future stereotype use, people are likely to be motivated to invest the necessary amount of mental energy in the service of stereotype conservation.

Fencing Off the Deviant as a Strategy for Stereotype Maintenance

According to the subtyping literature, the limited influence of disconfirming evidence on existing stereotypes is often thought to be a direct consequence of the weak relationship between the representation of deviant group members and the category as a whole (Johnston & Hewstone, 1992; Rothbart & Lewis, 1988; Rothbart, Sriram, & Davis-Stitt, 1996; Wilder, 1984; Wilder, Simon, & Faith, 1996). Although the idea that weak category activation blocks generalization offers an elegant explanation for stereotypes' insulation from deviant members, we believe it fails to account for the findings obtained in most stereotype-change experiments. Indeed, studies in this tradition of research emphasize the role of subtypes in stereotype maintenance and show that the provision of concentrated disconfirming information does not much affect stereotypes (Hewstone, 1994). This pattern emerges despite the fact that the relevant category is explicitly activated and the deviant individuals clearly belong to the target group. We argue that the perception of stereotype disconfirmation is in fact dependent on the concurrent activation of the stereotype. Judging the deviant(s) to be atypical offers an efficient way to protect stereotypes largely because it involves a contrasting reference to the category.

Our data not only show that the refencing process mediates stereotype maintenance, they also question the necessity of subtyping as a means to minimize stereotype change (Hewstone, 1994). The creation of smaller groups within the larger group might very well be a secondary process as far as on-line resistance to counterstereotypical information is concerned. Subtyping would then engender a more complex category representation that does lead to long-term impermeability of the stereotype.³ However, this step might be superfluous if protection from a (few) deviant(s) is all that is needed. It is our view that the simple yet powerful

process of refencing offers a parsimonious account of what happens during a subtyping experiment. In sum, the present data suggest that encounters with deviant members of a category often fail to provoke stereotype change not so much because the category is not activated or because a subtype has been created but rather because the counterstereotypical individual is appraised as an exception in the group.

Our findings may also be related to recent data collected by Bodenhausen, Schwarz, Bless, and Waenke (1995). In support of their generalized appraisal model, these authors found that, compared with neutral exemplars or no exemplars, exposure to very positive exemplars of Blacks (e.g., Michael Jordan) improved the favorability of judgments of Blacks as a group. Apparently, and contrary to what we found in the present set of studies, Bodenhausen et al.'s participants did not engage in stereotype-maintenance processes. There are a number of differences between Bodenhausen et al.'s study and our own series of experiments that could account for the discrepancy. Still, we think that the most likely explanation concerns the nature of the individuating information that was used in both contexts. As we see it, Michael Jordan embodies, and does so in an idealized way, a positive component of the stereotype of Blacks—namely, being athletic. Therefore, it is likely that participants may have appraised the group of Blacks by weighing one aspect of the stereotype somewhat more than they usually do. In sharp contrast, our own studies relied on a clearly counterstereotypical member of the category. Whereas archivists (or computer engineers) are perceived to be introverted, our participants were confronted with extroverted archivists (or computer engineers). This means that the deviant member used in our studies directly contradicted the central features of the stereotype. This difference may account for the degree of spontaneity of the cognitive work that perceivers engaged in so as to reconcile the target information and the stereotype. It is the work of future research to examine the value of this interpretation. More important for the present perspective, when Bodenhausen et al.'s participants were asked to question the typicality of the favorable exemplars and were thus led to view them as atypical members of the group, the favorable exemplars no longer affected the judgments of the group of Blacks. Thus, as was the case in our own data, disconfirming information was found to produce a sizable change in the perception of the larger group only when perceivers did not construe the exemplar as being atypical. The elaboration of the disconfirming information as being atypical inevitably leads perceivers to distinguish the deviant target(s) from

³ The difficulties in interpreting earlier subtyping findings' measures should be noted, especially those present when the measures are performed during the same session as the initial encounter with the counterstereotypical exemplars. The question is whether the grouping of the deviants in a separate cluster during a card-sorting task really offers conclusive evidence that a subtype has been created in long-term memory or whether it simply confirms that participants can sort targets according to typicality. To make a firm decision on this issue would require collection of delayed measures of the representation of the group. In our view, judged atypicality and subtyping could be seen as, respectively, the short- and long-term strategies for the protection of the stereotype against deviance: Judged atypicality meets the requirement of dismissing deviants as they are encountered, whereas subtyping offers a long-term security against future deviance based on the adaptation of the category representation.

the category, maintaining, if not reinforcing, the stereotypic perception of the group as a whole.

Conclusion

Building on both the social perception and the attitude change literature as well as empirical work of his own, Gilbert has argued that perceivers are deemed to accept whatever information they encounter before being able to reject it (for reviews, see Gilbert, 1991, 1993). In our opinion, the present series of experiments sits quite comfortably within such a view of the human information-processing system. When confronted with new data about deviant members of a known social group, perceivers' first reaction is to accept it. Only if additional resources are available will they be able to question the potential automatic reaction of acceptance. The lesson of a number of different lines of research is that people try to shape the incoming information in light of their larger knowledge base but that this operation entails certain cognitive costs.

Because of the crucial role that stereotypes play in our daily interactions, we wanted to gain a better understanding of the conditions under which people may be able to maintain their stereotypes. Our findings show that perceivers do indeed engage in stereotype-maintenance processes when facing disconfirming evidence. The present research indicates, however, that such defense mechanisms have weaknesses and can be made to fail. As a matter of fact, stereotypic views changed more when distraction disrupted stereotype-maintenance processes than when people enjoyed their full mental capacity.

By confronting distracted and nondistracted perceivers with a situation in which their stereotypic expectations were challenged, we were able to focus on a neglected aspect of the role of cognitive resources in stereotyping. To our great despair, an abundance of cognitive resources may not always lead perceivers toward more accurate target perceptions but may instead have the diametrically opposite consequence of giving them the opportunity to deploy efficient stereotype-maintenance strategies. Given the role of expectations in interpersonal and intergroup relations, continued research on these important issues is needed in order to better understand the factors affecting the durability of stereotypes.

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