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Increasing Perceived Variability Reduces Prejudice and Discrimination: Theory and Application

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Abstract

In this article, we describe theoretically-based research on a new method to reduce prejudice and discrimination. The method is based on increasing people's perceived variability of an out-group. Our research allowed us to generate a versatile experimental paradigm for investigating cognitive processes related to prejudice. It also led to the development of an effective tool that policy makers and managers can use to reduce prejudice in the real world. We describe several randomized field and laboratory experiments in which an increase of perceived variability led to a decrease in prejudice and discrimination. We also describe the results of research in which we tested the effectiveness of a ready-to-be-used intervention in a variety of social settings.

Most of us are aware of incidences of prejudice and discrimination in the workplace, education, and housing. Reskin (1998) reported that in the US in 1996 about 30% of White workers held professional and managerial jobs, while the comparable percentage was about 20% for Black workers and 14% for Latinos. At the other end of the job spectrum, in 1990 about 6% of White men held service jobs, compared to about 14% of African American men and 25% of African American women. In a series of field experiments, Amadieu (2004) showed that a French candidate has a fivefold greater likelihood of being invited to a job interview than an Arab candidate with the same CV. These statistics highlight the need to discover effective ways to change attitudes toward minority groups living in our societies. The present article describes a new method to reduce prejudice and discrimination. Our approach is based on the concept of perceived variability, and the idea that highlighting differences among the members of an out-group elicits less negative intergroup attitudes. The first part of the article is an overview of the literature on prejudice reduction and an outline of the theoretical rationale for our main hypothesis. In the second part of the article we will present empirical evidence for our hypothesis and for the underlying psychological process. In the third part, we will present a ready-to-be-used prejudice intervention, together with empirical evidence demonstrating its effectiveness. Finally, we consider the theoretical, empirical and practical implications of this new approach to reducing prejudice and discrimination and we suggest an agenda for future research.

Status Quo of Prejudice Reduction Literature

Over the past few decades, social actors and scholars have developed different interventions aimed at fighting prejudice and discrimination. Paluck and Green (2009) reviewed this body of work. Out of a total of 985 studies, 60% (i.e., 591) were non-experimental and thus do not allow us to draw reliable causal conclusions. Of the remaining studies,

most were conducted in the laboratory, and only 107 articles reported randomized field experiments. Of these 107 randomized field experiments, 36 were concerned with cooperative learning (''jigsaw classroom'') and the remaining 71 examined other prejudice reduction methods. Most of these experiments, however, were done with students or pupils. Of the 107 randomized field experiments, only 11 were carried out with a non-student population. Importantly, Paluck and Green noted: ''The literature provides little empirical guidance to policy makers seeking to intervene with populations living in conflict or post-conflict environments.'' (p. 351). It turns out that only a minority of the prejudice reduction methods developed in scientific laboratories have been systematically tested in the field. The authors state: ''The contact hypothesis [...] remains unproven in the real world due to the limited number of randomized studies conducted in field settings and the narrow range of prejudices tested in those studies.'' (p. 359).

It appears then that research in the social sciences has not been able to generate effective prejudice reduction methods that have been submitted to rigorous testing in the field. When we started the research project described in this article, we shared the concerns of Paluck and Green (2009). Our goal was to develop a theoretically-based prejudice intervention and to test its effectiveness in field settings with student and non-student populations. Through our research, we attempt to (i) advance theoretical knowledge about prejudice and discrimination, and (ii) design ready-to-be-used interventions that have been proven to be effective and that can be easily implemented by decision makers.

Perceived Variability, Stereotypes, Prejudice and Discrimination

The concept of perceived variability refers to the fact that individuals perceive a given out-group as more or less heterogeneous (Jones, Wood, & Quattrone, 1981; Park & Rothbart, 1982). The same individual may have the impression that a given out-group is composed of members who are rather dissimilar from each other, or who resemble each other quite a bit. The perceived variability of a social group is an important construct because it affects an individual's attitude towards that group. Like other attitudes, an individual's attitude toward a group can be conceptualized as having cognitive (stereotypes), affective (prejudice), and behavioral (discrimination) components (Breckler, 1984; Leyens, Yzerbyt, & Schadron, 1994), and we suggest that all three components are affected by perceived variability. *Stereotypes* refer to perceivers' tendency to associate certain characteristics with certain groups (Leyens et al., 1994). *Prejudice* is defined as generalized negative affect toward members of an out-group (Devine, 1989; Dovidio, Brigham, Johnson, & Gaertner, 1996). *Discrimination* refers to negative behaviors toward members of an out-group, such as the refusal to rent one's apartment or to give a job to a member of the out-group (Dovidio & Gaertner, 1986). The psychological literature suggests that stereotypes, prejudice and discrimination should be treated as separate constructs. For example, one can associate certain characteristics with a group without necessarily having a negative affect toward that group (Dovidio et al., 1996).

The few authors who have examined the social consequences of perceived variability have generally demonstrated its effect on stereotyping (Hewstone & Hamberger, 2000). In fact the constructs of perceived variability and stereotyping are so closely linked to each other that some authors use them interchangeably (Linville, 1998; Richards & Hewstone, 2001). Indeed, the tautological relationship between perceived variability and stereotyping becomes clear under scrutiny: The more an individual perceives members of a given group to be different from each other on a certain characteristic, the less he or she will associate this characteristic with the group (Hewstone & Hamberger, 2000). In

contrast, the link between perceived variability on the one hand and prejudice and discrimination on the other hand is less straightforward. Regarding prejudice, we reasoned that the perception of heterogeneity of an out-group implies that all members are not equally dislikeable. Whereas it is possible to have generalized negative affect toward a category that consists of similar members (''I don't like red meat''), it is considerably more difficult to have such feelings toward a category that consists of dissimilar members (''I don't like European food''). The greater the perceived within-group variability, the less likely that the perceiver will associate (negative) characteristics with the group and maintain his/her generalized negative affect. As for the link between perceived variability and discrimination, we think that once a perceiver realizes that an out-group is heterogeneous, group membership becomes non-diagnostic and can no longer serve as a guide for behavior. In the case in which the discriminatory behavior is based on generalized negative affect toward the group, perceived variability affects the extent to which prejudice is applied to individual out-group members (Lambert, Payne, Ramsey, & Shaffer, 2005).

We predicted that an increased perception of variability in the out-group would lead to lower prejudice and to less discrimination in the case of a negatively evaluated out-group. In our experiments, we attracted participants' attention to either the homogeneity or the heterogeneity of members of an out-group, and then measured (i) their perception of variability of the out-group, and (ii) their attitudes or behaviors. Below we discuss supportive evidence for the idea that an increase in perceived variability leads to reduced prejudice and discrimination.[1]

Empirical Work

In our research program, we started out by examining the effect of perceived variability on prejudice reduction with university students in classroom settings (Brauer & Er-rafiy, 2011; Exp. 1). In this experiment, participants read one of two texts that were ostensibly excerpts of a travel journal of a person traveling in Morocco. The participants' task was to underline the spelling errors in the text. Each version of the text contained 10 minor spelling errors that did not hinder comprehension of the text. Both texts were written in order to convey a neutral image of Moroccans, neither very positive nor very negative. In the ''homogeneous condition,'' the author described the particularities of the Moroccans referring to them always as a single group (either ''the Moroccans'' or ''they''). For example, the authors mentioned a visit at the market and commented on the Moroccans' habit of talking loudly and drinking mint tea. In the ''heterogeneous condition,'' the author described his experience in Morocco mentioning several different sub-groups, such as farmers, working-women and elderly citizens. The results showed that participants in the heterogeneity condition (i.e., subgroups) perceived Moroccans to be more variable and displayed lower levels of prejudice (measured with the Modern Racism Scale, see McConahay, 1986) than participants who read a text about the customs and habits of Moroccans as a whole group (homogeneity condition). The experiment is consistent with prior work showing that the number of sub-groups that perceivers are aware of is an important determinant of how variable they perceive a given group to be (Park, Ryan, & Judd, 1992).

In another experiment, we showed that increasing participants' perceived variability of an out-group can reduce not only prejudice, but also discrimination toward out-group members (Brauer & Er-rafiy, 2011, Experiment 2). We invited three participants who did not know each other prior to the experiment to the laboratory. With the help of a Chinese confederate, the experimenter led them to believe that, in the adjacent room,

three other students of Chinese nationality were also participating in the experiment. The ostensible purpose of the experiment was to examine how individuals from different cultures working in the same organization communicate and exchange information. Participants completed a questionnaire about their attitudes and behaviors at the workplace (e.g., ''How important is it for you to have harmonious relationships with your colleagues''?). Then, the experimenter copied the three individual answers on a ''collective answer sheet'' and led participants to believe that these answers would be given to the Chinese group and that they would see the responses of the Chinese group. The similarity of the answers of the three Chinese individuals constituted the experimental manipulation. In the ''homogeneous condition,'' the answers of the Chinese individuals were similar to each other on most items of the questionnaire (e.g., responses 1, 1, and 2, on the 13-point scale ranging from −6 to +6). In the ''heterogeneous condition,'' the three responses were dissimilar from each other (e.g., responses −4, 2, and 6, for the same question). The average of the three ratings for the same item was always the same across the two conditions. When participants were later asked to distribute a monetary reward (100 €) to their own group and the Chinese out-group, they allocated less money to the out-group in the ''homogeneous'' condition than in the ''heterogeneous'' condition. In other words, they discriminated less against the Chinese out-group when they believed that the group was composed of dissimilar rather than similar members.

An increased perception of out-group variability can also reduce discrimination in a hiring situation (Brauer & Er-rafiy, 2011; Experiment 4). For this purpose, participants were told that they would be participating in two unrelated experiments. In the first phase, participants in the heterogeneity and homogeneity conditions were asked to look at pictures of eight Arab individuals and to form sentences that would help them memorize the pictures. Participants in the heterogeneity condition were instructed to form sentences with the following structure: 'Whereas some individuals…, other individuals….'' Participants in the homogeneity condition were instructed to form sentences that started with ''They are all ….'' Participants in the control condition did not complete the sentence task. In the second phase, participants were asked to evaluate and rank order the CVs of four job candidates for a position as a sales representative. The four CVs had been constructed so that one CV was clearly better than the other three. The better CV had a French name (François Durand) for half of the participants, but an Arab name (Karim Benlabssir) for the other half of the participants. Both factors were crossed, and thus yielded a three (heterogeneous versus control versus homogeneous) by two (French versus Arab target CV) between-subjects design. We found that participants in the heterogeneous condition perceived Arabs to be more different from each other than participants in the homogeneous and control conditions. The control condition did not differ from the homogeneous condition. We interpret this null effect as an indication that participants perceived the out-group as being quite homogeneous and that thinking about similarities did not change participants' perceptions (Park et al., 1992). As can be seen in Figure 1, results of participants' evaluation of the candidates indicated that encouraging participants to think about the heterogeneity of Arabs eliminated the discrimination of the Arab job candidate in a simulated hiring situation. Specifically, the Arab candidate was evaluated less favorably than the French candidate with the same CV in the homogeneity and control conditions. Ethnicity played no role, however, in the heterogeneity condition. This finding is important because Amadieu (2004) showed that discrimination occurs mostly during the initial phases of the selection process. While an Arab candidate is five times less likely to be invited for a job interview than a French candidate with comparable CVs, Amadieu (2004) also showed that both candidates are equally likely to be offered the job if they are interviewed.

In the research presented above, we took great care in eliminating potential experimental confounds or errors. For example, in all of the above experiments the experimenter was European. We made also a great effort to create a credible cover story in order to reduce experimenter demand effects (e.g., Chinese confederate sitting in the waiting area, separate experimenters for the two presumably unrelated experiments). In general, participants reported little suspicion. We also measured perceived variability in every experiment and showed that the effect of the experimental manipulation on the outcome measure was mediated by participants' perception of variability of the outgroup. In sum, modifying people's perceptions of variability of a target group reduces prejudice and discrimination against that group. Recently we have conducted research to shed light on the underlying psychological process by which increasing perceived variability reduces prejudice.

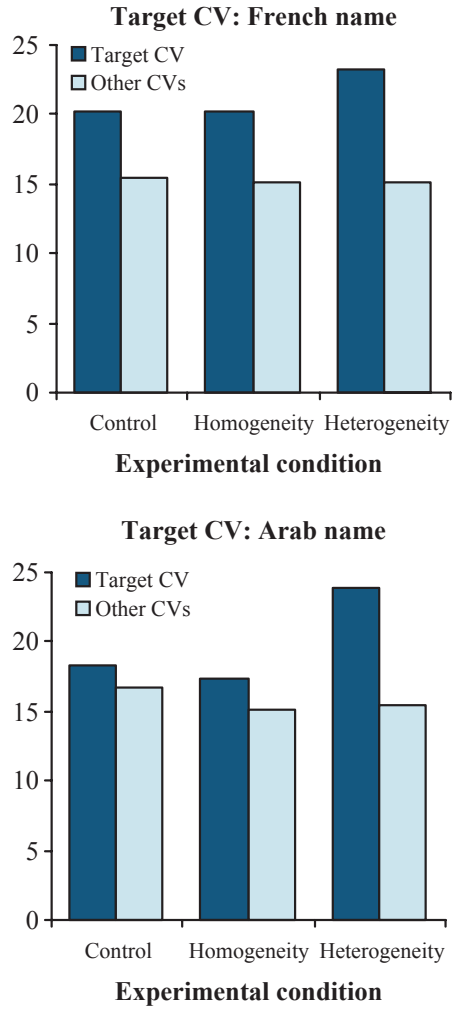

Figure 1 Evaluation of the target CV and average evaluation of the ''other'' CVs as a function of experimental condition and target ethnicity in Experiment 4 (Brauer & Er-rafiy, 2011).

Underlying Process

As already mentioned, prejudice is a generalized negative affect toward members of an out-group. For a variety of reasons we made the prediction that an increase in perceived variability leads to a decrease in intensity of the affect that individuals feel toward a group. First, an increase in perceived variability leads to more complex representation of the target object (Linville & Jones, 1980) and the complexity of a representation is inversely related to the intensity of the affect felt toward the object of the representation. Second, as mentioned above, it is difficult to maintain intense negative affect toward a group that is seen as heterogeneous. If members are seen as being rather dissimilar to each other, then it is nearly impossible to feel the same way toward all of them as if they were interchangeable. If our reasoning is correct, then the decrease in affective intensity following the increase in perceived variability should occur for both liked (e.g., Firefighters) *and* disliked groups (e.g., Policemen). In other words, an increase in perceived variability should lead to less positive feelings toward a well-liked group and to less negative feelings toward a disliked group. We tested this hypothesis in two experiments (Er-rafiy & Brauer, forthcoming). Perceived variability was manipulated by asking participants to either think about differences between members of an out-group or to think about similarities (see Brauer & Er-rafiy, 2011; Experiment 4). Based on extensive pretesting, we chose two target groups, firefighters, who were generally well-liked, and policemen, who were generally disliked by our student participants. In the main experiment, we asked participants to complete a task measuring their affect toward the entire group (Experiment 1) or toward individual members of the group (Experiment 2). Compared to participants in the control condition, participants in the heterogeneity condition expressed less intense affect, i.e., less liking of the positively evaluated group (or its individual members) and less disliking of the negatively evaluated group (or its individual members) (Experiment 1),[2] and they were also less certain about their affect and less at ease expressing their affect (Experiment 2).

The results suggest that people generally do not maintain generalized affect – positive or negative – toward an out-group if they perceive this out-group to be relatively heterogeneous.

We now briefly discuss the key findings from the research program developing and testing the effectiveness of a *tool* based on the idea of perceived variability.

Applying the Idea of Increasing Perceived Variability of an Out-Group

Government institutions spend billions of dollars annually on interventions aimed at reducing prejudice. However, the effectiveness of most of these interventions is never evaluated (Wilson, 2011). For example, Oskamp and Jones (2000) identified 350 multicultural education programs in the United-States. Only 124 programs were judged by the authors as programs including evaluations of their impact on attitude change. On the other hand, fundamental research in social psychology contains numerous examples of experiments in which the researchers showed the effect of an experimentally manipulated variable that causally affects prejudice and/or discrimination. However, many of these interventions have practical problems (Paluck & Green, 2009; Wilson, 2011). First, these methods often are not concrete and used manipulations that cannot be implemented in schools, the work place, or in other natural settings (see Aboud & Levy, 2000; Paluck & Green, 2009). In some prejudice reduction studies, for example, participants receive a boost in self-esteem (Fein & Spencer, 1997), but it may be difficult to change people's

self-esteem in the real world both for ethical and logistic reasons. Second, some studies were conducted with artificial groups that were created during the laboratory experiment. It is possible that an intervention that has been tested with artificial groups is not effective with real groups that have a long-standing history of conflict (Miller & Harrington, 1990).

How could one modify individuals' perceptions of variability of a meaningful out-group in daily life and thereby improve intergroup relations? One way would be to make salient the group's heterogeneity in terms of characteristics that have been shown to be important in person perception, most of which can be represented by perceptual characteristics. These include gender, age, social status, preferences, and personality traits (Brewer & Gardner, 1996). Such a message can easily be communicated with a poster that can be used in public intervention campaigns. We designed such a poster and improved it in a series of pilot experiments in order to maximize its capacity to modify people's perceptions of within-group variability. The poster was developed in collaboration with an advertising agency that specializes in societal campaigns (http://www.conjoncture.fr). It contained photographs of 12 male and female Arab individuals who differed in age, hair style, lightness of skin color, formality of clothing (an indicator of social status), and facial expression (some smiled, some had a neutral facial expression; see Figure 2). Next to two-thirds of the photographs, there was a small box with the person's first name, his or her age, and a characteristic describing the person (e.g., ''Yamina, 59 years, optimistic,'' ''Aïcha, 30 years, stingy''). The characteristics were constructed so that on average, the individuals on the photographs came across as neither very likeable nor very dislikeable. Below the photographs, there was a slogan, printed in large letters: ''What makes us the same – is that we are all different.''

The effectiveness of the poster highlighting perceptions of perceived differences among Arabs was tested in a series of laboratory and field experiments. In all these experiments, we exposed (or not) participants to the poster highlighting the differences among Arabs and then measured their attitudes and/or behaviors toward this out-group. As we will describe in detail below, the poster turned out to be highly effective at reducing negative attitudes toward Arabs in different settings. In what follows, we briefly discuss the key findings from this research program.

In two experiments, undergraduate students were asked to take a seat in a waiting room near the psychology laboratory (Brauer & Er-rafiy, 2011; Experiment 3; Er-rafiy & Brauer, forthcoming-b; Experiment 1). While they were waiting, participants were exposed to the poster that drew their attention to differences among Arabs (heterogeneity condition) or to a poster encouraging them to eat more fruits (control condition). Subsequently, participants' attitudes toward Arabs were evaluated. We found that participants in the heterogeneous condition (compared to the control condition) perceived Arabs as more different from each other and reported fewer negative stereotypes (see Dambrun & Guimond, 2004), less prejudice (measured with the Modern Racism Scale, see McConahay, 1986), and less ethnocentrism (measured with the ethnocentrism scale, see Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950). Participants in the heterogeneous condition were also willing to devote more time to an Arab interest group (Er-rafiy & Brauer, forthcoming-b; Experiment 1). In another experiment, we showed that the heterogeneity poster affects not only explicit attitudes, but also behavior. In fact, Brauer and Er-rafiy (2011, Experiment 3) showed that an Arab confederate who pretended to accidentally drop the content of her purse received more help from participants who had previously been exposed to the heterogeneity poster than participants in the control condition. This result is important because it contradicts the claim that the effects of our heterogeneity

Figure 2 The poster that was used to modify participants' perceived variability of Arabs.

poster are due to demand characteristics (i.e., participants guessing what the task is meant to do, or what they believe is socially desirable responding).

The general conclusion of the above research is that the heterogeneity poster effectively reduces discriminating behavior. However, there are alternative explanations for the above findings. As an example, it could be possible that reduction of prejudice is due to the fact of looking at faces or to the fact that the poster reminds viewers of the social norm that it is unacceptable to discriminate against Arabs. The following experiments were designed to address and eliminate possible alternative explanations for our findings (see Brauer, Er-rafiy, Kawakami, & Phills, 2012; Er-rafiy & Brauer, forthcoming-b).

Aboud and Levy (2000) noted that the majority of programs used to change intergroup attitudes in educational settings (e.g., anti-racist interventions encouraging children to

recognize, and confront, prejudice in themselves and in society; Short & Carrington, 1996) are typically developed from intuition and creative insight, rather than research-guided theory, and this could be part of why most of them are rather ineffective (see also Wilson, 2011). In contrast, the interventions developed in our line of research are based on solid theoretical grounds and empirical evidence from controlled laboratory experiments.

In order to test the effectiveness of our intervention campaign in schools, we implemented a matched randomized experimental design. Eight schools agreed to participate in an applied research project on prejudice reduction. We created four pairs of schools in such a way as to pair schools that shared a maximum of common characteristics (e.g., number of students, percentage of immigrants). Then, within each pair, one school was randomly assigned to the experimental condition and one school to the control condition. We then displayed our heterogeneity poster for 2 weeks on the classroom walls of the experimental schools, while no poster was displayed in the control school. Students' attitudes, prejudice and discrimination were measured 5 weeks after the beginning of the experiment. The data were analyzed with hierarchical linear modeling in order to take into account the lack of independence due to school. The results demonstrate that students who had been exposed to the poster highlighting the differences among Arabs evaluated Arab students more positively (attributed more positive traits to Arab students), felt closer to them, were less prejudiced and were more likely to sign a website petition in support of the reduction of discrimination against Arabs.

In Er-rafiy, Brauer, and Musca (2010, Experiment 3), we tested the effectiveness of our poster with a non-student population. Six physical therapists gave us permission to conduct a field experiment in their waiting rooms. As in the previous experiment, we formed pairs of therapists with similar characteristics (e.g., same size waiting room, socio-economic status of the neighborhood) and randomly assigned one physical therapist to the experimental and one to the control condition. During the first week of the experiment, the posters were displayed in the waiting rooms of the three physical therapists in the experimental condition. Note that most clients see their physical therapists on a weekly basis and thus were almost certainly exposed to our poster. No poster was displayed in the waiting room of the physical therapists in the control condition. Three weeks later, participants' attitudes towards Arabs were evaluated with an indirect, behavioral measure of prejudice: an Arab confederate took place in the waiting room, and we measured how far incoming clients sat away from him. Note that physical distance has been considered an unobtrusive measure of discrimination (Word, Zanna, & Cooper, 1974).

As can be seen in Figure 3, clients of physical therapists in the experimental condition were more likely to sit closer to an Arab confederate seated in the waiting room than clients of physical therapists in the control condition. If Paluck and Green's (2009) list is correct, the article by Er-rafiy et al. (2010) is the 12th in the literature on prejudice interventions in which a randomized field experiment was conducted with a non-student population.

Although the poster we created seems to be quite effective in reducing negative attitudes toward Arabs, the experiments testing the previously reported studies nevertheless contain a possible confound. In the heterogeneous condition, participants were exposed to a poster that contained pictures of individuals, whereas in the control condition, they were exposed to a poster that contained drawings of fruits, or were not exposed to any poster. There are two viable alternative explanations for the results we obtained. First, it could be that the beneficial effect of the poster may be due to the fact that the poster

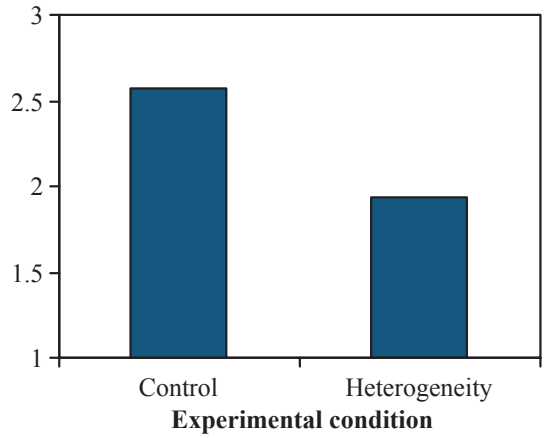

Figure 3 Physical distance separating participants from a confederate of Arab origin as a function of experimental condition in Experiment 3 (Er-rafiy et al., 2010).

reminds viewers of the social norm that it is unacceptable to discriminate against Arabs (Plant & Devine, 1998). Second, it could be that the simple fact of looking at pictures of Arab individuals causes participants to hold less negative attitudes toward Arabs (Zebrowitz, White, & Wieneke, 2008). Although these alternative explanations do not invalidate the conclusion that the poster effectively reduces prejudice and discrimination, their existence is unsatisfactory from a scientific standpoint because we do not know why exactly the poster is effective. We decided to address these issues in the following experiment.

In this experiment (Er-rafiy & Brauer, forthcoming-b; Experiment 4), we included the heterogeneity poster and the control poster (eating more fruits) from the previous experiments, but we added two new conditions. In the ''social norm condition,'' we used a poster that was used by the French government in a public advertisement campaign 5 years prior to our experiment (Figure 4, left panel). The poster displays a single Arab individual and encourages viewers to stop discriminating against Arabs by providing counter-stereotypic information. In the ''faces condition,'' we used the same poster as in the heterogeneous condition but we removed all information related to the heterogeneity of Arabs and replaced the slogan by a general appeal to stop discrimination (Figure 4, right panel). The experiment was run among undergraduate students at the university ($N = 486$) and ran over a course of 2 weeks. During the first week, before the beginning of the class, one of the four posters was displayed on the classroom walls. After the class ended, the poster was removed. The following week, participants' attitudes toward Arabs were measured. Our results suggest that participants who had been exposed to the poster in the heterogeneous condition had fewer negative stereotypes and were less prejudiced than participants who were exposed to any of the three other posters. Posters that appealed to the social norm of anti-discrimination or that displayed faces of Arab individuals appeared to be ineffective.

Our method involves reducing prejudice and discrimination against an out-group by reminding viewers of the fact that the out-group is heterogeneous, that is, that its members possess diverse negative and positive characteristics. The poster that was used in our experiments reminds viewers that some Arabs are polite, some are impolite, and some Arabs are interesting and some are boring. In contrast, previous attempts to reduce prejudice and discrimination have involved showing members of an out-group with only

Figure 4 The posters that were used in Experiment 4 (Er-rafiy & Brauer, forthcoming-b).

positive characteristics (e.g., Arabs are all polite or interesting; Kawakami, Dovidio, Moll, Hermsen, & Russin, 2000). Recently, we compared the effectiveness of the two prejudice reduction methods. In a series of five experiments, Brauer et al. (2012) demonstrate that exposure to information related to an out-group's heterogeneity reduces prejudice more effectively than exposure to only positive characteristics of the out-group. More precisely, participants were incidentally exposed to (Experiments 1 and 3) or explicitly shown (Experiments 2 and 4) a poster that associated both positive and negative traits with an out-group (mixed condition), to a poster that associated only positive traits with the out-group (positive condition), or to no poster (control condition). The two out-groups were Arabs in France and Blacks in Canada. Results revealed that participants in the mixed condition expressed less explicit prejudice (assessed by the Modern Racism Scale) (Experiments 1–2) and less implicit bias (measured by the Implicit Association Test) (Experiments 3–4) than participants in the other two conditions (see Figure 5). A fifth experiment demonstrated that the mixed poster was more acceptable and created less reactance than the positive poster. These results suggest that a persuasive message highlighting both the positive and negative characteristics of the out-group reduces prejudice more effectively because it is easily acceptable and yet effectively modifies people's representation of the out-group. In these experiments we did not explore the full range of negative traits that make the mixed message most effective. Moreover we did not consider the manipulation of relevant and irrelevant stereotypic traits associated to the out-group. Future research will shed more light on these questions.

In sum, we provide unambiguous empirical evidence for the idea that increasing individuals' perceived variability of an out-group reduces prejudice and discrimination toward out-group members. We also show that a change in affective intensity is responsible for these effects. Moreover, we develop a ready-to-be-used intervention based on the idea of

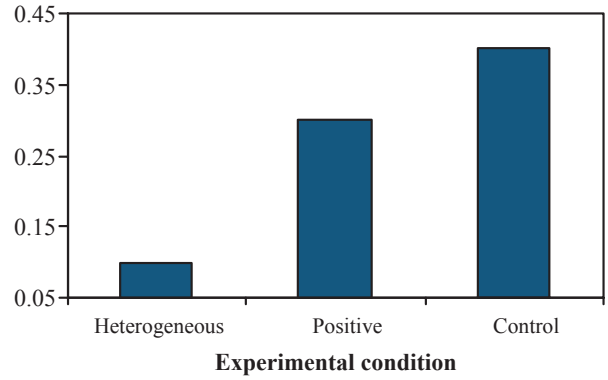

Figure 5 Implicit attitudes as a function of experimental condition in Experiment 4 (Brauer et al., 2012).

increasing perceived variability that can be used by decision makers who want to fight discrimination and prejudice.

Prospects for Social Policy and Practice

In terms of practical implications, these findings are relevant for social policy. Our research introduces an effective tool for use by policy makers interested in fighting prejudice and discrimination in society. Compared to existing techniques for discrimination and prejudice reduction, our method is particularly easy to implement. For instance, inter-group contact reduces prejudice and discrimination, especially if certain conditions are met (equal status, lack of competition, institutional support; Allport, 1954; Pettigrew & Tropp, 2006). However, in the field, these conditions may not characterize many informal contact opportunities between members of different groups (Powers & Ellison, 1995). ''Recategorization,'' a prejudice reduction method suggested by Gaertner, Mann, Murrell, and Dovidio (1989), may work only if individuals are willing to give up their group identity, which is unlikely if they are strongly identified with their social groups (Bourhis & Leyens, 1999). Compared to other approaches, modifying people's perceived variability seems to be relatively easy to carry out. Our poster constitutes a highly flexible means by which to increase perceived variability. It is cheap, easy to use, and effective. But the use of a poster is only one possibility among many others. The media (e.g., television, radio) can also contribute to the reduction of the prejudice by showing members of minority groups in more variable roles on the radio and on television (Paluck, 2009). Diversity trainings in schools and companies should aim to modify perceived variability through specific exercises.

Directions for Future Research

We think that a modification of the out-group's perceived variability plays an important role in other approaches to prejudice reduction. The beneficial effect of *intergroup contact* may be due to the fact that contact increases the complexity of out-group perceptions, thus overriding the use of stereotypes to categorize and evaluate individual out-group members (Hewstone, 2003; Turner, Hewstone, & Voci, 2007). For example, two studies (with students in Study 1 and workers in Study 2) revealed that contact had a direct (i) positive effect on perceived out-group variability, and (ii) negative effect on subtle

prejudice (Voci & Hewstone, 2003). Although the mediation of the effect of contact on prejudice by perceived variability was not tested by these authors, it is likely that contact exerts is beneficial effect through a modification in perceived variability. Similarly, a change in perceived out-group variability could explain the effect of *decategorization* on prejudice reduction. This model proposes minimizing the use of category labels altogether, and instead interacting with others on an individual basis (Brewer & Miller, 1984). It has been shown that individuating members of the out-group or personalizing interactions de-homogenizes the out-group (Brewer & Miller, 1984; Miller, Brewer, & Edwards, 1985). In a similar vein, modification of the perceived variability of the out-group may be the crucial element in the *recategorization* approach (e.g., Gaertner et al., 1989). This approach encourages perceivers to reject the use of ''us'' and ''them'' in favor of a more inclusive, superordinate category that includes both the in-group and the out-group. A given group may be seen as more heterogeneous when it is considered to be a subgroup of the superordinate category than when it is defined as an out-group (Hornsey & Hogg, 2000). Testing a possible mediation of the effect of the ''other'' methods on prejudice reduction by a modification of people's perception of variability will be an important focus for future research.

More generally, social scientists need to conduct more field experiments on prejudice reduction. In Er-rafiy et al. (2010), we underscored the importance of field experiments. Though seldom used, field experiments are crucial to applied research in social psychology. First, they allow researchers to test in the field an intervention that was initially developed in the laboratory (i.e., external validity: the beneficial effects of the intervention can be generalized to other situations). Second, they make it possible to examine the long-term effects of an intervention in the field, that is, in a real-world situation characterized by political and economic influences, by social pressure and by distraction from features of the environment. Finally, field research helps generate new predictions and theories that improve our knowledge of social phenomena. There is no doubt, however, that field experiments are harder to conduct than laboratory experiments. For this reason, in Er-rafiy et al. (2010), we suggested some guidelines to social psychologists and public policy decision makers who wish to conduct field experiments. Among other things, we recommend the inclusion of a control group in a pretest-posttest design. We also recommend a random assignment to experimental conditions, either at the participant level (e.g., pupils) or at the group level (e.g., classes of pupils). We encourage the use of indirect questionnaires and of behavioral measures in order to eliminate response biases. We argue that the measures should be administered well after the intervention, if possible several months later. Finally, we suggest that researchers interested in field studies should consider more varied populations, such as neighborhood residents, customers at the bakery, public transportation users, etc.

Conclusion

In this article, we have described the theoretical basis, emerging support, and practical potential of a new intervention strategy for improving intergroup attitudes: increasing people's perceived variability. The approach has three key strengths. First, it has been rigorously tested in laboratory and field settings. Second, it is relatively easy to implement. Third, it is socially acceptable by reminding viewers of the fact that an out-group's members are heterogeneous, that is, that these members possess diverse negative and positive characteristics (not only positive characteristics). Increasing perceived variability is a simple yet effective means of promoting more positive intergroup relations; it is a theoretically grounded intervention with significant potential for policy makers and educators.

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Short Biographies

Abdelatif Er-rafiy is an Assistant Professor of Social Psychology at the Université of Poitiers. He holds a PhD from Clermont University. He has published in journals such as the Journal of Experimental Social Psychology, Journal of Applied Social Psychology and International Review of Social Psychology. His research interests broadly involve perceived variability, diversity training, majority-minority relations, and the reduction of prejudice. This research has been funded by grants from the French ''L'Agence Nationale pour la Cohésion Sociale et pour l'Égalité des Chances'' (ACSÉ). He has conducted research looking at a variety of inter-nation and inter-ethnic relations involving groups such as French and immigrants in France, Swiss and Kosovars in Switzerland, and Hutus and Tutsis in Burundi.

Markus Brauer is Professor of Social Psychology at the University of Wisconsin-Madison. He received his PhD in 1994 from the University of Colorado at Boulder. He has published more than 70 articles and book chapters. He has received numerous grants and awards, and has served on the editorial board of all major journals in social psychology. His research interests include social power, intergroup perception, prejudice reduction and moral psychology.

Endnotes

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[1] We are keen to make our experimental materials to increase perceived variability accessible to interested researchers. All materials are available upon request from the authors.

[2] The mediated moderation analyses suggest that making the heterogeneity of a target group salient leads to a decrease in affective intensity (less positive affect toward a well-liked group, less negative affect toward a disliked group), and affect in turn determines prejudice.

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