More of the Same
The Influence of Temporal Trends on Stereotype Endorsement

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Abstract. We suggest that temporal stability in the frequency of stereotype-consistent behavior can be used to estimate whether this behavior reflects internal stable dispositions (i.e., stereotype-consistent traits) shared within the group rather than other factors. Based on this reasoning, we expect that people may be more likely to judge a target group in stereotypical ways when the percentage of members of this group performing the stereotype-consistent behavior is stable rather than when the trend has been increasing or decreasing up to the present. This hypothesis was applied to the perceived endorsement of Flemish nationalism in Belgium. The main hypothesis was confirmed. The effect of temporal trend on stereotyping was mediated by an indicator of perceived group homogeneity.

Keywords: stereotypes, time, group variability, change, trend

Groups, like individuals, change according to the ebb and tide of history. Whereas some social scientists (e.g., Myrdal, 1944; Todd, 2003) have argued that race is deeply embedded in US history, with being “black still bearing the mark of slavery” (Hacker, 1992, p. 14), citizens of that country recently elected a black president. By contrast, since World War II, the Dutch have often been viewed as supporters of multiculturalism. Yet, the popularity of such policies has been on the wane in the past decade (Vasta, 2007). How do people’s views of groups evolve as a function of such changes? Do they “update” their stereotypes? Or do they maintain them regardless of such evidence?

Although stereotypes are influenced by expectations and naive theories (Yzerbyt, Rocher, & Schadron, 1997), they also originate from inductive processes (Fiedler & Walther, 2004; Schaller, 1994; Stangor & Lange, 1994). Observers can be viewed as implicitly following the rules of an analysis of variance (Schaller, 1994), as they infer general trends from a limited sample of available information. Two categories of cues are crucial in this respect: information regarding the central tendency of a trait and information regarding its variability in the observed group.

Stereotypes are often preserved in spite of exposure to stereotype-incongruent information (for reviews, see Fiske, 1998; Hamilton & Sherman, 1994). Nevertheless, a vast body of literature has studied when and how exposure to stereotype-inconsistent information promotes stereotype revision, usually operationalized in terms of central tendencies of different traits or typical characteristics (e.g., Kunda & Oleson, 1997; Weber & Crocker, 1983). Recently, the role of variable information between group members has also been investigated. Early work by Park and Hastie (1987) demonstrated that people take information regarding the objective variability of a group into account (see Guinote, Judd, & Brauer, 2002). Some research has investigated the relationship between perceived group variability, member typicality, and judgment of a single group member (Lambert, 1995; Lambert & Wyer, 1990; see also Ryan, Judd, & Park, 1996). Paolini, Hewstone, Rubin, and Pay (2004) examined how member atypicality affects perceived variability of the group, stereotyping, and prejudice. Other studies were concerned about the effect of exposure to several group members on stereotyping. On the one hand, perceived group variability was examined as a function of the central tendency of stereotype-related information. Exposure to stereotype-disconfirming information increased the perceived variability of the stereotyped group (Garcia-Marques & Mackie, 1999). On the other hand, stereotype endorsement (measured in terms of central tendency) was examined as a function of stereotype-related information variability. Exposure to disconfirming information elicited more stereotype change when it was low in variability (Garcia-Marques & Mackie, 2001). Interestingly, Errafiy and Brauer (2010) showed that perception of variability alone can reduce prejudice (see also Brauer & Errafiy, 2011).
Whereas information concerning variability between group members has been the focus of recent research, variability across time of stereotype-related information has received little attention. This paper provides initial evidence that, like variability between group members at a specific time point, temporal variability influences stereotypical beliefs. Indeed, we found that exposure to temporally stable stereotype-consistent information elicited more stereotype endorsement than exposure to temporally variable stereotype-consistent information.

The Effect of Temporal Variability on Stereotypes

Variability information is an important cue to stereotype applicability: Following the logic of an ANOVA, it can be viewed as providing information about the relationship between group membership and possession of a characteristic. If we applied Kelley’s ANOVA model of attribution (Kelley, 1967) at a group level, people should be more likely to explain stereotype-consistent behavior as due to the presence of a shared stereotypical trait within the group, that is, make an internal and stable attribution, to the extent that this behavior is performed repeatedly (i.e., is consistent) over time (for evidence, see, e.g., Zuckerman, 1978). By contrast, when people know that the frequency of a behavior varies across time, they may be more likely to explain it by other factors. This logic would suggest that the existence of a perfectly stable trend may function as a cue to consistency and thereby lead to more internal and stable attributions to its group members than the absence of knowledge regarding this trend. By contrast, any type of temporal trend, to the extent that it displays variability, may lead people to view a group in less stereotypical terms than the absence of knowledge regarding this trend or the existence of a perfectly stable trend. For example, if the percentage of Americans who drive a large car varies considerably across time, perceivers may be more likely to explain Americans’ preference for large cars in terms of situational factors (e.g., the economic situation), whereas if it remains stable they may explain it in terms of internal stable dispositions (e.g., materialism).

Rydell, Hugenberg, Ray, and Mackie (2007) proposed that individuals hold implicit theories about groups’ tendencies toward stability. In this respect, some individuals view groups as being inherently stable over time while others view them as being malleable and likely to change as a function of circumstances. Moreover, they showed that implicit theories about groups change perceptions of group entitativity which in turn has an impact on stereotyping. Group entitativity (Campbell, 1958) refers to the belief that the group is a “real thing” or an entity rather than an assemblage of disparate individuals. According to Campbell, one of the chief factors influencing entitativity is the perceived homogeneity. Based on this analysis, we reasoned that witnessing that stereotype-consistent behaviors of a group are stable over time may facilitate stereotyping by increasing the perception of group homogeneity whereas witnessing a temporal trend showing that stereotype-consistent behaviors vary across time may discourage stereotyping by reducing the perception of group homogeneity.

Forecasting the Future of the Group

People may not use temporal trends only to infer the current dispositions of groups. They may also use such trends to make predictions about the later evolution of these characteristics. Interestingly, whereas people’s appraisal of the past of their group and relevant out-groups has attracted much attention (Licata, Klein, & Gely, 2007), the question of how people appraise the future of their and other groups has been largely neglected (however, see Klein, Spears, & Reicher, 2007) in spite of its importance in intergroup relations.

How do people make predictions based on existing available trends? Westerners tend to adhere to a “linear” logic influenced by the Greek philosophical tradition (Ji, Nisbett, & Su, 2001). Hence, when confronted with a linear trend, be it ascending or descending, they tend to predict that it will keep its course (Ji et al., 2001). According to this logic, if the frequency of stereotype-consistent behavior has been increasing, people should estimate that it will continue to increase at the same rate whereas if it has been decreasing, they should view it as likely to further decrease at the same rate. If people take such patterns at face value, they may perceive the target group in more stereotypical terms in the former than in the latter case.

However, even if people believe that the stereotype-consistent behavior will continue to increase (e.g., the number of large cars bought by Americans will increase over time), they will not necessarily infer from such a pattern that a stereotype-consistent trait will also increase (e.g., Americans will become more and more materialistic). Indeed, consistency in and of itself can also be used as a cue for predicting future trends within the group. Research on interpersonal attribution (Newman, 1996) suggests that people may use past consistency to predict future behavior especially when they cannot process contextual information: Past behavior can then be attributed to internal stable dispositions, which in turn leads to a prediction of consistency in the future. If stereotypical judgments operate like attributions, we may expect people witnessing a stable temporal trend to expect the target group to conform to the stereotype not only in the present but also in the future.
Hypotheses

Based on this analysis, we make the following predictions: When the frequency of stereotype-consistent behavior has been stable over a given period of time within a group, people will make more extreme stereotypical judgments than when no information regarding this temporal trend is available. By contrast, they will rely on less stereotypic evaluations when the temporal trend has been changing (be it negatively or positively) than when no information regarding the temporal trend is available.

The alternative hypothesis according to which witnessing an ascending, compared to a descending, trend may enhance stereotyping will also be tested.

Overview and Context of the Study

The study was conducted in October 2007 during a period of acute political crisis in Belgium, a country composed of two main communities defined on linguistic grounds (a Flemish, Dutch-speaking community and a French-speaking community). Stereotypes depicting Dutch speakers as “Flemish nationalists” are widespread in the French-speaking populations (Klein & Licata, 2001; Klein, Licata, Van der Linden, Mercy, & Luminet, 2012). It is significant that a specific, pejorative term exists in Belgian French to designate Flemish nationalism (“Flamingant”). Flemish nationalists demand more autonomy for Flanders and some extremists even want to split the country (Mabille, 2000). One of the major Flemish parties supporting the splitting of the country is “Vlaams Belang” (“Flemish Interest”), a nationalistic party that attracted around 19% of voters in the 2007 federal election in Flanders. Using the widely shared stereotype of Flemings as “nationalistic” (Klein et al., 2012), we used temporal trends in support of this party (in alleged polls) as a proxy for the frequency of stereotype-consistent behavior. Indeed, expressing one’s support for Vlaams Belang can be viewed as a strong manifestation of the “nationalistic” stereotype. Using an XY graph, this support was presented as either stable, increasing, or decreasing over a 7-month period. The endpoint was always the same. To manipulate temporal trends, we used graphs showing poll results because of their pervasiveness in the mass media (see e.g., Bishop, 2005).

Method

Participants and Design

Eighty-four undergraduate students (11 males, 73 females; mean age = 19) at the Université Libre de Bruxelles, Belgium, were randomly assigned to one of four temporal trends (control vs. stable vs. ascending vs. descending). They received course credit in return for their participation. Flemish participants (n = 6) were not included in the analyses since the main dependent variables concerned the perception of Flemings. Moreover, eight participants who did not identify Vlaams Belang as a right-wing separatist party were excluded from the analyses.

Procedure

Participants were seated in an auditorium. The experiment was presented as a survey about the Belgian political situation and took the form of an anonymous questionnaire. The participants provided information about their nationality, mother tongue, community, and region. Then they answered some filler questions about Belgian politics. In order to check that participants had minimal knowledge about Vlaams Belang, they were asked to place Vlaams Belang on a left- versus right-wing continuum and to judge the extent to which it was a separatist or a unitarist party on bipolar continuous scales. To measure their initial beliefs and to introduce the temporal trend manipulation, participants were asked to estimate the percentage of Flemish and French-speaking Belgians supporting Vlaams Belang’s ideas 6 months ago and presently.

Then information about the percentage of Flemings supporting Vlaams Belang’s ideas in the past 7 months was provided. In the stable, ascending, and descending conditions, it was given as 30% at the time of the study. This percentage was chosen on the basis of a pilot study in which 10 French-speaking undergraduate students were asked to estimate it. The percentage of Flemings supporting Vlaams Belang’s ideas 6 months ago was presented as 20% in the ascending condition, as 30% in the stable condition, and as 40% in the descending condition. In the control condition, no information was provided. The participants then explained the temporal trend by responding to an open-ended question.

To measure the stereotype of Flemings being “Flemish nationalists,” we used the probability of differentiation (Pd) task (Linville, 1998; Linville, Salovey, & Fischer, 1986, 1989), which distinguishes between central tendency and dispersion (contrary to more common stereotyping measures). This task also has the advantage of precisely reflecting the perceived distribution of group members on a given dimension (Park & Judd, 1990). Because the task may be difficult to complete when using an eight-level scale (Park & Judd, 1990), we used a five-level scale after having pretested that it was easy enough. Another reason for using this task was that Belgians are, in our experience, often concerned about not appearing prejudiced and are reluctant to answer questions about a group in general. Participants were thus asked to estimate what percentage of Flemings hold five specified political opinions about Flemish nationalism. From the lowest to the highest, the five levels of the scale were labeled as follows: “Communities and regions should be suppressed; there should only be one government for all Belgians”;

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“Some prerogatives should be transferred from the regions and communities to the federal government”; “Belgian institutions should remain unchanged”; “Some prerogatives should be transferred from the federal government to the regions and communities”; “Belgium should split into separate states.” Participants were asked to estimate this distribution for the present and for two different temporal projections: in 6 months and in 10 years. In line with Linville et al. (1989), we computed two indicators: a mean score (which measures central tendency) and a $P_d$ score (which measures dispersion). In our study, the latter score is the probability that two randomly chosen group members differ with respect to their attitude toward Flemish nationalism. It is important to note that $P_d$ scores are arithmetically independent of the mean scores (we ran a computer simulation by randomly generating one billion random distributions and observed a null correlation between those scores). Mean and $P_d$ scores were calculated with the following formulas.

$$M = \sum_{i=1}^{n} P_i X_i$$

$$P_d = 1 - \sum_{i=1}^{n} P_i^2$$

whereby $n$ represents the number of levels of the scale, $P_i$ the number of individuals divided by 100 attributed to a given level, and $X_i$ the value assigned to a level of the scale (in our study, 1, 2, 3, 4, or 5).

After completion of the $P_d$ task, participants provided personal information and were thanked and debriefed in small groups.

**Results**

**Initial Beliefs about Vlaams Belang**

On average, before the manipulation of temporal trend, participants estimated that 40.7% and 45.1% of Flemings supported Vlaams Belang’s ideas 6 months ago and presently, respectively, which is higher than the score of 19% obtained by this party during the 2007 federal elections that preceded data collection. Before the manipulation, participants perceived the trend as ascending; indeed the two percentages were significantly different, $t(68) = -2.69, p < .01$. However the trend was more moderate than in the ascending condition. In subsequent analyses, these two items were used as covariates in order to control for participants’ a priori expectations regarding temporal trends.

**Explanations Regarding Temporal Trends**

Since no trend was presented in the control condition, participants did not respond to this question. Five participants from the other conditions who did not respond to this question were also excluded from this analysis. We analyzed the explanations participants gave about temporal trends in terms of attributions. Explanations were separated with respect to arguments and coded in terms of internality (Cohen’s $\kappa = .98$) and stability (Cohen’s $\kappa = .86$) by two independent judges who were blind to the experimental condition (Weiner, 1985). Disagreements were resolved through discussion.

Given that some participants made several attributions, we took into account the proportion of internal attributions as well as the proportion of stable attributions for each participant. Attributions were first analyzed as a function of temporal trend while controlling for initial beliefs with an analysis of covariance. Next, given that we had specific hypotheses, we used a set of contrasts rather than several $t$ tests (Abelson & Prentice, 1997; McClelland & Brauer, 2005). The first contrast compared the stable condition to the ascending and descending conditions while the second contrast compared the ascending and descending conditions. Temporal trends had an effect on internality, $F(2, 39) = 3.86, p < .05$, partial $\eta^2 = .17$. Attributions were more often internal in the stable condition ($M = .58, SE = .10$) than in the ascending ($M = .21, SE = .09$), and descending conditions ($M = .41, SD = .09$) ($\beta = .318, p < .05$). The two latter conditions did not differ. Temporal trends also had an effect on stability, $F(2, 39) = 13.65, p < .01$, partial $\eta^2 = .41$. Attributions were more often stable in the stable condition ($M = .77, SE = .09$) than in the ascending ($M = .18, SE = .08$) and descending ($M = .26, SE = .08$) conditions, which constitutes a manipulation check ($\beta = .62, p < .01$). The two latter conditions did not differ. Because we were particularly interested in investigating whether temporal trends were explained in terms of traits (i.e., attributions that are simultaneously internal and stable) rather than psychological states or contextual factors, we also compared the frequency of internal and stable attributions with the frequency of other types of attributions. A significant effect of temporal trend was found, $F(2, 39) = 9.59, p < .01$, partial $\eta^2 = .33$. Attributions were more often internal and stable in the stable condition ($M = .59, SD = .09$) than in the ascending ($M = .14, SD = .08$), and descending ($M = .11, SD = .08$) conditions ($\beta = .57, p < .01$). The latter two conditions did not differ.

**Probability of Differentiation Task**

We first ran a repeated-measures analysis of covariance with the mean scores for the three temporal projections regarding Flemish nationalism as repeated factors (presently, in 6 months, and in 10 years), the temporal trend as the independent variable, and initial beliefs as covariates. This analysis yielded a significant effect of temporal trend, $F(3, 60) = 2.83, p < .05$, partial $\eta^2 = .12$, and no interaction between temporal trend and temporal projection. As temporal trend did not in-
teract with temporal projection, the means were aggregated.
As can be seen in Figure 1, the pattern of means was in the predicted form. Additionally, Figure 1 provides the confidence interval for each condition.

Given that we had specific hypotheses, we used a set of contrasts rather than several t-tests (Abelson & Prentice, 1997; McClelland & Brauer, 2005). Indeed, we had hypothesized that when stereotype-consistent information is stable over time, stereotyping should increase and that it should decrease when variable information (ascending or descending) is provided as compared to a control condition. As can be seen in Table 1, the critical contrast was thus designed to test whether the data fit this pattern. The second contrast was designed to test the alternative hypothesis according to which an ascending trend may elicit higher stereotype endorsement than a decreasing one. To ensure that the contrasts were independent, the third contrast was constrained by the choice of the first two.

These analyses were performed by regressing stereotype endorsement (global mean score) on the three contrasts while controlling for initial beliefs. The critical contrast was significant while the other two were not. This pattern of results is congruent with the main hypothesis and allows us to reject the alternative hypothesis. To ensure that our predictions adequately fit the data, the significance of the remaining contrasts was also tested simultaneously; this analysis showed that the effect of the critical contrast was significant while the other two were not (Table 1). The residual was not significant either, $F(2, 60) = .06, p > .9$. The two conditions specified by Abelson and Prentice (1997) as necessary in order to accept the hypothesis (the critical contrast was significant while the residual was not) were thus fulfilled.

The $P_d$ scores for the three temporal projections (presently, in 6 months, in 10 years) were examined as a function of temporal trend while controlling for initial beliefs. The critical contrast was significant while the other two were not. This pattern of results is congruent with the main hypothesis and allows us to reject the alternative hypothesis. To ensure that our predictions adequately fit the data, the significance of the remaining contrasts was also tested simultaneously; this analysis showed that the effect of the critical contrast was significant while the other two were not (Table 1). The residual was not significant either, $F(2, 60) = .40, p > .6$. These results supported our hypothesis. However, it should be noted that the difference between the stable ($P_d = .64$) and the control condition ($P_d = .65$) was smaller than the difference between the control and the ascending ($P_d = .69$) and descending ($P_d = .71$) conditions.

A third multiple regression analysis was run to test whether perceived heterogeneity among group members (as measured by $P_d$ scores) mediated the effect of temporal trend on stereotype endorsement (mean score) (see Figure 2). This analysis showed that the effect of the critical contrast on stereotype endorsement (global mean score) was not significant any more when the effect of perceived heterogeneity ($P_d$ score), which predicted stereotyping, was controlled for. Combined with the effects of temporal trend on perceived heterogeneity and stereotyping reported above, this suggests that the four conditions for establishing mediation (Baron & Kenny, 1986) were fulfilled. Mediation was also tested using the bootstrapping method recommended by Preacher and Hayes (2008) using 1000 bootstraps. As expected, the bias-corrected confidence interval for the coefficient estimating the relevant indirect effect exceeded 0 (CI$_{Low} = .01$, CI$_{High} = .07$).

### Table 1

<table>
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<th>Contrast</th>
<th>$B$</th>
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<td>.02</td>
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<td>Second contrast</td>
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<td>Third contrast</td>
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<tr>
<td>$P_d$ score</td>
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<td>–.37**</td>
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<td>–.01</td>
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<td>–.12</td>
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<td>Third contrast</td>
<td>–.00</td>
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Notes. $R^2 = .253$ for the mean score, $R^2 = .213$ for the $P_d$ score. The critical contrast was dummy-coded as follows: Stable (3) > Control (1) > Ascending (–2) = Descending (–1). The second contrast was dummy-coded as follows: Stable (0) Control (0) Ascending (1) > Descending (–1). The third contrast was dummy-coded as follows: Stable (3) < Ascending (–1) = Descending (–1) < Control (5). **p < .01.

**Figure 1.** Stereotype endorsement as a function of temporal trend.

**Figure 2.** Mediation of the effect of temporal trend (critical contrast) on stereotype endorsement by perceived heterogeneity.
Discussion

Our findings suggest that witnessing changing patterns in the frequency of stereotype-consistent behavior attenuates the perception of homogeneity of the target group and discourages the endorsement of the associated stereotype (in terms of central tendency). By contrast, witnessing a stable pattern seems to exert the opposite effect. These results seem to apply to evaluations regarding both the present and the future of the group. Responses to an open-ended question also showed that a stable, as compared to a changing, trend was more likely to be explained by internal and stable attributions. Stereotype-consistent behaviors were thus more likely to be attributed to stereotype-consistent traits when they were stable across time. By contrast they were more likely to be attributed to psychological states or contextual factors when their frequency was changing across time. The results of a quantitative task ($P_d$ Task) as well as a more qualitative indicator (open-ended question) of stereotyping thus both support our prediction that perceivers use information regarding temporal stability to revise their stereotypes.

Interestingly, the process that underlies the difference between witnessing a stable or a changing temporal trend was dependent on changes in perception of group homogeneity. Our data thus suggest that witnessing a stable trend increases the perception of homogeneity whereas witnessing a changing trend decreases the perception of homogeneity of the target group. The link between homogeneity and stereotyping is congruent with previous research. Indeed, Rydell et al. (2007) showed that entitativity, a concept that is often operationalized in terms of perception of homogeneity (Yzerbyt, Corneille, & Estrada, 2001), promotes stereotyping. This link also corroborates work by Er-rafiy and Brauer (2010), who showed that perception of variability alone may reduce prejudice.

As our results also seem to apply to predictions regarding the future of the group, they resonate with the idea that stereotypes should be viewed as “dynamic constructs”: People not only have beliefs about the target group’s existing characteristics but also about the likelihood that they will change (Diekmann & Eagly, 2000). Our trend manipulation may have influenced this dynamic aspect of stereotypes by inducing the beliefs that stereotypes could or could not change, thereby undermining the implicit theory about group fixedness in favor of an incremental theory of group characteristics which, in turn, discourages stereotyping (Rydell et al., 2007). Our results also support the idea that if past behavior can be attributed to internal stable dispositions, it leads to predictions of consistency in the future.

As Rydell et al. (2007) showed that implicit theories about fixedness of groups affect stereotyping by changing perceptions of group entitativity, one could expect that besides their effect on perceived homogeneity, temporal trends might also have an impact on another aspect of entitativity. More generally, according to Brewer, Hong, and Li (2004), perception of group entitativity may be driven by two factors: the perception of an essence, an essence being defined as an underlying nature explaining their observable characteristics (Yzerbyt et al., 1997), or the perception that the target group pursued shared goals and acted in a coordinated manner. Typically, internal differentiation (which explained the effects observed here) is generally associated with the former rather than the latter aspect. For example, when groups are perceived as homogeneous, essentialism is likely to come into play (Yzerbyt et al., 2001). And, indeed groups tend to be viewed in more stereotypical terms to the extent that they can be perceived as “essential” (Hamilton, Sherman, & Rodgers, 2004). Thus, when a group seems to travel through time without noticeable changes, this may foster the belief that the group possesses an underlying “essence,” explaining such stability. Although essentialism might be linked to both temporal stability and perceived group homogeneity, people may view the two types of variability as interchangeable and automatically infer one from the other.

A potential drawback of the present research was that participants were asked to explain the temporal trend that was provided in an open-ended question. The attributional processes triggered by this instruction may have reinforced the effects of the manipulation. Given that our hypothesis rests on the assumption that people make different inferences depending on the nature of the trend, this is not problematic. However future research should address whether people seek to explain such trends spontaneously and whether the findings observed here would be obtained in the absence of such instructions. For example, the inference may be spontaneous, mimicking individual attributions (Winter & Uleman, 1984). Another potential drawback was that the average percentage displayed in the graph used to manipulate temporal trends varied across conditions. If the endpoint of the curve is identical in all conditions, the average is inevitably higher in the descending condition and inevitably lower in the ascending condition. Furthermore, more stereotyping was observed in the stable condition, whereas ascending and descending conditions did not differ. The effect of temporal trend thus seems more important than the average percentage.

Given that different measures of perceived variability might capture different aspects of perceived variability (Bolby, Gaertner, & Quinn, 2007), another avenue of research would be to use different measures and thereby determine which aspects of perceived variability are affected by temporal trends. In spite of these remaining questions, the present study provides an initial step in showing that stereotype change can be achieved by manipulating the temporal variability of stereotype-consistent behavior within the group. To the extent that people believe that a group can and does change, they may also endorse less extreme stereotypes.
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