



Perceptions of leadership success from nonverbal cues communicated by orchestra conductors

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ARTICLE INFO

Article history:

Received 14 May 2013

Received in revised form 30 June 2014

Accepted 1 July 2014

Available online 25 July 2014

Handling Editor: John Antonakis

Keywords:

Leadership

Success

Thin slices

Nonverbal behavior

Music

ABSTRACT

Research has suggested that people can extract information relevant to leadership from thin slices of behavior. Nearly all of this research has been conducted in the context of large organizations where the relationships between leaders and followers are relatively indirect, however. We therefore examined here whether participants could extract similar information about leadership success from contexts with direct leader–follower interactions: conductors of orchestras. We found that perceivers could accurately discern conductors' success from brief video clips and that perceptions of expressiveness and age formed the basis for this accuracy. Thus, the current work demonstrates that leadership success is perceptible from nonverbal cues not only for the leaders of large organizations, but also in the context of groups where leaders and followers must continually and dynamically interact to produce successful outcomes.

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Researchers have demonstrated that, within seconds of seeing people, individuals instantly and effortlessly perceive various characteristics from others' appearance and brief "thin slices" of their nonverbal behaviors (Ambady & Rosenthal, 1992; Tskhay & Rule, 2013). Some of this research has suggested that leadership success can be perceived from leaders' faces alone (Rule & Ambady, 2008; Rule & Tskhay, 2014). For example, studies have reported that perceptions of power from Chief Executive Officers' (CEOs') faces significantly correlate with their companies' profits but not revenues (e.g., Rule & Ambady, 2008). These findings suggest that people may hold valid implicit beliefs about how a leader should look and possibly how he or she should behave. These beliefs, furthermore, are theoretically shared among multiple people (Epitropaki & Martin, 2004) and ultimately combine to form prototypes of leadership (Lord, Brown, Harvey, & Hall, 2001; Lord, Foti, & De Vader, 1984). Importantly, research has suggested that the stimulation of just a few implicit beliefs about leadership can potentially activate the entire overarching schema (i.e., prototype), which then will guide the perception of someone as a leader, either accurately or inaccurately. The previous research has mainly focused on the link between implicit leadership beliefs and accurate perceptions of success, however, side-stepping the intermediate stage of prototype activation. Thus, the first goal of the current work was to demonstrate that implicit leadership beliefs inform leadership prototypes, which then lead to evaluations of targets' leadership that are sometimes valid predictors of leadership success.

Although previous data linking implicit leadership theories to leaders' behaviors without addressing prototype activation are informative, they are limited to leaders who are far removed from their followers (e.g., only the top management team members tend to have direct contact with their CEOs). Much less research has been conducted within the context of close physical and social distance among leaders and followers, including the important and related process of how leaders dynamically project influence onto followers (Antonakis & Atwater, 2002). It therefore remains unclear whether successful leaders exhibit nonverbal behaviors

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that match people's implicit beliefs or are selected based on implicit beliefs that do not necessarily reflect their actual behavior (e.g., Lord et al., 1984; Offermann, Kennedy, & Wirtz, 1994). The second goal of the current work was therefore to examine whether implicit leadership beliefs result in valid impressions of success by studying leaders engaged in direct and immediate interactions with their followers.

To address both aims of the current work, we examined the relationship between judgments of leadership from nonverbal cues that are present in groups, rely on close and direct interaction between the leader and followers, generalize beyond the context of business and politics, are dynamic and continuous rather than static, and focus on the body instead of the face: the leadership success of orchestra conductors.

Implicit leadership theories, prototypes, and context

A number of studies within the social sciences and organizational behavior have suggested that people hold beliefs about the traits and behaviors that demarcate successful leaders—implicit leadership theories (e.g., Eden & Leviatan, 1975; House, Javidan, Hanges, & Dorfman, 2002; Lord et al., 1984; Offermann et al., 1994; Rush, Thomas, & Lord, 1977). Moreover, cross-cultural research (e.g., project GLOBE; House et al., 2002) suggests that some beliefs about leadership tend to be shared across national borders and may be universal whereas other beliefs seem to be culture-specific; implicit leadership beliefs therefore may be at least partially bound to the culture in which they arise (see Abdalla & Al-Homoud, 2001; Den Hartog, House, Hanges, Ruiz-Quintana, & Dorfman, 1999; Javidan & House, 2002; Koopman, Den Hartog, Konrad, et al., 1999). Nevertheless, these implicit leadership beliefs, in theory, manifest in perception and aggregate to form leader prototypes—abstract and sometimes naive representations of leadership (also referred to as “leadership schemata;” Lord et al., 2001, 1984). One function of leader prototypes could be to help identify leadership by decompressing the relatively ambiguous set of perceptual cues that signals leadership and renders leadership selection highly complex. Thus, unlike simple judgments that require little inference (e.g., perceptions of race; MacLin & Malpass, 2001; Maddox, 2004), people may use prototypes of leadership that are based on their implicit leadership theories as a way to identify leadership-relevant traits that allow them to infer others' leadership potential and ability (Butler & Geis, 1990).

In the case of charismatic leadership, for example, the rhetoric of leaders' speeches may be important to the perceptions of leadership. Independent of their speeches' content, charismatic leaders are also characterized by a variety of expressive signals (Shamir, Arthur, & House, 1994). Indeed, research has demonstrated that a number of nonverbal behaviors are associated with believing and perceiving someone to be in a position of power (e.g., Brooks, Church, & Fraser, 1986; Hall, Coats, & LeBeau, 2005). For example, when people think about someone of higher social status or with greater power, they tend to think of expressive behavior (e.g., gesturing more; Hall et al., 2005). Not surprisingly, these descriptors tend to be somewhat accurate: charismatic leaders use a variety of linguistic structures (e.g., metaphors and repetitions) and nonverbal expressions to reinforce their messages and influence their followers (Den Hartog & Verbarg, 1998; Newcombe & Ashkanasy, 2002). Thus, implicit thoughts about leadership seem to match the behaviors of real-world leaders and might therefore be used to predict leadership outcomes.

Indeed, a growing body of research shows not just that people make subjective judgments about leadership from appearance and nonverbal behavior, but that these judgments can sometimes actually predict real-world outcomes (Benjamin & Shapiro, 2009; Rule & Ambady, 2010; Rule & Tskhay, 2014; Sanchez-Cortes, Aran, Mast, & Gatica-Perez, 2010; Stein, 1975). For example, political candidates showing greater expressions of affect and more eye gaze during interviews are evaluated more positively (McGovern & Tinsley, 1978). Furthermore, perceivers—even children—can accurately judge political candidates' electoral success from nothing more than photos of their faces (Antonakis & Dalgas, 2009; Poutvaara, Jordahl, & Berggren, 2009; Rule et al., 2010; Todorov, Mandisodza, Goren, & Hall, 2005). Some research has also suggested that this ability to distinguish between winning and losing political candidates may arise from a proclivity to exclude the candidate identified as not fitting the leadership prototype (Gentry & Duke, 2009). Even in cases where success is not defined by popular opinion, as it is for electoral success, researchers have found that outcomes can be predicted from facial cues. For instance, the financial performance of Fortune 1000 companies and top law firms can be judged significantly better than chance guessing from photos of the faces of their leading executives (Rule & Ambady, 2008, 2009, 2011a, 2011b; Rule & Tskhay, 2014). Thus, the use of leadership prototypes can predict both the subjective consensus of other people as well as objective measures of leadership.

However, it is important to consider how different contextual factors could play a role in accurate perceptions of leadership success (Johns, 2006; Lord et al., 2001, 1984). To date, most research on perceptions of leadership from nonverbal cues has focused on predicting success within the context of large organizations (e.g., politicians and CEOs). In such contexts, however, the leader's followers or constituents rarely have direct contact with him or her unless they hold more advanced positions within the organizational or political structure—thus, the social distance is high and the interaction frequency is low (Antonakis & Atwater, 2002; Rule & Ambady, 2008). It remains unclear, then, whether perceptions of leadership might also predict leadership success when leaders and followers actually interact. In such contexts, leaders tend to be relatively close to their subordinates and, thus, become a focal point of influence by aligning and providing direction to followers (Drath et al., 2008).

Interestingly, some theoretical accounts have argued that leaders may not match their followers' expectations when the leaders and followers are relatively “close” (Katz & Kahn, 1978). However, previous work has found that, although distant leaders were described as more prototypical than close leaders, distant leaders were no more idealized (Shamir, 1995). Given that leaders of large organizations, such as politicians and CEOs, often serve as public images for their organizations—effective mascots, in some high profile cases—the nonverbal behaviors they evince might be more carefully crafted and polished for the public (e.g., Ranft, Zinko, Ferris, & Buckley, 2006). Political parties and companies might therefore seek chiefs and representatives based on their public relation abilities rather than their leadership qualities, delegating the actual labor of leadership (i.e., alignment and direction) to a

highly competent support staff. Any relationship between leadership success and nonverbal cues could therefore be the product of more successful organizations selecting a better representative figurehead rather than leaders with particular nonverbal attributes showing a greater capability to lead their organizations to success. Thus, it could be the case that (1) the relationship between fitting a leadership prototype and corporate or electoral success is an artifact of organizational efforts rather than actual ability, or (2) successful leaders truly fit the leadership prototypes and implicit theories that people hold. To resolve these possibilities, it is critical to examine leaders while they are in the process of aligning and directing their followers.

Orchestra conductors

Leadership outcomes have been conceptualized in terms of alignment, direction, and commitment (Drath et al., 2008). Thus, the work of leadership requires inspiring, coordinating, and managing diverse individuals (Bass, 1985). A skilled motivator might therefore rely on a particular set of behaviors to bring the followers together (e.g., Bluedorn & Jaussi, 2008). Indeed, a good leader must be able to continuously align his or her followers towards a common goal (Conger & Kanungo, 1987; Shamir et al., 1994). In charismatic leadership, for example, leaders direct and align people through superior rhetoric and nonverbal expression (Shamir, 1995; Shamir et al., 1994). Charismatic leadership is also based on the quality of the leader–follower information exchange, the congruence between different expressions, and the fit between followers' expectations and leaders' behavior (Dorfman, Javidan, Hanges, Dastmalchian, & House, 2012; Sullivan & Masters, 1988). A leader who is able to continuously align followers with a common goal and fits their expectations should therefore be more successful. One such context that is illustrative of the importance of leadership in groups with continuous direct contact is between orchestra conductors and musicians.

Both conductors and musicians train for years to achieve the alignment and coordination that are necessary for superior performance (Hunt, Stelluto, & Hooijberg, 2004). Indeed, great musical performance is a function of the complex and synergistic language of sensorimotor communication (D'Ausilio et al., 2012; Wöllner & Auhagen, 2008). Research has demonstrated that conductors, like other leaders, evoke the power of charismatic leadership—and nonverbal expressiveness in particular—to guide musicians during their performance (Byo & Austin, 1994; House, 1998; Shamir et al., 1994; Wöllner & Auhagen, 2008). Indeed, the success of both musicians and conductors should be proportional to the quality of both the conductors' communication and the ability of the musicians to interpret the conductors' expressive gestures in real time. Thus, those conductors who are able to produce a powerful performance by directing and aligning the musicians well, all else being equal, should be rewarded and recognized within the musical community (Duell, 2013). Furthermore, conductors' success and recognition should only partly depend on who the followers are and rely more on the production of the musical pieces themselves (D'Ausilio et al., 2012).

Orchestra conductors therefore provide an ideal opportunity to examine the validity of leadership prototypes in perceptions of success. Unlike CEOs, conductors have to continuously interact with, as well as direct and align, musicians to achieve high quality performance and recognition (D'Ausilio et al., 2012). This is important because the context of the interaction isolates the conductor as leader—performing a specific task—obviating the possibility that the conductor has been selected merely to serve as the face of the orchestra. Indeed, focusing on conductors allows examination of individuals' leadership success. Although CEOs, politicians, and managing partners of law firms make decisions for their constituents, teams of highly trained specialists provide tremendous support and coordination (e.g., Wong, Ormiston, & Haselhuhn, 2011). Because orchestra conductors enact leadership in the context of a performance, their leadership corresponds to a specific time-sensitive event. As their leadership success is directly tied to performance in the moment (conductors cannot simply walk down from their podium and ask for assistance), they must align and direct their followers contemporaneously. These features allow us to examine whether leadership prototypes predict leaders' success in a domain very different from that studied in the past research.

Current study

In the current work, we aimed to demonstrate that leadership prototypes truly describe the behaviors of successful leaders and are not a mere reflection of selecting leaders who fit these prototypes without actually influencing their followers (Ranft et al., 2006). In light of the literature suggesting that the perception of traits and holistic judgments of leadership are correlated with both objective and subjective outcomes (e.g., Benjamin & Shapiro, 2009; Rule & Ambady, 2008), and that conductors' success is theoretically a function of their ability to align and direct an orchestra towards producing a superior performance, it is conceivable that perceivers might be able to accurately identify whether a conductor is generally successful from briefly observing these leaders in action. Indeed, because successful execution of a musical piece is proportional to the ability to align musicians and is therefore rewarded (D'Ausilio et al., 2012; Wöllner & Auhagen, 2008), we reasoned that public and peer recognition would be an excellent indicator of conductors' leadership success.

Although the majority of work examining the relationship between leadership and nonverbal cues has focused on static facial appearance, some previous work demonstrated that politicians' electoral success could be perceived from short clips of political debates (Benjamin & Shapiro, 2009). The present investigation expands on this work by examining perceptions of leadership in the context of dynamic and continuous nonverbal interaction; that is, the bodily movements and gestures of orchestra conductors do not accompany spoken language and therefore serve as the sole medium of leadership influence during a performance (D'Ausilio et al., 2012). Thus, we examined perceptions of leadership in the context of bodily cues alone. Obscuring the information communicated by the face and concentrating on the body allowed us to isolate the main channel of orchestra conductors' communication to their followers: their body movements (D'Ausilio et al., 2012). Thus, we were interested in the interrelationships between leaders' nonverbal behaviors, perceivers' implicit leadership theories, and the leaders' success.

Given that previous research has suggested (a) that prototypically exceptional leadership might be marked by greater expressiveness (e.g., Hall et al., 2005; McHugo, Lanzetta, & Bush, 1991; Newcombe & Ashkanasy, 2002; Seiter & Weger, 2005; Seiter, Weger, Jensen, & Kinzer, 2010; Shamir et al., 1994; Sullivan & Masters, 1988), (b) that expressiveness is generally a visible behavior (Duclos et al., 1989; Pitterman & Nowicki, 2004; Wilbarger, Reed, & McIntosh, 2011), and (c) that greater expressiveness can improve interpersonal communication and leadership outcomes (Masters, Sullivan, Feola, & McHugo, 1987; McHugo et al., 1991), we expected that participants would use this naïve leadership theory about expressiveness to infer leadership success.

Hypothesis 1. Perceived expressiveness will positively predict perceived leadership success.

Additionally, some previous research has suggested that stereotypes about the relationship between age and ability (e.g., shrewdness and intelligence; Berry & McArthur, 1985, 1986) may be somewhat valid (older people tend to be wiser; Grossman et al., 2012). Thus, it could be the case that perceptions of age from appearance and motion would also serve as cues to prototypical leadership; thus, perceivers may expect older conductors to be more successful. Because other variables, such as perceived speed of conducting, conductors' general skill, and years of experience (i.e., competence) could also explain the link between actual and perceived success, we examined these variables as additional components of prototypical leadership (i.e., perceived success). However, we did not have any specific predictions regarding these measures.

Hypothesis 2. Perceived age will positively predict perceived leadership success.

Last, as the previous literature suggests that both expressiveness and age may be prototypical indicators of successful leadership that distinguish individuals in the real world (reflected in our Hypotheses 1 and 2), we examined a theoretical model in which leadership prototypes mediated the relationship between implicit leadership theories and actual leadership success. Specifically, we examined whether people rely on conductors' expressiveness and apparent age to infer leadership prototypes, which they then use to evaluate the conductors' success. Central here is the link between perceptions of success and actual success.

Previous research suggested that people utilize leadership theories to make inferences about others' success (Lord et al., 2001, 1984). Furthermore, people tend to extract information about leadership rapidly and somewhat accurately from simply looking at people's faces (Benjamin & Shapiro, 2009; Rule & Ambady, 2010; Rule & Tskhay, 2014). People's impressions of leadership may therefore sometimes align with actual indicators of leadership success and, thus, form a kernel of truth (Berry, 1990). In other words, there seems to be substantial overlap between effective leaders' actions, appearances, and how they are perceived. Thus, we propose that:

Hypothesis 3. Perceived leadership will positively predict actual success.

The primary focus of this investigation was to explore the role of leadership prototypes when judging leadership for groups in which the leader–follower exchange is direct, continuous, and explicitly interpersonal—parallel to what past studies have shown for the leaders of large organizations (e.g., Rule & Ambady, 2008). To examine this, we asked participants to watch conductors in the act of aligning their musician followers towards producing an exceptional performance and to judge the leadership ability of the conductors based on brief video clips. We then related these judgments to consensually-accepted measures of conductors' achievement that result from consistent excellence in reproducing musical pieces (i.e., the number of times searched on Google,¹ the number of awards received, and the number of unique venues conducted). Conductors' interactions with followers are direct and dynamic in nature, providing extensions beyond the prevalent focus on static faces in the research on perceptions of leadership from nonverbal cues. Conductors' nonverbal behavior is also unique in that it serves as the primary medium for communicating with the orchestra (versus the more typical case in which nonverbal behaviors simply underscore and emphasize verbal messages). We saw these differences as advantages for helping to inform the nature of the relationship between leadership prototypes and inferences of leadership success by providing multiple opportunities to generalize beyond the findings of the established literature in several new directions.

Method

Stimulus generation

Fifty-one video recordings were downloaded from a video-sharing website (www.youtube.com). Twenty-four videos were of famous conductors leading an orchestra and 27 were of conductors who were less well known. Research assistants searched for the videos using the following terms: conductor, music, orchestra, symphony, and concerto. Although the research assistants were specifically instructed to find and download an approximately equal number of successful and less successful conductors, they were also instructed to be impartial in selecting the videos. Thus, research assistants downloaded the first high-quality video of orchestra conducting. An independent group of participants ($n = 22$) then rated 46 of the videos (we removed five clips in which the audience was visibly present) for quality in random order at a self-paced rate using a one-item 7-point scale (1 = Low quality;

¹ We quantified the number of Google searches using Google's AdWords Count: <https://support.google.com/adwords>. Previous research used this variable to examine people's fame (Bagrow & Ben-Avraham, 2005; Bagrow, Rozenfeld, Bolt, & Ben-Avraham, 2004; Simkin & Roychowdhury, 2006). Not surprisingly, this research generally finds that individuals' levels of achievement correlate significantly with the number of Google Searches about them.

7 = High quality; inter-rater reliability Cronbach's $\alpha = .88$). Although research assistants might have unconsciously selected videos that made successful conductors look even more successful and less successful conductors look particularly unsuccessful, we found no evidence of differences in ratings of the quality of the videos: $t(44) = 0.35, p = .73, r = .05$.

We used conductors' biographies to differentiate famous and non-famous conductors. Famous conductors were leaders of national orchestra performances or had won prestigious awards (e.g., a Grammy Award) at some point in their career whereas the non-famous conductors led local orchestras and had not won any major awards. We looked at the predictors of accuracy in a structural equation modeling analysis and estimated a continuous latent measure of the leaders' actual success. Specifically, research assistants obtained three continuous variables that served as indicators of success: the number of times the conductor was searched on Google, the number of venues at which the conductors performed, and the number of recognitions and awards—all of these variables, as described in the results section below, loaded on the latent Success factor and independently distinguished between successful and less successful conductors (all $t_s > 2.19, p_s < .03, r_s > .31$).² Importantly, because we used these variables as indicators of a latent construct, we effectively accounted for unreliability in the measurement (Ree & Carretta, 2006).

All of the conductors were Caucasian men, wore formal attire, and led the orchestra facing the camera. We coded for the number of years since the pieces were originally composed and found that more famous conductors ($M = 142.83$ years, $SD = 59.31$) performed older pieces than did less famous conductors ($M = 87.86$ years, $SD = 78.37$): $t(40) = 2.56, p = .01, r = .38$. Thus, to minimize differences that might be apparent in any given era, we extracted clips of continuous dynamic information from each video for each target by capturing the first 10 s of uninterrupted conducting. The videos were spatially cropped to present only the target's upper body. We further removed the color and sound information from the clips and applied a Gaussian blur to each frame to eliminate the information that could be communicated by the face (e.g., mild facial expressions, facial attractiveness).³ Although we implemented the most common and accepted control procedures in the person perception literature, some remaining information might be difficult to control (see the Discussion section below).

Music Parameters

Five hypothesis-blind and musically-trained research assistants (all holding certification from the Royal Conservatory of Music) independently examined a subset of the 10-s audio tracks from the extracted clips in random order ($n = 26$) and provided continuous judgments of tempo ("How fast?" inter-rater reliability Cronbach's $\alpha = .93$), dynamics ("How loud?" inter-rater reliability Cronbach's $\alpha = .91$), melody ("How lyrical?" inter-rater reliability Cronbach's $\alpha = .84$), timbre ("How dark?" inter-rater reliability Cronbach's $\alpha = .89$), as well as categorical judgments of meter (e.g., 4/4 times) and harmony (e.g., major). This procedure allowed us to ensure that the 10-s segments of musical information did not differ between famous and less famous conductors when each was tested independently with correction for multiple comparisons ($\alpha = .0083$): $t_s < 2.44, p_s > .02; \chi^2_s < 1.00, p_s > .36$. Thus, it is unlikely that the performed musical pieces themselves communicated any information about conductors' success.⁴

Procedure

Success ratings

Twenty-one undergraduates ($n = 15$ female) participated for partial credit in an introductory psychology course. Participants were told that they would be seeing a series of video clips of orchestra conductors and were instructed to categorize the target as being either "famous" or "not famous" via key-press at a self-paced rate. The presentation order of the video clips was random and the participants were encouraged to base their judgments on their first impression.

Ratings of conductor characteristics

Independent groups of undergraduates rated the conductors in the clips on one of several one-item 7-point scales (anchors: 1 = *Not at all X*, 7 = *Very X*), as in other studies examining perceptions of leadership (e.g., Rule & Ambady, 2009). We assessed each conductor's expressiveness ("How expressive?"; $n = 27$, inter-rater reliability Cronbach's $\alpha = .94$) and perceived age ("How old?"; $n = 35$, inter-rater reliability Cronbach's $\alpha = .98$). Furthermore, we collected data on perceived skill ("How skilled?"; $n = 22$, inter-rater reliability Cronbach's $\alpha = .83$), speed of conducting ("How fast?"; $n = 22$, inter-rater reliability Cronbach's $\alpha = .97$), and years of experience (indicated by the number of years since graduation from a conservatory or since obtaining an advanced degree; this information was available for 42 conductors) to serve as additional potential predictors of perceived success. All clips were presented in random order.

Analytic strategy

As all of the measures demonstrated an acceptable level of inter-rater reliability, the scores for each were aggregated across participants to calculate the average for each target along each variable. Because we hypothesized that the relationship between perceptions of conductors' success and their actual status would relate differently to the various characteristics that we examined, we

² Applying a Bonferroni correction for multiple comparisons ($\alpha = .016$) changed the outcome of only one test (Google searches), which then became marginally significant.

³ Research assistants adjusted the radius of the Gaussian blur so that the stimuli would appear relatively uniform.

⁴ For interested readers, sample stimuli are available in the supplementary materials.

derived a continuous measure of perceived success by calculating the proportion of participants categorizing each target as famous from the categorical judgments made by participants and then related this continuous measure of perceived success to targets' scores along each of our variables.

The data were analyzed using structural equation modeling implemented in R via the lavaan package (Rosseel, 2012) according to the recommendations of Antonakis, Bendahan, Jacquart, and Lalive (2010). Specifically, we estimated a model in which only expressiveness and perceived age predicted leadership success, which in turn predicted a latent variable that we labeled actual success. Actual success was constructed using three indicators: number of awards, number of (Google) searches, and the number of venues. We constrained the number of venues to 1 to ensure model identification. A significant path between perceptions of success and actual success should be interpreted as accuracy in inferring leadership from the video clips. To test whether the perception of success was a mediator between perceived expressiveness, perceived age, and actual success, we did not specify paths between the two exogenous variables (i.e., years of experience and expressiveness) and the latent factor actual success; we tested the indirect effects instead (Sobel, 1982). Furthermore, to ensure consistency of the estimates, we examined the model with correlations between the endogenous disturbances (Antonakis et al., 2010).⁵ Even given the relatively small effective sample size ($N = 42$), these procedures should provide consistent model estimates.

Because older conductors would logically be more likely to have had more performances (and, thus, at more locations) and been working longer such that they have had more opportunities to receive awards and be searched on Google, we used years of experience as an exogenous predictor of age. Previous research findings further support this decision by reporting strong correlations between age and experience in skill- and speed-based jobs ($r_s > .61$; Giniger, Dispenzneri, & Eisenberg, 1983). Thus, years of experience are a reasonable measure of age, as older conductors are more likely to have more years of experience. Similarly, we assumed that expressiveness is an appropriate instrumental variable. Previous studies suggest that nonverbal expressiveness is consistent (a) over time, (b) within individuals, and (c) across situations, suggesting that it may be a personality dimension (Gallaher, 1992). Consistent with this, researchers have suggested that this variable is determined by both genetics (Farber, 1981) and family socialization (Halberstadt, 1986). Thus, expressiveness was modeled as an exogenous latent instrument with one indicator; we constrained the residual variance of the indicator to $(1 - \text{reliability}) \times \text{Sample Variance}$ (i.e., 0.08; Bollen, 1989). We present unstandardized estimates (Greenland, Schlesselman, & Criqui, 1986; King, 1986) and a conventional model fit index (i.e., χ^2). Importantly, because χ^2 may be biased when sample sizes are small (as in the case of the current work), we implemented a Swain correction in our analysis to adjust the model χ^2 for small sample size and model complexity (Herzog & Boomsma, 2009).

Results

First, we explored the cues that participants used to categorize conductors as “successful” via multiple regression (see Table 1 for zero-order correlations). As mentioned above, we predicted that perceived expressiveness and age would be the primary contributors to a prototype of leadership success, thereby demarcating the implicit leadership beliefs that the participants held. Thus, we were interested in cues that people use to infer how successful a conductor might be.

The results indicated that none of perceived skill [$b = 0.01, SE = 0.04; t(36) = 0.26, p = .80$], perceived speed [$b = 0.005, SE = 0.03; t(36) = 0.16, p = .88$], nor years of experience [$b = 0.003, SE = 0.002; t(36) = 1.33, p = .19$] reliably predicted perceived success. Perceived expressiveness [$b = 0.05, SE = 0.03; t(36) = 1.70, p = .097$] was a marginally significant predictor of perceived success and perceived age [$b = 0.07, SE = 0.03; t(36) = 2.44, p = .02$] was a significant predictor of perceived success in the overall regression model. Eliminating the non-significant predictors revealed that perceived expressiveness [$b = 0.06, SE = 0.02; t(43) = 3.36, p = .002$] and perceived age [$b = 0.10, SE = 0.02; t(43) = 4.99, p < .001$] simultaneously predicted perceptions of success, supporting our hypothesis that participants believe expressiveness and age to be prototypical of successful orchestra leaders; we used these two variables in the formal estimation of the structural model to fully test our hypotheses.

The hypothesized model fit the data well, $\chi^2(9) = 9.90, p = .36$; Swain-corrected $\chi^2(9) = 9.08, p = .43$ (Herzog & Boomsma, 2009). First, the model demonstrated that perceived age was predicted by years of experience [$b = 0.05, SE = 0.009; Z = 5.47, p < .001$] but not expressiveness: $b = 0.03, SE = 0.11; Z = 0.23, p = .82$. The model further showed that conductors who were perceived to be older were also perceived as more successful: $b = 0.13, SE = 0.03; Z = 3.92, p < .001$. Similarly, conductors perceived as more expressive were perceived to be more successful: $b = 0.06, SE = 0.02; Z = 3.04, p = .002$. Perceptions of success, in turn, predicted the latent construct of Actual Success: $b = 51.30, SE = 20.79; Z = 2.47, p = .01$. The indirect effect from expressiveness to actual success through perceptions of success was statistically significant ($b = 3.24, SE = 1.61; Z = 2.02, p = .04$), as was the indirect effect from years of experience via perceived age and perceived success to actual success: $b = 0.35, SE = 0.13; Z = 2.71, p = .007$. In sum, the model fit the theoretical predictions and fared well analytically. See Fig. 1.⁶

Discussion

The goal of the current work was to examine the validity of implicit leadership theories and leadership prototypes in situations where direct interaction between leaders and followers is necessary for success. We found that perceptions of conductors'

⁵ A joint Hausman (1978) test of endogeneity of the disturbances of perceived age with perceived success and perceived age with actual success was highly significant: $\chi^2(2) = 17.72, p < .001$.

⁶ Additionally, we calculated the variance explained in perceived age ($R^2 = .88$), perceived success ($R^2 = .11$), and actual success ($R^2 = .60$) using the procedures outlined by Bentler and Raykov (2000) for non-recursive structural equation models.

Table 1
Zero-order Pearson product-moment correlations between the variables of interest.

	M (SD)	2	3	4	5	6	7	8	9
1. Perceived skill	4.21 (0.71)	.33*	.51***	.36**	.06	-.06	-.16	.13	.45***
2. Perceived age	4.05 (1.10)	-	-.05	.56***	.03	-.10	.06	.61***	.01
3. Perceived speed	3.86 (1.32)		-	.24	.05	.07	-.04	-.06	.76***
4. Perceived success	0.47 (0.19)			-	.21	.08	.41***	.47***	.38**
5. Google searches	1.11 (3.05)				-	.46***	.28†	.22	.24
6. Number of awards	2.22 (3.64)					-	.31*	.37*	.15
7. Number of venues	14.89 (16.46)						-	.34*	.32*
8. Experience	13.83 (13.36)							-	.04
9. Perceived expressiveness	4.46 (1.18)								-

All correlations were based on $N = 46$, except the correlations with years of experience ($N = 42$). The mean and standard deviation for the Google searches variable are given in thousands.

- † $p < .10$.
- * $p < .05$.
- ** $p < .01$.
- *** $p < .001$.

expressiveness and age predicted perceptions of success, consistent with conceptual models of implicit leadership theories (Lord et al., 1984), stereotype fit (Collins & Zebrowitz, 1995), and expressive charismatic leadership (Shamir et al., 1994). Furthermore, perceptions of conductors' age and expressiveness propagated through perceptions of success to actual success, suggesting that those leaders who seem to fit the general prototypical representation of leadership were indeed more successful.

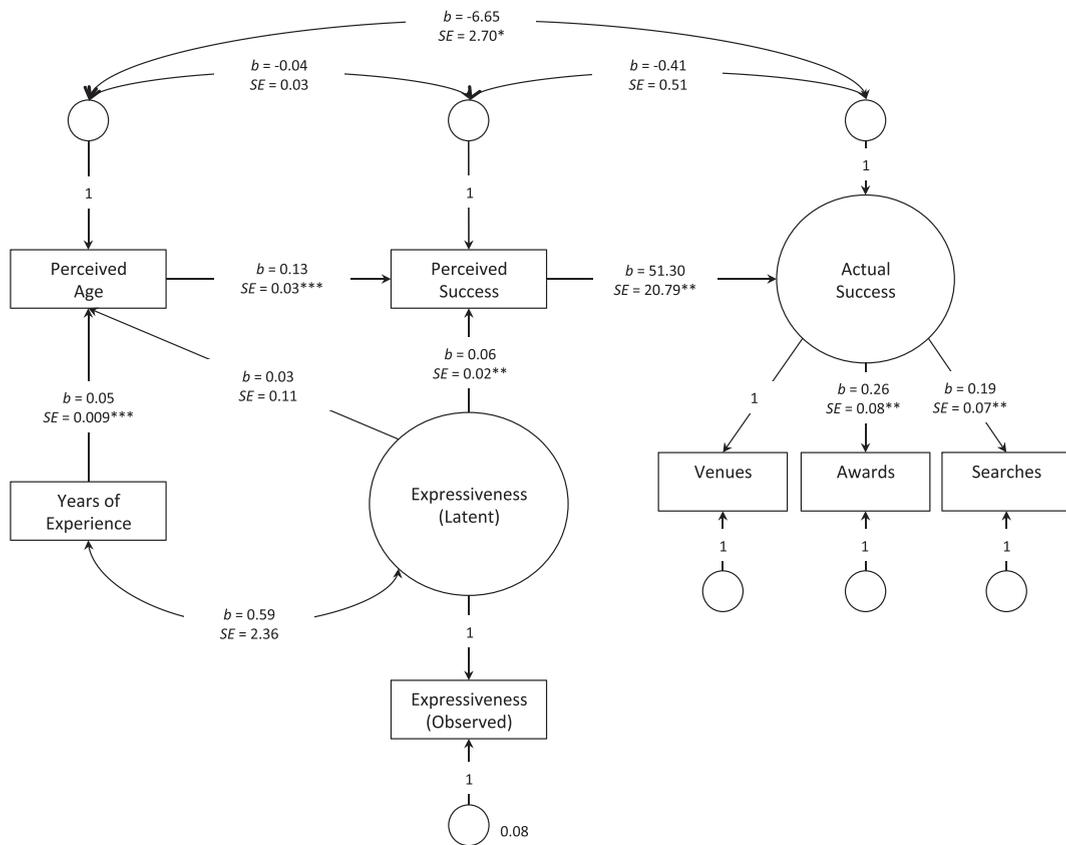


Fig. 1. A graphical representation of the structural equation model testing Hypotheses 1–3 ($N = 42$). The overall model fit was excellent: $\chi^2(9) = 9.90$, $p = .36$. Note. * $p < .05$, ** $p < .01$ and *** $p < .001$.

Theoretical implications

One theoretical goal of the current work was to enrich the research in leadership perception by demonstrating that implicit leadership beliefs indeed result in accurate perceptions of leadership success through activating internal representational schemas, or leadership prototypes. The data supported our predictions such that activating beliefs about conductors' experience and expressiveness prompted perceptions of leadership success. The match between perceived and actual leadership success, then, informed accuracy. In other words, people used trait information to activate stored schemata about leaders and then used these schemata to correctly perceive the leaders' degree of success from thin slices of nonverbal behavior.

Furthermore, this research adds to the literature on the perception of leadership by demonstrating that leadership prototypes are not only valid in the context of large organizations (Rule & Ambady, 2008) and large-scale elections (Antonakis & Dalgas, 2009), but also in closer leader–follower interactions. In the introduction section above, we suggested that it is possible that the match between leadership prototypes and success reported in previous work could be an artifact of organizational efforts (e.g., organizations select CEOs to communicate with the public, not workers). However, the current data suggest that leaders who tend to fit leadership prototypes are truly more successful as leaders. Indeed, those conductors who consistently aligned their followers to produce superior performance were perceived as more successful and attained greater recognition.

On an important note, the current work moves beyond a romanticized representation of creative professions and focuses on realistic interactions between leaders and followers (i.e., conductors and musicians; Hunt et al., 2004). First, we examined the leaders in the process of conducting and have therefore demonstrated similar effects in “flat-organizations” to those previously observed in large-scale hierarchical organizations (e.g., corporations; Rule & Tskhay, 2014). Furthermore, according to Hunt et al. (2004), the conductors must be high in monitoring multiple audiences for the duration of performance. That is, a conductor must be able to direct and align hundreds of musicians while simultaneously attending to thousands of audience members (which may include important benefactors). Because we found stable effects of conductors' expressiveness and age on perceptions of success, we can speculate that the conductors' nonverbal behavior was able to direct and align the followers, which produced award-winning performances representative of leadership success. This suggests that fitting leadership prototypes via nonverbal behavior is important for success in both flat- and hierarchically-scaled organizations (Hunt et al., 2004).

The current work also expands upon research in person perception and nonverbal behavior by examining the prediction of leadership from dynamic nonverbal (versus static) information. Whereas earlier studies reported that leadership could be reliably judged from static photos of faces (e.g., Rule & Ambady, 2008) and from multimedia clips of political debates (Benjamin & Shapiro, 2009), the present work isolated purely nonverbal cues from the body. Though dynamic, the nature of orchestra conductors' cues differs importantly in that their nonverbal gestures are the main medium of communication whereas the nonverbal cues used during speech acts, such as political speeches, tend to instead provide secondary reinforcement of the verbal stream (Ekman & Friesen, 1969). The contributions from the present findings therefore help to expand the examination of how various nonverbal cues can support accurate inferences of others, in general, and of leadership, in particular.

Furthermore, because the participants did not see the musicians following the conductors or hear the performance itself, it is evident that perceivers' accurate impressions resulted from the conductors' behavior, rather than the quality of the piece performed or an interaction with any specific group of musicians. This suggests not only that implicit leadership beliefs and prototypes are composed of chronic traits and dispositions, but also of perceptions of nonverbal behavior. For example, we observed that the more expressive the conductor was (an attribute), the more likely he was to be perceived as successful (leadership prototype). It appears that perceptions of expressiveness may have simultaneously activated other beliefs that people have of leaders more generally (Lord et al., 2001)—perhaps beliefs unrelated to conducting at all, as none of our participants had extensive musical training. Similarly, perceptions of age produced accurate inferences of leadership success. The current data therefore suggest that nonverbal behavior, and expressiveness and age specifically, are attributes that could potentially also activate leadership prototypes outside of high-profile leadership domains (e.g., politics and business) to result in accurate impression formation for a variety of leadership contexts. Indeed, our data suggest that the relationship between implicit leadership beliefs and leadership prototypes may apply to leadership more generally.

Practical implications

Aside from the theoretical implications inherent to the current work, this research also has many practical implications. Although the present investigation is likely to be especially relevant in the domain of orchestra conducting, it may also be of interest to leaders in broader organizational settings. In essence, we tested how prototypical leadership behaviors relate to conductors' success. Thus, our study highlights how fitting the prototypes of nonverbal behavior in leadership could lead to positive leadership outcomes. Importantly, here we focus on expressive and emotional cues to leadership free of any verbal information. Indeed, leaders might find it useful to train in the nonverbal expression of appropriate emotions (Antonakis, Fenley, & Liechti, 2011; Masters et al., 1987; Newcombe & Ashkanasy, 2002), especially in light of the literature suggesting that congruence between leaders and followers is likely to lead to positive evaluations and outcomes (Ashkanasy & O'Connor, 1997; Sullivan & Masters, 1988).

Limitations and future directions

Although these results are informative, our investigation was not without limitations. In the current set of stimuli, we attempted to eliminate much of the ancillary information in the video clips by applying a rigorous standardization procedure (i.e., blurring the faces,

converting the stimuli to grayscale and cropping out the audiences). It is difficult to account for all sources of variance, however. One variable that we were unable to fully control was the quality of the videos. All of the videos were downloaded from the same online video sharing website and it is likely that the recordings of conductors for a national orchestra may be created with better equipment than recordings made in the context of more intimate performances. However, perceivers' subjective inferences of quality from the clips did not significantly differ between more and less famous conductors. Indeed, although we attempted to ensure that the recordings were as uniform as possible, future research should examine clips that have been created in a standardized laboratory setting (Podsakoff, Podsakoff, MacKenzie, & Klinger, 2013). Despite being a limitation, however, the use of organic clips conversely allowed us to explore more ecologically-valid and natural interactions between musicians and conductors, which provided an advantage to the current work.

Additionally, future researchers might wish to achieve greater resolution regarding the effects reported here. This might be accomplished by investigating the exact pattern of body motion and communication supporting the relationship between conductors' behavior and perceivers' accurate judgments of success. At present, our findings suggest that subjective inferences of age and expressiveness predict perceived success, which in turn results in accurate inferences of actual success among conductors. However, both age and expressiveness could be very specific to the domain of conducting. For example, age could be negatively related to success in athletics due to decreased physical mobility. Thus, future research could take a closer look at other domains in which perceptions and stereotypes of age may be important. Similarly, establishing the physical cues that lead to these judgments may represent a productive avenue for future research that seeks to understand how and why particular conductors are distinguished in fame or attain higher levels of success. For example, facial width-to-height ratios have been related to subjective impressions of traits related to actual leadership outcomes (Carré & McCormick, 2008; Stirrat & Perrett, 2010; Wong et al., 2011). Unfortunately, due to the nature of our stimuli, it would be very difficult to get a precise estimate of this variable, also rendering it relatively inaccessible to perceivers and therefore unlikely to have been used in the present judgments; nonetheless, this remains a potential question for future research.

Furthermore, the tenure of the conductors in a given group could also result in leadership success due to increased congruence between leaders and followers who have worked together for a greater number of musical performances. Previous studies examining the success of business leaders did not find any relationship between tenure and accuracy in perceiving leadership, however (Rule & Ambady, 2011a, 2011b; Rule & Tskhay, 2014). Naturally, this might differ in the present domain in which leaders and followers engage in much closer interactions than they do in the corporate hierarchy. Unfortunately, we were not able to obtain sufficient information about conductors' tenure with a particular orchestra to model these effects in the present data. Thus, future work would benefit greatly from examining these important variables.

Similarly, we have suggested that people detect the characteristics and attributes that lead to successful orchestra conducting. However, an alternative possibility is that others' perceptions of budding conductors' traits leads them to consider the conductors as having greater potential, which then permits them to actually develop better skills through opportunities presented by self-fulfilling prophecy effects (see Rosenthal & Jacobson, 1968). More expressive individuals might therefore be considered to have more conducting ability, leading them to actually become better conductors. In such a case, the relationship between expressiveness and conducting success may be an artifact of perception rather than a valid cue to success. Future research in orchestral conducting may be needed to fully disentangle these effects, particularly as self-fulfilling prophecies can often function cyclically (see Zebrowitz, 1997, for review). Our finding that conductors' years of experience (an objectively-measured variable) predicted accurate perceptions of their success does suggest that the current participants' perceptions may have been at least somewhat valid, however.

Conclusion

In sum, the current work showed that perceivers were able to identify the leadership success of orchestra conductors from viewing very brief recordings of uninterrupted nonverbal behavior. This accuracy was facilitated by perceptions of expressiveness and age—cues to implicit theories that seem to have contributed to a prototype of successful leadership. Most important, the current findings demonstrated that leadership could be accurately perceived in the context of continuous leader–follower interactions. Here, the success of leaders was based largely on direct face-to-face interactions between leaders and followers rather than the more distant and hierarchical organizational structure typically examined in past work. Thus, leadership prototypes reflect real-world success not solely in the context of organizations potentially seeking leaders to serve as public figureheads, but also in a context where leaders and followers must unequivocally work together to achieve excellence.

Acknowledgment

The authors would like to thank the members of the Social Perception and Cognition lab for their help with stimuli and data collection. This work was supported in part by grant SSHRC #104410 to NOR.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <http://dx.doi.org/10.1016/j.leaqua.2014.07.001>.

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