The influence of economic context on the relationship between chief executive officer facial appearance and company profits ☆

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A B S T R A C T

Inferences of leadership ability and personality from faces have been associated with leaders' efficacy across multiple domains. One influential factor that has only been scarcely explored, however, is the context in which leadership occurs. The present studies examined the effect of two such contextual variables: economic conditions across time and economic conditions across nations. In Study 1, inferences of leadership ability from the faces of American Chief Executive Officers (CEOs) predicted their companies' financial performance prior to the Financial Crisis of 2008 but not after. In Study 2, traits previously found to predict the success of American CEOs before the Financial Crisis (i.e., Power) predicted the success of CEOs in Germany in the year following the crisis but not in the US, consistent with the differential impact of the international recession in the two nations. These results suggest that economic events may affect the relationship between facial appearance and business leaders' success.

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Introduction

Previous research has demonstrated a relationship between leaders' facial appearance and their relative success across a number of domains. Political candidates' electoral success can be judged with accuracy that significantly exceeds what would be expected from chance guessing (Antonakis & Dalgas, 2009; Ballew & Todorov, 2007; Berggren, Jordahl, & Poutvaara, 2010; Castelli, Carraro, Ghitti, & Pastore, 2009; Lawson, Lenz, Baker, & Myers, 2010; Rule et al., 2010; Todorov, Mandisodza, Goren, & Hall, 2005; but see also Poutvaara, Jordahl, & Berggren, 2009), chief executive officer (CEO) facial appearance can predict the financial performance of a company (Rule & Ambady, 2008, 2009, 2010; Wong, Ormiston, & Haselhuhn, 2011), judgments of the faces of law firm managing partners have been found related to the financial performance of their firms (Rule & Ambady, 2011a), and judgments of the faces of military cadets can predict their later rank (Mazur, Mazur, & Keating, 1984). The relationship of these perceptions to the outcomes that they predict varies, however. For example, voters' impressions of a political candidate may be partially influenced by his or her facial appearance, affecting their voting decisions rather directly (e.g., Armstrong, Green, Jones, & Wright, 2010; Lenz & Lawson, 2011). In other cases, though, the relationship appears to be relatively indirect: CEOs of companies (e.g., retail chains) are rarely known or seen by customers and yet impressions from their faces are also associated with sales (e.g., Graham, Harvey, & Puri, 2010).

Although it may seem surprising that judgments from photos of faces can predict outcomes as important as the selection and success of leaders, studies in the psychological literature have noted the importance of the face for influencing impressions, behaviors, and external outcomes for decades (e.g., Zebrowitz, 1997). Much of this work has focused on relative levels of consensus and accuracy in judging personality traits from physiognomic cues. For instance, numerous studies have reported high

levels of consensus in judgments of the Big-5 personality traits from faces (e.g., Albright et al., 1997). Penton-Voak, Pound, Little, and Perrett (2006) found that some of these traits may be judged accurately. In their study, judgments of extraversion significantly corresponded to men's and women's self-reported levels of extraversion, though the results were somewhat mixed for the other Big-5 traits. Berry (1991) reported similar effects for judgments of more complex traits (i.e., power and warmth) from faces. More complex still, very subtle individual characteristics, such as one's political leanings, may be judged accurately from faces (see Tskhay & Rule, 2013, for review). Judgments of traits from faces are not always accurate, however. For example, a recent study reported that, although perceivers showed strong agreement in their judgments of trustworthiness from faces, these did not correspond with measures of trustworthy behavior across several different domains, including trustworthy versus untrustworthy business leaders (Rule, Krendl, Ivcevic, & Ambady, 2013). Thus, the face communicates a lot of powerful information about individuals that is sometimes, but not always, calibrated with measures of how those individuals actually are.

One factor that may influence the way in which faces are judged is the context in which they are perceived. Little and colleagues found that perceivers preferred masculine and attractive faces as political leaders in the context of war – perhaps suggesting a high capacity for power, competence, or fitness – but feminine and trustworthy faces in the context of peace, perhaps suggesting warmer and more pro-social traits (Little, Burriss, Jones, & Roberts, 2007; Little, Roberts, Jones, & DeBruine, 2012). Although their manipulations of wartime and peacetime were hypothetical, cross-cultural research suggests that real contextual variability can affect the relationship between leadership preference and facial appearance as well. Rule et al. (2010) reported that Americans elected political candidates with faces perceived as powerful whereas Japanese elected political candidates with faces perceived as warm, reflecting the two cultures' general values regarding leadership (e.g., Jung & Avolio, 1999; Misumi & Peterson, 1985). Other studies showed that judgments from the faces of CEOs predicted their companies' annual net profits in the US but not in Japan (Rule, Ishii, & Ambady, 2011); and that CEO success in China was predicted by inferences of risk-taking, despite Western perceivers' expectations that dominance, intelligence, and positivity would be associated with leaders' success (Harms, Han, & Chen, 2012). Similarly, the traits predicting success may vary depending on the social group membership of the targets being judged, such as race or sex (Livingston & Pearce, 2009; Rule & Ambady, 2009). Contextual variables can therefore play important roles in both whether and how perceptions of faces relate to leaders' perceived and actual success.

Previous studies have identified geographic context (Harms et al., 2012; Rule et al., 2010, 2011) and political conditions (Little et al., 2007, 2012) as contextual factors influencing judgments of leadership. The elements comprising both of these contexts, however, often change over time. For instance, cultures continuously evolve and political conditions can vary widely as particular regimes rise and fall (see Heine, 2010 for review). A related variable that may strongly affect perceptions and judgments of leaders, particularly those in business, is the state of the economy. Economic conditions are important sociopolitical factors that affect leaders and followers both directly and indirectly. Given the powerful influence of hypothetical changes in a nation's military and political landscape upon judgments of leaders (Little et al., 2007, 2012), we reasoned that actual changes in the economic conditions of a society might similarly impact the relationship between perceptions of business leaders (i.e., CEOs) and measures of their success. This was the focus of the present work.

As contexts change, so too might the traits and behaviors that are preferred or effective among leaders. Preferences for specific leadership qualities may be particularly salient in the domain of big business where CEOs not only lead their companies but may also serve as public representations or spokespersons for their employees and shareholders, rendering their selection and behavior sensitive to public perception (e.g., Ranft, Zinko, Ferris, & Buckley, 2006). Earlier studies addressing the importance of CEOs to their companies' success, not considering facial appearance, have reported mixed findings (see Agle, Nagarajan, Sonnenfeld, & Srinivasan, 2006). To the extent that one's face honestly advertises one's traits (see Berry & Finch-Wero, 1993), CEOs who are perceived to possess one particular set of traits may be preferred in times of economic growth and those with other traits preferred in times of economic hardship (see also Wong et al., 2011). This may be particularly exacerbated when public scrutiny of companies is greater, reinforcing an organization's desire to project a certain image through the representative face of its company—the CEO (see Ranft et al., 2006).

Such public scrutiny came to the fore following the global economic "Great Recession" of the late 2000s and climactic "Financial Crisis" of 2008 (Congleton, 2009; Imbs, 2010; Verick & Islam, 2010). This major shift in the US economy spurred international reverberations believed to have affected almost every nation (Imbs, 2010; Verick & Islam, 2010). One prominent consequence of these events was a public backlash against many major financial firms believed either to be responsible for the economic downturn or to have profited from its effects (such as receiving governmental "bailout" assistance; Congleton, 2009; Lawder, 2010). Popular disapproval of the companies that were perceived to benefit from government intervention culminated in the Occupy Wall Street movement in November 2011: the impetus for a series of international protests against economic inequality that often included effigies of specific high-profile CEOs (e.g., Van Gelder, 2011). This shift in both the US national and global economies, and the subsequent negative public sentiment against big businesses and their CEOs, represent notable pressures on corporations and their leadership. These, in turn, might have also changed the way that CEOs lead their companies, CEOs' public images, or the general success of particular firms.

Given the effect that context can exert upon perceptions of leadership (Little et al., 2007, 2012) and leadership values (Rule et al., 2010), we hypothesized that these events might result in a change in the relationship between inferences of CEO facial appearance and company success. Due to the broad public backlash against major US companies, the increased scrutiny on the leaders of those companies by the public and news media, and the abrupt financial fluctuations experienced by many companies as a result of the Great Recession, we wondered whether the relationship between CEO facial appearance and company performance would continue to apply after the Financial Crisis of 2008 as it had previously been reported before the crisis (cf. Rule & Ambady, 2008, 2009, 2010; Rule et al., 2011; Wong et al., 2011).

To test this, in Study 1, we applied the method of Rule and Ambady (2008) to seven years of data centering around the 2008 Financial Crisis. Specifically, we asked perceivers to judge the leadership ability of CEOs from the top 50 Fortune 500 companies from fiscal years 2005–2011 and associated these judgments with the annual net profits of the companies led by the CEOs, which may be considered the "gold standard" of leadership in a business context (e.g., Kaiser, Hogan, & Craig, 2008). Consistent with past work examining fiscal years in the late 1990s to mid-2000s (Rule & Ambady, 2008, 2009, 2010; Rule et al., 2011; Wong et al., 2011), our first hypothesis was that inferences of CEOs' potential to lead a company based on photos of their faces would correspond with company performance in fiscal years 2005-2008 but not in the years following the recession's downturn in late 2008 (i.e., fiscal years 2009–2011).

To explore this possibility further, in Study 2, we examined the relationship between CEO facial appearance and leadership success across nations, rather than across time. Despite the international impact of the Great Recession, one nation's economy was marked by notable success and recovery: Germany (Burda & Hunt, 2011). The somewhat unique case of Germany's relatively positive economic standing in the wake of the 2008 Financial Crisis provides an interesting comparison for the US, which did not fare as well. We therefore examined the relationship between CEO facial appearance in both Germany and the US in the year following the global Financial Crisis of 2008 (i.e., fiscal year 2009) to further test whether economic conditions might be credited with the change in the relationship between facial appearance and CEOs' leadership success expected in Study 1.

Additionally, to seek deeper insight to the relationship between perceptions of the leaders and their companies' performance, we examined traits known to be related to successful leadership in Study 2, rather than the holistic judgments of success used in Study 1. Specifically, we examined the relationship between inferences of power and warmth—traits previously found to be associated with leadership success across several domains and that theoretically represent major orthogonal axes of social judgment (Fiske, Cuddy, Glick, & Xu, 2002; Rule & Ambady, 2008, 2011a; Rule et al., 2010). In accord with Western cultural values (Rule et al., 2010), our second hypothesis was that power-related traits would predict the success of German CEOs as it had previously been found for US CEOs prior to the 2008 Financial Crisis (Rule & Ambady, 2008, 2009; Wong et al., 2011). Due to the change in economic conditions in the US, however, our third hypothesis was that the relationship between power and leadership success would not predict outcomes for American CEOs after the 2008 Financial Crisis. Hence, we compared the relationships between judgments of traits and CEOs' company profits for German and American CEOs in fiscal year 2009.

In overview, leaders' effectiveness may depend on context, including that created by historical events (Little et al., 2007, 2012). Past work has shown that judgments of CEOs' facial appearance can predict the profits of their companies (e.g., Rule & Ambady, 2008), which is typically regarded as an indirect but highly meaningful measure of their effectiveness as leaders (Kaiser et al., 2008). Given that CEOs are tasked not only with leading their companies but also with serving as the public interface, representative, or essential "mascot" of their brand (Ranft et al., 2006), it is possible that the relationship between CEO facial appearance and company performance is an artifact of favorable economic conditions: e.g., among the many competent leaders that may serve as CEO of a company, perhaps it is the individual with the right look that has an advantage when the luxury of appearances may be considered (see also Rule & Ambady, 2011a, 2011b). To better understand the integration of theory in social perception and in leadership, then, we examined how facial appearance might predict leadership outcomes in economically-secure and economically-insecure contexts across time (Study 1) and geography (Study 2) based on both holistic judgments of leadership success (Study 1) and inferences of traits related to leadership (Study 2).

Study 1

Method

Stimuli

We selected the 50 highest ranked companies from the Fortune 500 listings (http://money.cnn.com/magazines/fortune/fortune500) for each list year between 2006 and 2012 (fiscal years 2005–2011). The listing contained the names of the companies' CEOs, which we used to obtain their photographs from their companies' websites or annual reports published online for the specific year of interest (i.e., photos of CEOs were not simply reused across all of the years they led a particular company). Several CEOs did not have their photographs available on the company websites or in the company's online postings of their annual reports and were therefore excluded. Furthermore, some companies listed more than one CEO; we also excluded these companies. If more than four CEOs were excluded from a given year, we substituted their photographs with the CEOs from the next several ranks in the listing (i.e., beyond the 50th ranked company); see Table 1 for final sample sizes. In total, there were 107 different CEOs leading the 65 companies at some point within the 7 years examined. On average, 17% of the companies had a new CEO from one year to the next with an overall average of 1.69 ($SD = .67$, $Maximum = 4$) CEOs per company in the 7-year period studied.

Each CEO's photograph was cropped to the limits of the head, converted to grayscale, and standardized to the same size. Similar to previous work (Rule & Ambady, 2008), we obtained information about the companies' financial performance (i.e., annual net profits in US dollars) from the Fortune website.

Procedure

A total of 196 American participants (40% women; $M_{Age} = 32$ years, $SD = 11$) were recruited from Amazon's Mechanical Turk online research community in the early months of 2013. Participants were randomly assigned to rate the photographs of the CEOs from one of the seven fiscal years. Specifically, they were asked to imagine that they were considering each target as a candidate

Table 1
Target and participant demographics by condition in Study 1.

Fiscal year	n_{CEOs}	Success		Attractiveness		Affect	
		n_{Raters}	$n_{Female\ Raters}$	n_{Raters}	$n_{Female\ Raters}$	n_{Raters}	$n_{Female\ Raters}$
2005	48	30	7	15	6	15	5
2006	50	30	17	16	7	14	8
2007	50	31	19	12	3	13	4
2008	50	30	14	13	9	13	5
2009	48	25	8	13	4	13	4
2010	50	25	6	12	6	12	6
2011	47	25	8	13	4	12	4

for a company's CEO and asked to estimate how successful they thought each would be in filling that position from 1 (*Not at all successful*) to 7 (*Very successful*).[1] The participants were not informed that any of the targets were already CEOs, though some participants occasionally recognized targets (<1% of all data); the results did not considerably differ when these trials were excluded from analysis. Additionally, due to the powerful influence of facial attractiveness and emotional expression on the perception of faces (Zebrowitz, 1997), independent groups of participants rated the faces within each year on attractiveness ($N = 94$; 41% women; 1 = *Not at all attractive*, 7 = *Very attractive*) and affective expression ($N = 92$; 36% women; 1 = *Neutral*, 4 = *Happy*, 7 = *Very happy*) for inclusion as covariates in the analyses; all inter-rater reliabilities Cronbach's αs > .78. The CEOs' pictures were presented in random order within each condition.

Results and discussion

Because the distributions of annual net profits did not achieve normality in any given year, we used partial nonparametric Spearman correlations. Similar to Rule and Ambady (2010), we calculated the partial sensitivity correlations between each perceiver's ratings of leadership ability and companies' reported financial performance while controlling for the consensus ratings of affect and attractiveness within each condition, as well as the CEOs' ages. Although annual net profits do not scale with company size the same way that annual gross revenues do (M_rs = .12 and .58, respectively, in the present data), we also included the number of employees at each company as a covariate to permit additional control for company size. The estimates were converted to Fisher's Z_r prior to analysis and compared against the null hypothesis of no effect ($Z_r = .00$) using one-sample *t*-tests at $\alpha = .007$ to correct for multiple comparisons.

Results showed that the participants' estimates of leadership ability from the CEOs' faces were significantly more accurate than chance in fiscal years 2005 [$M = .09$, $SD = .16$; $t(29) = 3.16$, $p = .004$, $r = .51$], 2006 [$M = .09$, $SD = .15$; $t(29) = 3.29$, $p = .003$, $r = .52$], 2007 [$M = .13$, $SD = .18$; $t(29) = 4.14$, $p < .001$, $r = .61$], and 2008 [$M = .14$, $SD = .17$; $t(28) = 4.39$, $p < .001$, $r = .64$]. Following the Financial Crisis that struck in the fall of 2008 (representing the climax of the Great Recession), a different pattern emerged in fiscal years 2009 [$M = .05$, $SD = .16$; $t(24) = 1.51$, $p = .14$, $r = .30$], 2010 [$M = .04$, $SD = .16$; $t(24) = 1.15$, $p = .26$, $r = .23$], and 2011 [$M = .03$, $SD = .18$; $t(24) = 0.88$, $p = .39$, $r = .18$]: participants' estimates of leadership ability were not significantly related to the companies' annual net profits.[2] Congregating the data into two groups showed that the relationship between CEOs' facial appearance and their companies' annual net profits was significantly greater before ($M = .11$, $SD = .17$) versus after ($M = .04$, $SD = .16$) the Financial Crisis of 2008: $t(192) = 3.13$, $p = .002$, $r = .22$ (see Fig. 1).

These data suggest that the relationship between CEO appearance and company performance might have changed following the 2008 Financial Crisis. Additionally, the effects resulting from this change appear to have remained after the US economy was considered to have recovered in 2009 (e.g., Verick & Islam, 2010). The Great Recession was regarded as not just an American phenomenon but one that affected the global economy rather broadly. Within the scope of this economic strife, some nations were notably less affected than others. Germany, in particular, was observed to have weathered this storm especially well, owing largely to the retention of firm employees working at reduced hours versus the elimination (layoffs and firings) of executives and laborers in countries like the US (e.g., Rinne & Zimmerman, 2012). As a second test of our hypothesis that economic conditions might influence the relationship between judgments of CEO success and their performance as leaders, we therefore examined differences in economic conditions not across time but across nations. Thus, in Study 2, we compared the relationships between CEO facial appearance and company performance in the US versus Germany during the same time period: the year immediately following the 2008 Financial Crisis (i.e., fiscal year 2009). In addition, we expanded our investigation by focusing on the specific traits that might support leadership success, rather than examining holistic judgments of leadership ability.

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[1] Two participants' data were removed because they had no variance in responses (i.e., gave the same rating to all of the faces).

[2] To account for company performance prior to the deduction of taxes, we retrieved earnings before income taxes (EBIT) information for a subset of the companies in the sample based on their Security Exchange Commission filings and annual reports. Results were very similar when EBIT was used in place of annual net profits as the dependent measure in these analyses (mean difference in effects: $Z = 0.02$, 95% CI [-.01, .06]).
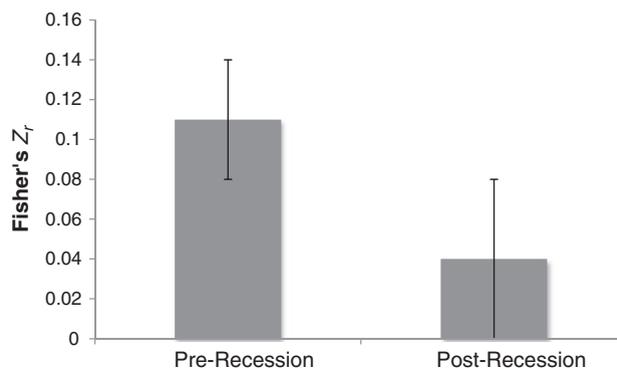
Fig. 1. Mean partial Spearman sensitivity correlations controlling for facial affect, attractiveness, CEO age, and company size (number of employees) for the relationship between individual participants' estimates of CEO leadership ability and company annual net profits before (pre-recession) and after (post-recession) the Financial Crisis of 2008. *Note.* Error bars indicate 95% confidence intervals around the mean.

Study 2

The results of Study 1 showed that the relationship between perceptions of leadership ability from the faces of top Fortune 500 CEOs and company annual net profits appeared to vary with changes in economic conditions across time in the US. CEOs leading companies in years prior to the Financial Crisis of 2008 showed the same positive relationship between perceptions of their faces and their companies' annual net profits that was demonstrated in previous research (Rule & Ambady, 2008, 2009, 2010; Wong et al., 2011). After the climax of the recession in late 2008, however, this relationship became non-significant. Despite the international effects of the 2008 Financial Crisis, one nation's economy remained particularly robust against its impact: Germany. In Study 2, we therefore examined whether the relationship between CEO facial appearance and leadership success might be present among German CEOs after the Financial Crisis (fiscal year 2009) and compared this with American CEOs from the same year.

In addition, we broadened our investigation in Study 2 by testing the relationship between perceptions of specific traits associated with leadership success, rather than global judgments of perceived leadership ability. Earlier work found that CEOs leading companies with greater annual net profits were perceived as more powerful and characterized by structural facial features that connote dominance and aggression (Carré, McCormick, & Mondloch, 2009; Rule & Ambady, 2008; Wong et al., 2011). These traits correspond to one of the two major axes by which individuals and social groups are generally perceived, which we will refer to as "power" (see Fiske et al., 2002; Rule et al., 2010). In contrast, perceptions of traits along the second orthogonal dimension of "warmth" previously showed no significant relationship with CEOs' success (Rule & Ambady, 2008, 2009); though past studies have suggested that the traits valued among leaders may vary according to the context in which those leaders are evaluated (Little et al., 2007, 2012; Rule et al., 2010; see also Wong et al., 2011).

Consistent with the changes observed in Study 1, then, we hypothesized that the traits perceived from the faces of CEOs leading companies after the 2008 Financial Crisis might differ according to context as well. Specifically, given the differences in the impact of the Great Recession on businesses in the US versus Germany, we wondered whether the relationship between traits and success might differ between American and German CEOs during this time period. To test this, we asked participants to rate the faces of the top-ranked US and German CEOs from fiscal year 2009 along traits previously used to measure perceptions of power and warmth.

Method

Stimuli

Information about the top-ranked US and German CEOs from fiscal year 2009 were obtained from Fortune's 2010 Global 500 listing (http://money.cnn.com/magazines/fortune/global500/2010/full_list/). Of the 500 companies listed, 37 were from Germany and 139 were from the US; we therefore selected all of the German companies and the top 40 US companies to use in the present study; all of the CEOs were male. The listing provided the names of each CEO and each company's annual net profits (in US dollars) for fiscal year 2009. We used this information to obtain photos of the CEOs from each company's website, as in Study 1, and standardized them following the same procedures described above.

Procedure

A total of 140 undergraduate psychology students at the University of Toronto were randomly assigned to rate the faces of either the American ($n = 62$) or German ($n = 78$) CEOs along five traits used in previous work (e.g., Rule & Ambady, 2008): competence (1 = *Not at all competent*, 7 = *Very competent*), dominance (1 = *Submissive*, 7 = *Dominant*), facial maturity (1 =

Table 2

Means, standard errors, and rotated component loadings with variance explained for the trait ratings of American and German CEOs included in the Principal Components Analysis with varimax rotation in Study 2.

	American CEOs				German CEOs			
	M	*SE*	Power	Warmth	*M*	*SE*	Power	Warmth
Dominance	4.44	.09	**.91**	−.24	4.27	.10	**.91**	−.10
Facial maturity	5.08	.08	**.90**	.09	5.00	.12	**.89**	−.12
Likeability	4.41	.10	−.21	**.94**	4.12	.11	−.20	**.94**
Trustworthiness	4.22	.09	.07	**.98**	4.03	.10	.02	**.98**
Competence	4.88	.05	.66	.67	4.74	.08	.70	.60
Variance explained			42%	47%			42%	45%

Note. Traits loading together for use in composite formation are indicated in bold.

Babyish, 7 = *Mature*), likeability (1 = *Not at all likeable*, 7 = *Very likeable*), and trustworthiness (1 = *Not at all trustworthy*, 7 = *Very trustworthy*). Participants judged the faces in random order within five randomly-ordered blocks corresponding to each of the five traits. Three participants recognized targets in the American CEO condition; the results did not differ when these trials were excluded from analysis. Due to a programming error, participant sex and age were not recorded in either condition. As in Study 1, separate samples of participants also rated the photos for attractiveness ($n_{\text{US targets}} = 11, n_{\text{German targets}} = 8$) and affective expression ($n_{\text{US targets}} = 15, n_{\text{German targets}} = 15$). All judgments were made along 7-point scales and showed acceptable levels of inter-rater reliability: all Cronbach's αs > .71.

Results and discussion

As in previous research (e.g., Rule & Ambady, 2008), we first conducted principal components analyses (PCA) with varimax rotation on the mean judgments for each target along the five traits for the American and German targets. The rotated component loadings showed the emergence of two principal components: one consisting of dominance and facial maturity and the other consisting of likeability and trustworthiness, which we used to form composites of Power and Warmth, respectively. Similar to previous research on perceptions of leadership from faces (Rule et al., 2010), competence loaded highly onto both components and was not included in the subsequent analyses. Summary statistics and component loadings for the American and German targets are presented separately in Table 2 and show similar patterns as when both groups of targets are congregated.[3]

Following the results of the PCA, we averaged each participant's ratings of dominance and facial maturity, and likeability and trustworthiness, to construct individual scores for Power and Warmth for each participant's judgment of each target. These Power and Warmth scores were then correlated with the CEOs' companies' annual net profits for each participant using nonparametric partial Spearman sensitivity correlations controlling for the consensus judgments of attractiveness and affective expression, as well as CEO age and number of company employees, as in Study 1. The resulting correlation coefficients were then converted to Fisher Z_r scores and subjected to one-sample *t*-tests against chance ($Z_r = .00$) with a significance threshold of $\alpha = .0125$ to correct for multiple comparisons.

As predicted, Power was significantly positively associated with company annual net profits among German CEOs [$M = .09, SD = .15; t(77) = 5.57, p < .001, r = .54$] whereas Warmth showed a negative relationship [$M = −.03, SD = .15; t(77) = 1.98, p = .05, r = .22$], though the latter effect was non-significant when controlling for multiple comparisons. This pattern of results is relatively consistent with previous work examining the relationship between trait ratings and company annual net profits among top American CEOs from fiscal year 2005 (Rule & Ambady, 2008; Rule et al., 2011). Consistent with the results of Study 1, however, Power was not significantly related to the annual net profits of American CEOs from fiscal year 2009: $M = .02, SD = .18; t(61) = 0.98, p = .33, r = .12$. Interestingly, Warmth was significantly negatively correlated with company annual net profits, suggesting that the warmer a CEO was perceived to be, the less profitable his company was: $M = −.08, SD = .17; t(61) = 3.88, p < .001, r = .44$. This pattern of results was not in accord with that observed for American CEOs prior to the Great Recession and Financial Crisis (i.e., fiscal year, 2005; Rule & Ambady, 2008; Rule et al., 2011).

The relationship between perceptions of personality traits and a measure of leadership success (company annual net profits) among German CEOs in 2009 was therefore relatively consistent with that previously observed for American CEOs in 2005. This pattern of Power positively predicting leadership success is consistent with perceptions of Western leadership in other domains, such as electoral success (Rule et al., 2010) and the success of law firm managing partners (Rule & Ambady, 2011a, 2011b). Thus, the results for German CEOs seem in line with what is typically observed in the relationship between face perception and Western leadership.

The findings for American CEOs were distinct from the pattern typically observed, however. Perceptions of Power from CEOs' faces showed no relationship to their companies' annual net profits—a measure of their success as leaders. Curiously, though, Warmth was significantly negatively related. That less likeable and less trustworthy CEOs showed significantly greater success as leaders within the context of the Great Recession may not be surprising in light of previous work on the effect of context on the traits that are valued, ascribed to, and perceived from leaders and their faces, which has shown some contrast in the traits that are

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[3] Independent-samples *t*-tests comparing the mean ratings of the American and German CEOs showed no significant differences for any of the traits rated: all *t*s ≤ 1.78, all *p*s ≥ .08.

esteemed in different contexts (Little et al., 2007, 2012; Rule et al., 2010; Wong et al., 2011). Future research may be useful in further understanding the nature of this inverse relationship between Warmth and leadership success among business leaders in an economically depressed context.

General discussion

Context bears an important influence on the relationship between facial appearance and leadership. Previous studies showed that individuals preferred faces representing different traits depending on the sociopolitical context in which they imagined them as leaders (Little et al., 2007, 2012) and that the dynamics of an organization's leadership renders leaders with particular facial appearances to be more effective than others (Wong et al., 2011). The present studies add to this literature by demonstrating that contextual variation in the prevalent economic conditions of the time and place in which a leader holds office can critically affect the relationship between facial appearance and leadership success.

Prior to the international Great Recession of the late 2000s, several studies reported a significant relationship between CEOs' facial appearance and the financial success of their companies (e.g., Rule & Ambady, 2008; Wong et al., 2011). Study 1 replicated these results with new samples of faces but found that the relationship between facial appearance and leadership success was significantly reduced after the landmark Financial Crisis that occurred in 2008. Perceivers' judgments of leadership ability from the faces of CEOs were significantly associated with the annual net profits earned by their companies for the top CEOs of Fortune 500 companies in the years leading up to the crisis but predicted company performance no better than chance guessing in the years immediately after. This suggests that the relationship between facial appearance and leadership success for the CEOs of the top American companies declined after the 2008 Financial Crisis.

We found further support for our hypothesis that economic conditions affect the relationship between CEO facial appearance and their leadership success by testing these effects in two different nations in Study 2. Comparing the relationship between judgments of CEOs' faces and their success as leaders in the US and Germany, we found that the success of CEOs in Germany (whose economy remained relatively stable following the global financial crisis) was predicted from judgments of their faces whereas the success of American CEOs was not. Thus, we observed that economic conditions impacted the relationship between CEO facial appearance and leadership success across changes in geographic location (Study 2) and time (Study 1).

Given that different types of leaders may be preferred in different sociopolitical contexts (e.g., wartime versus peacetime; Little et al., 2007, 2012), we also hypothesized that the traits associated with successful leadership may have been different after the 2008 Financial Crisis than before. We explored this in Study 2 by investigating the relationship between trait inferences based on CEO facial appearance and company performance in the US and Germany for fiscal year 2009. Results showed that the pattern previously observed for American CEOs prior to the Great Recession continued to be reflected in the relationship between facial appearance and CEO success for the leaders of the highest-performing companies in Germany in its immediate wake. Power predicted the success of German CEOs, as it did for American CEOs when studied in fiscal year 2005 (Rule & Ambady, 2008). This is the first study to show a relationship between facial appearance and CEO success in a Western nation outside of the US, thereby confirming the relevance of power and dominance to leadership in Western societies (Jung & Avolio, 1999; Misumi & Peterson, 1985). Interestingly, a strikingly different pattern was observed for American CEOs from fiscal year 2009. The success of these leaders was not related to Power but was negatively associated with inferences of Warmth from their faces, a trait that was previously found to be unrelated to successful leadership in business (Rule & Ambady, 2008; Rule et al., 2011). Moreover, the direction of this relationship is noteworthy: CEOs perceived as less warm led companies that performed better in fiscal year 2009. This unhypothesized finding deserves further consideration to be fully understood.

Although the social and economic contexts undoubtedly bear an important role in the association between facial appearance and leadership, other factors may affect this relationship as well. One outstanding possibility is that facial appearance is important to leaders' success only when other variables are relatively well-matched. That is, previous studies have shown that a leader's facial appearance predicts roughly 9–14% of the variance in his or her firm's financial performance (Harms et al., 2012; Rule & Ambady, 2008, 2011a). Other factors accounting for the remaining 80–90% of the variance may represent a set of necessary prerequisites before which facial appearance exerts an effect. Considering that the leaders typically utilized in studies on facial appearance tend to occupy the highest ranks in their respective fields, it can be largely assumed that they all possess the majority of the skills needed to succeed in their professions. That is, they are a sample of elite leaders—some of the most successful in the world. It is possible, then, that the effects of facial appearance are particularly important for distinguishing between the most elite leaders who may all be relatively well-matched on the qualities that otherwise permit successful leadership. Specifically, they are all good leaders but facial appearance may distinguish them when all else is considered equal. This hypothesis remains speculative in the absence of further testing yet presents an interesting prospect for future study.

Indeed, the limitations of the present work provide several opportunities for future research. One limit faced by the current studies is that they represent merely one snapshot of time. Although we were able to test the relationship between CEO facial appearance and company performance across seven contiguous years, it is unclear if and when the relationship observed prior to the Financial Crisis of 2008 might return. Inherent in this is the fact that financial measures of company performance can be quite noisy, particularly during a period of economic recession. For example, here we utilized companies' annual net profits as our primary dependent measure. Although past studies have examined other measures (such as return on assets; Wong et al., 2011) and found similar effects, there is not complete agreement about which financial variable might be the best indicator of a company's success. Ongoing tests will be needed to monitor the relationship between CEO facial appearance and company performance to better understand how, when, and why various measures might predict leadership outcomes in different

economic contexts. In the interim, it is worth noting that the capacity for CEO facial appearance to cut through the noise of a measure like company financial performance might suggest that the effects are even more powerful than observed in the literature thus far.

An additional avenue for future study that may prove fruitful is the examination of the relationship between facial appearance and leadership success across other domains. Although numerous studies have now demonstrated relationships between facial appearance and leadership success in politics, business, and law, it is worthwhile to explore this relationship among other types of leaders. Pursuant to our hypothesis that the relationship between facial appearance and leadership success may be restricted to only the most elite leaders, it would be particularly valuable to investigate whether facial appearance relates to leadership success among less prominent leaders, such as middle managers, small business owners, and local politicians.

Additionally, the present study extended the literature on facial appearance and business leadership to a second nation: Germany. Two previous studies examined the relationship between facial appearance and CEO success in Japan (Rule et al., 2011) and China (Harms et al., 2012). Both studies found no relationship between inferences of typical Western traits of leadership and facial appearance. Despite the relationship observed between inferences of Warmth and the electoral success of Japanese candidates in prior work (Rule et al., 2010), neither Warmth nor any other trait was related to the success of Japanese CEOs. The authors concluded that this may be due to the nature by which CEOs typically gain their position in Japan: often through social and familial relations (Rule et al., 2011). Similarly, the only variable predicting the success of Chinese CEOs was risk-taking, an element related to leadership in China but that may differ from business leadership in other nations, including Japan (Harms et al., 2012; Wiersema & Bird, 1993; Yoshikawa, Phan, & David, 2005). Continued investigation into the relationship between facial appearance and leadership success in other non-Western nations and outside of North America might therefore help to expound upon the more general relationship between facial appearance and leadership success.

Similar to examining these effects across domains would be to consider how the relationship between facial appearance and company performance might vary according to industry. Although the present sample of companies was not large enough to allow for a sufficiently-powered test of differences between different industrial sectors, the results were not significantly different when financial firms were excluded (mean difference in effects: $|Z| < .00$, 95% CI $[-.02, .02]$). Research with a larger sample is needed to provide sufficiently-powered comparisons and, thus, this remains an open question for additional future investigation.

Last, all of the raters in the present study were from the same time period. Although this could be regarded as an advantage of the current work – as it removes the possibility that raters might have changed perceptions over time, rather than targets or companies – it would also be interesting to explore how the dispositions of perceivers might affect the traits that they ascribe to leaders. Considering that thinking of wartime versus peacetime has been found to influence participants' preferences for leaders in past work (Little et al., 2007, 2012), it seems tenable that the psychological impact of economic conditions might also influence who is effective at leading individuals at different times. This could, in turn, affect how CEOs are appointed to not only lead but also represent organizations (e.g., Ranft et al., 2006). Thus, perceiver characteristics and conditions could be considered in more depth in subsequent work.

The face is an important part of human perception and communication with the potential to reveal a great deal of information about an individual target. A growing body of research has suggested that an individual's success as a leader is one such trait that can be perceived from the face. The present studies contribute to this literature by providing additional evidence for how important contextual factors such as economic conditions can serve to shape the relationship between facial appearance and predictions of leadership success. In doing so, we hope to inspire continued research into this topic that will help to refine scholars' understanding of leadership and the role that the face plays in social perception more broadly.

References

Agle, B. R., Nagarajan, N. J., Sonnenfeld, J. A., & Srinivasan, D. (2006). Does CEO charisma matter? An empirical analysis of the relationships among organizational performance, environmental uncertainty, and top management team perceptions of CEO charisma. *Academy of Management Journal, 49,* 161–174.

Albright, L., Malloy, T. E., Dong, Q., Kenny, D. A., Fang, X., Winquist, L., et al. (1997). Cross-cultural consensus in personality judgments. *Journal of Personality and Social Psychology, 72,* 558–569.

Antonakis, J., & Dalgas, O. (2009). Predicting elections: child's play! *Science, 323,* 1183.

Armstrong, J. S., Green, K. C., Jones, R. J., Jr., & Wright, M. J. (2010). Predicting elections form politicians' faces. *International Journal of Public Opinion Research, 22,* 511–522.

Ballew, C. C., II, & Todorov, A. (2007). Predicting political elections from rapid and unreflective face judgments. *Proceedings of the National Academy of Sciences, 104,* 17948–17953.

Berggren, N., Jordahl, H., & Poutvaara, P. (2010). The looks of a winner: Beauty and electoral success. *Journal of Public Economics, 94,* 8–15.

Berry, D. S. (1991). Accuracy in social perception: Contributions of facial and vocal information. *Journal of Personality and Social Psychology, 61,* 298–307.

Berry, D. S., & Finch-Wero, J. L. (1993). Accuracy in face perception: A view from ecological psychology. *Journal of Personality, 61,* 497–521.

Burda, M. C., & Hunt, J. (2011). What explains the German labor market miracle in the Great Recession? *SFB 649 discussion paper 2011-031.*

Carré, J. M., McCormick, C. M., & Mondloch, C. J. (2009). Facial structure is a reliable cue of aggressive behavior. *Psychological Science, 20,* 1194–1198.

Castelli, L., Carraro, L., Ghitti, C., & Pastore, M. (2009). Effects of perceived competence and sociability on electoral outcomes. *Journal of Experimental Social Psychology, 45,* 1152–1155.

Congleton, R. D. (2009). On the political economy of the financial crisis and bailout of 2008–2009. *Public Choice, 140,* 287–317.

Fiske, S. T., Cuddy, A. J. C., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology, 82,* 878–902.

Graham, J. R., Harvey, C. R., & Puri, M. (2010). A corporate beauty contest. *NBER Working Paper 15906.*

Harms, P. D., Han, G., & Chen, H. (2012). Recognizing leadership at a distance: A study of leader effectiveness across cultures. *Journal of Leadership and Organizational Studies, 19,* 164–172.

Heine, S. J. (2010). Cultural psychology. In D. T. Gilbert, S. Fiske, & G. Lindzey (Eds.), *Handbook of Social Psychology* (pp. 1423–1464) (5th ed.). . New York: Wiley.

Imbs, J. (2010). The first global recession in decades. *IMF Economic Review, 58,* 327–354.

Jung, D. I., & Avolio, B. J. (1999). Effects of leadership style and followers' cultural orientation on performance in group and individual task conditions. *Academy of Management Journal, 42,* 208–218.

Kaiser, R. B., Hogan, R., & Craig, S. B. (2008). Leadership and the fate of organizations. *American Psychologist, 63*, 96–110.

Lawder, D. (2010). *Bailout anger may hamper U.S. in future crisis: Panel.* Reuters (Retrieved 21 March 2013 from http://www.reuters.com/article/2010/09/16/us-usa-bailouts-idUSTRE68F0J320100916)

Lawson, C., Lenz, G. S., Baker, A., & Myers, M. (2010). Looking like a winner: Candidate appearance and electoral success in new democracies. *World Politics, 62*, 561–593.

Lenz, G. S., & Lawson, C. (2011). Looking the part: Television leads less informed citizens to vote based on candidates' appearance. *American Journal of Political Science, 55*, 574–589.

Little, A. C., Burriss, R. P., Jones, B. C., & Roberts, S. C. (2007). Facial appearance affects voting decisions. *Evolution and Human Behavior, 28*, 18–27.

Little, A. C., Roberts, S. C., Jones, B. C., & DeBruine, L. M. (2012). The perception of attractiveness and trustworthiness in male faces affects hypothetical voting decisions differently in wartime and peacetime scenarios. *The Quarterly Journal of Experimental Psychology, 65*, 2018–2032.

Livingston, R. W., & Pearce, N. A. (2009). The teddy-bear effect: Does having a baby face benefit black chief executive officers? *Psychological Science, 20*, 1229–1236.

Mazur, A., Mazur, J., & Keating, C. (1984). Military rank attainment of a West Point class: Effects of cadet's physical features. *American Journal of Sociology, 90*, 125–150.

Misumi, J., & Peterson, M. F. (1985). The performance–maintenance (PM) theory of leadership: Review of a Japanese research program. *Administrative Science Quarterly, 30*, 198–223.

Penton-Voak, I. S., Pound, N., Little, A. C., & Perrett, D. I. (2006). Personality judgments from natural and composite facial images: More evidence for a "kernel of truth" in social perception. *Social Cognition, 24*, 607–640.

Poutvaara, P., Jordahl, H., & Berggren, N. (2009). Faces of politicians: Babyfacedness predicts inferred competence but not electoral success. *Journal of Experimental Social Psychology, 45*, 1132–1145.

Ranft, A. L., Zinko, R., Ferris, G. R., & Buckley, M. R. (2006). Marketing the image of management: The costs and benefits of CEO reputation. *Organizational Dynamics, 35*, 279–290.

Rinne, U., & Zimmerman, K. F. (2012). Another economic miracle? The German labor market and the Great Recession. *IZA Journal of Labor Policy, 1*, 3.

Rule, N. O., & Ambady, N. (2008). The face of success: Inferences from chief executive officers' appearance predict company profits. *Psychological Science, 19*, 109–111.

Rule, N. O., & Ambady, N. (2009). She's got the look: Inferences from female chief executive officers' faces predict their success. *Sex Roles, 61*, 644–652.

Rule, N. O., & Ambady, N. (2010). First impressions of the face: Predicting success and behavior. *Social and Personality Psychology Compass, 4*, 506–516.

Rule, N. O., & Ambady, N. (2011). Face and fortune: Inferences of personality from managing partners' faces predict their firms' financial success. *Leadership Quarterly, 22*, 690–696.

Rule, N. O., & Ambady, N. (2011). Judgments of power from college yearbook photos and later career success. *Social Psychological and Personality Science, 2*, 154–158.

Rule, N. O., Ambady, N., Adams, R. B., Jr., Ozono, H., Nakashima, S., Yoshikawa, S., et al. (2010). Polling the face: Prediction and consensus across cultures. *Journal of Personality and Social Psychology, 98*, 1–15.

Rule, N. O., Ishii, K., & Ambady, N. (2011). Cross-cultural impressions of leaders' faces: Consensus and predictive validity. *International Journal of Intercultural Relations, 35*, 833–841.

Rule, N. O., Krendl, A. C., Ivcevic, Z., & Ambady, N. (2013). Accuracy and consensus in judgments of trustworthiness from faces: Behavioral and neural correlates. *Journal of Personality and Social Psychology, 104*, 409–426.

Todorov, A., Mandisodza, A. N., Goren, A., & Hall, C. C. (2005). Inferences of competence from faces predict election outcomes. *Science, 308*, 1623–1626.

Tskhay, K. O., & Rule, N. O. (2013). Accuracy in categorizing perceptually ambiguous groups: A review and meta-analysis. *Personality and Social Psychology Review, 17*, 72–86.

Van Gelder, S. (2011). *This changes everything: Occupy Wall Street and the 99% movement.* San Francisco, CA: Berrett-Koehler Publishers, Inc.

Verick, S., & Islam, I. (2010). The Great Recession of 2008–2009: Causes, consequences and policy responses. *IZA discussion paper 4934*.

Wiersema, M. F., & Bird, A. (1993). Organizational demography in Japanese firms: Group heterogeneity, individual dissimilarity, and top management team turnover. *Academy of Management Journal, 36*, 996–1025.

Wong, E. M., Ormiston, M. E., & Haselhuhn, M. P. (2011). A face only an investor could love: CEOs' facial structure predicts their firms' financial performance. *Psychological Science, 22*, 1478–1483.

Yoshikawa, T., Phan, P. H., & David, P. (2005). The impact of ownership structure on wage intensity in Japanese corporations. *Journal of Management, 31*, 278–300.

Zebrowitz, L. A. (1997). *Reading faces: Window to the soul?* Boulder, CO: Westview Press.