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Contesting Gender Stereotypes Stimulates Generalized Fairness in the Selection of Leaders

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### Abstract

Exposure to counter-stereotypic gender role models (e.g a *woman engineer*) has been shown to successfully reduce the application of biased gender stereotypes. We tested the hypothesis that such efforts may more generally lessen the application of stereotypic knowledge in other (non-gendered) domains. Specifically, based on the notion that counter-stereotypes can stimulate a lesser reliance on heuristic thinking, we predicted that contesting gender stereotypes would eliminate a more general group prototypicality bias in the selection of leaders. Three studies supported this hypothesis. After exposing participants to a counter-stereotypic gender role model, group prototypicality no longer predicted leadership evaluation and selection. We discuss the implications of these findings for groups and organizations seeking to capitalize on the benefits of an increasingly diverse workforce.

**KEYWORDS:** leadership, group prototypicality, gender role model, counter-stereotypes

## 1. Introduction

It is well established that exposure to counter-stereotypic role models can help to reduce gender bias in a range of domains (Cheryan & Plaut, 2010; Hutter & Crisp, 2005; Tidball, Smith, Tidball, & Wolf-Wendel, 1999; Unzueta, Gutiérrez & Ghavami, 2010). In this research we explored whether such interventions can have *extended* benefits for organizational decision-makers. Specifically, we hypothesized that engaging with counter-stereotypic gender role models may promote a more generalized resistance to heuristic forms of thinking; and through this, instill greater fairness in leadership selection processes that may on occasion fall prey to social cognitive bias.

### 1.1. Cognitive Processes in Leader Construal

Leadership judgments, evaluation and selection are affected by the extent to which the potential leader is representative of the group they want to lead (for reviews see Hogg & van Knippenberg, 2003; Hogg, van Knippenberg, & Rast III, 2012; van Knippenberg, 2011). Numerous surveys and experimental and field studies across various countries and continents, showed that group prototypical leaders are preferred (Hais, Hogg, & Duck, 1997; van Vugt & De Cremer, 1999), and that trust, effectiveness, and endorsement (Giessner & van Knippenberg, 2008; Giessner, van Knippenberg, & Sleebos, 2009; Hais et al., 1997; Hogg et al., 2006; Platow & van Knippenberg, 2001; Ullrich, Christ, & van Dick, 2009; van Knippenberg & van Knippenberg, 2005), are affected by how closely leaders match the group prototype. Together, these findings provide strong support for the notion that there is an evaluative preference for leadership candidates who are prototypical of their group.

Although a prototypicality bias is not problematic for leadership *per se* (cf Thoroughgood, Tate, Sawyer, & Jacobs, 2012), in leader *selection*, relying on a heuristic rule of thumb (i.e., simply participants' representativeness of the group), by definition, entails ignoring more diagnostic individuating information. In addition, it might not always be in the

best interests of the group to appoint a representative leader. In order to innovate, grow and strengthen the group, leaders must sometimes steer it into new directions (Abrams, Randsley de Moura, Marques, & Hutchison, 2008; Randsley de Moura, Abrams, Marques, & Hutchinson, 2011). A deeper understanding of the circumstances under which individuals reduce reliance on heuristic forms of representativeness bias will help us gain an insight on how to facilitate innovation and change within organizations - a vital tool, to gain competitive advantage (Pieterse, van Knippenberg, Schippers, & Stam, 2010). Our contribution to this goal starts from a perhaps unexpected standing. Whereby efforts to promote equality in organizations can be perceived by some commentators as a “luxury” in times of economic prosperity, we submit a counter-claim. Based on recent research on the broader cognitive benefits of engaging with equality and diversity, we propose that engaging with counter-stereotypic diversity experience can lessen reliance on heuristic forms of thinking, and in so doing, debias leader selection and evaluation. Specifically, we propose that an exposure to counter-stereotypical female role models might reduce a more general representativeness bias in the selection of leaders, and promote precisely those conditions needed to foster innovation and change in groups, organizations, industry, and beyond.

### **1.2. Counter-stereotypes and Cognitive Flexibility**

Generally speaking, exposure to counter-stereotypic role models can lead to a lesser use of stereotypes in social judgment (e.g., Fiske & Neuberg, 1990; Kunda, Miller, & Claire, 1990). Thus while individuals tend to use stereotype-based information as a default to form impressions of targets (Bodenhausen Macrae, & Sherman, 1999; Brewer & Feinstein, 1999; Fiske & Neuberg, 1990; c.f. Grossman, 2013; Turner, Hogg, Oacks, Reicher, & Wetherell, 1987), encountering someone who does not fit in existing schemata, and therefore is counter-stereotypic, forces individuals to switch from a heuristic to a more individuated and

systematic mode of social information processing (Chaiken & Trope, 1999; Fiske & Neuberg, 1990; Petty & Cacioppo, 1986).

Research on intergroup relations revealed that such exposure to counter-stereotypic targets reduces the application of stereotypes when forming impressions of the target at hand (Hutter & Crisp, 2005; 2006; 2008; Kunda et al., 1990). Experimental studies have shown that independent of the type of counter-stereotypic targets participants are presented with (e.g. "Oxford-educated bricklayer " or "male midwife"), forming an impression of a counter-stereotypic target affects information processing. This change in information processing is characterized by the use of fewer attributes unique to one of the target's group memberships, and a greater focus on using new, emergent attributes (Hutter & Crisp, 2005). An increase in the use of emergent attributes indicates a switch from a heuristic form of impression formation using stereotypic knowledge, to a more individuated one without the use of heuristics and with an increase in generative thought processes (Crisp, Bache, & Maitner, 2009; Hutter & Crisp, 2005; 2006; 2008; Hutter, Crisp, Humphreys, Waters, & Moffitt, 2009). This demonstrates that exposure to counter-stereotypic targets does change the way in which individuals form impressions and process social information.

It has been argued that such exposure, and the mindset that it triggers, may carry over to *other* decision domains that are not obviously related to stereotyping and impression formation, but which nonetheless rely - by default - on heuristic thinking (Crisp & Turner, 2011). It has been shown that asking participants to self-create targets with counter-stereotypic group memberships can increase lateral thinking in comparison to control conditions in which stereotypic targets or no targets were created, indicating more flexibility in problem solving strategies (Vasiljevic & Crisp, 2013, Study 3). Research on creative performance furthermore supports this contention. It has been found that exposure to gender counter-stereotypes, in addition to asking participants to create counter-stereotypic dual

group membership can lead to enhanced performance on a subsequent creativity task (Gocłowska, Crisp & Labuschagne, 2013; Gocłowska & Crisp, 2013). It is well established that heuristic thinking limits creativity (Marsh, Ward, & Landau, 1999). Consequently, the uplift in creative performance observed following the counter-stereotyping task is consistent with the notion that a generalized mindset persisted beyond the impression formation domain to those others in which (non)heuristic thinking is also key.

In summation, these studies show that counter-stereotypic targets can increase generative and systematic thought processes. The propensity to prefer group prototypical leaders, and those matching implicit leadership stereotypes can be partially explained by a reliance on heuristic thinking (Hogg & van Knippenberg, 2003; Koenig, Eagly, Mitchell, & Ristikari, 2011; Leicht, Crisp, & Randsley de Moura, 2013) – i.e., the representativeness heuristic (Tversky & Kahnemann, 1982). We therefore argue that exposing people to gender counter-stereotypes also reduces a more general group prototypicality bias in the selection of leaders.

### **1.3. Summary of Studies**

The aim of this research was to investigate whether exposure to counter-stereotypic gender occupation role models can affect leadership perceptions, evaluations and choices. In the following three experiments we hypothesized that group prototypicality would only predict leadership evaluation and associated cognitions when participants were exposed to a preceding stereotypic mindset prime. Specifically, we predicted that:

**H1.** Ratings of the non-prototypical candidate in the stereotypic condition will be significantly lower compared to all other conditions.

In comparison to the stereotypic conditions we predicted that participants who were asked to form an impression of a counter-stereotypic gender role model would be required to change their information processing style. As a consequence it should decrease participants'

reliance on group prototypicality as a heuristic process to evaluate and choose a leadership candidate. In effect participants would not heuristically dismiss a non-prototypical leader candidate, but instead see value and engage with the possibility of having a non-prototypical leader. To investigate the information processing of participants we included a thought listing paradigm in each experiment, examining positive and negative thoughts towards a candidate that participants were presented with. We asked participants to list both positive and negative thoughts in order to control for individual differences in engagement with this task but were specifically interested in participant's positive thoughts. By doing this we aimed to uncover the cognitive dynamics that lead to the proposed effect.

Experiment 1 aimed to show the basic effect. It tested whether evaluation and choice of a leadership candidate is based on group prototypicality information when participants were exposed to a target with a stereotypic gender-occupational role model. However, this heuristic should not be applied after exposure to a counter-stereotypic gender occupational role model. The goal of Experiment 2 was to show that the effect established in Experiment 1 can be generalized by applying a similar operationalization and design to a different population and organizational setting. Experiment 3 aimed to strengthen the psychological significance of setting in which participants were asked to evaluate and choose a leadership candidate by stressing that the candidate will represent the participants group in a more prestigious environment.

## **2. Experiment 1**

### **2.1. Design and Participants**

Sixty participants ( $M_{age} = 19.70$ , 51 female) were randomly allocated to one of four conditions in a 2 (role model: stereotypic vs. counter-stereotypic) x 2 (group prototypicality:

prototypical vs. non-prototypical) between-participants design. Participants received course credit for taking part and none were able to guess our hypothesis at the end of our study.

## **2.2. Procedure**

Participants were asked to take part in a study about the upcoming student elections. To frame the group prototypicality manipulation, we first gave participants some information about the importance of conflict management styles in leadership positions. In order to give participants a deeper insight into what conflict management could entail, we asked them to complete a conflict management style questionnaire. After completion of this questionnaire, we presented participants with a two dimensional scatter plot. This plot displayed the distribution of past conflict management styles within their group, psychology students studying in their institution. In the middle of the scatter plot, the average score of the participants group was indicated and labeled as “Average Kent Psychology Student Score” (at 4.13 of each dimension). The two dimensions of the graph were labeled as “concern for others” and “concern for self” (1 = low and 5 = high). The aim of this graph was to serve as a normative frame for the group prototypicality manipulation. Similar manipulations have been successfully used to manipulate group prototypicality within studies concerning leadership and deviance (e.g. Abrams et al., 2002).

Participants were then introduced to the first independent variable: role model. We asked participants to form an impression of either a stereotypic or a counter-stereotypic gender-occupation role model. This task has been established in previous work as an effective intervention to reduce stereotyping (Hutter & Crisp, 2005; 2006; 2008; Hutter et al., 2009). The priming task asked participants to form an impression of either a female mechanic (counter-stereotypic role model) or a male mechanic (stereotypic role model) and to list 10 attributes that this person may have. Generation of stereotypic combinations was chosen as

the most appropriate control because it constituted a task of equivalent load while representing the default mode of stereotypic person perception (Fiske & Neuberg, 1990)

After completing the role-model task participants were introduced to the leadership candidate (“Chris”). This was the second independent variable. Participants received a candidate that was either group prototypical or non-prototypical. Group prototypicality was manipulated by presenting participants with the same graph used to set the normative frame at the beginning of the experiment. In the group prototypical condition the label of “average psychology student score” was replaced with the label “Chris”. In the non-prototypical condition this candidate scored one standard deviation below on both dimensions (at 3.14 on each dimension).

### 2.3. Dependent Variables

**Group Prototypicality.** To examine whether the candidate in the non-prototypical condition was perceived as less group prototypical for the participants group “psychology students at Kent” than the group prototypical candidate we asked participants to rate six items (e.g. “*Chris is representative of Kent psychology students.*”) with regard to how much they apply to the candidate (1= *not at all*, 7=*very much*) (Platow & van Knippenberg, 2001). The mean score was used for all analysis with higher scores indicating more group prototypicality,  $\alpha = .93$ .

**Thought listing.** To examine systematic thinking we asked participants to list all positive and negative arguments they could think of in regard to the candidate’s possible election as student representative. Participants were given a sheet with two columns asking them to think about all positive and negative arguments for the presented candidate and to note all negative thoughts in the left column and all positive thoughts in the right column. If participants are in a systematic mode of thinking they should report specifically more positive thoughts about the non-prototypical candidate, rather than simply dismissing them with

negative thoughts. All arguments were added to create two thought listing scores, one for positive and one for negative thoughts.

**General Evaluation.** To assess participants' evaluation of the candidate, we asked to indicate their overall favorability towards Chris on a 10 point thermometer scale ( $0^\circ = \text{cold}$ ,  $100^\circ = \text{warm}$ ) (Judd, Park, Ryan, Brauer, & Kraus, 1995).

**Voting Intention.** Finally participants were asked to indicate how likely they would give their vote to Chris by placing a cross on 6 centimeter long line ( $0 = \text{very unlikely}$  -  $60 = \text{very likely}$ )

## 2.4. Results

### Group Prototypicality

A two-way factorial ANOVA with group prototypicality and role model as independent variables revealed a significant main effect of group prototypicality,  $F(1, 56) = 52.29, p \leq .001, \eta^2 = .48$ . The prototypical candidate was perceived more group prototypical for the participants group ( $M = 5.29, SD = 0.76$ ) than the non-prototypical candidate ( $M = 3.44, SD = 1.15$ ). As expected, there was no main effect of role model,  $F(1, 56) = 0.25, p = 0.62, \eta^2 = .004$ , and no interaction,  $F(1, 56) = 0.23, p = .88, \eta^2 < .005$ , see Table 1.

### Analytic Strategy

To test our specific hypothesis that an exposure to a counter-stereotypic gender occupational role model would reduce participant's reliance on group prototypicality as a heuristic to judge and choose a leadership candidate, we created three orthogonal Helmert contrast variables to use as predictor variables in linear multiple regression analysis (Rosenthal & Rosnow, 1985; Rosenthal, Rosnow, & Rubin, 2000; Rosnow & Rosenthal, 1996). The order of the contrasts was as follows: stereotypic role model/group prototypical candidate versus stereotypic role model /group non-prototypical candidate versus counter-

stereotypic role model/group prototypical candidate versus counter-stereotypic role model/group non-prototypical candidate.

Contrast 1 was 0, 0, + 1, - 1, and compares the two group prototypicality conditions after the exposure to a counter-stereotypic role model. We did not expect Contrast 1 to be a significant predictor. After receiving a counter-stereotypic role model, participants should not use group prototypicality to choose, judge and think about the candidate. Contrast 2 was - 2, 0, + 1, + 1. We did not expect Contrast 2 to be a significant predictor. Ratings on all dependent variables of the group prototypical and non-prototypical candidate in the counter-stereotypic condition should not be different from ratings of the prototypical candidate in the stereotypic conditions. Contrast 3 was + 1, - 3, + 1, + 1. We expected Contrast 3 to be significant. The pattern of predicted significance and non-significance across these three contrasts would support our hypothesis that ratings of the non-prototypical candidate in the stereotypic condition will be significantly lower compared to all other conditions.

### **General Evaluation<sup>1</sup>**

We entered general evaluation as the dependent variable and the three created contrast variables as predictors in a multiple linear regression analysis. Contrast 1 was not a significant predictor,  $\beta = -.01$ ,  $t(56) = 0.06$ ,  $p = .95$ , indicating that there was no difference between the evaluation of the prototypical and non-prototypical candidate in the counter-stereotypic condition. Contrast 2 was also not a significant predictor,  $\beta = .05$ ,  $t(56) = 0.40$ ,  $p = .69$ , showing that the evaluation of the prototypical and the non-prototypical candidate following exposure to the counter-stereotypic role model did not differ from the evaluation of the prototypical candidate in the stereotypic role model condition. Only Contrast 3 significantly predicted general evaluation,  $\beta = .31$ ,  $t(56) = 2.44$ ,  $p = .02$ . Altogether this shows that after the exposure to a counter-stereotypical role model, participants did not rely on group prototypicality for leadership evaluations; see Table 1.

**Voting intention<sup>1</sup>**

Again we entered the three created contrast variables as predictors with voting intention as dependent variable in a multiple linear regression analysis. Only Contrast 3 was a significant predictor for voting intention  $\beta = .41$ ,  $t(56) = 3.46$ ,  $p = .001$ , showing that participants within the stereotypic condition were biased against a group non-prototypical leader candidate. Contrast 1 was not a significant predictor,  $\beta = -.21$ ,  $t(56) = -1.74$ ,  $p = .09$  and nor was Contrast 2,  $\beta = .09$ ,  $t(56) = .80$ ,  $p = .43$ , showing that the bias against a non-group prototypical candidate was eliminated after participants were exposed to a counter-stereotypic role model; see Table 1.

**Thought listing<sup>1</sup>**

We conducted the same multiple regression analysis for positive thoughts. When entering positive thoughts as dependent variable in a multiple regression analysis neither Contrast 1  $\beta = -.05$ ,  $t(56) = -.35$ ,  $p = .73$ , nor Contrast 2,  $\beta = .17$ ,  $t(56) = 1.30$ ,  $p = .20$ , or Contrast 3,  $\beta = .20$ ,  $t(56) = 1.45$ ,  $p = .15$  was a significant predictor. However, the pattern of means for the thought listing paradigm was in the predicted direction despite being not significant, see Table 2. .

**Discussion**

Overall, these effects are consistent with our central proposition: That exposure to counter-stereotypic role models can decrease the impact of stereotype-based processes in an unrelated domain. Inasmuch as group prototypicality may overshadow other important factors when it comes to leadership qualities, being able to reduce perceivers' reliance on group prototypicality as a judgment guide is of potentially significant importance both theoretically and practically.

However, the nature of the group prototypicality manipulation as well as the rather limited scope of only exploring voting intentions and general evaluation towards the

candidate could limit the generalizability of the results. We therefore decided to implement the same paradigm in a different organizational context as well as in a different nation.

Moreover, Experiment 2 aims to show that the found effects are replicable on a range of variables associated with leadership.

### **3. Experiment 2**

Experiment 2 aimed to build on the initial findings and investigate whether exposure to gender counter-stereotypic role models can also impact a wider range of leadership criteria. Moreover we were attempting a replication in a different organizational and national context.

#### **3.1. Design and Participants**

Sixty participants studying various different degrees at a German university ( $M_{age} = 21.40$ , 36 females, 55 German) were allocated randomly to one of four conditions in a 2 (role model: stereotypic vs. counter-stereotypic) x 2 (group prototypicality: prototypical vs. non-prototypical) between-participants design. Nine participants stated in an open ended question at the end of the experiment that they had difficulties understanding the graphs that were used to display group prototypicality of the candidate. We therefore excluded those participants from future analysis. However, at the end of the experiment none of our participants were able to state our hypothesis correctly.

#### **3.2. Procedure**

In this experiment, we asked students of the German University to take part in a study about an upcoming round table panel discussion at their University. Participants were told that the topic about this public debate would be the Bologna Process, the changes it brought to both their own University and the entire higher education sector in Germany. The Bologna Process, which introduced tuition fees and changed degrees and qualifications in Germany, was and is a topic of constant public debate in Universities, society and the media.

Constructing a cover story around this topic seemed therefore topical, increasing the relevance and the participants' interest in the study.

The procedure of the Experiment was similar to the one used in Experiment 1. First participants were introduced to the cover story. We informed participants that the aim of this survey was to find a student who would best represent the student views in an open panel discussion at their University. We told participants that 20 students applied to represent student's views on the Bologna Process in the open panel discussion and that in order to find the best candidate to discuss with local politicians and senior academic staff we decided to collect their opinions on these candidates. Before introducing participants to the candidate, we instructed them to do the same impression formation task using a stereotypic or counter-stereotypic gender occupational role model as in Experiment 1. We disguised this task as an independent pre-test, before presenting them with one candidate they would have to evaluate and form an opinion of. This candidate was indicated to be either group prototypical or not, by using a similar group prototypicality manipulation as in Experiment 1. Participants were first presented with a two dimensional normative distribution of students at this University in regard to a personality profile. Significantly, we told participants that this normative distribution was based on previous survey results but the distribution was actually designed by us. Despite being similar to the prototypicality manipulation in Experiment 1, we made significant changes to the graph. Firstly, the normative distribution was moved to the middle of the graph, with an average score of 3.1 on both dimensions (1 = low; 5 = high). Secondly, instead of using concern for self/others as dimensions we labeled them as personality dimensions *a* and *b*. We implemented this change to control for any potential associations that participants could have made with the group prototypicality manipulation as used in Experiment 1.

After receiving the normative distribution, participants were presented with a second graph that indicated the score of a candidate who they believed had applied to be the discussant in the open panel discussion. This was the third and final change to the prototypicality manipulation. Instead of naming the candidate as "Chris", as in Experiment 1, we labeled the candidate as "Candidate 1". This candidate was indicated either as being group prototypical by scoring like the average of the distribution with 3.1 on each dimension, or as non-prototypical, scoring one standard deviation below (2.1 on each dimension). Finally, participants completed the dependent variables before being thanked, debriefed and given a chocolate bar for completing the survey.

### 3.3. Dependent Variables

**Category Combination.** In order to assess how counter-stereotypical participants experienced the role model, we asked directly after the impression formation task to indicate how surprising they found the role model, how similar they experienced the two associated social categories to be, and how familiar they were with gender-occupation combination. The items were measured on a seven point scale (1; *not at all*, 7; *very much*) and combined into an average score, with higher numbers indicating a greater experience of a counter-stereotypicality.

**Group Prototypicality.** We used the same six items as in Experiment 1 and combined them into an average score to assess the group prototypicality of the candidate with higher mean scores indicating greater group prototypicality,  $\alpha = .91$ .

**Thought listing.** This variable was measured as in Experiment 1. All negative thoughts and all positive thoughts were counted and added to the dataset as two variables, positive thoughts and negative thoughts.

**Voting Intention.** We asked participants to place a cross on a 6 cm long line (0 = *very unlikely* – 60 = *very likely*) to indicate how likely they would choose the presented candidate as a student discussant.

**General Evaluation.** We measure general evaluation as reported in Experiment 1 on a 10 point thermometer scale.

**Leadership Trust.** A four item scale measured participants trust in the candidate to represent their views and ideas correctly (e.g. “I trust the candidate to represent student’s views”). Participants were asked to place a cross on 6 cm long lines (0 = *not at all*-60 = *very much*). Higher numbers indicated more leadership trust,  $\alpha = .80$ .

**Attitude.** Participants were asked to indicate their thoughts of the candidate becoming the next student union representative on seven semantic differentials (e.g. bad-good, foolish-wise), on a 9 point scale (Tormala & Petty, 2002). We combined all seven items into one mean attitude score, with higher numbers indicating more positive attitudes,  $\alpha = .85$ .

### 3.4. Results

All means, standard deviations and pairwise comparisons can be found in Table 3. We created and used the same three contrast variables as in Experiment 1 to test our hypothesis using linear multiple regression analysis.

#### Category Combination

A one factorial ANOVA with role model as independent variable and the mean category combination score as dependent variable, showed that the counter-stereotypical role model was perceived as more counter-stereotypic ( $M = 4.56$ ,  $SD = 1.15$ ) than the stereotypic role model ( $M = 3.16$ ,  $SD = 0.81$ ),  $F(1, 49) = 25.37$ ,  $p \leq .001$ ,  $\eta^2 = .34$ .

#### Group Prototypicality

An ANOVA revealed a main effect for group prototypicality,  $F(1, 47) = 46.39, p \leq .001, \eta^2 = .50$ . The prototypical candidate was rated higher on group prototypicality ( $M = 4.82, SD = 0.86$ ) than the non-prototypical candidate ( $M = 3.08, SD = 0.95$ ). The main effect for role model was not significant,  $F(1, 47) = 0.63, p = .43, \eta^2 = .01$  and there was no significant interaction,  $F(1, 47) = 0.26, p = .61, \eta^2 < .001$ .

### **Voting Intention<sup>2</sup>**

As in Experiment 1, we used multiple linear regression analysis with the three created contrast variables as predictors and voting intention as dependent variable. The multiple regression showed that Contrast 1 was not a significant predictor  $\beta = -.13, t(46) = 0.5, p = .35$ , nor was Contrast 2,  $\beta = -.15, t(46) = -1.09, p = .28$ . However, Contrast 3 significantly predicted voting intention,  $\beta = .42, t(46) = 3.06, p = .004$ . This pattern of results supports our hypothesis.

### **General Evaluation<sup>2</sup>**

In a linear multiple regression analysis, none of the contrast variables emerged as significant predictors. Contrast 1 was not significant,  $\beta = -.07, t(46) = -.45, p = .65$ , Contrast 2 was not significant,  $\beta = -.10, t(46) = -.69, p = .49$ , and Contrast 3 was also not significant,  $\beta = -.14, t(46) = -.95, p = .35$ .

### **Leadership Trust<sup>2</sup>**

Again we used multiple linear regressions with Contrasts 1, 2 and 3 as predictors and leadership trust as dependent variable. Contrast 1 was not significantly predicting leadership trust,  $\beta = -.10, t(46) = -.71, p = .48$  nor did Contrast 2,  $\beta = -.08, t(46) = -.58, p = .56$ . However, Contrast 3 predicted leadership trust marginally,  $\beta = .26, t(46) = 1.78, p = .08$ . This pattern of results supports our hypothesis.

### **Attitude<sup>2</sup>**

Using the three created contrast variables as predictors and attitude as dependent variable, the analysis showed that neither Contrast 1,  $\beta = -.10$ ,  $t(46) = -.76$ ,  $p = .45$ , nor Contrast 2 were significant predictors,  $\beta = -.26$ ,  $t(46) = -1.96$ ,  $p = .06$ . Contrast 3 predicted the attitude towards the candidate significantly,  $\beta = .39$ ,  $t(46) = 2.93$ ,  $p = .003$ , giving overall support to our hypothesis that exposure to counter-stereotypic role models reduces reliance on group prototypicality information for leadership evaluations.

### **Thought listing<sup>2</sup>**

As in Experiment 1, the pattern of means was in the predicted direction - participants created more positive thoughts towards the non-prototypical candidate after forming an impression of a counter-stereotypic role model (see Table 4). However, this pattern was not significant using linear multiple regression analysis.

## **Discussion**

Building on Experiment 1, Experiment 2 demonstrated that while a group prototypicality bias existed under default (stereotypic) processing conditions, after thinking about a counter-stereotypic gender role model, this bias was eliminated for measures of attitudes towards the candidate, attribution of leadership trust and voting intention. Although for general evaluations we were not able to observe these effects, analysis showed that for female participants, the predicted pattern of significance emerged.

Moreover, we employed a manipulation check for role-model task, and asked participants to indicate how surprising, familiar and similar the role model prime was perceived. The results indicate that participants who were asked to form an impression of a female mechanic perceived this role model as more counter-stereotypic. This suggests that the counter-stereotypic role model was more likely to shift participants' impression formation from heuristic to systematic, since pre-existing stereotypes were not applicable in forming an impression of a female-mechanic.

Testing this hypothesis in a different national context, with a different cover story, additionally increases the generalizability of the results. Moreover, the three changes that we applied regarding the group prototypicality manipulation, indicating the candidate as "Candidate 1", shifting the distribution towards the middle and changing the labeling of the distribution dimension to personality styles a and b shows that the observed effects of Experiment 1 are not due to the operationalization of the group prototypicality manipulation.

In Experiment 3 we sought to expand on Experiments 1 and 2 and asked participants not only about their voting intention but also about the behavioral intentions towards the candidate. In addition, we aimed to address why we might have observed weaker support on the thought listing measure (and general evaluation measure in Experiment 2) by locating the study within a more meaningful psychological context.

#### **4. Experiment 3**

Experiment 3 aimed to demonstrate the observed effects in a more meaningful psychological context. We did this by taking the cover story of Experiment 1 to a more important and impactful context. In this Experiment, the student representative standing for election would represent psychology undergraduate students in meetings including the whole University. We hypothesized that this contextual change would increase the psychological meaningfulness of the leadership selection decision. As such, we expected more pronounced effects on our dependent measures, in particular our measure of thought listing.

##### **4.1. Design and Participants**

Sixty psychology undergraduate students (44 females,  $M_{age} = 19.39$ ) were allocated randomly to one of four conditions in a 2 (role model: stereotypic vs counter-stereotypic role model) x 2 (group prototypicality: prototypical vs non-prototypical) between-participants design in exchange for course credit. As this experiment was conducted later on in the academic year we asked participants to indicate whether they were already familiar with the

role model manipulation. Thirteen participants indicated that they were familiar with the manipulation and were therefore excluded from any further analysis. However, none of the participants stated our hypothesis correctly when asked at the end of the questionnaire.

#### **4.2. Procedure**

The procedure was identical to that in Experiment 1. Participants first read some general information about the importance of conflict management styles in leadership positions to set the frame of the cover story. With this information they received a two dimensional scatter plot indicating how students in the School of Psychology scored on conflict management styles in previous years. The dimensions were ranging from 1 (low) to 5 (high) and were, as in Experiment 1, labeled as concern for others and concern for self. The average score was indicated in the middle of the scatter plot falling on 3.1 on both dimensions, as in Experiment 2. We then asked participants to complete the same impression formation task, generating up to 10 attributes describing either a male mechanic (stereotypic role model) or a female mechanic (counter-stereotypic role model). Participants then received a candidate standing for student representative elections on a university level. This candidate was either group prototypical scoring like the average Kent psychology student (3.1 on each dimension, as in Experiment 2) or non-prototypical scoring lower on both dimensions (2.4 on each dimension). We reminded participants that the candidate was standing for the election of student representative at the University level, hence for meetings that would involve all academic schools and departments within the entire University.

#### **4.3. Dependent Variables**

**Group Prototypicality and Thought listing.** The same measures as in Experiments 1 and 2 were used (prototypicality  $\alpha = .96$ ).

**Willingness to campaign.** We asked participants to indicate how likely they would be to campaign for the indicated candidate Chris, hand out flyers for Chris, and discuss

Chris's views with others by making a cross on a 6 cm long line (0 = *very unlikely* – 60 = *very likely*). All three items were combined in one average score,  $\alpha = .77$ .

**Voting intentions and General Evaluation.** Both variables were used as described in Experiment 1.

**Attitudes.** The same semantic differentials as in Experiment 2 were used and combined into an average score,  $\alpha = .96$ .

#### 4.4. Results

We used the same linear multiple regression analysis as in Experiments 1 and 2 for our main dependent variables: thought listing, general evaluation, voting intentions, attitudes, and willingness to campaign. We entered all three created Contrast variables as predictors in a linear multiple regression.

##### Group Prototypicality

An ANOVA revealed a significant main effect of group prototypicality,  $F(1, 43) = 74.55, p < .001, \eta^2 = .63$ . The prototypical candidate was perceived as more group prototypical ( $M = 5.06, SD = 1.07$ ) than the non-prototypical candidate ( $M = 2.51, SD = 0.96$ ). There was no main effect for prime,  $F(1, 43) = 1.97, p = .17, \eta^2 = .04$ , and no interaction between prime and prototypicality,  $F(1, 43) = 0.88, p = .35, \eta^2 = .02$ , see Table 5.

##### Thought listing<sup>3</sup>

The predicted pattern emerged for positive thoughts. We entered all three contrast variables in a multiple linear regression. Contrast 1 was a non-significant predictor,  $\beta = .20, t(46) = 1.44, p = .16$ , showing that there was no difference regarding positive thoughts in the counter-stereotypic condition. Contrast 2 was also not significant,  $\beta = .15, t(46) = 1.06, p = .29$ , showing that the number of positive thought regarding the group prototypic candidate in the stereotypic condition was similar to the number of positive thoughts towards candidates in either of the counter-stereotypic conditions. Contrast 3 was significant,  $\beta = .31, t(46) =$

2.22,  $p = .03$  showing that the non-prototypical candidate in the stereotypic condition received the least amount of positive thoughts, see Table 6.<sup>4</sup>

### **General Evaluation<sup>3</sup>**

In a multiple linear regression with the three created contrast variables and general evaluation as dependent variable, Contrast 1 did not significantly predict general evaluation,  $\beta = -.22$ ,  $t(46) = -1.85$ ,  $p = .07$ , whereas Contrast 2,  $\beta = -.29$ ,  $t(46) = -2.41$ ,  $p = .02$  and Contrast 3,  $\beta = .47$ ,  $t(46) = 3.97$ ,  $p < .001$  did significantly predict general evaluations, see Table 5.

### **Voting Intention<sup>3</sup>**

We ran a multiple linear regression with the three created contrast variables as predictor variables and voting intention as dependent variable. All three Contrast variables were significant predictors for voting intentions,  $\beta_{\text{Contrast 1}} = -.37$ ,  $t(46) = 3.34$ ,  $p = .002$ ,  $\beta_{\text{Contrast 2}} = -.23$ ,  $t(46) = -2.04$ ,  $p = .05$ ,  $\beta_{\text{Contrast 3}} = .48$ ,  $t(46) = 4.39$ ,  $p < .001$ . This shows that although there is still a preference for choosing the group prototypical candidate in the counter-stereotypic condition (Contrast 1) the likelihood to vote for the non-prototypical candidate in the stereotypic condition is, as predicted, lowest (Contrast 3), see Table 5.

### **Attitudes<sup>3</sup>**

A multiple linear regression analysis with the three created contrast variables as predictor variables and attitudes as dependent variables showed that all three Contrast variables were significant predictors,  $\beta_{\text{Contrast 1}} = -.30$ ,  $t(46) = -2.69$ ,  $p = .01$ ,  $\beta_{\text{Contrast 2}} = -.32$ ,  $t(46) = -2.87$ ,  $p = .01$ ,  $\beta_{\text{Contrast 3}} = .51$ ,  $t(46) = 4.60$ ,  $p < .001$ . This shows that although there is a group prototypicality bias within the counter-stereotypic condition (Contrast 1) the non-prototypical candidate within the stereotypic condition received a significantly lower mean than all other conditions (Contrast 3), see Table 5.

### **Willingness to campaign<sup>3</sup>**

Again linear multiple regression analysis with the three created contrast variables as predictors, and willingness to campaign as dependent variable showed Contrast 1 as not a significant predictor,  $\beta = -.02$ ,  $t(46) = -.13$ ,  $p = .89$  and nor was Contrast 2,  $\beta = -.18$ ,  $t(46) = -1.33$ ,  $p = .19$ . However Contrast 3 was a significant predictor,  $\beta = -.39$ ,  $t(46) = 2.83$ ,  $p = .01$  see Table 5. This pattern supports our hypothesis.

### **Discussion**

Overall, the results of Experiment 3 were consistent with the results of Experiments 1 and 2. Participants who thought about a counter-stereotypical role model were no longer biased towards a group prototypical student representative on a range of measures. As in Experiments 1 and 2, participants who were asked to form an impression of a counter-stereotypic gender occupational role model did not base their evaluative judgments of a leadership candidate on the indicated group prototypicality. Additionally, participants did not differentiate between the group prototypical and the non-prototypical candidate regarding intentions to campaign for the candidate. Moreover, participants who formed an impression of a counter-stereotypic gender-occupational role model had significantly more positive thoughts towards a non-prototypical leadership candidate.

Altogether these results indicate that participants who are exposed to counter-stereotypical role models switch to a less heuristic mode of social information processing and are less likely to base their judgments of a leadership candidate on group prototypicality. Furthermore, participants who are exposed to counter-stereotypical role models are more inclined to acknowledge potential benefits of a non-prototypical student representative (positive thoughts).

### **5. Posttest**

To address potential gender issues regarding our operationalization of leader candidate as well as group prototypicality we ran a posttest study. The aim of this posttest

was twofold. Firstly, we wanted to explore whether the gender of the leader candidate affected our results and secondly whether the operationalization of our group prototypicality manipulation was gendered. We randomly allocated 146 participants ( $M_{age} = 19.75$ ,  $SD = 3.53$ , 122 female, 113 British) to one condition in a 2 (role model: stereotypic vs counter-stereotypic)  $\times$  2 (group prototypicality: prototypical vs non-prototypical)  $\times$  3 (candidate gender: male vs neutral vs female) between participants design. We applied the same procedure as in previous experiments. Participants were first asked to form an impression of either a male mechanic or a female mechanic before evaluating a candidate standing for student union elections. Next to measuring voting intentions (0 = *not at all*, 100 = *very likely*) attitudes (as in the Experiment 2 and 3) and willingness to campaign (as in Experiment 3), we also asked how much concern for others and concern for self was perceived to be associated with gender (0 = *male*, 100 = *female*).

To explore gender associations with the dimensions, concern for others and concern for self we conducted a one sample t-test, testing the ratings for concern for others and concern for self against 0 and 100. The results show that concern for others was not perceived as male,  $t(145) = 41.01$ ,  $p < .001$  or female,  $t(145) = -25.24$ ,  $p < .001$ . Concern for self was also not associated with male,  $t(145) = 30.05$ ,  $p < .001$  or female  $t(145) = -34.52$ ,  $p < .001$ . To test whether the candidate's gender affected our results we included leader gender (-1 = male, 0 = neutral, 1 = female) as an additional predictor in a multiple regression including the three contrast variables. For voting intentions, leader gender was not a significant predictor for voting intentions,  $\beta = -.06$ ,  $t(145) = -0.75$ ,  $p = .45$  with Contrast 3 being the only significant predictor,  $\beta = .028$ ,  $t(145) = 3.52$ ,  $p < .001$ . The same pattern emerged for willingness to campaign with leader gender as non-significant predictor,  $\beta < -0.05$ ,  $t(145) = -0.04$ ,  $p = .97$ , and Contrast 3 as only significant predictor,  $\beta = .17$ ,  $t(145) = 2.14$ ,  $p = .03$  and for attitudes with  $\beta = -.08$ ,  $t(145) = -1.05$ ,  $p = .29$  for leader gender and  $\beta = .40$ ,  $t(145)$

= 5.16,  $p < .001$  for Contrast 3. Overall this shows that the group prototypicality manipulation was not perceived as gendered and that the gender of the leader candidate does not affect the results reported.

## **6. General Discussion**

In three Experiments we showed that exposure to a counter-stereotypical role model decreases the tendency to use salient group prototypicality information in order to evaluate and decide on a leadership candidate within a different domain. After exposure to a gender counter-stereotype participants no longer based their evaluative judgment of the leadership candidate on indicated group prototypicality (Experiments 1, 2, & 3). Moreover, behavioral intentions (Experiment 3), leadership trust ratings (Experiment 2) and voting intentions (Experiments 1 & 2) were no longer affected by the indicated group prototypicality of the leadership candidate. Experiment 3 additionally showed that participants have significantly less positive thoughts towards a non-prototypical candidate under stereotypic default processing conditions. However, this is not the case after the exposure to a counter-stereotypic role model.

### **Theoretical implications**

Research has shown that exposure to counter-stereotypic role models in womens colleges is associated with the number of students who then choose gender counter-stereotypic professions themselves (Eccles, 2006; Eccles, Jacobs, & Harold, 1990; Rosenthal & Crisp, 2006; Tidball et al, 1999). Experimental and longitudinal studies also reveal that exposure to counter-stereotypic role models decreases the tendency of female participants to negatively self-stereotype (Dasgupta & Asgari, 2004). This research contributes to the empirical support showing that exposure to counter-stereotypical role models can affect stereotyping and stereotypic judgments (Crisp & Turner, 2011; Dasgupta & Asgari, 2004). Despite research showing that participants self-esteem can be negatively impacted by strong

female role models due to social comparison processes (Hoyt, Burnette, & Innella, 2012) this research shows that role models who inspire participants to challenge their stereotypes can affect social cognitive processes and decrease the tendency to associate good leadership with being group prototypical (Leicht et al., 2013; Hogg et al., 2012). Since leadership judgments are strongly affected by how closely individuals match the group prototype and or a leadership stereotype (Hogg & van Knippenberg, 2003) showing that exposing participants to examples of counter-stereotypical individuals can debias these judgments and can positively affect occupational choices and increase equality within the workplace.

Research on the normative conflict model of dissent has shown that highly identified individuals are more likely to dissent from group norms, prototypes and behaviors if they experience a conflict between their own norms and the group's norms and behaviours. However, low identified individuals are more likely to disengage from their group (Packer, 2008; Packer & Chasteen, 2010; Packer & Miners, 2011). Considering that highly identified individuals often emerge as leaders due to their commitment and group prototypicality (Hogg & van Knippenberg, 2003), the likelihood that they will engage in non-prototypical behavior is increased. Research on innovation credit already showed that future leaders are given a license to innovate and are judged more leniently when prescriptively deviating from the group norm (Abrams et al., 2008; Randelsy de Moura et al., 2011).

Moreover, research has shown that in times of crisis individuals are also more inclined to choose leaders who do not fulfill the stereotypic schematic association of "think manager, think male". This leads to the glass cliff effect of females in senior roles who are burdened with struggling companies due to their perception as 'good people managers' and their willingness to take the blame for the organizational failure (Haslam & Ryan, 2008; Ryan & Haslam, 2005; 2007; Ryan, Haslam, Hersby, & Bongiorno, 2011). Our research adds to the understanding on how group members can be set into a cognitive mindset that

increases their readiness to consider leadership candidates who are not prototypical of the group. It provides an intra-individual factor that can debias leadership preferences and choices and might be equally beneficial to overcome the detrimental glass cliff effect for women and other minorities to climb the corporate ladder.

Although there were two unexpected results across three experiments (in Experiment 2 general evaluation was not affected by the counter-stereotypic manipulation), across the large number of other measures we found converging support for our hypothesis. We attribute these two weaker results to the use of a less psychologically meaningful context in Experiments 1 and 2.

### **Limitations**

Despite the prevailing support for our hypothesis across all three experiments, there are three caveats that need to be addressed in regard to the experiments reported. First of all, the role model prime of all three studies was a counter-stereotypic female. Since our sample in two studies was predominantly female, and the operationalization of the role-model prime was also gendered, we controlled for gender effects in our analysis. Over all three experiments gender effects were rare and inconsistent, and did not contradict the pattern of our results. Moreover, Experiment 2 did use a different nation and organizational context but replicated the results. This adds confidence to the generalizability of our results.

Secondly, the group prototypicality manipulation in the Experiments 1 and 3 used conflict management styles to set a comparative framework. This comparative framework and the terminology "concern for others/concern for self" possibly could be associated with gender. To address this potential confound in our posttest study we asked participants how far they perceived these dimensions with being male or female. The results indicate that neither dimension was associated with either gender.

Finally Experiments 1 and 3 indicated the candidate using the name "Chris". Although we did not intend to indicate a gender using this name, it is important to establish as to whether the gender of the candidate would affect our results. We addressed this additional hypothesis in the posttest study, by including an additional independent variable, leader candidate gender. The gender of the candidate did not emerge as a significant predictor, showing that leader gender did not affect our overall results.

Altogether, we are confident that because our results were consistent across three experiments independent of the cover story, the group prototypicality framework, the gender of the participant, and the gender of the leadership candidate, the effects reported are not based upon a sample bias or specifics of the group prototypicality manipulation.

### **Practical and Managerial Implications**

One important role of leaders is to innovate and change the groups they are leading (Abrams et al., 2008). However, changing the groups' direction and initiating innovation cannot be done without deviating from existing group behaviors, norms and group prototypes. Although deciding on leadership positions based on the individuals group prototypicality may be beneficial in order to assure that the leader can transform individual action into group action (Haslam, Reicher, & Platow, 2010), this heuristic fails when it comes to implementing change through leadership, because some form of non-prototypicality behavior becomes essential. Therefore, understanding factors under which leadership choices are less reliant on the leader's group prototypicality can help to establish circumstances and contexts under which leadership candidates are allowed to initiate innovation and change and deviate from the group's prototype. It would therefore be interesting to investigate whether and how counter-stereotypic role models could affect perception and openness to innovation and change in laboratories as well as in existing companies.

Moreover, this research provides a promising insight into how diversity training within organizations and companies can be structured by managers in order to embrace innovation, diversity, and non-prototypical leadership. In 2010 only 25% of Chief Executive positions across all organizations within the US were held by women (US Department of Labor, 2010). Likewise, on average only about 23% of members within upper and lower houses across Europe and the US are female (Inter-parliamentary Union, 2012). This under-representation of women within politics and Chief Executive positions can partially be explained by stereotypic thinking that associates masculinity with leadership, and the associated backlash effect for women in leadership positions (Eagly & Karau, 2002; Eagly & Johnson, 1990; Eagly & Carli, 2007; Johnson, Murphy, Zewdie, & Reichard, 2008; Kark & Eagly, 2010; Koenig et al., 2011; Lord, Foti, & de Vader, 1984; Nye & Forsyth, 1991; Rosette, Leonardelli, & Phillips, 2008). Future research could therefore investigate how counter-stereotypic role models can affect schematic associations that are made with leadership positions, thereby challenging the glass ceiling effect of women and minorities. However, we propose that those interventions should be designed very carefully. Research has shown that individuals who prefer a stable and structured environment are more inclined to use group prototypicality for leadership judgments (Leicht et al., 2013). Additionally participants who are high in need for structure decrease their performance when being exposed to a counter-stereotypic target (Gosłowska & Crisp, 2013). We therefore propose that interventions aiming to challenge these stereotypic leadership associations take into account these empirical findings, and expose participants gradually and repetitively to minimize possible reactance of individuals who have a high need for structure. This approach would also allow for testing more long-term effects including changes in actual behaviour. Additionally it would be interesting to examine whether the changes in social cognitive processing proposed and examined in this research can also challenge individuals

attributional bias when judging women working in gender non-congruent domains (Heilman & Haynes, 2005). Future research could explore whether the status, gender and role of the counter-stereotypic target play a moderating role (Hoyt et al., 2012; Hoyt & Simon, 2011; Simon & Hoyt, 2012).

Changes in demographics of a nation are also reflected in companies and have led to a more heterogeneous workforce over the last decades (Stevens, Plaut, & Sanchez-Burks, 2008). This research shows that using this existing diversity in a workforce, e.g. a black CEO or a female engineer, and by asking individuals to engage in counter-stereotypic thought processes and actively challenging the stereotypic expectancies can increase cognitive flexibility, and prepare individuals to evaluate innovative ideas, leaders, and established norms not on stereotypes, but on more objective criteria.

### **Conclusions**

Counter-stereotypic role models have been found to positively affect stereotyping and self-stereotyping and increase chances of individuals choosing a counter-stereotypic career. This research aimed to show that thinking about counter-stereotypic role models can not only have an impact beyond affecting the individual but also actually influence choices and preferences of leadership candidates. Encouraging individuals to challenge their stereotypic expectancies helped to overcome a judgment that is known to be biased by stereotypes and group prototypicality: leadership choice. We were able to show that encouraging counter-stereotypic thinking by exposing participants to counter-stereotypic role models positively affects the evaluation and choice of a non-prototypical leadership candidate. By finding ways to overcome the heuristic judgment that group prototypicality equals good leadership, we are hoping to gain a deeper understanding on how equal opportunities for group prototypical and non-prototypical leadership candidates within organizations can be established.

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Table 1 *Mean, Standard Deviation and Pairwise comparison in Experiment 1*

Variable	Condition			
	<u>Stereotypic</u>		<u>Counterstereotypic</u>	
	<u>prototypical</u>	<u>non-prototypical</u>	<u>prototypical</u>	<u>non-prototypical</u>
General Evaluation	6.00 (2.17) <sup>a c</sup>	5.07 (1.16) b c	6.20 (1.08) <sup>a</sup>	6.17 (1.09) <sup>a</sup>
Voting Intention	3.21 (1.68) <sup>a</sup>	1.99 (1.28) <sup>b</sup>	4.02 (1.34) <sup>a</sup>	3.12 (1.29) <sup>a</sup>
Prototypicality	5.33 (0.79) <sup>a</sup>	3.52 (1.17) <sup>b</sup>	5.24 (0.75) <sup>a</sup>	3.29(1.16) <sup>b</sup>

*Note* Means that share the same superscript do not differ from each other at  $p \leq .05$

Table 2 *Mean and Standard Deviation thought listing in Experiment 1*

	Condition			
	<u>Stereotypic</u>		<u>Counterstereotypic</u>	
	<u>Prototypical</u>	<u>Non-prototypical</u>	<u>Prototypical</u>	<u>Non-prototypical</u>
Positive thoughts	2.06 (0.59)	1.93 (1.03)	2.47 (0.74)	2.36 (0.93)
Negative thoughts	1.73 (0.59)	1.93 (0.70)	1.73 (0.46)	2.20 (0.94)

Table 3 *Mean, Standard Deviation and Pairwise comparison in Experiment 2*

Variable	Condition			
	<u>Stereotypic</u>		<u>Counterstereotypic</u>	
	<u>prototypical</u>	<u>non-prototypical</u>	<u>prototypical</u>	<u>non-prototypical</u>
Prototypicality	5.01 (0.99) <sup>a</sup>	3.12 (0.82) <sup>b</sup>	4.68 (0.75) <sup>a</sup>	3.04 (1.09) <sup>b</sup>
General Evaluation	5.60 (0.67) <sup>a</sup>	4.95 (0.95) <sup>a</sup>	5.27 (1.50) <sup>a</sup>	4.92 (1.66) <sup>a</sup>
Voting Intention	34.50 (12.19) <sup>a</sup>	19.80 (10.02) <sup>b</sup>	32.00 (11.94) <sup>a</sup>	27.85 (10.87) <sup>ab</sup>
Leadership Trust	31.62 (10.84) <sup>a</sup>	23.55 (6.26) <sup>b</sup>	30.61 (8.25) <sup>a</sup>	28.36 (11.25) <sup>ab</sup>
Attitudes	5.71 (0.77) <sup>a</sup>	4.78(0.39) <sup>b</sup>	5.26 (0.71) <sup>ca</sup>	5.13 (0.69) <sup>cb</sup>

*Note* Means that share the same superscript do not differ from each other at  $p \leq .05$

Table 4 *Mean and Standard Deviation thought listing in Experiment 2*

	Condition			
	<u>Stereotypic</u>		<u>Counterstereotypic</u>	
	<u>Prototypical</u>	<u>Non-prototypical</u>	<u>Prototypical</u>	<u>Non-prototypical</u>
Positive thoughts	1.40 (0.84)	1.33 (0.92)	2.27 (1.53)	2.15 (1.72)
Negative thoughts	1.30 (0.67)	1.08 (0.77)	1.73 (1.39)	1.76 (1.77)

Table 5 Mean and Standard Deviation and Pairwise Comparison in Experiment 3

Variable	Condition			
	<u>Stereotypic</u>		<u>Counterstereotypic</u>	
	<u>prototypical</u>	<u>non-prototypical</u>	<u>prototypical</u>	<u>non-prototypical</u>
Prototypicality	5.02 (1.08) <sup>a</sup>	2.17 (0.90) <sup>b</sup>	5.17 (1.00) <sup>a</sup>	2.95 (0.87) <sup>b</sup>
Voting Intentions	33.00 (12.45) <sup>a</sup>	9.23 (9.08) <sup>b</sup>	30.09 (16.13) <sup>a</sup>	15.00 (10.92) <sup>b</sup>
General Evaluation	6.42 (1.24) <sup>a</sup>	3.42 (1.83) <sup>b</sup>	5.36 (1.43) <sup>ca</sup>	4.36 (1.75) <sup>cb</sup>
Attitudes	6.18 (0.75) <sup>a</sup>	3.70 (1.73) <sup>b</sup>	5.66 (0.74) <sup>a</sup>	4.36 (0.91) <sup>b</sup>
Willingness to campaign	28.22 (13.26) <sup>a</sup>	14.25 (8.06) <sup>b</sup>	23.18 (13.08) <sup>ab</sup>	22.54 (10.05) <sup>ab</sup>

*Note* Means that share the same superscript do not differ from each other at  $p \leq .05$

Table 6 Mean and Standard Deviation thought listing in Experiment 3

	Condition			
	<u>Stereotypic</u>		<u>Counterstereotypic</u>	
	<u>Prototypical</u>	<u>Non-prototypical</u>	<u>Prototypical</u>	<u>Non-prototypical</u>
Positive thoughts	2.08 (1.00) <sup>a</sup>	1.46 (0.77) <sup>c</sup>	2.18 (1.18) <sup>a</sup>	3.00 (2.10) <sup>d</sup>
Negative thoughts	1.33 (0.65) <sup>b</sup>	3.00 (1.15) <sup>e</sup>	1.82 (0.37) <sup>b</sup>	3.36 (1.68) <sup>e</sup>

*Note* Means that share the same superscript do not differ from each other at  $p \leq .05$

### Footnotes

<sup>1</sup>We controlled for gender effects using a dummy coded gender variable (0 = female, 1 = male) in a second step. Gender was not a significant predictor for any of the dependent variables.

<sup>2</sup>We controlled for gender effects, adding a dummy (0 = female, 1 = male) variable in a second step of the regression. There were no significant gender effects for voting intention, leadership trust, attitude, or positive thoughts. There was a significant gender effect for general evaluation,  $\beta = -.31$ ,  $t(46) = -2.14$ ,  $p = .04$ . For female participants Contrast 1 was not a significant,  $\beta = .10$ ,  $t(28) = .55$ ,  $p = .58$  nor was Contrast 2,  $\beta = .04$ ,  $t(28) = .21$ ,  $p = .84$ . Contrast 3 was marginally significant,  $\beta = -.34$ ,  $t(28) = -1.81$ ,  $p = .08$ , indicating that after the exposure to counter-stereotypical role model group prototypicality was not used as a guidance for the general evaluation of the candidate. For male participants none of the Contrasts were significant predictors,  $\beta_{\text{Contrast 1}} = -.41$ ,  $t(16) = -1.79$ ,  $p = .10$ ,  $\beta_{\text{Contrast 2}} = -.41$ ,  $t(16) = -1.77$ ,  $p = .10$ ,  $\beta_{\text{Contrast 3}} = .08$ ,  $t(16) = .38$ ,  $p = .71$ .

<sup>3</sup>We also added a dummy coded gender variable as an additional predictor in a second step (0 = female, 1 = male). Gender was not a significant predictor for positive thoughts. There was also no significant gender effect for attitude, or willingness to campaign. There were significant gender effects for general evaluation,  $\beta = -.27$ ,  $t(46) = -2.23$ ,  $p = .03$ . For female participants Contrast 1 was not significant,  $\beta = -.19$ ,  $t(32) = -1.25$ ,  $p = .22$ , Contrast 2 was significant,  $\beta = -.34$ ,  $t(32) = -2.27$ ,  $p = .03$  as well as Contrast 3  $\beta = -.29$ ,  $t(32) = -2.41$ ,  $p = .02$ . For male participants Contrast 1 was not significant,  $\beta = -.22$ ,  $t(12) = -2.41$ ,  $p = .28$ ,

Contrast 2 was also not significant,  $\beta = -.22$ ,  $t(12) = -.91$ ,  $p = .38$ . However Contrast 3 was significant,  $\beta = .62$ ,  $t(12) = 2.53$ ,  $p = .03$ .

Gender was also a significant predictor for voting intention,  $\beta = -.27$ ,  $t(46) = -2.39$ ,  $p = .02$ . For female participants all three contrast variables emerged as significant predictors,  $\beta_{\text{Contrast 1}} = -.42$ ,  $t(32) = -3.26$ ,  $p = .003$ ,  $\beta_{\text{Contrast 2}} = -.27$ ,  $t(32) = -2.09$ ,  $p = .05$ ,  $\beta_{\text{Contrast 3}} = .51$ ,  $t(32) = 3.92$ ,  $p < .001$  whereas for male participants none of the contrast variables were significant predictors,  $\beta_{\text{Contrast 1}} = -.28$ ,  $t(13) = -1.08$ ,  $p = .30$ ,  $\beta_{\text{Contrast 2}} = -.09$ ,  $t(13) = -.34$ ,  $p = .74$ ,  $\beta_{\text{Contrast 3}} = .48$ ,  $t(13) = 1.84$ ,  $p = .09$ .

<sup>4</sup>To further examine how positive and negative thoughts were affected by prototypicality and diversity we entered positive and negative thoughts as repeated measure in a mixed model ANOVA with prototypicality and the role model as fixed factors. The analysis showed a significant three way interaction. Pairwise comparisons showed that participants in the stereotypic condition,  $F(1, 43) = 13.11$ ,  $p < .001$ ,  $\eta^2 = .23$ , as well as in the counter-stereotypic condition,  $F(1, 43) = 9.94$ ,  $p < .01$ ,  $\eta^2 = .12$ , had more negative than positive thoughts. However, the number of positive thoughts regarding the non-prototypical candidate was significantly higher in the counter-stereotypic condition than in the stereotypic condition  $F(1, 43) = 8.00$ ,  $p < .01$ ,  $\eta^2 = .16$ , see Table 6.