

In the eye of a leader: eye-directed gazing shapes perceptions of leaders' charisma

PRE-PRINT VERSION OF

*Maran, T./Furtner, M./Liegl, S./Kraus, S./Sachse, P. (2019): In the eye of a leader:
eye-directed gazing shapes perceptions of leaders' charisma, Leadership Quarterly (accepted).*

Abstract

Charismatic leadership improves organizational performance. Charisma itself can be defined as a repertoire of behaviors designed to communicate, however its constituents remain elusive. We hypothesized leaders' eye-directed gaze to be one such behavior, and therefore linked to their charisma. Using eye-tracking, we monitored gaze during a simulated leadership scenario, in which subjects attempted to influence followers towards a common goal. In two studies, we found subjects' impressions of their own charisma to predict the frequency and duration of gaze directed at their followers' eyes. In addition, longer and more frequent eye-directed gazing led leaders to appear both more charismatic and prototypical of their position in the eyes of their audience. Our findings provide first evidence that leaders' gazing towards the eyes of an audience is linked to their charisma. By investigating a leader's charisma through the lens of the signaling approach, we offer insight into the behaviors constituting charismatic leadership.

Keywords

Charismatic Leadership | Charisma | Eye Movements | Visual Attention | Communication

19 **Highlights**

- 20 ● Leaders' charisma is composed of a repertoire of communicative behaviors
- 21 ● Leaders' gaze behavior was monitored during a simulated leadership scenario
- 22 ● Eye-directed gazing is predicted by leaders' impressions of their own charisma
- 23 ● Eye-directed gazing shapes observers' perceptions of leaders, increasing ascribed charisma and
- 24 leader prototypicality

25 **In the eye of a leader: eye-directed gazing shapes**
26 **perceptions of leaders' charisma**

27
28 Imagine being part of the audience when a remarkable firm launches a new product. Suddenly, the gaze of
29 the charismatic business leader on the stage finds you, and you feel electrified, captured, and connected
30 (Kampe, Frith, & Frith, 2003). The ability to elicit such emotional resonance in followers is the hallmark
31 of charismatic leadership, and to do so, impressive leaders have often been known to employ particularly
32 piercing eyes (Bryman, 1992). Remarkably palpable communication, employing a high number of salient
33 verbal and nonverbal signals, is at the heart of charisma (Antonakis, Bastardo, Jacquart, & Shamir, 2016).
34 Indeed, evidence suggests expressive behavior to indicate actual leadership ability (Grabo, Spisak, & van
35 Vugt, 2017; Reh, Van Quaquebeke, & Giessner, 2017), since it enables an individual to emerge as the
36 leader of a group (Gerpott, Lehmann-Willenbrock, Silvis, & van Vugt, 2018), earn ascriptions of success
37 (Tskhay, Xu, & Rule, 2014), and to influence followership (Antonakis, Fenley, & Liechti, 2011). Recently,
38 preliminary evidence has given rise to the assumption that the same may be true for eye-directed gaze
39 (Clark & Greatbatch, 2011; Tskhay, Zhu, & Rule, 2017).
40 Surprisingly, these superficial impressions withstand critical examination, as charismatic leadership has
41 been proven to be the most effective way of coordinating followership (Bass, 1985). The outstanding
42 importance of this “new leadership” concept (Antonakis, 2018) for leadership science stems from
43 convincing evidence proving its effectiveness in organizational leadership. A meta-analysis of 76
44 independent studies shows that charismatic leadership increases organizational effectiveness by improving
45 objective performance on multiple levels, ranging from individuals to the whole organization (Banks et al.,
46 2017). However, conceptions of charisma suffer from the problem of endogeneity, and therefore have
47 recently become the subject of strong criticism (van Knippenberg & Sitkin, 2013). This is the case first and
48 foremost because existing tools almost exclusively assess charisma in terms of its effects, rather than

49 conceptualizing it through concrete and measurable leadership behaviors (Antonakis et al., 2016; Yukl,
50 1999). This precludes its use as an exogenous variable in the design of new research, seriously limiting its
51 application and the validity of past results. Hence, despite the obvious importance of charisma, we still lack
52 a clear understanding of the proximal signals that constitute the distal construct of charismatic leadership
53 (Antonakis, Day, & Schyns, 2012; Antonakis et al., 2016). Of late, there has been a clamor to base novel
54 definitions of charisma on the range of behaviors, sent by the leader, and received by followers, that
55 engender it (Antonakis et al., 2016; Grabo, Spisak, & van Vugt, 2017).

56 In this, our study aims to contribute, addressing the current limitations of empirical conceptualizations of
57 charisma within this under-researched area. To do this, we assess whether eye contact of greater frequency
58 and duration is typical of charismatic leaders. This is what we aim to accomplish in two studies, by mapping
59 leaders' charisma onto an objective, measurable behavior, their gaze directed towards followers' eyes, with
60 the use of eye-tracking technology. The first study investigates whether increased gazing towards the eyes
61 of followers, while trying to influence them in pursuit of a common goal, is predicted by a charismatic
62 personality. The second study aims to replicate our initial findings using established measures of leaders'
63 charisma, and further tests whether eye-directed gazing coincides with the impressions of a leader's
64 charisma as perceived by others. We find that leaders' self-ascribed charisma showed a specific relationship
65 with heightened eye-directed gaze, while related constructs, such as motivation to lead, failed to show any
66 association. Interestingly, when attempting to influence followers towards a common goal, the gaze of
67 participants acting as leaders towards their followers' eyes makes the former appear more charismatic, and
68 further, earns them ascriptions of desirable leader attributes in the eyes of an audience. Our results open a
69 gateway from one of the most salient nonverbal channels of communication, eye-directed gaze, to
70 charismatic leadership. Though these findings illuminate only a section of the signaling process, they
71 contribute to the efforts underway to decode the proximal elements constituting charisma (Antonakis et al.,
72 2012) that allow leaders to motivate their followers with such success (Banks et al., 2017).

73

74 **Theoretical background**

75 Influencing followers towards a common objective is the core issue of the leadership process, as it enables
76 the successful coordination of group action (Antonakis & Day, 2018; Grabo et al., 2017; Spisak, O'Brien,
77 Nicholson, & van Vugt, 2015). Therein charisma plays a crucial role, since it represents a “value-based,
78 symbolic and emotion-laden leader signaling” (Antonakis et al., 2016, p. 304) that empowers a leader to
79 influence followers in pursuit of a shared ambition. Such a signaling approach to charisma puts the focus
80 on verbal and nonverbal behaviors (Reh et al., 2017), which, from this perspective, act as reliable cues used
81 by followers to assess an individual's ability to lead effectively (Grabo et al., 2017). And indeed, when it
82 comes to leader emergence, followers' attention is hijacked by such cues, suggesting a heightened
83 sensitivity for signals providing information on who is able to coordinate a group effectively (Gerpott et
84 al., 2018). In particular, nonverbal behavior constitutes a crucial ingredient of successful communication
85 at the workplace (Bonaccio, O'Reilly, O'Sullivan, & Chiochio, 2016), even more so when leading others
86 (van Knippenberg & van Kleef, 2016). For example, followers pay special attention to facial appearance
87 (Antonakis & Eubanks, 2017) or particularly expressive nonverbal behaviors (Trichas, Schyns, Lord, &
88 Hall, 2017) when developing their impression of a leader. To conclude, the use of an unusually broad
89 selection of signals may produce the aura of charisma surrounding exceptional leaders, and critically,
90 followers are tuned to recognize and integrate such cues when judging who might be most capable, and
91 therefore most likely to emerge and gain acceptance as a leader (Grabo et al., 2017). This might explain
92 why follower's attributions of a leader as charismatic are highly conducive to a leader's influence over that
93 followership (Johnson & Dipboye, 2008), and why charismatic leadership is the most effective form of
94 leading in organizations (Banks et al., 2017; Jacquart & Antonakis, 2015).

95 Eye-directed gaze is probably the most basic nonverbal component of communication, exhibiting a strong
96 signaling function (Grossmann, 2017; Risko, Richardson, & Kingstone, 2016; Siposova, Tomasello, &
97 Carpenter, 2018; Wu, Bischof, & Kingstone, 2014). Its function as a signal arises threefold: firstly, it is
98 highly visible and designed to communicate; secondly, it impacts the receiver's impressions; and thirdly,

99 it shapes the latter's behavior. Its high visibility exists because the human eye's morphology specifically
100 evolved to facilitate social communication. Possessing the most prominent whites of any primate species,
101 our eyes are horizontally elongated (Kobayashi & Kohshima, 1997), and thereby facilitate accurate location
102 of where our fellow humans' attention is lying (Emery, 2000). These developments have given eyes another
103 function beyond the gathering of information, namely highlighting our gaze's direction from moment to
104 moment, transforming it into a potent social signal (Gobel, Kim, & Richardson, 2015; Khalid, Deska, &
105 Hugenberg, 2016).

106 Secondly, the mere way we look at others shapes the receiver's personal impressions, and can earn us a
107 range of ascriptions (e.g. Tskhay et al., 2017), including various attributes desirable in a leader. For
108 example, people who exhibit increased eye-directed gaze appear to be more powerful (Dovidio & Ellyson,
109 1982), potent (Brooks, Church, & Fraser, 1986), and dominant (Hall, Coats, & LeBeau, 2005). This
110 explains why eye contact has been considered in every study employing dramaturgical operationalizations
111 of charismatic leadership (e.g. Caspi, Bogler, & Tzuman, 2019; Holladay & Coombs, 1994; Johnson &
112 Dipboye, 2008).

113 Thirdly, gazing can not only shape attributions prototypical of a leader, but also elicits responses from
114 receivers that support leadership. For example, perceived eye contact arouses pleasant emotions (Hietanen
115 et al., 2018) and feelings of self-involvement (Conty, George, & Hietanen, 2016), and is simultaneously
116 capable of promoting cooperation (Bateson, Nettle, & Roberts, 2006), prosocial behavior (Ekström, 2012),
117 honesty (Nettle, Nott, & Bateson, 2012), and even behavioral synchronization (Prinsen et al., 2017). These
118 latter effects give rise to the supposition that eye-directed gaze may have ameliorative outcomes for both
119 sender and receiver, supporting the suggestion that it may act as a signal (Grabo et al., 2017). Some findings
120 translate directly to the domain of leadership. For instance, the followership of former populist, Italian
121 prime minister Silvio Berlusconi reflexively followed the gaze of their right-wing leader (Cazzato, Liuzza,
122 Caprara, Macaluso, & Aglioti, 2015; Liuzza et al., 2011). Interestingly, a leader's fall in popularity is
123 preceded by a reduction of their gaze's attractive power (Porciello, Liuzza, Minio-Paluello, Caprara, &
124 Aglioti, 2016).

125

126 **The current study**

127 To summarize the above-mentioned findings, eye-directed gaze hijacks attention (e.g. Liuzza et al., 2011),
128 promotes prototypical leader impressions (e.g. Tskhay et al., 2017), elicits approach (e.g. Hietanen et al.,
129 2018) and facilitates cooperation (e.g. Bateson et al., 2006). In other words, eye-directed gazing might
130 support leaders in appealing to and captivating their followership, lending potency to their message of
131 cooperation in the pursuit of a shared vision. However, as opposed to facial appearance (Dietl, Rule, &
132 Blickle, 2018) or emotional expressions (Trichas et al., 2017), research on leadership has so far paid little
133 attention to social gaze behavior. We aim to zoom into the signaling process of leaders' charisma
134 (Antonakis et al., 2016; Grabo et al., 2017) by investigating a core element of signaling, the sending and
135 receiving of a distinct behavior that could shape leaders' charisma, their gaze towards followers eyes
136 (Tskhay et al., 2017). It is therefore suggested that senders, charismatic leaders, employ heightened eye-
137 directed gaze when attempting to influence receivers, their followers. As such we propose, that more
138 charismatic leaders exhibit increased eye-directed gazing, specifically more frequent (count of fixations)
139 and prolonged gaze (duration of fixations) towards the eyes of followers they are attempting to influence.
140 The frequency of fixations is indicative of the orienting component of visual attention, while the duration
141 of fixations indicates attentional engagement (Nummenmaa, Hyönä, & Calvo, 2006). Charismatic
142 individuals might both show prolonged gaze towards the eyes of their counterparts, and regularly reorient
143 towards the eyes once averted, while attempting to captivate them.

144

145 **Hypothesis 1.** *The more charisma leaders ascribe to themselves, the more often they gaze towards*
146 *their followers' eyes while attempting to influence them.*

147

148 **Hypothesis 2.** *The more charisma leaders ascribe to themselves, the longer they gaze towards their*
149 *followers' eyes while attempting to influence them.*

150
151 Using the behaviors that make up charisma enables leaders to exert influence over their followership in
152 pursuit of a shared goal (Antonakis et al., 2016). Influencing, in turn, requires that the leaders' behavior is
153 received and acted upon by followers (Grabo et al., 2017; Spence, 2002). We suggest that followers receive
154 a leader's heightened gaze towards their eyes, as indicated by its ability to increase perceptions of the
155 leader's charisma. More specifically, we propose that leaders who display more frequent (count of
156 fixations) and prolonged eye-directed gazing (duration of fixations), while attempting to influence
157 followers, are perceived as more charismatic by others.

158
159 **Hypothesis 3.** *The more often leaders gaze towards followers' eyes, while attempting to influence*
160 *them, the more charisma is ascribed to them by those followers.*

161
162 **Hypothesis 4.** *The longer leaders gaze towards followers' eyes, while attempting to influence them,*
163 *the more charisma is ascribed to them by those followers.*

164
165 To test our predictions, we designed two studies to investigate the hypothesized link between leaders'
166 charisma and the gaze they directed towards followers' eye regions. Across both studies, we assessed
167 charisma of participants placed in a leader role, and examined their gaze behavior while speaking to an
168 audience during an economic game. As influencing followers is one of the core elements of leadership
169 (Antonakis & Day, 2018, p. 6), we simulated a scenario where participants have to take such a role and to
170 show influence behaviors in order to move their audience towards a common goal. This scenario has
171 previously been successfully applied to investigate the effects of the legitimacy of leaders on group
172 outcomes (Brandts, Cooper, & Weber, 2015). By using eye-tracking on participants appointed to a

173 leadership position, we were able to analyse their gaze fixations towards the eyes of followers throughout
174 their efforts to influence them.

175 In Study 1 we approach the proposed link between subjects' perceptions of their own charisma and their
176 social gaze behavior (hypothesis 1 and 2). In study 2, we attempt to replicate the results of study 1 and, in
177 doing so, to tie in to the existing research by referring to established measures of leaders' charisma used to
178 assess charismatic leadership (hypothesis 1 and 2). Most importantly, study 2 aims to overcome the
179 limitations of self-report data and captures naïve observers' impressions of the leader's charisma
180 (hypothesis 3 and 4). Thus, we tested whether eye-directed gaze was both sent by participants holding a
181 leadership position and received by naïve observers, a distinction crucial regarding its ability to shape the
182 latter's impressions of a leader's charisma.

183

184 **Study 1**

185 In study 1, we examined whether the general charisma of participants acting as leaders predicted their gaze
186 directed towards the eye region of followers, and moreover whether it explained variance in eye-directed
187 gaze behavior beyond the Five Factor Model of personality (McCrae & Costa, 2010), thus seeking
188 preliminary support for hypotheses 1 and 2. To capture a leader's general charisma, we relied on a recent,
189 operational conceptualization of charisma for everyday life, designed to extend beyond but still include
190 leadership (Tskhay, Zhu, Zou, & Rule, 2018). This conceives of general charisma as a combination of
191 tangible interindividual differences in influence, i.e. the ability to persuade and guide others, and affability,
192 i.e. the ability to make other people feel comfortable.

193

194 **Methods and design**

195 We developed a task combining methods of experimental economics (e.g. Brandts et al., 2015) with high
196 precision eye-tracking technology (e.g. Gerpott et al., 2018). Participants, informed that they had been
197 randomly assigned as group leader, were tasked with attempting to influence four followers towards
198 contributing investments (see *Supplementary Information*). Their aim was to maximize the final group
199 payout over four rounds, which was commensurate with course credits. They played an adapted version of
200 the Turnaround Game (Brandts et al., 2015), an economic game designed to cause an inefficient
201 equilibrium. The game revolves around the independent investments of each player, with the final payout
202 dependent on these individual investments. Higher investments increased the final payout, but also their
203 risk of a potential loss, due to the possibility of another participant committing less.

204 Participants acting as leaders had to give two-minute speeches in each round to influence followers to
205 maximize their investment. This occurred via a simulated live video connection, displaying followers
206 seated in another room, which was established for each of the four rounds. Participants were informed that
207 their face and voice would be transmitted to a screen in front of the followers in real time, while in reality,
208 four videos of confederates had already been pre-recorded and edited to appear as real, live video
209 connections (see *Supplementary Information*).

210 After each speech, a feedback chart appeared on screen containing the individual investments of the
211 followers. They were pre-defined identically for all the participants acting as leaders, and varied for each
212 of the four rounds. Subsequently, the leader had a thirty second period to prepare the next speech, after
213 which the next video clip started. The simulated live video connection was presented on the screen of the
214 Tobii TX300 eye-tracker which recorded participants' gaze behavior throughout the task. Following the
215 task, participants completed self-rating questionnaires.

216

217 **Sample**

218 The initial sample consisted of 83 healthy young adults (61 female; 22 male) that participated voluntarily
219 in the study. Their age ranged from 18 to 31 years, $M = 21.05$, $SD = 2.15$. Subjects reported to have normal

220 or corrected-to-normal visual ability. We controlled whether participants recognized their followers to be
221 confederates or the video connection as being pre-recorded, via self-report. Only three participants met
222 those criteria (male, 20; female, 20; female, 21), and were subsequently removed from analysis. Their data
223 were not considered, resulting in a final sample of 80 (59 female; 21 male), whose age ranged from 18 to
224 31 years, $M = 21.07$, $SD = 2.19$. The study was conducted in line with the guidelines of the Ethics Committee
225 of the University of _ and participants provided informed consent.

226

227 **Visual stimulus material**

228 Four videos, each with a runtime of about two and a half minutes, were recorded (1920 x 1080 pixels),
229 portraying four followers sitting on one side of a table, showing attention to the camera. The content was
230 designed specifically to appear as naturalistic and authentic as possible, to give participants the impression
231 of being under observation by live counterparts (see *Supplementary Information*). This was necessitated by
232 recent research, finding that a person's perception of a social presence is the key to inducing that person to
233 use their gaze in the service of social signaling. Lacking such a social presence, the function remains
234 dormant, and gaze remains largely a means of gathering information (e.g. Gobel et al., 2015; see
235 *Supplementary Information*).

236

237 **Charisma**

238 The General Charisma Inventory (Tskhay et al., 2018) is a psychometrically well proven measure of general
239 charisma, with the two subscales of influence and affability. This measure, based on a popular
240 understanding of charisma, was rigorously developed by querying people as to which traits they employ to
241 describe charismatic individuals, and then analyzing these for the most relevant dimensions (see
242 *Supplementary Information*).

243 We included the original 10-item version, replicating the two-factor structure of the General Charisma
244 Inventory provided by the authors (see *Supplementary Information*) and calculated Cronbach's α values to
245 assess the scales' reliability ($\alpha = .89$ for the influence, $\alpha = .75$ for the affability subscale, respectively).
246

247 **Five factor model of personality**

248 The NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, German translation by Borkenau &
249 Ostendorf, 2008) is a well-established 60-item questionnaire based on the Five-Factor Model of personality.
250 Reliabilities for our data were calculated at $\alpha = .89$ for neuroticism, $\alpha = .80$ for extraversion, $\alpha = .74$ for
251 openness, $\alpha = .76$ for agreeableness, and $\alpha = .80$ for conscientiousness.
252

253 **Gaze behavior**

254 A Tobii TX300 binocular near-infrared eye-tracking system (Tobii Technology, Stockholm, Sweden)
255 recorded gaze patterns with a sampling rate of 300 Hz. This system has a precision rate of $.15^\circ$ and an
256 accuracy rate of $.40^\circ$ at ideal conditions. Fixations were calculated using the Tobii Fixation Filter.
257 We defined dynamic areas of interest frame by frame for the eye region of each confederate within each
258 video (144 x 80 pixels). Dependent variables were the overall duration of all fixations [s] as well as the
259 total count of fixations, over all video recordings.
260

261 **Results and discussion**

262 We first calculated Pearson product-moment correlation coefficients to assess the relationship between the
263 count and duration of eye contact, both dimensions of general charisma, and the five factors of personality.
264 Correlations are reported as r [$\pm .10 =$ small effect; $\pm .30 =$ medium effect; $\pm .50 =$ large effect]. To look

265 further into these relationships, we then calculated linear regression models. Data analyses were conducted
266 using SPSS (Version 24) ¹.

267 Correlational analyses revealed the predicted links among variables (see Table 1 for an overview). First,
268 charismatic influence was associated both with the count ($r = .33, p = .0029$) and duration ($r = .29, p =$
269 $.0091$) of participants' fixations towards eye regions. By contrast, the second dimension of general
270 charisma, affability, was not linked ($r = .20, p = .0782$ for count; $r = .14, p = .2125$ for duration). Similarly,
271 we found no association of the count and overall duration of fixations towards eye regions and neuroticism,
272 extraversion, openness, agreeableness or conscientiousness (all p 's $> .05$; Table 1; Fig. 1).

273

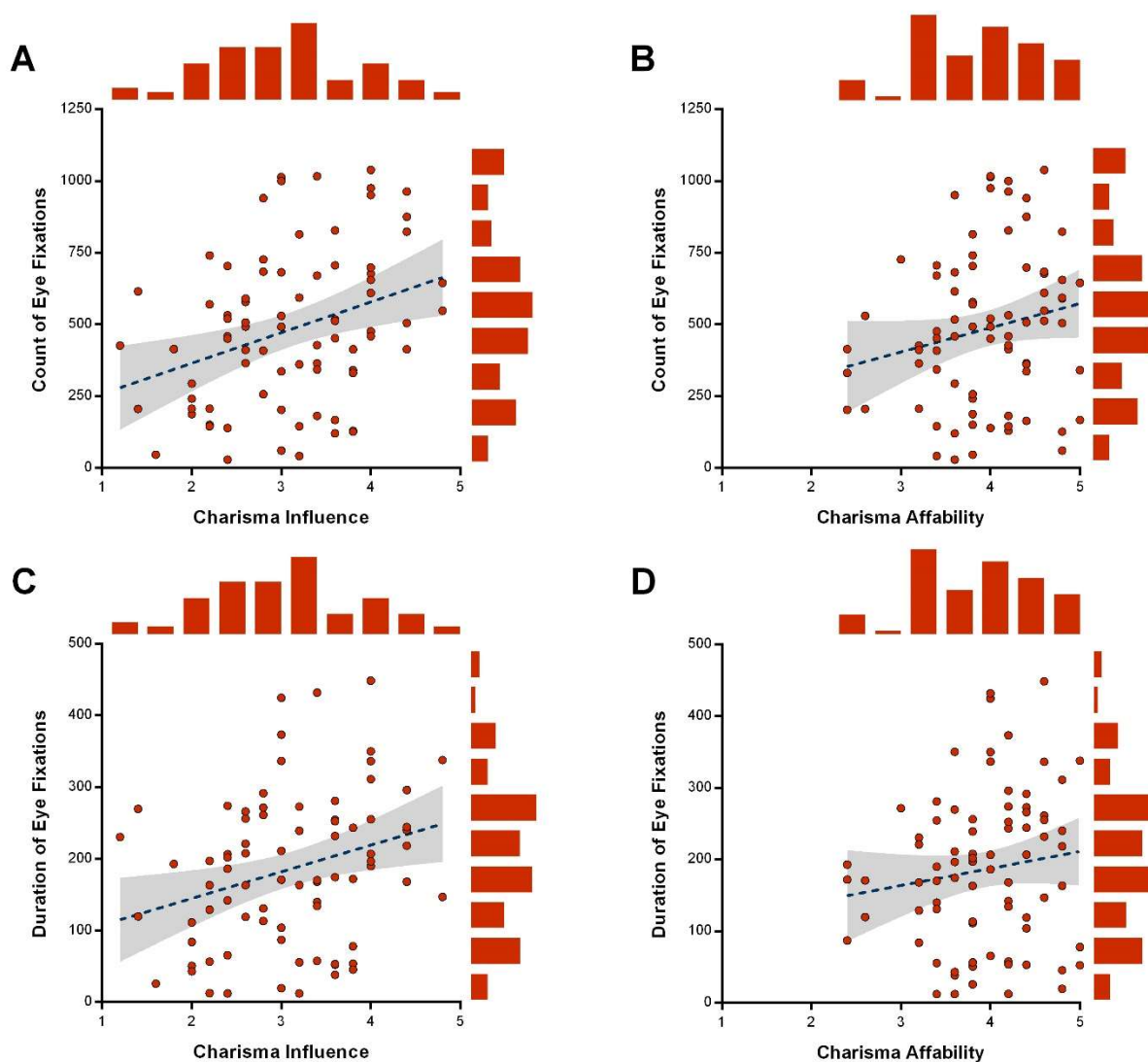
274

275

Table 1 about here

276

¹ All data are available at the Open Science Framework website, <https://osf.io/bnq32/>.



277
 278 **Fig. 1.** Correlations are displayed between the count (A, B) and duration (in [s]; C, D) of eye fixations and
 279 charisma influence (A, C) and affability (B, D). The unstandardized values ($N = 80$) are displayed with
 280 linear regressions and a 95% confidence interval. Histograms on either side of the graphs denote relative
 281 frequency distributions.

282
 283 In a last step, to test whether general charisma explained variance in eye-directed gaze beyond the five-
 284 factor model of personality, we computed two-step, ordinary least squares linear regression models. In
 285 order to reduce the influence of heteroskedasticity, robust standard errors were calculated using the

286 heteroskedasticity consistent estimator 3 (HC3; Davidson & MacKinnon, 1993) in the RLM macro for
287 SPSS by Darlington and Hayes (2016). Standardized coefficients are reported. The first model,
288 encompassing only the Big Five dimensions, did not predict the count of fixations towards the eye region
289 ($\Delta R^2 = .08$, $F(5,74) = 1.34$, $SE = .99$, $p = .2559$; see Table 2), and yielded no significant weights for
290 personality traits (all p 's $> .05$). However, the addition of the two facets of general charisma into a second
291 model ($\Delta R^2 = .14$, $F(7,72) = 3.47$, $SE = .93$, $p = .0029$) increased the explained variance from 8% to 22%
292 and showed effects for charisma influence ($\beta = .50$, $SE = .15$, $p = .0011$) but not for affability ($\beta = -.07$, SE
293 $= .13$, $p = .9381$). Again, this second model showed no significant weights for other Big Five dimensions
294 (all p 's $> .05$), except for agreeableness ($\beta = .32$, $SE = .12$, $p = .0122$).

295 The same pattern was found for the duration of eye-directed gaze, with a model ($\Delta R^2 = .05$, $F(5,74) = .70$,
296 $SE = 1.01$, $p = .6283$), containing exclusively the Big Five personality traits, yielding no prediction (all p 's
297 $> .05$). The explained variance was once more increased through the inclusion of the two dimensions of
298 general charisma ($\Delta R^2 = .11$, $F(7,72) = 2.30$, $SE = .96$, $p = .0360$), with mainly charisma influence ($\beta = .48$,
299 $SE = .15$, $p = .0019$), but not affability ($\beta = -.06$, $SE = .14$, $p = .6872$), again showing predictive power.
300 The other personality traits displayed no effects (all p 's $> .05$), except for agreeableness ($\beta = .31$, $SE = .13$,
301 $p = .0195$).

302

303

304

Table 2 about here

305

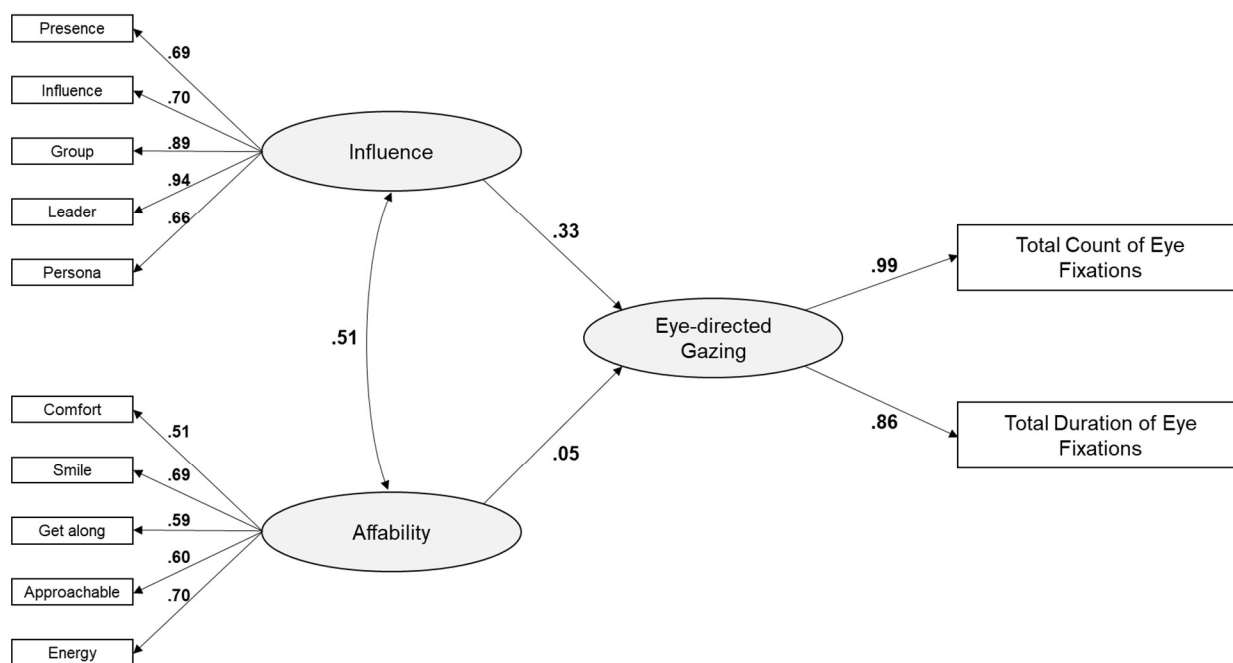
306

307 **Post Hoc Analysis: Structural Equation Modelling**

308 Since both the count and duration of fixations are correlated highly ($r = .85$, $p < .0001$), we combined them
309 in a structural equation model, testing whether this new latent variable was predicted by charismatic
310 influence and affability (Fig. 2). Maximum likelihood estimates were calculated using SPSS AMOS

311 (Version 24.0.0). We calculated several descriptive measures of the overall model fit ($\chi^2/d.f.$, sufficient fit
 312 ≤ 3 ; good fit ≤ 2 *SRMR*, sufficient fit ≤ 0.10 , good fit ≤ 0.05) and comparative measures of increased model
 313 fit between the proposed and the independence model (*TLI*, sufficient fit ≥ 0.95 , good fit ≥ 0.97 Browne &
 314 Cudeck, 1993; Hu & Bentler, 1999). In order to reduce the influence of heteroskedasticity, bootstrap
 315 estimates of standard errors were calculated using 500 bootstrap samples (Arbuckle, 2016; Nevitt &
 316 Hancock, 2001; Yung & Bentler, 1996). We report standardized coefficients for the structural equation
 317 model.

318 The observed data show a good fit with the proposed structural model ($\chi^2_{(51)} = 61.32, p = .1527, \chi^2/d.f. =$
 319 $1.20; SRMR = .08; TLI = .97$; Fig. 2). The results also confirmed eye-directed gazing as a latent factor for
 320 the count ($\beta = .99, SE = .16, p < .0001$) and duration ($\beta = .86, SE = .13, p < .0001$) of eye-directed gaze.
 321 Importantly, increases in eye-directed gazing, expressed as more frequent and prolonged eye-directed gaze,
 322 can be traced back to the influence dimension of general charisma ($\beta = .33, SE = .14, p = .0218$), but not to
 323 the affability dimension ($\beta = .05, SE = .16, p = .7164$).



324 **Fig. 2.** Structural equation model of the two dimensions of general charisma, influence and affability, and
325 the count and duration of eye fixations, explained by the latent factor eye-directed gazing. Standardized
326 coefficient estimates are displayed. $N = 80$.

327
328 These results provide preliminary evidence favoring the hypothesized link between leaders' charismatic
329 influence and both the count (hypothesis 1) and duration (hypothesis 2) of gaze fixations towards followers'
330 eyes, beyond the established five factors of personality. Increased eye-directed gaze might characterize
331 those in particular who tend to charismatically influence others, but not necessarily those who prefer to
332 charismatically socialize with others.

333 A limitation of the study is its reliance on self-reported data, an issue exacerbated by the endogenous
334 conceptualization of the items used to measure charisma (Antonakis et al., 2016; see *Supplementary*
335 *Information*). The influence dimension, for example, measures whether a person exudes a magnetic aura
336 or impressive presence, rather than concrete behaviors. It remains to remediate these issues, which is our
337 aim in study 2. While study 1 linked participants' social gazing with impressions of their own general
338 charisma, study 2 assessed whether eye-directed gaze behavior shaped followers' impressions of charisma
339 (Grabo et al., 2017). Furthermore, while study 1 employed a conceptualization of general charisma, study
340 2, aiming to capture leaders' charisma, employed measures of charismatic leadership.

341

342 **Study 2**

343 Because of the limitations of study 1, therefore, this second study proceeded to test these results in a trial
344 by fire. In a first step, we sought to replicate our previous results with established measures of charismatic
345 leadership, shoring up evidence for our first and second hypothesis. However, our examination of
346 charismatic leadership was carried out through the lens of the signaling approach, which focuses on
347 behaviors both sent and received (Antonakis et al., 2016; Spence, 2002). Therefore, a crucial second step

348 was investigating whether eye-directed gaze was received by followers, and thereby impacted their
349 impressions of a leader's charisma (hypotheses 3 and 4).

350

351 **Methods and design**

352 To replicate our initial findings, we employed the same design as study 1. In contrast to study 1, however
353 participants filled in self-rating questionnaires measuring charismatic leadership (Multifactor Leadership
354 Questionnaire 5X-Short, Avolio & Bass, 2004; Conger-Kanungo scale, Conger, Kanungo, Menon, &
355 Mathur, 1997), leader motivation (Motivation to Lead, affective identity, Chan & Drasgow, 2001),
356 dominance (Kalma, Visser, & Peeters, 1993) and leader prototypicality (Antonakis et al., 2011).
357 Furthermore, we collected audio-visual recordings of all participants' motivational speeches. These
358 recordings were then presented to naïve observers (Antonakis et al., 2011), who assessed leaders'
359 prototypicality (Antonakis et al., 2011), desirable leader attributes (first impressions, Oosterhof & Todorov,
360 2008) and leaders' charisma (Avolio & Bass, 2004). We further tested whether naïve observers were
361 sensitive to interindividual variations in gaze behavior. To ensure that the eye contact perceived by
362 observers reliably reflected their sensitivity towards a leader's gaze, we tested discriminant validity with
363 regard to gestures and facial expressions.

364

365 **Sample**

366 The initial sample for data analysis consisted of 75 healthy young adults (41 female; 34 male). Their age
367 ranged from 18 to 32 years, $M = 22.23$, $SD = 2.79$. Only two participants (male, 22; female, 21) recognized
368 the video connection as being pre-recorded and were removed from analysis. Their data were not
369 considered, resulting in a final sample of 73 (40 female; 33 male), whose age ranged from 18 to 32 years,
370 $M = 22.25$, $SD = 2.83$.

371

372 Observers

373 Eight naïve observers (4 female; 4 male), with ages ranging between 19 and 31 (age: $M = 22.50$, $SD =$
374 3.96). Each rated the total 73 video recordings in a pseudo-randomized order (Antonakis et al., 2011).
375 Further, the sensitivity of observers to differences in the nonverbal expressivity of the participants acting
376 as leaders was assessed with four items, two for gaze behavior (“Holds eye contact”, “Has a focused gaze”)
377 and one each for facial expressions (“Shows facial expressions”) and gestures (“Uses gestures”).

378

379 Video recordings of participants

380 Audiovisual recordings were made of all participants for the length of the entire task using (Logitech HD-
381 Webcam C920, 1920 x 1080 Pixel). Recordings were all made from the front, ensuring that observers could
382 best identify when participants offered or tried to establish eye contact. For rating, only the first and last of
383 the four speeches were used. The first was chosen because participants were then faced for the first time
384 with motivating their followers, while the last was chosen due to our use of predefined feedback, which
385 showed a decline in investments prior to the fourth round. This prompted participants to expend particular
386 effort on their attempted motivation, to boost collective outcomes in the final round.

387

388 Charisma

389 *Leaders' charisma.* We selected 16 items of the transformational leadership scale, specifically designed to
390 capture a leader's charismatic aura and their emotional effect on followers (MLQ Form 5X-Short; Avolio
391 & Bass, German translation by Felfe, 2006; Towler, 2003). An example item reads: “Impresses and
392 fascinates others with his personality”. Reliability for the selected items from the transformational
393 leadership scale was measured at $\alpha = .78$ for self-rating, and $\alpha = .95$ for the naïve observers, with the ICC
394 $= .90$.

395

396 *Charismatic leadership*. This was assessed using the Conger-Kanungo scale, which measures vision
397 communication, as well as the daring and the personal and environmental sensitivity necessary to fulfil it
398 (Conger & Kanungo, 1994). We employed the entire scale, which contained a total of 20 items, for
399 example: "Shows sensitivity to the needs and feelings of other members in the organization." (Conger et
400 al., 1997). Reliability was measured at $\alpha = .84$.

401

402 **Leader Prototypicality**

403 *Leader Prototypicality* was assessed utilizing 3 items from the prototypicality questionnaire (Cronshaw &
404 Lord, 1987; adapted by Antonakis et al., 2011). It measures the extent to which participants acting as leaders
405 meet the observers' prototypical expectations of a leader. An example item being: "Person I am rating acts
406 like a typical leader"². Reliability was measured at $\alpha = .80$ for self-rating, and $\alpha = .95$ for the naïve
407 observers, with an ICC = .89.

408

409 **First impressions**

410 We measured different facets of first impressions from presented stimuli (Oosterhof & Todorov, 2008).
411 We assessed five trait impressions, each of which was scored using one item. An example item being:
412 "How charismatic is this person?", with the ICC = .84 (charisma); ICC = .80 (attractiveness); ICC = .77
413 (trustworthiness); ICC = .83 (dominance); ICC = .74 (intelligence).

414

415 **Motivation to lead**

416 *Motivation to lead* was assessed using a questionnaire that measures personal preference and drive with
417 respect to gaining a leadership position (affective identity, Chan & Drasgow, 2001). Motivation to lead was

² We selected item from each scale with the highest corrected item total correlation.

418 measured using 9 items, an example item being: "I am the type of person who is not interested in leading
419 others" (reversed). Reliability was measured at $\alpha = .92$.

420

421 **Dominance**

422 *Dominance* is defined here as a strong motivation to realize one's own aims, even at the expense of personal
423 relationships. It was measured using 20 items from an established questionnaire (Kalma et al., 1993), an
424 example item being: "I like taking responsibility". Reliability was measured at $\alpha = .76$.

425

426 **Results and discussion**

427 *Self-ratings.* We aimed to replicate the results gained in study 1, thereby consolidating evidence for
428 hypotheses 1 and 2, and to connect gaze behavior to firmly established measures of charismatic leadership
429 (see Table 3 and Fig. 3). Therefore, we performed correlational analyses between gaze behavior and the
430 measurements of participants' perceptions of their own charisma. Firstly, leaders' charisma, as measured
431 by a selection from the transformational leadership scale, showed an association with the count ($r = .33, p$
432 $= .0038$) and duration ($r = .27, p = .0222$) of gaze fixations towards eye regions. Charismatic leadership
433 was found to be associated with the count of fixations on eye regions ($r = .29, p = .0128$), but not the
434 duration of gaze ($r = .17, p = .1602$).

435 These specific, consistent relationships between gaze and charisma contrast with leaders' assessments of
436 their own dominance, found to have no relationship with either the duration or count of gaze fixations.
437 Interestingly, leaders' judgements of their own leader prototypicality also showed no relationships with
438 gaze, nor did their self-reported motivation to lead.

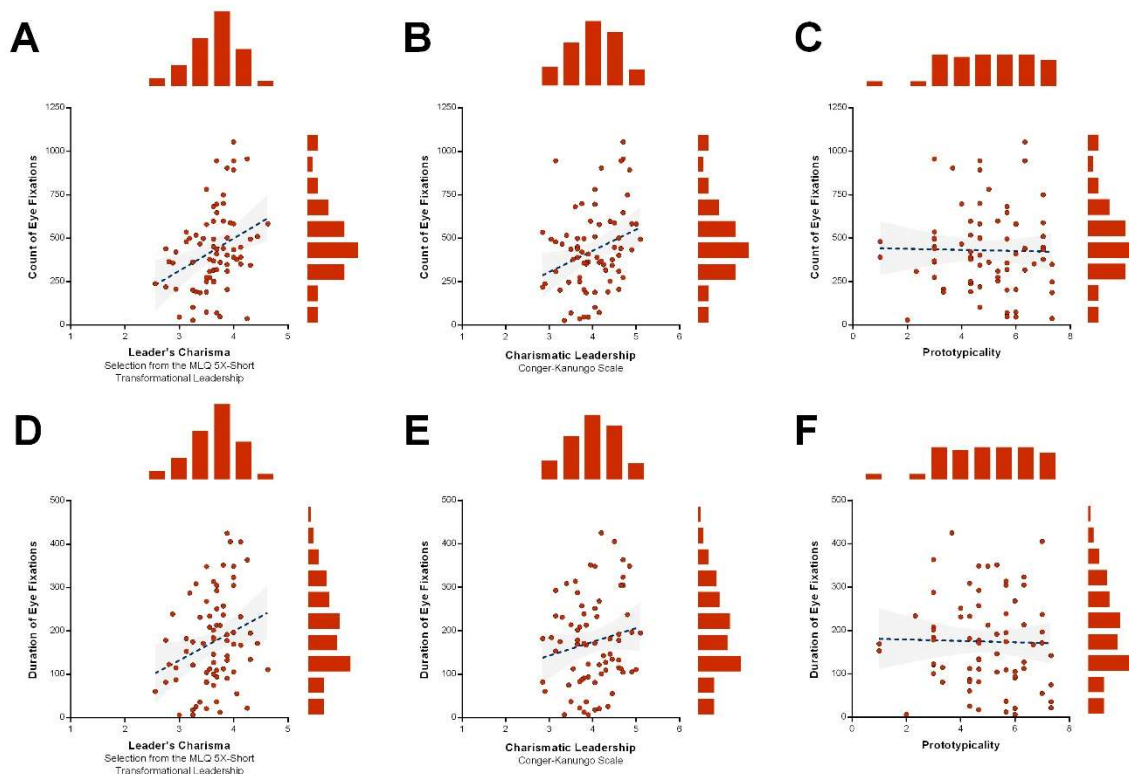
439

440

441

Table 3 about here

442



443

444 **Fig. 3.** Correlations are displayed between the count (A-C) and duration (in [s]; D-F) of eye fixations and
 445 self-rated leaders' charisma (selection from the transformational leadership scale; A, D), charismatic
 446 leadership (Conger-Kanungo scale; B, E), and leader prototypicality (C, F). The unstandardized values are
 447 displayed with linear regressions and a 95% confidence interval. Histograms on either side of the graphs
 448 denote relative frequency distributions. $N = 73$ for graphs A-J.

449

450 *Observer sensitivity towards gaze behavior.* We included several measures designed to assess the
 451 sensitivity of observers towards leaders' gaze behavior, specifically the count and duration of a leader's
 452 fixations towards the eyes of followers. Thereby, we ensured that the eye-directed gaze shown by leaders
 453 when attempting to influence followers was reliably transmitted through video recordings. Our results
 454 display a clear pattern of associations between the eye contact subjectively perceived by naïve observers,
 455 and that measured objectively by eye-tracking (count, $r = .33$, $p = .0039$, duration, $r = .39$, $p = .0007$).

456 Interestingly, the extent to which observers rated a leader's gaze as focused was associated only with the
457 duration of eye fixations ($r = .30, p = .0090$), but not the count ($r = .19, p = .1102$). This suggests that the
458 quantifiable length of fixations towards the eyes of followers has a direct bearing on the subjectively
459 ascribed intensity of eye contact as perceived by observers.

460 Discriminant validity was proven, as leaders' objectively assessed eye-directed gazing did not correlate
461 with the ratings of facial expressiveness (count, $r = .12, p = .3097$; duration, $r = .17, p = .1591$) or with
462 gesturing (count, $r = .14, p = .2452$; duration, $r = .13, p = .2798$). Therefore, observers did indeed appear
463 sensitive to shifts in gaze behavior, which offers dual conclusions: firstly, that gaze towards the eyes of
464 followers was indeed registered by the observers, and secondly, that higher levels of perceived eye contact
465 were not distorted by increased perceptions of expressivity.

466
467 *Observer-ratings.* Leaders' charisma, captured by the selection from the transformational leadership scale,
468 was found to correlate with both the count ($r = .29, p = .0131$; see Table 4 and Fig. 4) and duration ($r =$
469 $.33, p = .0042$) of gaze fixations towards the eyes. Observers overall first impression of charisma reflected
470 this with associations for both the count ($r = .26, p = .0293$) and duration ($r = .31, p = .0081$) of fixations
471 to the eyes. Other first impressions of desirable leader attributes, also yielded results, with associations
472 found between impressions of intelligence (count, $r = .24, p = .0421$; duration, $r = .34, p = .0036$) and of
473 dominance (count, $r = .26, p = .0247$; duration, $r = .31, p = .0084$). First impressions of trustworthiness
474 showed an association with only the duration ($r = .30, p = .0100$) but not the count ($r = .19, p = .1014$) of
475 fixations towards the eyes, while attractiveness revealed no relationships.

476 Importantly, in contrast to leaders' own assessments of their leader prototypicality, observers' impressions
477 were associated with both the count ($r = .27, p = .0202$) and duration ($r = .30, p = .0102$) of fixations
478 towards the eyes.

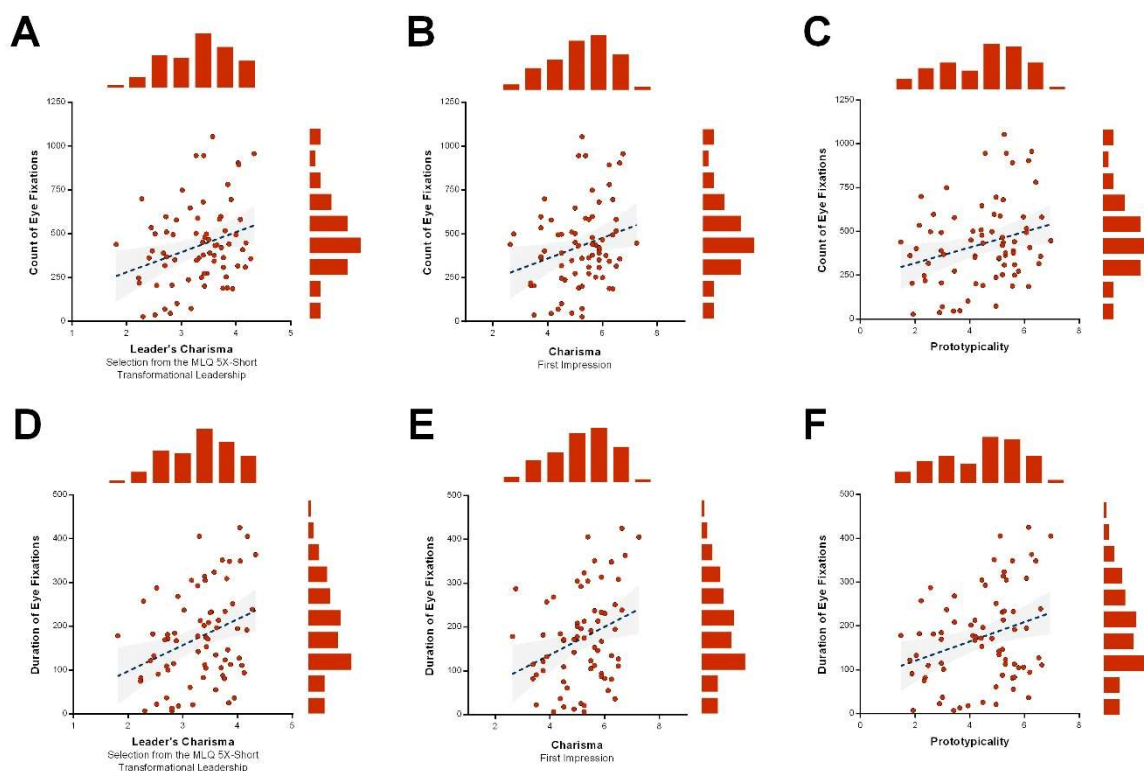
479

480

481

Table 4 about here

482
483
484



485

486 **Fig. 4.** Correlations are displayed between the count (A-C) and the duration (in [s]; D-F) of eye fixations
487 and the naïve observers' ratings of leaders' charisma (selection from the transformational leadership scale;
488 A, D), the first impression of charisma (B, E), and leader prototypicality (C, F). The unstandardized values
489 ($N = 73$) are displayed with linear regressions and a 95% confidence interval. Histograms on either side of
490 the graphs denote relative frequency distributions. $N = 73$.

491

492 To conclude, our results reveal consistent links between a leader's charisma and their gaze towards the eyes
493 of followers. More specifically, in a first step we found the frequency and duration of leaders' eye-directed
494 gaze to be associated with perceptions of their own charisma, thereby providing additional support for
495 hypotheses 1 and 2. Moreover, it was leaders' charisma in particular which was linked to gaze directed at

496 followers' eyes, with self-perceived measurements of related constructs such as dominance, motivation to
497 lead and leader prototypicality failing to show any association.

498 In a second step, the results showed leaders' gaze to distinctly shape the social perception of an audience.

499 A leader's gaze towards the eyes of followers was consistently associated with attributions of charisma

500 made by naïve observers, hence providing support for hypotheses 3 and 4. Interestingly, the ascription of

501 a series of desirable leader attributes by observers, and the overall judgement of a person as being a

502 prototypical leader, were also influenced by leaders' gazing towards followers' eyes. This, crucially, lends

503 support to evolutionary approaches to charisma, which assume charismatic behaviors to be indicative of

504 leader ability as perceived by followership (Grabo et al., 2017).

505

506 **General discussion**

507 Put yourself back into the situation of being in the audience of a product launch, when suddenly the gaze

508 of the leader onstage hits you, and you feel captivated by their aura. It is this charismatic aura, constituted

509 of a repertoire of signals, that enables outstanding leaders to exert influence over followers (Antonakis et

510 al., 2016), to ameliorate group outcomes (Banks et al., 2017). However, the behaviors that constitute this

511 phenomenon still remain elusive (van Knippenberg & Sitkin, 2013; Yukl, 1999). Aiming to add one

512 missing piece to this puzzle, we mapped leaders' charisma onto one of the most basic nonverbal channels

513 of communication, gaze behavior (Emery, 2000; Grossmann, 2017). Over two studies, we found consistent

514 evidence endorsing the notion that, when leaders attempt to influence followers, both their own and others'

515 ascriptions of their charisma are distinctly linked to the amount they gaze towards followers' eyes. More

516 specifically, both studies showed individuals in leadership positions, who considered themselves to be more

517 charismatic, to gaze more often (hypothesis 1) and for a longer time period towards followers' eyes

518 (hypothesis 2). Results from study 2 further revealed that when participants in leadership positions sought

519 more eye contact with followers, the former were perceived as more charismatic by their audience

520 (hypothesis 3 and 4). Beyond charisma, gaze is found to be instrumental in encouraging ascriptions of a
521 range of attributes desirable to a leader, and in prompting the impression of a leader as prototypical for
522 their station. Thus, these findings clearly indicate eye-directed gaze to be a component behavior of
523 charisma, sent by leaders, received by followers, and utilized by the latter to shape their perceptions of a
524 leader's charisma and prototypicality.

525 By shining the spotlight on one core element of leader signaling, the sending and receiving of a distinct
526 behavior, we contribute to its elevation from an ill-defined gift to a repertoire of concrete behaviors
527 (Antonakis et al., 2016; Van Knippenberg & Sitkin, 2013; Yukl, 1999). In the marketplace of leader
528 selection, among other groups, followers gauge leaders' abilities, while leaders engage in signaling to
529 appear as the most capable, with both striving for the most adaptive outcomes (Antonakis et al., 2016;
530 Spence, 2002). However, leadership ability is not a directly observable quality, hence demanding that
531 followers infer it from a leader's signals (Grabo et al., 2017). And indeed, more recently, leaders' charisma
532 has been defined in this very way, to represent a selection of signals which enable leaders to influence
533 followers (Antonakis et al., 2016). A charismatic leader's way of communicating, through both verbal and
534 nonverbal behaviors, might therefore represent a repertoire of signals indicating desirable leader attributes
535 to followers (Grabo et al., 2017; Reh et al., 2017; van Vugt & Grabo, 2015). For example, both being
536 eloquent in debates, as well as the use of metaphors by leaders (e.g. Mio, Riggio, Levin, & Reese, 2005),
537 act as reliable cues for cognitive sophistication (Silvia & Beaty, 2012; von Hippel, Ronay, Baker, Kjelsaas,
538 Murphy, 2016), which is indeed related to leader effectiveness (e.g. Antonakis, House, & Simonton, 2017).
539 The same holds true for nonverbal behavior, with charismatic leaders engaging in heightened and therefore
540 energy-intensive nonverbal expressivity, which, possibly by indicating interest and excitement to followers,
541 is a sound cue for leadership success (Tskhay et al., 2014).

542 Viewed through the lens of the signaling approach, our findings offer a glimpse into a core process of a
543 charismatic leader's signaling, the sending and receiving of eye-directed gaze. A leader, directing their gaze
544 towards the eyes of followers, spends their attentional resources on their followers, simultaneously
545 suppressing other potentially relevant information from the environment. To followers, this may indicate

546 that a leader's attention is on them, and their message specifically directed towards them. Research does
547 indeed show eye-directed gaze to act as a pointer (Kingstone, Tipper, Ristic, & Ngan, 2004), similar to
548 calling somebody's name (Kampe et al., 2003), making it possible for a leader to tag followers, increasing
549 their sense of self-involvement (e.g. Conty et al., 2016). This is a hallmark of the effect exuded by
550 charismatic leaders, touching a follower's self, and making them susceptible to influence (Shamir, House,
551 & Arthur, 1993; Howell & Shamir, 2005). It might be this very experience of feeling touched, feeling
552 captivated, that makes a leader appear charismatic in the eyes of followers (Castelnovo, Popper, & Koren,
553 2017). Experiencing the aura of a leader's charisma might drive followers to perceive a leader as
554 prototypical of their station (Antonakis et al., 2011; Cronshaw & Lord, 1987), helping the latter to win
555 favor in the marketplace of leader selection (Grabo et al., 2017). Indeed, our results offer first partial
556 evidence for this claim, by demonstrating that gaze directed towards followers' eyes is a behavior both
557 expressed by charismatic leaders and received by their followers, and that it shapes the follower's
558 perception of a leader as charismatic. In addition, by making a leader appear not merely more charismatic
559 to their audience, but by inducing various ascriptions of desirable attributes, our findings suggest eye-
560 directed gaze to shape receivers' impressions into the prototype of an outstanding leader: decisive,
561 intelligent, trustworthy.

562

563 **Future research directions and limitations**

564 In light of these findings, we suggest several avenues we consider fruitful, and discuss: first, how further
565 research is needed to examine the outcomes gaze has for both leader and follower, before it can be
566 confirmed as a signal of charisma; second, whether charismatic gaze is used in the service of
567 communication, or merely for information gathering; thirdly, consider in how far leaders' eye-directed gaze
568 is automatic or strategic, concluding with how instruction in strategic gaze could face and overcome certain
569 inherent issues. Moreover, we devote the last conclusory section in enumerating the limitations we identify
570 in our study and make suggestions for their remediation.

571 First, though this effect taps into the signaling process of charismatic leadership, signaling, as noted above,
572 encompasses sending, receiving, and an adaptive outcome for both sender and receiver (Antonakis et al.,
573 2016; Grabo et al., 2017; Spence, 2002). While our work demonstrates eye-directed gaze behavior to be
574 both sent and received, it does not provide evidence for an adaptive outcome for leaders and followers.
575 Interestingly, evidence reached from social cognition research indicates that beyond its impact on social
576 perception, eye-directed gaze supports just such behaviors desirable in followership, those that are
577 supportive of the leadership process. For example, looking at others can hijack their attention, might enable
578 leaders to claim the spotlight of a group (Gerpott et al., 2018), and also help to form a social bond between
579 the followers and their charismatic leader (e.g. Khalid et al., 2016). Most importantly, similar to a full
580 display of charismatic leader behavior (Grabo & van Vugt, 2016), being looked at not only causes
581 cooperative behaviors in a group to proliferate (e.g. Dear, Dutton, & Fox, 2019), but also enforces social
582 pressures that ensure conformity (e.g. Panagopoulos & van der Linden, 2016). Therefore, beyond
583 confirming that a leader's eye-directed gaze was received, further research is definitely needed to
584 investigate how followers act upon it. An example would be better group performance in a coordination
585 problem, achieved through cooperation, confirming the leader's effectiveness in his station (e.g. Grabo &
586 van Vugt, 2016; Siposova, Tomasello, & Carpenter, 2018).

587 Second, our findings give rise to the question whether a leader's eye-directed gaze is driven by the need to
588 gather information, or through its utility in impacting others. Without doubt, our eye behavior has the
589 primary function of gathering visual information about our environment. Therefore, gazing at followers'
590 eyes could reflect a mere need to collect the information they convey, as the eye region enables us to draw
591 highly reliable inferences about where somebody's attention lies and what somebody actually feels (Emery,
592 2000). This alone might be valuable to charismatic leaders, allowing them to tune their persuasive efforts
593 by the fine-grained reactions of followers. In contrast to such a pure information gathering account, a very
594 recent line of research finds that in real social encounters, our gaze behavior is guided first and foremost
595 by the affordances of the social situation, acting as a channel for communication (Risko et al., 2016).
596 However, our findings do not allow us to draw conclusions about whether a leader's increased attention to

597 followers' eyes is due to information gathering or serves a communicative function. It is worth noting,
598 however, that eye-directed gazing exerts its effects on receivers, irrespective of which function is dominant
599 in directing gaze behavior.

600 Third, the question remains whether leaders show such eye behavior automatically or strategically. While
601 there is a certain degree of control over gaze behavior (Laidlaw, Rothwell, & Kingstone, 2016), it is not
602 always intentional, but operates first and foremost automatically, especially with regard to reflexively
603 orienting towards the eyes of others (Thompson, Foulsham, Leekam, & Jones, 2019). It is worth noting
604 that people have also been shown to exhibit more naturally occurring eye-contact when attempting to be
605 persuasive (e.g. Mehrabian & Williams, 1969) or deceptive (e.g. Riggio & Friedman, 1983). Similarly,
606 people holding high status or expertise gaze more towards their counterparts while speaking, and less when
607 listening (e.g. Dovidio & Ellyson, 1985; Koch, Baehne, Kruse, Zimmermann, & Zumbach, 2010). These
608 findings support the notion that heightened eye-directed gaze is employed whenever the aim is to influence
609 an audience. While none of these studies, including our own, permit conclusions about whether this critical
610 gaze behavior is reflexive or controlled, there do exist multiple findings indicating that we automatically
611 orient our gaze towards relevant cues (e.g. Preciado, Munneke, & Theeuwes, 2017). Therefore, we argue
612 that participants placed in a leadership position gazed towards the eyes of followers automatically, rather
613 than intentionally (e.g. Risko, Anderson, Lanthier, & Kingstone, 2012). Hence, it would be premature to
614 draw conclusions on how followers perceive leaders' eye directed gazing, were leaders to engage in eye-
615 directed gazing in a controlled, intentional manner rather than genuinely. For example, staring that appears
616 unnaturally fixed, or too much eye-directed gaze, could certainly tip perception of the leader from authentic
617 to artificial, or even provocative (e.g. Giacomantonio, Jordan, Federico, van den Assem, & van Dolder,
618 2018). Indeed, it is well-known that certain factors can be beneficial to overall leader effectivity, and yet
619 turn detrimental when overdone (e.g. Antonakis et al., 2017). Hence, conflicting or distorting factors
620 (Spisak, Grabo, Arvey, & van Vugt, 2014), such as a "too-much" effect, are an issue which require their
621 own research before any consideration of leader instruction aimed at altering gaze behavior (e.g. Frese,
622 Beimel, & Schoenborn, 2003; Towler, 2003).

623 Even though our results offer consistent evidence linking eye-directed gaze and leaders' charisma, there
624 are some limitations to our findings. Most importantly, we followed an appeal to conduct more controlled
625 studies on leaders' charisma with high internal validity (Antonakis et al., 2016), but in doing so we face
626 inherent limitations with respect to the ecological validity of the task. First, as we aimed to capture
627 interindividual differences in genuine eye-directed gaze, some restraints to the natural flow of conversation
628 were inevitable. Future studies should aim to replicate our findings in more unrestricted conditions, such
629 as using mobile eye-tracking during a natural conversation between a leader and their followers, which
630 would void the necessity of simulating interactions to participants (e.g. Rogers, Speelman, Guidetti, &
631 Longmuir, 2018). Second, we examined one component behavior of charisma, yet others are likely of equal
632 importance when charismatically influencing others. It might be interesting to investigate how tonality,
633 facial expressions, or gestures affect followers' perceptions of their leader (Antonakis et al., 2011; Sy,
634 Horton, & Riggio, 2018; van Knippenberg & van Kleef, 2016). Third, there are differences between
635 cultures in the way eye-directed gaze is shown, and in how it is utilized by receivers to inform their
636 interpersonal judgments. For example, members of Eastern cultures are found to hold eye contact less than
637 those of Western cultures (McCarthy, Lee, Itakura, & Muir, 2006), and are similarly more likely to perceive
638 those who gaze intently at them as angry, unapproachable or unpleasant, compared to members of Western
639 cultures (Akechi et al., 2013). However, it is worth noting that cultural effects are largely restricted to
640 emotional perception, and there is a lack of evidence for effects on other impressions or physiological
641 responses (Akechi et al., 2013). Hence, cultural norms and display rules may act as a factor leveraging
642 potency, possibly dampening the relationship between a leaders' eye directed gaze and followers'
643 perceptions of their charisma.

644

645 **Conclusion**

646 Charismatic leaders are outstanding at captivating their audiences, and thus excel at influencing them to
647 share their vision of the future. However, it remains elusive what leader behaviors induce this charm, incite
648 a followership and inspire shared visions with such potency (Yukl, 1999). These findings provide the first
649 evidence that a leader's gaze, when directed towards the eyes of followers and received by the latter, makes
650 that leader appear more charismatic, and as the prototypical ideal of their role. By mapping charisma onto
651 gaze behavior, our studies add to this picture by taking a first step towards turning this distal construct right
652 side up, and positioning it on firm, behavioral underpinnings (Antonakis et al., 2016).

653 **References**

- 654 Akechi, H., Senju, A., Uibo, H., Kikuchi, Y., Hasegawa, T., & Hietanen, J. K. (2013). Attention to Eye
655 Contact in the West and East: Autonomic Responses and Evaluative Ratings. *PLoS ONE*, 8(3),
656 e59312. <https://doi.org/10.1371/journal.pone.0059312>
- 657 Antonakis, J. (2018). Charisma and the “New Leadership”. In J. Antonakis & D. V. Day (Eds.), *The Nature*
658 *of Leadership* (3rd ed., pp. 56–81). Thousand Oaks: SAGE Publications, Inc.
- 659 Antonakis, J., Bastardo, N., Jacquart, P., & Shamir, B. (2016). Charisma: An Ill-Defined and Ill-Measured
660 Gift. *Annual Review of Organizational Psychology and Organizational Behavior*, 3(1), 293–319.
661 <https://doi.org/10.1146/annurev-orgpsych-041015-062305>
- 662 Antonakis, J., & Day, D. V. (Eds.). (2018). *The Nature of Leadership*. Thousand Oaks: SAGE Publications,
663 Inc.
- 664 Antonakis, J., Day, D. V., & Schyns, B. (2012). Leadership and individual differences: At the cusp of a
665 renaissance. *The Leadership Quarterly*, 23(4), 643–650.
666 <https://doi.org/10.1016/J.LEAQUA.2012.05.002>
- 667 Antonakis, J., & Eubanks, D. L. (2017). Looking leadership in the face. *Current Directions in*
668 *Psychological Science*, 26(3), 270–275. <https://doi.org/10.1177/0963721417705888>
- 669 Antonakis, J., Fenley, M., & Liechti, S. (2011). Can Charisma Be Taught? Tests of Two Interventions.
670 *Academy of Management Learning and Education*, 10(3), 374–396.
671 <https://doi.org/10.5465/amle.2010.0012>
- 672 Antonakis, J., House, R. J., & Simonton, D. K. (2017). Can super smart leaders suffer from too much of a
673 good thing? The curvilinear effect of intelligence on perceived leadership behavior. *Journal of Applied*
674 *Psychology*, 102(7), 1003. <https://doi.org/10.5465/amle.2010.0012>

- 675 Arbuckle, J. L. (2016). *IBM SPSS Amos 24 user's guide*. Chicago, IL: Amos Development Corporation.
- 676 Avolio, B. J., & Bass, B. M. (2004). *Multifactor leadership questionnaire (MLQ)*. Redwood City, CA
677 Mindgarden.
- 678 Banks, G. C., Engemann, K. N., Williams, C. E., Gooty, J., McCauley, K. D., & Medaugh, M. R. (2017).
679 A meta-analytic review and future research agenda of charismatic leadership. *The Leadership*
680 *Quarterly*, 28(4), 508–529. <https://doi.org/10.1016/j.leaqua.2016.12.003>
- 681 Bass, B. M. (1985). *Leadership performance beyond expectations*. New York: Academic Press.
- 682 Bateson, M., Nettle, D., & Roberts, G. (2006). Cues of being watched enhance cooperation in a real-world
683 setting. *Biology Letters*, 2(3), 412–414. <https://doi.org/10.1098/rsbl.2006.0509>
- 684 Bonaccio, S., O'Reilly, J., O'Sullivan, S. L., & Chiochio, F. (2016). Nonverbal Behavior and
685 Communication in the Workplace: A Review and an Agenda for Research. *Journal of Management*,
686 42(5), 1044-1074. doi: 10.1177/0149206315621146
- 687 Borkenau, P., & Ostendorf, F. (2008). *NEO-FFI: NEO-Fünf-Faktoren-Inventar nach Costa und McCrae*,
688 *Manual* (2nd ed.). Göttingen: Hogrefe.
- 689 Brandts, J., Cooper, D. J., & Weber, R. A. (2015). Legitimacy, Communication, and Leadership in the
690 Turnaround Game. *Management Science*, 61(11), 2627–2645.
691 <https://doi.org/10.1287/mnsc.2014.2021>
- 692 Brooks, C. I., Church, M. A., & Fraser, L. (1986). Effects of Duration of Eye Contact on Judgments of
693 Personality Characteristics. *The Journal of Social Psychology*, 126(1), 71–78.
694 <https://doi.org/10.1080/00224545.1986.9713572>

- 695 Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S.
696 Long (Eds.), *Testing Structural Equation Models* (pp. 136–162). Newbury Park, CA: Sage.
- 697 Bryman, A. (1992). *Charisma and Leadership in Organizations*. London: Sage.
- 698 Caspi, A., Bogler, R., & Tzuman, O. (2019). “Judging a Book by Its Cover”: The Dominance of Delivery
699 Over Content When Perceiving Charisma. *Group & Organization Management*,
700 <https://doi.org/10.1177/1059601119835982>
- 701 Castelnovo, O., Popper, M., & Koren, D. (2017). The innate code of charisma. *The Leadership Quarterly*,
702 28(4), 543-554. <https://doi.org/10.1016/j.leaqua.2016.11.003>
- 703 Cazzato, V., Liuzza, M. T., Caprara, G. V., Macaluso, E., & Aglioti, S. M. (2015). The attracting power of
704 the gaze of politicians is modulated by the personality and ideological attitude of their voters: a
705 functional magnetic resonance imaging study. *European Journal of Neuroscience*, 42(8), 2534–2545.
706 <https://doi.org/10.1111/ejn.13038>
- 707 Chan, K. Y., & Drasgow, F. (2001). Toward a theory of individual differences and leadership:
708 Understanding the motivation to lead. *Journal of Applied Psychology*, 86(3), 481.
709 <http://dx.doi.org/10.1037/0021-9010.86.3.481>
- 710 Conger, J. A., & Kanungo, R. N. (1994). Charismatic leadership in organizations: Perceived behavioral
711 attributes and their measurement. *Journal of Organizational Behavior*, 15(5), 439-452.
712 <https://doi.org/10.1002/job.4030150508>
- 713 Conger, J. A., Kanungo, R. N., Menon, S. T., & Mathur, P. (1997). Measuring charisma: Dimensionality
714 and validity of the Conger-Kanungo scale of charismatic leadership. *Canadian Journal of*
715 *Administrative Sciences/Revue Canadienne des Sciences de l'Administration*, 14(3), 290-301.
716 <https://doi.org/10.1111/j.1936-4490.1997.tb00136.x>

- 717 Conty, L., George, N., & Hietanen, J. K. (2016). Watching Eyes effects: When others meet the self.
718 *Consciousness and Cognition*, 45, 184–197. <https://doi.org/10.1016/j.concog.2016.08.016>
- 719 Clark, T., & Greatbatch, D. (2011). Audience perceptions of charismatic and non-charismatic oratory: The
720 case of management gurus. *The Leadership Quarterly*, 22(1), 22-32.
721 <https://doi.org/10.1016/j.leaqua.2010.12.004>
- 722 Cronshaw, S. F., & Lord, R. G. (1987). Effects of categorization, attribution, and encoding processes on
723 leadership perceptions. *Journal of Applied Psychology*, 72(1), 97. [http://dx.doi.org/10.1037/0021-](http://dx.doi.org/10.1037/0021-9010.72.1.97)
724 [9010.72.1.97](http://dx.doi.org/10.1037/0021-9010.72.1.97)
- 725 Darlington, R. B., & Hayes, A. F. (2016). *Regression analysis and linear models: Concepts, applications,*
726 *and implementation*. New York: The Guilford Press.
- 727 Davidson, R., & MacKinnon, J. G. (1993). *Estimation and inference in econometrics*. Oxford University
728 Press.
- 729 Dear, K., Dutton, K., & Fox, E. (2019). Do ‘watching eyes’ influence antisocial behavior? A systematic
730 review & meta-analysis. *Evolution and Human Behavior*, 40(3), 269-280.
731 <https://doi.org/10.1016/j.evolhumbehav.2019.01.006>
- 732 Dietl, E., Rule, N., & Blickle, G. (2018). Core self-evaluations mediate the association between leaders'
733 facial appearance and their professional success: Adults' and children's perceptions. *The Leadership*
734 *Quarterly*, 29(4), 476-488. <https://doi.org/10.1016/j.leaqua.2018.01.002>
- 735 Dovidio, J. F., & Ellyson, S. L. (1982). Decoding Visual Dominance: Attributions of Power Based on
736 Relative Percentages of Looking While Speaking and Looking While Listening. *Social Psychology*
737 *Quarterly*, 45(2), 106. <https://doi.org/10.2307/3033933>

- 738 Dovidio, J. F., & Ellyson, S. L. (1985). Pattern of Visual Dominance Behavior in Humans. *Power,*
739 *Dominance, and Nonverbal Behavior* (pp. 129–149). New York, NY: Springer New York.
- 740 Ekström, M. (2012). Do watching eyes affect charitable giving? Evidence from a field experiment.
741 *Experimental Economics*, *15*(3), 530–546. <https://doi.org/10.1007/s10683-011-9312-6>
- 742 Emery, N. J. (2000). The eyes have it: the neuroethology, function and evolution of social gaze.
743 *Neuroscience & Biobehavioral Reviews*, *24*(6), 581–604. [https://doi.org/10.1016/S0149-](https://doi.org/10.1016/S0149-7634(00)00025-7)
744 [7634\(00\)00025-7](https://doi.org/10.1016/S0149-7634(00)00025-7)
- 745 Felfe, J. (2006). Validierung einer deutschen Version des “Multifactor Leadership Questionnaire“ (MLQ
746 Form 5X Short). *Zeitschrift für Arbeits-und Organisationspsychologie A&O*, *50*(2), 61-78.
747 <https://doi.org/10.1026/0932-4089.50.2.61>
- 748 Frese, M., Beigel, S., & Schoenborn, S. (2003). Action Training for Charismatic Leadership: Two
749 Evaluations of Studies of a Commercial Training Module on Inspirational Communication of a Vision.
750 *Personnel Psychology*, *56*(3), 671–698. <https://doi.org/10.1111/j.1744-6570.2003.tb00754.x>
- 751 Gerpott, F. H., Lehmann-Willenbrock, N., Silvis, J. D., & Van Vugt, M. (2018). In the eye of the beholder?
752 An eye-tracking experiment on emergent leadership in team interactions. *The Leadership Quarterly*,
753 *29*(4), 523–532. <https://doi.org/10.1016/j.leaqua.2017.11.003>
- 754 Giacomantonio, M., Jordan, J., Federico, F., van den Assem, M. J., & van Dolder, D. (2018). The evil eye:
755 Eye gaze and competitiveness in social decision making. *European Journal of Social Psychology*,
756 *48*(3), 388-396. <https://doi.org/10.1002/ejsp.2336>
- 757 Gobel, M. S., Kim, H. S., & Richardson, D. C. (2015). The dual function of social gaze. *Cognition*, *136*,
758 359–364. <https://doi.org/10.1016/j.cognition.2014.11.040>

- 759 Grabo, A., Spisak, B. R., & Van Vugt, M. (2017). Charisma as signal: An evolutionary perspective on
760 charismatic leadership. *The Leadership Quarterly*, 28(4), 473–485.
761 <https://doi.org/10.1016/J.LEAQUA.2017.05.001>
- 762 Grabo, A., & Van Vugt, M. (2016). Charismatic leadership and the evolution of cooperation. *Evolution
763 and Human Behavior*, 37(5), 399–406. <http://dx.doi.org/10.1016/j.evolhumbehav.2016.03.005>
- 764 Grossmann, T. (2017). The Eyes as Windows Into Other Minds. *Perspectives on Psychological Science*,
765 12(1), 107–121. <https://doi.org/10.1177/1745691616654457>
- 766 Hall, J. A., Coats, E. J., & LeBeau, L. S. (2005). Nonverbal Behavior and the Vertical Dimension of Social
767 Relations: A Meta-Analysis. *Psychological Bulletin*, 131(6), 898–924. [https://doi.org/10.1037/0033-
768 2909.131.6.898](https://doi.org/10.1037/0033-2909.131.6.898)
- 769 Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation,
770 moderation, and conditional process modeling. Retrieved from [http://www.afhayes.com/
771 public/process2012.pdf](http://www.afhayes.com/public/process2012.pdf)
- 772 Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A
773 regression-based approach*. New York, NY, US: Guilford Press.
- 774 Hietanen, J. K., Helminen, T. M., Kiilavuori, H., Kylliäinen, A., Lehtonen, H., & Peltola, M. J. (2018).
775 Your attention makes me smile: Direct gaze elicits affiliative facial expressions. *Biological
776 Psychology*, 132, 1–8. <https://doi.org/10.1016/J.BIOPSYCHO.2017.11.001>
- 777 Holladay, S. J., & Coombs, W. T. (1994). Speaking of visions and visions being spoken: An exploration of
778 the effects of content and delivery on perceptions of leader charisma. *Management Communication
779 Quarterly*, 8(2), 165–189. <https://doi.org/10.1177/0893318994008002002>

- 780 Howell, J. M., & Shamir, B. (2005). The Role of Followers in the Charismatic Leadership Process:
781 Relationships and Their Consequences. *The Academy of Management Review*, 30(1), 96-112.
782 <https://doi.org/10.2307/20159097>
- 783 Hu, L.-T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis:
784 Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1–55.
785 <https://doi.org/10.1080/10705519909540118>
- 786 Jacquart, P., & Antonakis, J. (2015). When does Charisma matter for top-level leaders? Effect of
787 attributional ambiguity. *Academy of Management Journal*, 58(4), 1051–1074.
788 <https://doi.org/10.5465/amj.2012.0831>
- 789 Johnson, S. K., & Dipboye, R. L. (2008). Effects of Charismatic Content and Delivery on Follower Task
790 Performance. *Group & Organization Management*, 33(1), 77–106.
791 <https://doi.org/10.1177/1059601106291072>
- 792 Kalma, A. P., Visser, L., & Peeters, A. (1993). Sociable and aggressive dominance: Personality differences
793 in leadership style?. *The Leadership Quarterly*, 4(1), 45-64. [https://doi.org/10.1016/1048-](https://doi.org/10.1016/1048-9843(93)90003-C)
794 [9843\(93\)90003-C](https://doi.org/10.1016/1048-9843(93)90003-C)
- 795 Kampe, K. K. W., Frith, C. D., & Frith, U. (2003). “Hey John”: Signals Conveying Communicative
796 Intention toward the Self Activate Brain Regions Associated with “Mentalizing”, Regardless of
797 Modality. *The Journal of Neuroscience*, 23(12), 5258–5263. [https://doi.org/10.1523/JNEUROSCI.23-](https://doi.org/10.1523/JNEUROSCI.23-12-05258.2003)
798 [12-05258.2003](https://doi.org/10.1523/JNEUROSCI.23-12-05258.2003)
- 799 Khalid, S., Deska, J. C., & Hugenberg, K. (2016). The Eyes Are the Windows to the Mind. *Personality and*
800 *Social Psychology Bulletin*, 42(12), 1666–1677. <https://doi.org/10.1177/0146167216669124>

- 801 Kingstone, A., Tipper, C., Ristic, J., & Ngan, E. (2004). The eyes have it!: An fMRI investigation. *Brain*
802 *and Cognition*, 55(2), 269–271. <https://doi.org/10.1016/J.BANDC.2004.02.037>
- 803 Kobayashi, H., & Kohshima, S. (1997). Unique morphology of the human eye. *Nature*, 387(6635), 767–
804 768. <https://doi.org/10.1038/42842>
- 805 Koch, S. C., Baehne, C. G., Kruse, L., Zimmermann, F., & Zumbach, J. (2010). Visual Dominance and
806 Visual Egalitarianism: Individual and Group-Level Influences of Sex and Status in Group Interactions.
807 *Journal of Nonverbal Behavior*, 34(3), 137–153. <https://doi.org/10.1007/s10919-010-0088-8>
- 808 Laidlaw, K. E., Rothwell, A., & Kingstone, A. (2016). Camouflaged attention: Covert attention is critical
809 to social communication in natural settings. *Evolution and Human Behavior*, 37(6), 449-455.
810 <https://doi.org/10.1016/j.evolhumbehav.2016.04.004>
- 811 Liuzza, M. T., Cazzato, V., Vecchione, M., Crostella, F., Caprara, G. V., & Aglioti, S. M. (2011). Follow
812 My Eyes: The Gaze of Politicians Reflexively Captures the Gaze of Ingroup Voters. *PLoS ONE*, 6(9),
813 e25117. <https://doi.org/10.1371/journal.pone.0025117>
- 814 McCarthy, A., Lee, K., Itakura, S., & Muir, D. W. (2006). Cultural display rules drive eye gaze during
815 thinking. *Journal of Cross-Cultural Psychology*, 37(6), 717-722. doi: 10.1177/0022022106292079
- 816 McCrae, R. R., & Costa, P. T. (2010). *NEO Inventories For The NEO Personality Inventory-3 (NEO-PI-*
817 *3), NEO Five-Factor Inventory-3 (NEO-FFI-3), NEO Personality Inventory-Revised (NEO PI-R):*
818 *Professional Manual*. PAR.
- 819 Mehrabian, A., & Williams, M. (1969). Nonverbal concomitants of perceived and intended persuasiveness.
820 *Journal of Personality and Social Psychology*, 13(1), 37–58. <https://doi.org/10.1037/h0027993>

- 821 Mio, J. S., Riggio, R. E., Levin, S., & Reese, R. (2005). Presidential leadership and charisma: The effects
822 of metaphor. *The Leadership Quarterly*, *16*(2), 287-294.
823 <http://dx.doi.org/10.1016/j.leaqua.2005.01.005>
- 824 Nettle, D., Nott, K., & Bateson, M. (2012). 'Cycle Thieves, We Are Watching You': Impact of a Simple
825 Signage Intervention against Bicycle Theft. *PLoS ONE*, *7*(12), e51738.
826 <https://doi.org/10.1371/journal.pone.0051738>
- 827 Nevitt, J., & Hancock, G. R. (2001). Performance of bootstrapping approaches to model test statistics and
828 parameter standard error estimation in structural equation modeling. *Structural equation modeling*,
829 *8*(3), 353-377. http://dx.doi.org/10.1207/S15328007SEM0803_2
- 830 Nummenmaa, L., Hyönä, J., & Calvo, M. G. (2006). Eye movement assessment of selective attentional
831 capture by emotional pictures. *Emotion*, *6*(2), 257-268. <https://doi.org/10.1037/1528-3542.6.2.257>
- 832 Oosterhof, N. N., & Todorov, A. (2008). The functional basis of face evaluation. *Proceedings of the*
833 *National Academy of Sciences*, *105*(32), 11087-11092. <https://doi.org/10.1073/pnas.0805664105>
- 834 Panagopoulos, C., & Van der Linden, S. (2016). Conformity to implicit social pressure: the role of political
835 identity. *Social Influence*, *11*(3), 177-184. <https://doi.org/10.1080/15534510.2016.1216009>
- 836 Porciello, G., Liuzza, M. T., Minio-Paluello, I., Caprara, G. V., & Aglioti, S. M. (2016). Fortunes and
837 misfortunes of political leaders reflected in the eyes of their electors. *Experimental Brain Research*,
838 *234*(3), 733-740. <https://doi.org/10.1007/s00221-015-4496-1>
- 839 Preciado, D., Munneke, J., & Theeuwes, J. (2017). Was that a threat? Attentional biases by signals of threat.
840 *Emotion*, *17*(3), 478-486. <http://dx.doi.org/10.1037/emo0000246>
- 841 Prinsen, J., Bernaerts, S., Wang, Y., de Beukelaar, T. T., Cuypers, K., Swinnen, S. P., & Alaerts, K. (2017).
842 Direct eye contact enhances mirroring of others' movements: A transcranial magnetic stimulation

- 843 study. *Neuropsychologia*, 95, 111–118.
844 <https://doi.org/10.1016/J.NEUROPSYCHOLOGIA.2016.12.011>
- 845 Reh, S., Van Quaquebeke, N., & Giessner, S. R. (2017). The aura of charisma: A review on the embodiment
846 perspective as signaling. *The Leadership Quarterly*, 28(4), 486–507.
847 <https://doi.org/10.1016/J.LEAQUA.2017.01.001>
- 848 Riggio, R. E., & Friedman, H. S. (1983). Individual differences and cues to deception. *Journal of*
849 *Personality and Social Psychology*, 45(4), 899–915. <https://doi.org/10.1037/0022-3514.45.4.899>
- 850 Risko, E. F., Anderson, N. C., Lanthier, S., & Kingstone, A. (2012). Curious eyes: Individual differences
851 in personality predict eye movement behavior in scene-viewing. *Cognition*, 122(1), 86–90.
852 <https://doi.org/10.1016/j.cognition.2011.08.014>
- 853 Risko, E. F., Richardson, D. C., & Kingstone, A. (2016). Breaking the Fourth Wall of Cognitive Science.
854 *Current Directions in Psychological Science*, 25(1), 70–74.
855 <https://doi.org/10.1177/0963721415617806>
- 856 Rogers, S. L., Speelman, C. P., Guidetti, O., & Longmuir, M. (2018). Using dual eye tracking to uncover
857 personal gaze patterns during social interaction. *Scientific Reports*, 8(1), 4271.
858 <https://doi.org/10.1038/s41598-018-22726-7>
- 859 Shamir, B., House, R. J., & Arthur, M. B. (1993). The motivational effects of charismatic leadership: A
860 self-concept based theory. *Organization Science*, 4(4), 577–594. [https://doi.org/10.1016/S1048-](https://doi.org/10.1016/S1048-9843(99)00020-X)
861 [9843\(99\)00020-X](https://doi.org/10.1016/S1048-9843(99)00020-X)
- 862 Silvia, P. J., & Beaty, R. E. (2012). Making creative metaphors: The importance of fluid intelligence for
863 creative thought. *Intelligence*, 40(4), 343–351. <https://doi.org/10.1016/j.intell.2012.02.005>

- 864 Siposova, B., Tomasello, M., & Carpenter, M. (2018). Communicative eye contact signals a commitment
865 to cooperate for young children. *Cognition*, *179*, 192-201.
866 <https://doi.org/10.1016/j.cognition.2018.06.010>
- 867 Spence, M. (2002). Signaling in Retrospect and the Informational Structure of Markets. *American*
868 *Economic Review*, *92*(3), 434–459. <https://doi.org/10.1257/00028280260136200>
- 869 Spisak, B. R., Grabo, A. E., Arvey, R. D., & Van Vugt, M. (2014). The age of exploration and exploitation:
870 Younger-looking leaders endorsed for change and older-looking leaders endorsed for stability. *The*
871 *Leadership Quarterly*, *25*(5), 805-816. <https://doi.org/10.1016/j.leaqua.2014.06.001>
- 872 Spisak, B. R., O'Brien, M. J., Nicholson, N., & Van Vugt, M. (2015). Niche construction and the evolution
873 of leadership. *Academy of Management Review*, *40*(2), 291-306.
874 <http://dx.doi.org/10.5465/amr.2013.0157>
- 875 Sy, T., Horton, C., & Riggio, R. (2018). Charismatic leadership: Eliciting and channeling follower
876 emotions. *The Leadership Quarterly*, *29*(1), 58–69. <https://doi.org/10.1016/J.LEAQUA.2017.12.008>
- 877 Thompson, S. J., Foulsham, T., Leekam, S. R., & Jones, C. R. (2019). Attention to the face is characterised
878 by a difficult to inhibit first fixation to the eyes. *Acta Psychologica*, *193*, 229-238.
879 <https://doi.org/10.1016/j.actpsy.2019.01.006>
- 880 Towler, A. J. (2003). Effects of charismatic influence training on attitudes, behavior, and performance.
881 *Personnel Psychology*, *56*(2), 363–381. <https://doi.org/10.1111/j.1744-6570.2003.tb00154.x>
- 882 Trichas, S., Schyns, B., Lord, R., & Hall, R. (2017). “Facing” leaders: Facial expression and leadership
883 perception. *The Leadership Quarterly*, *28*(2), 317-333.
884 <https://doi.org/10.1016/j.leaqua.2016.10.013>

- 885 Tskhay, K. O., Xu, H., & Rule, N. O. (2014). Perceptions of leadership success from nonverbal cues
886 communicated by orchestra conductors. *The Leadership Quarterly*, 25(5), 901–911.
887 <https://doi.org/10.1016/j.leaqua.2014.07.001>
- 888 Tskhay, K. O., Zhu, R., & Rule, N. O. (2017). Perceptions of charisma from thin slices of behavior predict
889 leadership prototypicality judgments. *The Leadership Quarterly*, 28(4), 555–562.
890 <https://doi.org/10.1016/J.LEAQUA.2017.03.003>
- 891 Tskhay, K. O., Zhu, R., Zou, C., & Rule, N. O. (2018). Charisma in Everyday Life: Conceptualization and
892 Validation of the General Charisma Inventory. *Journal of Personality and Social Psychology*, 114(1),
893 131–152. <https://doi.org/10.1037/pspp0000159>
- 894 Wu, D. W. L., Bischof, W. F., & Kingstone, A. (2014). Natural gaze signaling in a social context. *Evolution*
895 *and Human Behavior*, 35(3), 211–218. <https://doi.org/10.1016/j.evolhumbehav.2014.01.005>
- 896 van Knippenberg, D., & Sitkin, S. B. (2013). A Critical Assessment of Charismatic—Transformational
897 Leadership Research: Back to the Drawing Board? *Academy of Management Annals*, 7(1), 1–60.
898 <https://doi.org/10.5465/19416520.2013.759433>
- 899 van Knippenberg, D., & van Kleef, G. A. (2016). Leadership and Affect: Moving the Hearts and Minds of
900 Followers. *Academy of Management Annals*, 10(1), 799–840.
901 <https://doi.org/10.1080/19416520.2016.1160515>
- 902 van Vugt, M., & Grabo, A. E. (2015). The Many Faces of Leadership. *Current Directions in Psychological*
903 *Science*, 24(6), 484–489. <https://doi.org/10.1177/0963721415601971>
- 904 von Hippel, W., Ronay, R., Baker, E., Kjelsaas, K., & Murphy, S. C. (2016). Quick thinkers are smooth
905 talkers: Mental speed facilitates charisma. *Psychological Science*, 27(1), 119–122.
906 <https://doi.org/10.1177/0956797615616255>

- 907 Yukl, G. (1999). An evaluation of conceptual weaknesses in transformational and charismatic leadership
908 theories. *The Leadership Quarterly*, *10*(2), 285–305. [https://doi.org/10.1016/S1048-9843\(99\)00013-2](https://doi.org/10.1016/S1048-9843(99)00013-2)
- 909 Yung, Y. F., & Bentler, P. M. (1996). Bootstrapping techniques in analysis of mean and covariance
910 structures. In G.A. Marcoulides and R.E. Schumacker (Eds.), *Advanced structural equation modeling:
911 Techniques and issues* (pp. 195–226). Hillsdale, NJ: Lawrence Erlbaum.

Table 1

Means, standard deviations, and Pearson product-moment correlations among the two measures of eye-directed gazing and the self-rated variables charisma influence, charisma affability, and the five factors of personality.

	<i>M</i>	<i>SD</i>	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Age	21.08	2.19											
2. Gender ^a	.74	.44	-.16										
3. Count of eye fixations	482.84	269.09	-.01	.01									
4. Duration of eye fixations [s]	185.89	106.17	-.08	-.06	.85 ***								
5. Charisma influence	3.11	.83	-.04	-.25 *	.33 **	.29 **	(.89)						
6. Charisma affability	3.94	.63	-.13	.12	.20	.14	.42 ***	(.75)					
7. Neuroticism	2.82	.77	-.18	.29 **	-.06	-.08	-.37 ***	-.43 ***	(.89)				
8. Extraversion	3.22	.58	.00	.06	.19	.17	.52 ***	.56 ***	-.58 ***	(.80)			
9. Openness	3.88	.52	-.12	-.04	-.12	-.10	.08	.22	-.01	-.01	(.74)		
10. Agreeableness	3.86	.49	-.13	.21	.15	.13	-.26 *	.34 **	-.22 *	.21	-.05	(.76)	
11. Conscientiousness	3.53	.54	.01	.08	.14	.04	.24 *	.30 **	-.32 **	.15	.02	.13	(.80)

Note. *N* = 80. Reliabilities are presented along the diagonal in parentheses.

* *p* < .05, ** *p* < .01, *** *p* < .001

^a Dummy variable (0 = male, 1 = female)

Table 2

Results of the regression analyses, assessing the additional variance in the amount and duration of eye fixations explained by the inclusion of both charisma subscales, influence and affability (Model 2), to the model containing the five factors of personality (Big 5; Model 1).

Variables	Count of eye fixations		Duration of eye fixations	
	Model 1	Model 2	Model 1	Model 2
Neuroticism	.15 (.16)	.19 (.16)	.05 (.16)	.10 (.16)
Extraversion	.23 (.15)	-.02 (.17)	.18 (.15)	-.05 (.16)
Openness	-.11 (.14)	-.13 (.14)	-.09 (.14)	-.10 (.14)
Agreeableness	.11 (.11)	.32* (.12)	.10 (.11)	.31* (.13)
Conscientiousness	.14 (.12)	.05 (.12)	.01 (.12)	-.06 (.12)
Charisma influence		.50** (.15)		.48** (.15)
Charisma affability		-.01 (.13)		-.06 (.14)
R^2	.08	.22	.05	.16
F -Statistic	$F(5,74) = 1.34$	$F(7,72) = 3.47^{**}$	$F(5,74) = .70$	$F(7,72) = 2.30^*$

Note. $N = 80$. Standardized coefficients are reported.

Robust standard errors (HC3) are displayed below the estimates in parentheses.

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 3

Means, standard deviations, and Pearson product-moment correlations among the two measures of eye-directed gazing and the self-rated variables prototypicality, leader's charisma (selection from transformational leadership scale), the Conger-Kanungo scale (C-K Scale), affective identity motivation to lead (Affective MTL), and dominance.

	<i>M</i>	<i>SD</i>	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Age	22.25	2.83									
2. Gender ^a	.55	.50	-.14								
3. Count of eye fixations	429.07	234.45	.18	.06							
4. Duration of eye fixations [s]	174.72	106.04	.15	.00	.81 ***						
5. Leader's charisma	3.63	.42	.16	-.17	.33 **	.27 *	(.78)				
6. C-K Scale	4.01	.56	.14	-.10	.29 *	.17	.56 ***	(.84)			
7. Prototypicality	4.91	1.53	-.20	-.30 **	-.02	-.02	.38 **	.37 **	(.80)		
8. Affective MTL	3.00	.88	-.05	-.09	-.02	-.03	.31 **	.33 **	.72 ***	(.92)	
9. Dominance	3.61	.58	-.10	-.33 **	.03	-.03	.42 ***	.39 ***	.62 ***	.61 ***	(.76)

Note. *N* = 73. Reliabilities are presented along the diagonal in parentheses.

* $p < .05$, ** $p < .01$, *** $p < .001$

^a Dummy variable (0 = male, 1 = female)

Table 4

Means, standard deviations, and Pearson product-moment correlations among the two measures of eye-directed gazing and the observer-rated variables prototypicality, leaders' charisma (selection from transformational leadership scale), the five first impression measures (7.-11.), and the four measures of observer's sensitivity (12.-15.).

	<i>M</i>	<i>SD</i>	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. Age	22.25	2.83														
2. Gender ^a	.55	.50	-.14													
3. Count of eye fixations	429.07	234.45	.18	.06												
4. Duration of eye fixations [s]	174.72	106.04	.15	.00	.81 ***											
5. Leader's charisma	3.30	.59	.34 **	-.09	.29 *	.33 **	(.95)									
6. Prototypicality	4.46	1.43	.32 **	-.21	.27 *	.30 *	.92 ***	(.95)								
7. Charismatic	5.19	1.02	.30 **	-.23	.26 *	.31 **	.87 ***	.88 ***								
8. Intelligent	5.90	.70	.22	-.01	.24 *	.34 **	.82 ***	.81 ***	.75 ***							
9. Dominant	4.60	1.20	.27 *	-.29 *	.26 *	.31 **	.72 ***	.84 ***	.81 **	.68 ***						
10. Trustworthy	5.80	.90	.23 *	.03	.19	.30 **	.79 ***	.71 ***	.70 ***	.82 ***	.48 ***					
11. Attractive	5.16	.98	-.15	.01	.02	.09	.27 *	.30 *	.41 ***	.43 ***	.32 **	.35 *				
12. Eye Gaze (eye contact)	3.63	.50	.12	-.15	.33 **	.39 ***	.69 ***	.74 ***	.68 ***	.63 ***	.74 ***	.47 ***	.44 ***			
13. Eye Gaze (focus)	3.04	.49	.16	-.25 *	.19	.30 **	.65 ***	.74 ***	.64 ***	.60 ***	.74 ***	.42 ***	.42 ***	.88 ***		
14. Facial Expression (strong)	2.58	.70	.21	.19	.12	.17	.55 **	.41 ***	.58 ***	.40 ***	.32 **	.42 ***	.30 *	.29 *	.20	
15. Gestures (strong)	1.71	.72	.37 **	.01	.14	.13	.44 **	.31 **	.39 ***	.27 *	.29 *	.25 *	-.09	.18	.08	.52 ***

Note. *N* = 73 participants; *N* = 584 ratings. Reliabilities are presented along the diagonal in parentheses.

* *p* < .05, ** *p* < .01, *** *p* < .001

^a Dummy variable (0 = male, 1 = female)