Durham University

Durham Research Online

Deposited in DRO:

25 October 2016

Version of attached file:

Accepted Version

Peer-review status of attached file:

Peer-reviewed

Citation for published item:

Trichas, S. and Schyns, B. and Lord, R.G. and Hall, R.J. (2017) '"Facing" leaders : facial expression and leadership perception.', Leadership quarterly., 28 (2). pp. 317-333.

Further information on publisher's website:

https://doi.org/10.1016/j.leaqua.2016.10.013

Publisher's copyright statement:

© 2016 This manuscript version is made available under the CC-BY-NC-ND 4.0 license
http://creativecommons.org/licenses/by-nc-nd/4.0/

Additional information:

Use policy

The full-text may be used and/or reproduced, and given to third parties in any format or medium, without prior permission or charge, for personal research or study, educational, or not-for-profit purposes provided that:

- a full bibliographic reference is made to the original source
- a link is made to the metadata record in DRO
- the full-text is not changed in any way

The full-text must not be sold in any format or medium without the formal permission of the copyright holders.

Please consult the full DRO policy for further details.

Durham University Library, Stockton Road, Durham DH1 3LY, United Kingdom
Tel : +44 (0)191 334 3042 | Fax : +44 (0)191 334 2971
https://dro.dur.ac.uk

“Facing” Leaders: Facial Expression and Leadership Perception

Savvas Trichas

Open University of Cyprus

Birgit Schyns

Robert G. Lord

Rosalie J. Hall

Durham University Business School

Accepted for publication in *Leadership Quarterly*

Abstract

This experimental study investigated the effect of a leader's expression of happy versus nervous emotions on subsequent perceptions of leadership and ratings of traits associated with implicit leadership theories (ILTs). Being fast and universally understood, emotions are ideal stimuli for investigating the dynamic effects of ILTs, which were understood in this study in terms of the constraints that expressed emotions impose on the connectionist networks that activate ILTs. The experimenal design contrasted videotaped and still frame presentations of a leadership event; however, this methodological factor had no significant effects and analyses were thus collapsed across this factor. Key findings were that the expression of a happy versus nervous emotion at the end of a problem-solving sequence had multiple effects: happy emotions resulted in higher leadership ratings, higher trait ratings, greater correlations among trait ratings, and greater dependence of trait ratings on leadership perceptions. An exploratory model suggested that leadership impressions mediated the effects of facial emotions on trait ratings. The discussion further links the study findings with interpretations in terms of ILTs and many types of constraints on these cognitive structures. It also suggests ways to integrate these ideas with advances in neuroscience research.

Keywords: implicit leadership theories, trait perceptions, leadership perceptions, endorsement of ILTs, facial expressions.

"Facing" Leaders: Facial Expression and Leadership Perceptions

The focus of the current investigation is the perception of leadership in others. More specifically, we study relationships between the emotional facial expressions of an individual labelled as a 'leader' and the extent to which that person is perceived as leader-like, both overall, and along a set of trait dimensions that have been shown to relate to leadership perception. Underlying our proposed relationships is an assumption that the perception of leadership relies on cognitive structures called implicit leadership theories (ILTs; Eden & Leviatan, 1975), which guide our perceptions and understanding of leadership potential in others (Epitropaki, Sy, Martin, Tram-Quon, & Topakas, 2013; Lord & Maher, 1991; Schyns, Felfe, & Blank, 2007; Shondrick, Dinh, & Lord, 2010).

Expectations for links between facial expressions and perceptions of leadership have strong roots in theory, particularly when those expressions convey emotions. Humans depend upon social relations for resources and survival (Kemper, 2006), and emotions play a critical role in achieving coordination both within and between individuals (Cosmides & Tooby, 2000). Facial expressions of emotions expedite these functions by allowing rapid communication of emotions among individuals (Fiske & Taylor, 2013), providing self-relevant feedback (Deckers, 2001), and mobilizing appropriate cognitive, motivational, and physical resources (LeDoux & Phelps, 2000).

Humans have evolved a unique facial musculature for emotional expression and share what is argued by some (e.g., Keltner & Ekman, 2000) to be a universal social language for interpreting the facial expressions. Facial expressions are central to feeling (Adlemann & Zajonc, 1989), expressing (Darwin, 1872/1965; LeDoux, 1996), regulating (Gross, 2007), and understanding emotional patterns (Niedenthal, Barsalou, Winkielman, Karath-Gruber, & Ric,

2005; Niedenthal, Winkielman, Mondillon, & Vermuelen, 2009). They also have a powerful influence on person perception (McArthur & Baron, 1983; Trichas, 2015; Zebrowitz & Montepare, 2008), and perceivers can use the information from facial expression of emotions for a variety of assessments such as potential threat (LeDoux, 1996), personality assessment (Fridlund, 1994), and even the expected financial success of a law partner's firm (Rule & Ambady, 2011). Indeed, a recent study shows the relationship of facial expressions to assessing leadership, demonstrating that dimensions central to ILTs can be inferred from the facial expressions of others (Trichas & Schyns, 2012). Yet the relationship between facial expressions and leadership perceptions has only begun to be systematically studied.

The current study addresses this deficiency in several ways. First, we describe the ILT literature, especially focusing on the issue of dynamic processes linking ILTs to leadership perceptions. Second, we pay careful attention to how cognitive categories, which underlie ILTs, are activated in a specific context. Third, we develop theoretically-based arguments for why emotions conveyed by facial expressions would be expected to influence leadership perceptions and leadership category activation. Finally, these ideas are tested empirically with an experimental design that manipulates the facial expression of emotions by a leader.

Our study differs from previous research in important ways. First, we actually assessed participants' implicit leadership theories and then used them to predict ratings, rather than assuming that prototypes are universally held. Importantly, the implicit leadership theory measurement we used shares substantial content with existing measures but was constructed in the context in which it was used (i.e., Cyprus), meaning that we can be more certain that it reflects what is prototypical in this context. Second, we investigated the extent to which perceivers endorsed a normative implicit leadership theory overall. That is, rather than focusing

on individual dimensions of implicit leadership theories, we created a single score (i.e., ILT endorsement) reflecting the extent to which a participant held a normative implicit leadership theory (Trichas & Schyns, 2012). This is appropriate because our theory focused on the information processing effects of having a relevant leadership schema, not on the effects of specific dimensions of ILTs. Third, in contrast to other studies, our manipulation of the leader stimulus was quite minimal, all that was varied was the leader's facial expression, thereby demonstrating how extremely subtle differences can influence perceivers' judgments about others in the leadership context.

Theoretical Background

Implicit Leadership Theories and Dynamic Categorization Processes

ILTs are context-specific cognitive schemas that people have about leaders' behaviors, traits, qualities, and attitudes (Epitropaki & Martin, 2004; Keller, 1999; Kenney, Blascovich, & Shaver, 1994; Lord & Maher, 1991). Most commonly (and as was done in the current study), an individual's implicit leadership theory is measured along a set of trait dimensions that tend to be associated with leadership, such as sensitivity, intelligence, and dedication (Epitropaki & Martin, 2004; Offermann, Kennedy, & Wirtz, 1994). These scales developed from research in the 1970s and 1980s that emphasized social cognitive processes associated with leadership perceptions and behavioral ratings procedures. That research maintained that people were perceived as leaders when their characteristics fit a cognitive category that perceivers used to define leadership (Lord, Foti, & De Vader, 1984). Although fit with the dimensions identified by Offermann et al. and Epitropaki and Martin is an important aspect of leader categorization processes, many additional factors associated with leaders (e.g., expressed emotions, vocal attractiveness, gender, ethnicity, race), perceivers (e.g., personality, experienced emotions, active identities), or contexts (e.g.,

crisis, level of group performance, type of work task) can also influence this process. Thus, leadership perceptions are a more dynamic process than just matching target behaviors to a perceiver's set of general leadership dimensions.

An important aspect of leader categorization theory came from the recognition that leadership categories, like categories in general, are defined by a *prototype,* which is a set of features that are typical of leaders. Early research conceptualized these prototypes as involving symbolic knowledge learned through experience (Lord et al., 1984; Lord, Foti, & Phillips, 1982). However, more contemporary thinking represents categories as dynamic cognitive structures that are generated anew in each context by a connectionist system that also incorporates constraints from a variety of sources (Foti, Knee, & Backert, 2008; Hanges, Lord, & Dickson, 2000; Lord, Brown, Harvey, & Hall. 2001; McDonald, Sulsky, & Brown, 2008; Sy et al., 2010). In connectionist models, prototypes are defined as interrelated recurrent networks, which in combination, create a meaningful interpretation such as leadership perceptions (Hanges et al., 2000; Lord et al. 2001). They are thought to be activated when top-down constraints such as gender, context, and active identities combine with bottom-up inputs such as traits, behaviors, or physical properties of a potential leader to activate multiple nodes in the network that constitutes a prototype. Thus, many aspects in addition to the prototypical ILT dimensions identified by Epitropaki and Martin (2004) are an integral part of the leadership perception processes and the cognitive dynamics that activate leadership categories.

Connectionist models can exhibit both stability and flexibility because of the interplay between stable cognitive structures and momentary input. The connections among nodes representing relevant leader features such as sensitivity, intelligence, dedication, etc. are stored in long-term memory and are thought to change gradually through an extended learning process.

However, the inputs that activate these nodes can vary from one situation to another so that somewhat different patterns can arise from the same underlying structure. It is the activated pattern that guides processing, and in this sense a leader prototype is re-generated each time it is used. Because of this process, each time the prototype is regenerated it reflects the currently active set of contextual constraints, which may modify some of its aspects. For example, McDonald et al. (2008) showed that priming interdependent identities increased the accessibility and endorsement of transformational leadership prototypes, whereas priming independent identities increased endorsement of transactional leadership prototypes. Similarly, Sy et al. (2010) showed that the ethnicity of a potential leader (Asian versus Caucasian) affected ratings of intelligence and dedication which were higher for Asians, and dynamism, tyranny, and masculinity which were higher for Caucasians. Such differences in turn affected leadership perceptions, although the effects were moderated by type of job (engineering, sales). As we show in this paper, expressions of emotions are another type of constraint which can affect how prototypes are activated and used.

Past researchers have typically investigated how multiple ILT trait dimensions separately influenced the perception of a potential leader in an additive fashion (e.g., Epitropaki & Martin, 2004). However, Fiske and Taylor (2013) argue that social perceptions are holistic, highlighting the importance of exploring patterns of features or behaviors when studying perception. In accord with this idea, research has shown that patterns of ILT dimensions (expressed as different combinations of ratings on multiple implicit leadership theory dimensions) predict leadership perceptions over and above the simple main effects of those same ILT dimensions (e.g., Dinh & Lord, 2013; Foti & Hauenstein, 2007; Smith & Foti, 1998). Conceiving of ILTs in terms of patterns of features also makes sense from a connectionist theory perspective on cognitive

categories because prototype activation is a function of the entire recurrent network, not merely individual elements. Moreover, because connectionist systems operate in parallel, they can create a pattern that meaningfully integrates information quite rapidly, typically in less than 250 *ms*, according to Rumelhart and McClelland (1986). This integration not only defines a relevant prototype, *the activation of this prototype is the process by which leadership is perceived.*

Several programs of social-cognitive research are consistent with this type of dynamic model. In an extensive program of research which matches experimental findings to computer simulations of underlying processing, Freeman and Ambady (2011) conclude that person construal involves creating simultaneous solutions to multiple top-down constraints and bottom-up stimulus inputs. Consistent with this conclusion, Thagard and Kunda (1998) maintain that particularly good solutions to networks of constraints, which they argue have *explanatory coherence*, reflect context-sensitive meanings or explanations, not just for behaviors, but rather for holistic patterns of features and behaviors. This process expands the notion of ILTs to include not just a fundamental set of leadership dimensions such as sensitivity, intelligence, etc., but also the automatic modification of these dimensions to reflect multiple contextual constraints as a specific leader is perceived in a specific context. Coherence, in such integrative networks produces a stable and meaningful interpretation, such as the conclusion that a specific person has leadership qualities.

Consequently, in the current study, we measured ILT dimensions using an instrument that was created and tested in the same context as the one in which our study is set. This increases the likelihood that ILT schema we used was actually relevant to most of our participants. Further, the index of implicit leadership theories endorsement used in our study was based on a combination of dimensions rather than using individual dimensions separately. We think this

more closely mirrors the holistic process by which prototypes are actually used to define categories. Further, because they are processed exceptionally rapidly, emotional expressions are likely to have holistic effects rather than effects on isolated ILT dimensions. We focused on implicit leadership theories about successful leaders here to better capture the positive orientation of our participants towards leaders.

In our study, ILTs initially were activated (primed) by being rated, then the overall impression of a leader was directly measured via participant ratings. This procedure was expected to create a top-down constraint from the initial leadership impression that further activated ILTs, which then would be active when participants provided trait ratings of the target individual. We expected that perceived trait patterns that matched ILTs would create coherence and thus be attributed to the individual being rated. However, this process is context sensitive, so it may well operate differently when the bottom-up inputs vary, for example, when a leader's facial expression conveys different emotions.

Facial Expressions, Emotions and Trait Perceptions

Researchers recognised quite early that human facial expressions constitute a rich and dynamic information source about the transmitter's underlying emotions (Darwin, 1872/1965). We have a dedicated cortical system for processing facial information (fusiform facial area), as well as other brain structures that are highly involved in face perception. Faces are processed holistically and can be categorized as such rapidly (100*ms*). With additional processing (i.e., at 170*ms*; Liu, Harris, Kanwisher, 2002), we recognize specific individuals. Trait inferences can also be made in as little as 100*ms* (Fiske & Taylor, 2013). This speed makes facial expressions ideal for communicating momentary emotions, providing a dynamic component that is roughly matched to on-going verbal communications which typically average about 3 words per second.

Clearly facial perception is fast enough to help one interpret the meaning of verbal phrases or isolated words, and to set the stage for subsequent global, brain-scale conscious processing which occurs 300*ms* or more after encountering a stimulus (Dehaene, 2014).

Fiske and Taylor (2013) note that spontaneous trait inferences are made from observed behaviors, and are automatically linked with faces in memory. That is, behavior binds with facial information automatically and without intention, and this process is likely facilitated by emotional reactions to faces (Allen, Kaut, & Lord, 2008). Thus, faces provide an important retrieval cue for trait perceptions that is made automatically. Facial displays also lead beholders to infer feelings and intentions (Fridlund, 1994). Specifically, when people observe behaviors such as facial expressions, they try to infer underlying emotions and intentions (see appraisal theories of emotion, e.g., Roseman, Antoniou, & Jose, 1996; Scherer, 1999) and, ultimately permanent personality characteristics (e.g., Hareli & Hess, 2009; Secord, 1958). For example, when someone observes an angry facial expression, she/he infers the emotional state of anger (or a general attack mode) but also might assume that the transmitter possesses anger-related trait characteristics such as being "short tempered" or "domineering."

Indeed, a large volume of published studies link trait perceptions to facial expressions (e.g., Aguinis, Simonsen, & Pierce, 1998; Krumhuber, Manstead, & Kappa, 2006; Marsh, Adams, & Kleck, 2005; Montepare & Dobish, 2003; Schmid & Hall, 2004). Some of these results have direct implications for leadership perception. For example, smiling facial expressions are considered more trustworthy than non-smiling facial expressions (Krumhuber et al., 2006), and angry facial expressions are associated with perceptions of high dominance and low affiliation (Montepare & Dobish, 2003). Thus we expect perceivers to be influenced by the

observed facial expressions of persons labelled as leaders, in part via inferential and attributional processes.

In addition, emotional contagion effects might influence perceptions of persons designated as leaders. Emotional contagion may occur when perceivers observe an expression of emotion in another, engage in facial mimicry, and then the resulting feedback from their own facial features leads them to also experience the mimicked emotion (Hatfield, Cacioppo, & Rapson, 1994). Indeed, effects of emotional contagion also have been confirmed in the area of leadership perceptions (Cherulnik, Donley, Wiewel, & Miller, 2001; O'Malley, Ritchie, Lord, Gregory, & Young, 2008).

Previous Research on Emotions and Leaders' Facial Expressions

Previous studies focusing on leaders' facial expressions (Stewart, Bucy, & Méhu, 2015; Stewart, Méhu, & Salter, 2015; Stewart, Waller, & Schubert, 2009; Trichas & Schyns, 2012) have established that perceivers' emotional responses are affected by leaders' facial expressions. For example, a study by Stewart, Bucy et al. (2015) found participants' emotional responses were influenced by simple changes in the facial expressions of Republican presidential candidates, that is, subtle alterations to leaders' smiles such as tightening the lips or pressing up the lower lip decreased perceivers' happiness/reassurance and increased their anger/threat ratings. Another relevant study by Stewart et al. (2009) showed that very short units of communication can influence participants' reactions: When watching a speech by former US president George W. Bush, observers felt more anger and felt more threatened when smiling frames (positive microexpressions) were removed from the speech.

Additional studies have linked leader emotional expressions to perceptions of specific leadership styles, especially charismatic leadership. For example, Bono and Ilies' (2006) results,

combined across their four studies, suggest that positive leader emotional expressions mediate the effects of charismatic leadership on perceptions of leader effectiveness and attractiveness, likely via an emotional contagion process in which positive leader emotions relate to positive follower emotions. In addition, Griffith, Connelly, Thiel, and Johnson (2015) used a historiometic approach involving the analysis of biographical materials and speech excerpts from a set of 93 historic leaders. These were content coded for positive and negative emotional display, as well as emotional authenticity and volatility. Positive emotional displays were most characteristic of leaders having a charismatic style, and had a positive relationship with follower satisfaction.

However, to our knowledge, there is only one study that has isolated the effect of *facial expressions* on perceptions of leadership *per se*, rather than presenting the leader's expression of emotion in a verbal form or focusing on the effects of the leader's emotional expression on followers' emotional responses, attributions of effectiveness, or possession of a particular leadership style. In this study, Trichas and Schyns (2012) showed their participants pictures of leaders' facial expressions, and asked them to evaluate those pictures with respect to their first impressions of leadership. Among other results, Trichas and Schyns found that respondents more generally evaluated leaders showing positive expressions as being higher in leadership than negative ones. This finding is consistent with the other results previously described which have associated positive emotions with leadership perceptions (e.g., Bono & Ilies, 2006; Griffith et al., 2015; Naidoo & Lord, 2008).

Based on this literature, we formulated a number of hypotheses regarding the effects of viewing leaders who display happy versus nervous faces. The choice of the happy expression was consistent with the studies described earlier which found displays of positive emotion tend

to be associated with greater leadership. The choice of a nervous expression as a negative facial stimulus, as far as we know, introduces the potential to investigate effects of an expression that has not previously been studied with respect to leadership perceptions. Previous studies have investigated effects of neutral emotional expressions (e.g., Bono & Ilies, 2006, Study 4) or components of basic emotional facial expressions such as surprise, happiness, sadness, fear, anger, and disgust (e.g., Stewart, Bucy et al., 2015).

Our choices are consistent with general theories of person perception, such as that of Cuddy, Fiske, and Glick (2007), who maintain that social perceptions along the dimensions of warmth and competence are universal. We expected that happiness expressions would communicate high warmth, and expressed nervousness would communicate low competence, both of which are relevant to leadership perceptions. In addition, warmth and competence roughly map into two dimensions, consideration and initiation of structure, which have long been associated with effective leadership (Fleishman, 1953; Judge, Piccolo, & Ilies, 2004). Consequently, perceivers should have well-learned cognitive structures to automatically encode such facial expressions and relate them to general schemas guiding social cognitions. Thus, we proposed that emotional expressions related to happiness or nervousness should affect both overall leadership impressions and perceptions of traits associated with ILTs, as stated in the following hypotheses.

Hypothesis 1. Overall leadership perceptions will be higher in the happy, compared to the nervous, condition.

Hypothesis 2. Perceptions of the levels of prototypical leadership traits will be higher in the happy, compared to the nervous, condition, while perceptions of the levels of anti-

prototypical leadership traits will be lower in the happy, compared to the nervous condition.

In addition, if exposure to a leader with a happy or nervous facial expression results in an emotional contagion process in which the perceiver experiences an emotion consistent with that of the leader, then one would expect differences in the cognitive processing of leadership-related information based on whether the leader's facial expression was positive or negative. More specifically, positive emotions can lead to greater use of heuristic schema-driven processing, while negative emotions such as nervousness can lead to more careful, data-driven processing. Positive emotions have been associated with greater use of schematic or stereotypic processes (Bless, 2003) for both capacity and motivational reasons. Because happy moods allow access to more information, the resulting information load on working memory is greater, reducing the available processing capacity compared to the more focused effect of negative moods. Also, because positive moods convey that a situation is safe, the need to process information in detail is diminished. In addition, other research shows that being in a positive mood is more likely to activate heuristic processing in general, while being in a negative mood is more likely to activate systematic proccessing (Friedman & Foster, 2002; Schwarz, 2002).

Because heuristic processing is likely to be based on patterns rather than detailed encoding of specific information, we expect that the degree of mutual activation (or suppression) among prototypical ILT dimensions should be greater in the happy condition, producing a stronger activation of a leadership prototype. This might either reflect the fact that recurrent networks defining leadership prototypes created a more complete pattern after viewing the stimulus person, and/or the fact that subjects were more likely to rely on their leadership rating as a constraint in generating perceptions on trait dimensions. As a consequence, ratings of

perceived traits should more strongly correlate with each other in the happy compared to the nervous condition.

Second, if the ratings of perceived traits do indeed all reflect something about leadership, the correlations among the traits should be able – at least to some extent -- to be represented by a common factor. That factor, in turn, should be positively associated with overall perceived leadership. Both of these effects should be higher in the happy compared to the nervous condition because subjects are more likely to rely on heuristic processing when experiencing positive emotions. This logic leads to the following two hypotheses:

Hypothesis 3. The correlations among ratings of perceived traits will be higher in the happy, compared to the nervous, condition.

Hypothesis 4. Overall leadership perceptions will be more strongly related to a common factor extracted from ratings of perceived traits in the happy compared to the nervous condition.

Individual Differences in ILT Endorsement

Prior research and theory (Engle & Lord, 1997; Hansbrough, Lord, & Schyns, 2015; House, Hanges, Javidan, Dorfman, & Gupta, 2004) showed that subordinates differed in the extent to which they endorsed normative ILTs due to differences in their experiences, background, or personalities. Persons with more normative ILTs would be expected to give successful leaders high ratings on normatively prototypical ILT dimensions, and low ratings on anti-prototypical ILT dimensions, while participants with less normative ILTs would be expected to show different patterns of ratings on the same normative ILT dimensions (and, although not assessed in the current study, might even include additional dimensions in their leadership

prototypes). In this article we will refer to the extent to which a participant's ratings demonstrate a normative pattern on the ILT dimensions as *ILT endorsement*.

Participants with a high level of ILT endorsement should have leadership schemas that are easier to activate and that exhibit stronger connections among nodes in a normative network defining leadership, including leadership-related traits. This is because it is easy for them to activate the associated network structure. In contrast, participants who are low on endorsement either have a less developed leadership schema or they hold non-normative implicit leadership theories. In both cases correlations among normative items should be lower, less related to a leadership impression, and less affected by emotion-induced schema use. If low ILT endorsement results from a weakly developed schema, activating a leadership category should also be harder, resulting in lower leadership perceptions. Based on this logic we predicted:

Hypothesis 5. Greater endorsement of ILTs will positively predict (a) overall leadership perceptions and (b) a pattern of ratings of perceived traits as reflected by a common factor.

How people process information and thus use implicit leadership theories is likely to change in a dynamic manner as emotional tone varies along a positive to negative dimension (Isen, 1987). As explained previously, a positive mood is more likely to activate heuristic processing while a negative mood activates systematic proccessing (Friedman & Foster, 2002; Schwarz, 2002). Further, use of heuristics should be buttressed by normative beliefs and standards for individuals who strongly endorse normatively defined ILTs. Thus, we predicted:

Hypothesis 6. In the happy compared to the nervous condition, endorsement of ILTs will be more strongly related to (a) overall leadership perceptions and (b) patterns of ratings of perceived traits (as reflected by a common factor)

In sum, we adopt a model that suggests that the bottom-up input from an emotion expressed on a leader's face is rapidly and automatically processed by perceivers. The leadership impression that results from this processing then operates as a top-down constraint on further information processing. Such processing integrates specific information about the leader being observed with more general information about leadership, such as ILTs, which in turn has implications for the formation of trait inferences about the leader. In addition, when the expression on the leader's face is happy, perceivers will likely engage in more heuristic processing, which draws more heavily on top-down constraints and patterns associated with schemas such as ILTs. In contrast, negative emotional expressions such as nervousness will likely lead to greater reliance on bottom-up processing, in part because the negative emotions create an inhibitory top-down constraint on ILTs. In the results section, we will examine exploratory models consistent with the above reasoning, following the hypothesis tests.

Method

Design and Procedure

The research was conducted as a part of professional development sessions delivered in a large Cypriot financial organization. Written permission was obtained from the HRM department to conduct the study in the organization's professional training center. Employees attending professional development seminars were informed about the study via the training instructors at the beginning of the session, and told that participation was voluntary. Approximately 95% of the employees agreed to participate and provided informed consent. Participants completed a measure of their implicit leadership theories (ILTs), and then they viewed either a video or a series of photographs showing a purported leader's facial expressions (portrayed by a male actor). Half of these participants viewed a leader with a happy facial expression, and the other

half viewed a leader with a nervous facial expression, thus creating a fully crossed, two-factor experimental design, with between-subjects factors of: Medium (dynamic video versus static pictures) and Emotion (happy versus nervous). Participants were then asked to rate their perceptions of the leader stimulus target in terms of: (a) overall perceptions of leadership, and (b) the actor's leadership attributes in terms of trait perceptions. There was also space for a brief qualitative explanation.

Participants

Participants were 227 Cypriot bank employees (62.4% male and 37.6% female). Their age groups were: 20-25 (3.2%), 26-30 (14.1%), 31-35 (23.7%), 36-40 (26.2%), 41-45 (14.6%), 46-50 (10.9%), 51-55 (4.8%), and 56-60 (2.5%).

Instruments

Implicit leadership theory measure. Participants' leadership prototypes were measured first, using a shortened version of a trait-based ILT instrument in written in Greek. This instrument was previously developed and tested on a Cypriot sample (Trichas & Schyns, 2012). To activate relevant leadership prototypes, the participants read the following statement before responding to the items, "In the current questionnaire, the word leader will refer to a person in a high organizational position who is successful in leading groups of people." Ratings were made on a 9-point response scale, with options ranging from *1* = "not at all characteristic" to *9* = "extremely characteristic." The 36 items in this instrument load on a likeability dimension, as well as on the seven classic dimensions previously identified by Epitropaki and Martin (2004) and Offermann et al. (1994), i.e., sensitivity, tyranny, dynamism, potency, intelligence, masculinity, and dedication. However, because one of the two likeability items introduced a

confound by specifically referring to a facial expression (i.e., "smiling"), this trait dimension was not used in the analyses for the current study.

Two different types of scores were created from the ILT measure. First, subscale scores for each of the seven classic *ILT dimensions* were created. Reliabilities for these were as follows: sensitivity (7 items, e.g., understanding, sensitive), $\alpha = 0.80$; intelligence (4 items, e.g., clever, intelligent), $\alpha = 0.70$; potency (4 items, e.g., strong, bold), $\alpha = 0.75$; dynamism (4 items, e.g., determined, dynamic), $\alpha = 0.75$; dedication (3 items: e.g., dedicated, hard-working), $\alpha = 0.72$; masculinity (3 items, e.g., masculine, attractive), $\alpha = 0.70$, and tyranny (9 items, e.g., dominant, manipulative), $\alpha = 0.85$.

Second, a more aggregate score was created, using the seven ILT dimension scores just listed above. (Likeability was dropped as previously noted.) The score, called *ILT endorsement*, was calculated as the sum of the standardized ILT dimension scores for sensitivity, intelligence, potency, dynamism, masculinity, dedication and tyranny. This continuous score reflected the extent to which traits shown in previous research to comprise leader prototypes were viewed by a given participant as being characteristic of leaders. Thus higher scores on this measure indicated greater endorsement of a classic leadership ILT. Given its multi-dimensional nature, it is not appropriate to estimate the reliability of this composite using alpha.

Measures of leader perceptions. Following participants' exposure to either the video or photographs depicting the 'leader,' we measured their leadership perceptions of that specific individual. A global measure of *overall leadership perceptions* was first obtained by asking participants to respond to the question, "From a scale 1 – 9, with 9 being the maximum score, which overall leadership score would you give to that man based on the information you saw above?" We then measured *trait perceptions* of the leader by asking participants to rate the

leader on the same set of traits that were in the ILT measure. (Again, we did not use the likeability ratings from this measure due to the inclusion of a "smiling" item.) A 9-point response scale was used, and the rated items were combined into the same subscales as for the ILT measure. This procedure allowed for direct comparisons of the previously measured ILTs (i.e., prototypes) with trait perceptions of a specific individual. Reliabilities (Cronbach's Alpha) for the trait perceptions were: sensitivity, $\alpha = 0.92$; intelligence, $\alpha = 0.91$; potency, $\alpha = 0.78$; dynamism, $\alpha = 0.94$; dedication, $\alpha = 0.91$; masculinity, $\alpha = 0.83$; and tyranny $\alpha = 0.82$.

Development of Stimulus Materials

Dynamic video condition. In the video condition, participants viewed a 14-second, color video clip depicting a long distance, computer-to-computer video call between the head of an HRM research group (played by an actor) and a member of that group who was asking for help. Filming of the video took place in an actual bank manager's office. The male actor used in the videos had a significant acting background, and was also a Facial Action Coding System (FACS) certified coder, thus he was familiar with the accurate depiction of emotions. In the production of the video, the Stanislavski acting technique (i.e., the actual experience, rather than simulation, of emotions) was applied to achieve deep acting so that the facial expression appeared natural (see Gordon, 1987; Stanislavski, 1965). A voice recorder was used to simulate a conversation between the actor and the fictitious group member, in order to align timing of the reactions and enhance deep-acting, however, the audio information was not included in the clip shown to participants. (Had voice been included, factors such as loudness, articulation, fluency, pitch height, pitch modulation, pitch range tempo, and loudness would have needed to be controlled, Buller & Aune, 1988; DeGroot, Aime, Johnson, & Kluemper, 2011).

The video consisted of two merged segments. The first segment was the same for all variations of the video-clips. It contained the first three facial expressions seen in the conversation. The actor began by showing a neutral face, and then smiled as he greeted the person he was talking to. After that, he frowned as he was listening to the problem the HRM team was experiencing. These facial expressions were considered to be consistent with the organization's display rules as indicated in a focus group.

In the second segment, the actor gave a solution to the problem. This second segment was different for each of the two emotion manipulation conditions. In the *happy condition*, the actor made positive facial displays, expressed using medium intensity pulling of the lip corners back and obliquely (i.e., a smile). In the *nervous condition*, the actor made negative facial displays, expressed using eyebrows raised and pulled together, with a cheek raise and eyelids tightening in. These facial actions indicate relatively universally recognizable emotional states (Ekman, Friesen, & Hager, 2002; Trichas & Schyns, 2012; Van Kleef et al., 2009). Timing the emotion manipulation to occur during proposed solutions is consistent with Naidoo and Lord (2008), who showed that positive emotions during proposed solutions were associated with leadership perceptions, whereas emotions expressed while describing problems had little impact on leadership perceptions.

Static photograph condition. The stimulus materials for the static condition consisted of a sequence of four black-and-white images of a man, showing his head and shoulders only. These were extracted from the videos at the apexes of the four emotional expressions used in the video-clips. Pictures 1, 2 and 3 were identical in each sequence: (1) neutral face, (2) smiling expression, and (3) pondering with a slight frown. The fourth, and final, picture differed for the two emotion conditions, and followed the same pattern as the videos: the happy condition ended

with an expression of happiness, and the nervous condition ended with an expression of nervousness.

Validity checks for stimulus materials. Ekman et al.'s (2002) Facial Action Coding System was used to evaluate the emotions expressed by the actor. Both static and dynamic facial expressions were coded by two FACS certified coders for facial muscle movement and intensity. The inter-rater reliability analysis using the FACS index[1] was 0.86, a very satisfactory score. The codings assigned supported the interpretation of the depicted emotions as happy and nervous.

In addition, at the time of data collection for the main study, a separate sample of 49 bank employees was asked to describe the facial expression apex photographs used in both emotion conditions. These participants were told, "The man you are going to see in this part is the head of a research team of the HRM department in one of the banks in Cyprus and his name is Mr. Ioannou." After that, a photo with the actor's neutral face was depicted with a statement "Facial expression is a strong indicator of a person's underlying emotions. Below, you are going to see extracted frames from a computer-to-computer video conference showing Mr. Ioannou's facial expressions. You will then be asked to describe the emotions you think Mr. Ioannou was experiencing at the time." After that, the participants were asked to describe, in a short paragraph, what emotion they thought the actor was experiencing for the photographs used in the happy and nervous experimental conditions.

Participant descriptions of the actor's emotions were analyzed by organizing the paraphrased data into category systems primarily consisting of implied trait descriptions and key characteristics. Figure 1 (a, b) shows the happy and nervous stimulus photographs with a summary of participants' descriptions of the underlying emotions for each. General impressions for the "happy" frame were positive, including descriptions such as happiness, satisfaction,

calmness, joy, and pleasant mood. Similarly, the "nervous" frame generally gave a negative impression, with descriptions such as as disappointment, wondering, sadness, stress, disagreement, and frustration. In sum, these data supported the use of the experimental stimuli for their intended purpose.

[Insert Figure 1 (a, b) about here]

Analytic strategy. Standard t-test and correlation analyses were used to test Hypotheses 1-3. For the tests of Hypotheses 4-6 and the subsequent exploratory models, we used a structural equation modelling (SEM) framework in order to allow us to create a latent factor that represented the common variance shared across the set of leadership traits. Unlike most SEM models where the goal would be to fit as much of the covariance among measured indicators as possible with unidimensional measurement, our goal was somewhat different. That is, we expected that the set of measured traits would covary because they had something in common related to leadership, but also that they might be expected to covary for other reasons as well. Therefore, we did not expect to fit all covariances among the set of traits. The implication of this logic is that we did not expect particularly well-fitting SEM models, rather our focus was on the ability to extract commonality across a set of multi-dimensional traits associated with leadership. As a consequence, our emphasis in reporting results is on parameter estimates of relationships with the latent trait factor, rather than model fit.

All SEM analyses were performed using Muthén & Muthén's (1998-2014) Mplus, v. 7.2 software package. A robust maximum likelihood (MLR) estimator was used to accommodate any minor sources of non-normality among the measured variables. Because the MLR estimator was used, whenever we made any statistical comparisons of chi-square fit indices across models,

we used the required adjustment as noted on the Mplus website at https://www.statmodel.com/chidiff.shtml .

Results

Preliminary Analyses and Descriptive Statistics

Table 1 presents the means, standard deviations, and correlations for all study variables combined across experimental conditions. An inspection of the ILT score means indicates that participants tended to believe that dynamism, intelligence, and dedication were especially characteristic of leaders, followed by sensitivity, and potency. Masculinity was not perceived as being very characteristic of leaders, and tyranny was emphatically *not* endorsed by these participants as a characteristic leadership quality.

[Insert Table 1 about here]

It was anticipated that the dynamic video versus static photographs factor would influence participant responses. However, this manipulation did not have any significant effects. Thus we aggregated across this factor for all analyses in the current paper (results pertaining to analyses retaining the dynamic video vs. static photographic factor are available from the first author).

Although participants were randomly assigned to the happy versus nervous experimental groups, as a preliminary analysis we compared the groups with respect to ILT endorsement to verify group equivalence (the ILT measures were collected before any experimental manipulation). As shown in the top half of Table 2, there were no significant between-group mean differences on six of the seven ILT dimension scores. The exception was a statistically significant but small difference of .2 for means on the ILT dimension of intelligence. And, the two groups were significantly different in overall ILT endorsement, although this difference was

also relatively small (Happy group M = .08, SD = .62; Nervous group M = -.09, SD = 54). The two groups were considered close enough to being equivalent to proceed.

[Insert Table 2 about here]

Effects of Facial Expression on Perceptions of Leadership and Traits

Hypotheses 1 and 2 proposed that the leader's facial expression would influence overall leadership perceptions as well as perceptions of specific traits that are relevant to leadership. These hypotheses were tested using a series of *t*-tests for independent groups (see bottom half of Table 2). Hypothesis 1, which stated that participants who viewed the happy face ($M = 5.6$) would give higher overall leadership perception ratings than those who viewed the nervous face ($M = 4.0$), was supported, $t\ (225) = 6.82$, $p < .01$.

Hypothesis 2, stating that participants who viewed the happy face would give higher ratings on the prototypical trait dimensions than participants who viewed the nervous face, was supported for the six relevant trait dimensions, at the $p < .05$ level or better. Differences in mean ratings ranged from .5 (for Potency) to 1.6 (for Dynamism). However, participants who viewed the nervous face ($M = 3.9$) gave higher ratings on Tyranny, which appears to be an anti-prototypical trait in the current sample, than did participants who viewed the happy face ($M = 3.2$), $t(225) = -4.11$, $p < .01$. In sum, there is strong support for the hypothesized effects of facial emotions on leadership and trait perceptions, with higher mean ratings on prototypical traits for persons in the happy group, and a lower mean rating on the anti-prototypical trait of tyranny for persons in the happy group.

Emotion Effects on Patterns Implied by Leadership Schema Activation

Hypothesis 3 predicted that the correlations among perceptions on the trait dimensions would be stronger in the happy compared to the nervous condition, on the basis that participants

in the happy condition would use more heuristic, schematic processing of the leader facial stimulus. This idea was tested in two different ways. First, an element-by-element comparison of the correlation matrices for these two conditions showed that 16 of the 21 correlations were indeed stronger (i.e., the magnitude of the absolute value of the correlation was higher) in the happy than nervous condition. The remaining five correlations were either weaker in the happy condition, or so close as to be considered the same. This result provided preliminary support for Hypothesis 3.

Next, we used a paired samples *t*-test to compare the average values of trait correlations in the happy versus nervous condition. Before performing the test, all *r* values were transformed using Fisher's formula for *r*-to-*z'* transformation, in order to account for the non-normal sampling distribution of *r*. In addition, the absolute value of the transformed r was used so that the index reflected the magnitude (i.e., strength) of the correlation without considering its direction. As would be expected, the values of the correlations in the two conditions related fairly strongly to each other ($r = .77$, $p < .001$), suggesting that the relative pattern of relationships held across the two conditions. However, a paired samples t-test which provided a second direct test of Hypothesis 3 indicated that the mean values for the two sets of correlation coefficients were significantly different, $t\ (20) = 3.30$, $p = .004$. The happy group had an average back-transformed mean *r* of .46 compared to the mean *r* of .36 for the nervous group. This result again supports Hypothesis 3, demonstrating that relationships among the trait dimensions tended to be significantly stronger for participants who viewed the happy face.

Hypothesis 4 also was based on an argument that persons viewing the happy face would engage in more heuristic (i.e., schema-based) processing. Specifically, Hypothesis 4 proposed that the relationship of overall leadership perceptions with perceptions on trait dimensions would

be stronger in the happy, compared to the nervous, condition. Rather than examining the relationship of leadership perceptions to each trait individually, as noted earlier in the section on analytic strategy, we estimated a latent factor in a SEM analysis to extract the common variance from the set of traits to determine its relationship with leadership perceptions. When this factor was estimated using all seven of the trait dimensions, we found that six of the seven traits loaded positively and significantly on the latent factor, with moderate to strong standardized factor loadings ranging from .57 (for sensitivity) to .85 (for intelligence). However, the factor loading for the trait of tyranny was low magnitude, negative and not statistically significant, $\lambda = -.08$, $p = .319$, indicating that it shared at best only minimal common variance with the other leadership-related traits. Based upon this finding, we modified our analytic strategy, so that in analyses testing Hypothesis 4 and all other subsequent hypotheses involving perceptions of trait dimensions, two sets of effects were estimated: (a) for a factor based on the six traits, and (b) for the Tyranny dimension only. The next paragraph presents more details of the revised trait factor model that was based on using only the relevant six trait dimensions as indicators.

The revised trait factor model allowed the six trait measures of sensitivity, intelligence, potency, dynamism, dedication, and masculinity to load on a single common factor. An additional remaining covariance between the two traits of dynamism and potency was quite strong and was also not surprising given the nature of these two traits, therefore we also allowed the uniquenesses of these two variables to covary ($r = .40$, $p < .001$). In the full sample, the overall model fit was $\chi^2_{(227)} = 39.958$, $df = 8$, $p < .0001$, *RMSEA* = .133, *CFI* = .936, *SRMR* = .049. Standardized factor loadings of the six trait indicators ranged from .58 (for masculinity) to .88 (for intelligence). As mentioned in our earlier discussion, this model would not be considered to be well-fitting for conventional purposes (although the CFI and SRMR indicate adequate fit).

However, we were not trying to fit all underlying covariance relationships, rather were trying to isolate the commonality associated with leadership in order to study its relations with other variables, therefore this model was found to be acceptable. This preliminary development of a baseline factor model thus provided us with a basis for testing Hypothesis 4.

To test Hypothesis 4, we performed a multi-group SEM analysis, splitting the data set by the happy versus nervous condition and estimating the model in the two groups simultaneously. The model was specified to estimate the covariance relationships of the overall leadership perceptions variable with (a) the 6-indicator latent trait factor and (b) the tyranny trait measure. Support for the hypothesis would consist of finding that these two relationships with overall leadership perceptions differed across the happy and nervous condition, specifically, that they were stronger in the happy condition than in the nervous condition. As predicted, the covariance of overall leadership perceptions with the latent trait factor was higher in the happy condition (*cov* = 1.58, *r* = .84, *p* < .001), than in the nervous condition (*cov* = .79, *r* = .66, *p* <.001). However, the covariance of overall leadership perceptions with the separate trait of tyranny did not show the expected pattern. Specifically, the covariance was stronger and had a positive sign in the nervous condition (*cov* = .63, *r* = .29, *p* =.005), compared to the happy condition where it had a negative sign and was weaker (*cov* = -.46, *r* = -.18, *p* = .051).

To determine whether the differences in the covariance values for the two groups were statistically significant, we performed a multi-group equivalence test. In the unconstrained condition, the covariances with overall leadership perceptions were allowed to freely differ in the happy versus nervous group (however, the factor loadings for the trait perceptions factor were constrained to be equal across groups in both models, which somewhat degraded fit but ensured that we were looking at comparable factors). The fit of this unconstrained model was $\chi^2_{(227)}$

=185.136, *df* = 46, p < .001. It was compared to a constrained condition which forced the two sets of covariances to be equal, $\chi^2_{(227)} = 207.463$, *df* = 48, *p* < .001. After performing the necessary adjustment for use of the MLR estimator, we found the constrained model fit was significantly worse than that of the unconstrained model, $adj\Delta\chi^2_{(227)} = 25.643$, *df* = 2, *p* <.001. Thus, Hypothesis 4 was supported for the traits included in the trait factor, indicating that *overall leadership perceptions were more strongly related to the pattern of perceptions on trait dimensions in the happy compared to the nervous condition*. This result implies that leadership perceptions provide a stronger constraint when assessing traits in the happy than in the nervous condition. However, Hypothesis 4 was not supported for the test of the relationship with tyranny.

Test of ILT Endorsement Effects

Hypothesis 5 proposed that differences among subjects in their level of endorsement of the ILT dimensions would influence overall leadership perceptions and perceptions of leadership-related traits. If supported, this hypothesis would help explain why we would have stronger effects in the happy condition, as subjects are expected to make greater use of their ILTs in rating leadership in that condition. We hoped to show that ILT endorsements, which were rated by participants prior to viewing any stimulus materials and thus were independent of the manipulation, predict both overall leadership perceptions (H5a) and perceptions on perceived trait dimension scores (H5b). When results were estimated in the full sample (i.e., going across the happy and nervous conditions), the prediction of overall leadership perceptions from ILT endorsement was not statistically significant, β = .13, *p* = .081, thus failing to support H5a. However, support was found for H5b with a significant prediction of the trait dimensions factor by endorsement of ILTs, β =.21, *p* = .004. The parallel test predicting only the tyranny trait from ILT endorsement was not significant, β =.08, *p* = .210. The related Hypothesis 6, which proposed

a happy versus nervous condition difference in the relationship of ILT endorsements to (a) the overall leadership perceptions, (b) the trait dimensions factor, and (c) tyranny, also was not supported, $adj\Delta\chi^2 = 1.491$, $df = 3$, $p = .316$.

Exploratory Mediational Model

Finally, to provide an integrative framework within which to think about our results, we tested a theory-based mediational model (see Figure 2) which proposed that the effects of the facial emotion expression of the leader on trait ratings of the leader was influenced by ILTs and mediated through overall leadership impression. Based on the logic that perceivers use categories to make sense of and simplify complex data, and also that categorization can be indexed by a global rating (Lord et al., 1984), we expected that rapid interpretation of a stimulus reflected in ratings in terms of overall leadership would be an appropriate index of leader categorization. Yet it is also possible that trait ratings drive interpretations of facial emotions and are antecedent to leadership perceptions, which is an alternative mediational logic. Hence we examined a mediational model on an exploratory basis.

The mediational model was also estimated using SEM, and it used the trait dimensions factor as the dependent variable. As a preliminary step, an alternative model that *did not* include the mediator was estimated. In this preliminary model, the path coefficient relating the leader facial emotion expression manipulation directly to the trait dimension factor was statistically significant, β=.34, $p < .001$, establishing again that the manipulation did indeed influence trait ratings. In addition, in this model ILT endorsement also significantly predicted the trait dimension factor, β=.18, $p = .008$.

Next the model was re-estimated, this time including overall leadership perceptions as a potential mediator of the effects of the manipulation and of ILT endorsement. As shown in

Figure 2, when the mediating variable was included in the model, the remaining direct effect for the leader facial emotion was reduced substantially from its previous value of .34, and was no longer statistically significant, $\beta = .05$, $p = .40$. Instead, leader facial emotion expression related significantly to the mediating variable of overall leadership impression, $\beta = .40$, $p < .001$, which in turn related significantly to the trait dimension factor, $\beta = .77$, $p < .001$. A Sobel test showed that this indirect effect of leader facial emotion expression on the trait dimension factor was statistically significant, $\alpha\beta = .31$, $p < .001$. However, ILT endorsement effects were not carried through the mediator, although there was a significant but low magnitude direct effect of ILT endorsement on the trait factor, $\beta = .11$, $p = .007$. Details of this model are displayed in Figure 2.

[Insert Figure 2 about here]

Discussion

The purpose of the current study was to add to our knowledge of several dynamic aspects of leadership perception that pertained to rapid use of facial expressions in the formation of leadership impressions. Specifically, we examined the role played by participants' ILT endorsement and the emotion displayed by stimulus individuals, and traced their effects through overall leadership perceptions to perception trait ratings. The emotions expressed by the focal individual affected overall leadership perceptions, perceptions on trait ratings, the intercorrelations of perceptions on trait ratings, and the relation of a general factor based on perceptions of trait ratings to overall leadership perceptions. All of these results are consistent with the greater use of schemas related to leadership in the happy compared to the nervous conditon. Our study highlights that a minimal manipulation (here, one different frame in a series of pictures or a final section of a short video) was sufficient to induce different leadership perceptions in perceivers. We also found significant effects of ILT endorsement on trait

perception ratings, but these effects did not vary across the the emotion manipulation. ILT endorsement did not significantly predict overall leadership perceptions.

Dynamics of the Underlying Process

Effects of emotions and faces. Because our data were cross-sectional rather than longitudinal, we acknowledge that comments made in this discussion regarding underlying dynamics are tentative. Yet our results are largely consistent with other research and with our underlying theory. Similar to Trichas and Schyns (2012), who found that smiling or happy faces are considered more leader-like, we found that experimentally manipulated emotions affected leadership ratings. The simplest interpretation of this result is that emotions are cues that indicate leadership *per se*, and perhaps leadership-related traits as well, to raters. This is consistent with our finding that the effects of emotions were relatively independent of ILT endorsement effects. Our results relating to the leader displaying a nervous facial expression are also consistent with Bono and Judge's (2004) finding that leaders high in neuroticism were rated lower on all dimensions of transformational leadership. In addition, they are also in line with Felfe and Schyns (2010), who showed that follower-rated leader neuroticism was negatively related both to perceptions of transformational leadership and affective commitment to the supervisor. In combination, these results imply that leaders perceived as emotionally unstable, either due to their facial expressions or as a general judgment of their personality, are perceived as less leader-like.

Such results suggest that ILTs may include prototypical emotions and/or emotional displays as well as behaviors, a possibility that has not yet been considered by ILT researchers and should be explored further. In doing so, it is essential for researchers to recognize that people may not be capable of self-reporting that expressed emotions affect their leadership perceptions,

even when those emotions have a substantial influence. Consequently, implicit measures or experimental procedures such as the ones used in this study may be needed to investigate the emotional components of ILTs. In our study, one reason why Hypotheses 5 and 6 were not well supported may simply have been that we did not include an emotional component of ILTs in our measure of leadership endorsement.

It is also likely that when a happy rather than nervous emotion was displayed, it increased the use of schematic processing. Our exploratory mediational analysis suggests that processing could be mediated by overall leadership perceptions, implying that the use of leadership schema was the critical process, rather than just a general emotion-related halo influencing trait ratings. As shown in Figure 2, there was no remaining direct effect of our emotional manipulation on the trait dimensions factor score when overall leadership impression was included in a mediating position.

Our observed effects also could have worked via emotional contagion (e.g., Barger & Grandey, 2006), so that the emotion depicted on a leader's face might have spilled over to the perceiver, influencing how the follower saw the depicted leader. Yet we are skeptical regarding this interpretation because all effects of our emotional manipulation seemed to occur through overall leadership perceptions and were independent of ILT endorsement. Had raters shared the emotion conveyed by the stimulus leader, we might have expected greater influence of ILTs because positive emotions increase the use of heuristic schemas such as ILTs. We tested for the presence of an interaction between emotional expression of the leader and ILTs, which would be consistent with an emotional contagion interpretation, but did not find a significant interaction effect.

The fact that perceivers infer so much from a brief exposure to faces shows how effective faces can be as communicative devices. Faces can also directly convey information about an individual's traits, and this effect may operate automatically. Illustrating such effects, children shown faces of presidential candidates were able to predict outcomes of US elections (Antonakis & Dalgas, 2009). In terms of leadership processes, our results indicate that even minimal variation in a series of facial expressions can influence perceivers' judgment of leaders. Generalizing to real social interactions, this result suggests that perceivers would react differently to various emotional displays, ultimately leading to different interactions between leaders and followers. This result highlights the power of emotional facial expressions in the leadership process and in social interactions in general.

Broader effects of ILT networks. In considering the dynamic impression formation processes at work in leadership perception, we think the strongest general interpretation of our results combines several theories. First, we expected that leadership prototypes operate as dynamic recurrent neural networks, which can fill-in or suppress relevant trait information based on both bottom-up and top-down constraints (Foti et al., 2008; Hanges et al., 2000; Lord et al., 2001; Sy et al., 2010), as they create a coherent interpretation of the stimulus (Thagard & Kunda, 1998).

Second, we believe that this prototype activation process occurs within the context of nested sets of constraints. This is consistent with person-construal research (Freeman & Ambady, 2011), and illustrates both bottom-up, data-driven, and top-down, concept-driven effects on the operation of dynamic systems. In the specific context of the current study, bottom-up input comes from the expression on the face of the target, and top-down constraints come from leader labels and associated categorization processes affecting trait ratings and also from the rater's

own ILTs. This general model is consistent with many studies in the leadership field showing that leadership perceptions are affected by constraints associated with leaders such as vocal attractiveness (DeGroot et al., 2013), gender (Scott & Brown, 2006), ethnicity (Sy et al. 2010), race (Rosette, Leonardelli, & Phillips, 2008), or other embodied cues (Giessner & Schubert, 2007; Lord & Shondrick, 2011); constraints from perceivers such as experienced affect (Naidoo & Lord, 2008), personality (Hansbrough et al., 2015), or liking of the leader (Brown & Keeping 2005); and constraints from context such as the level of group performance (Rush, Thomas, & Lord, 1977); the nature of work tasks (Sy et al., 2010), or the existence of crisis situations (Pillai, 1996).

Third, given the ordering of measures in our experimental procedure, participants had leadership labels in mind when making trait ratings. Thus, they may simply have inferred additional trait information from this label because it provided an easily accessible general evaluation. Such a process is consistent with Srull and Wyer's (1989) model of impression formation in which individuals infer behaviors and other attributes from a more general trait concept. Here, the critical general trait concept is that of leadership, for which it was established that our study participants had existing cognitive schemas (i.e., ILTs) of specific trait dimensions related to that general leadership concept. Moreover, we expect that this general assessment was relied on more extensively in the happy emotion condition as shown by support for H4, indicating a stronger link between overall leadership perceptions and the trait dimension factor in the happy conditions.

Finally, we argue that neural networks can automatically integrate diverse types of information discussed here in the blink of an eye (which typically takes between 100 and 400 *ms*) and before conscious evaluations have time to operate. That means that implicit automatic

effects can be important precursors to leadership and trait perceptions. Prior work (Dinh & Lord, 2013) has used both implicit measures and simulation methodology to support the operation of such processes in leadership perceptions and the activation of ratings on ILT dimensions. Our results are consistent with other research based on holistic and dynamic models of perceptions in leadership (Dinh & Lord, 2013; Foti & Hauenstein, 2007; Lord et al., 2001; Smith & Foti, 1998) and psychology (Fiske & Taylor, 2013; Freeman & Ambady, 2011).

Although our dynamic model is consistent with the notion that leadership perceptions involve the creation and activation of a prototypical pattern of leadership characteristics, our focus was on how this process was accentuated by happy compared to nervous facial expressions, and we measured leadership perceptions prior to collecting trait ratings. In contrast, some prior research has manipulated (Smith & Foti, 1998) or measured traits (Foti & Hauenstein, 2007) and then used trait patterns to predict leadership perceptions. The likely bidirectional nature of the leadership-to-trait-pattern relationship is consistent with the notion that they are both connected in a network that allows for reciprocal activation, and generally operates automatically, without intention, and often without awareness.

Practical Implications, Limitations and Future Research

Although we hesitate to draw strong practical implications from the study until there is an opportunity for additional replications, including those varying the leader stimulus and context, our results do suggest that it can be important for leaders and potential leaders to be aware of the emotional expressions that they display to followers. Those expressions will benefit leaders to the extent that they are congruent with leadership, or at least, not inconsistent with leadership. In the current study, and in most leadership research (e.g., Bono & Ilies, 2006; Griffith et al., 2015; Naidoo & Lord, 2008), positive emotions were more congruent with leadership.

However, it is not necessarily the case that leadership-congruent emotions be positive in nature. Although it seems likely from our results that the negative emotional display indicating nervousness is inconsistent with leadership, other negative emotional displays such as anger or disgust, in the proper contexts, might also be congruent with leadership. It might be that applied attempts to develop leaders' awareness of their emotional displays and the potential resulting effects on followers could be helpful, especially in circumstances where other indicators of leadership are weak. It is possible, for example, that emotional expressions might be quite important when there is a lack of formal hierarchical supports for leaders, or when the leader has characteristics (such as being female or of minority status) that prior research has indicated may be handicaps when it comes to being perceived as leader-like. However, persons wanting to explore more practical implications (as well as those interested in the more theoretical aspects) of our study should also be aware of some of the limitations described in the following paragraphs.

An important limitation of our study was that though grounded in the leadership and social-cognitive literatures, it was not grounded in neurocognitive or physiological literatures. Exciting new insight into the relation of automatic, preconscious processing in local brain modules and more global, brain-scale conscious processing has been developed by Dehaene and colleagues over the last 15 years (summarized in Dehaene, 2014). Occurring in local regions, automatic processing can be very fast, whereas brain-scale conscious processing, which requires cycles of communication across the entire brain, is necessarily slower. Future research might examine whether facial perceptions or prototype activation involve local, modular processes or more extensive brain scale processes. Similarly, an important question is whether broader emotional effects (occurring through the richly connected limbic system) or higher level constraints from many diverse sources associated with leaders, perceivers, or contexts depend on

conscious brain-scale networks. A critical question regarding ILTs is whether the modulation of prototypes involves primarily local, automatic processes, or a combination of local and conscious networks as we have argued in this paper. Determining answers to such questions may involve gauging the speed with which such modulation occurs, and the use of more specialized techniques that can more directly measure cognitive and neuro-cognitive processes.

Another important limitation of our study was the exclusive use of a relatively young, male, Caucasian actor for the leader stimulus. While this approach helped to control appearance variables such as hair, facial characteristics, skin color, and clothing (Wehrle, Kaiser, Schmidt, & Scherer, 2000; Zebrowitz, 1997), this choice restricts the external validity of the design, thus limiting our knowledge about the extent to which our findings can be generalized to leaders with other visible demographic characteristics. In interpreting this limitation, how constraints fit within a specific context is also important. The choice of a male Caucasian actor was quite representative of the bank's management demographics (see bank of Cyprus annual report, Prodromou & Ioannidou-Procopiou, 2008). Also, according to guidelines for large scale financial organizations in Cyprus (see Regulation of use of central bank of Cyprus, 2004), employees can occupy leadership positions quite early in their careers according to qualifications, performance, and experience. Consequently, even though a typical leader within the organization investigated would not as be as young as the actor used in the current study, it would not be that unusual.

Another limitation is that there may be organizational and situational factors that influence prototype activation. We controlled for this possibility by using only one organization and keeping the situation constant, but future research might explore such factors (e.g., organizational culture and form, Dickson, Resick, & Hanges, 2006; hierarchical level, Lord et al., 1984). For example, in crisis situations the emotional displays consistent with being

perceived as a leader might be quite different than those in a neutral situation, as there might be a need to use facial expressions that can convince followers of the serious need for action and motivate them to carry through. Also, our results indicated significant effects of ILT endorsement on trait perception ratings, but these effects did not differ across the emotion manipulation, and there was no direct endorsement effect of the ILTs on leadership impressions. The latter results might be due to the strong effect of emotional displays on leadership impressions that overruled the effect of implicit leadership theories The findings regarding trait perceptions may reflect a limitation of our design that can be addressed in future research. As we mentioned earlier in our paper, a reason for the above results may be that our measure of leadership endorsement did not include an emotional component of ILTs. It would be interesting for future research to construct instruments that take such emotional components into consideration when replicating the results we found We can assume that individuals who include emotions in their implicit leadership theories might attribute more traits that are included in their implicit leadership theories because implicit leadership theories are connected to each other in a network (Hanges et al., 2000; Lord et al. 2001) or due to a halo effect.

We cannot determine from our design the extent to which the effects of the stimulus emotions were direct, or whether they occurred indirectly via emotional contagion (and thus represent an embodied response to the stimulus). Future research could examine this issue by collecting pre- and post-stimulus exposure measures of the state affect of the perceiver, as well as measures of emotional sensitivity which would indicate susceptibility to contagion effects. In addition, in the current study the exposure to the leader stimulus was of relatively short duration, and there was not any meaningful interaction between the perceiver and the 'leader.' We speculate that the effects of emotions could be greater in face-to-face interactions, especially

where perceivers and social targets are interdependent. Thus, richer social contexts should be examined. Finally, our theorizing and analyses were based on an underlying model of dynamic processes which was primarily theoretical. Additional work could translate such reasoning into an explicit computational model, and then compare simulation results to experimental findings on a fine-grained level, such as was done in Freeman and Ambady's (2011) research on person construal.

Conclusions

Our research findings support our theory-based propositions that the dynamic processing of information relevant to leadership applies not just to behavior but also to emotions. We found evidence that the emotions displayed by leaders affected perceivers' leadership and trait perceptions, the covariances among trait perceptions, and the extent to which trait perceptions were associated with overall leadership impressions. Our findings show that patterns of traits were inferred simply from brief exposure to the faces of leader, but this process was mediated by a leadership perception process. In addition, this study illustrates the value of examining the effects of specific emotions such as happiness and nervousness in understanding leadership perceptions. Such emotional cues may be an important, but heretofore ignored, aspect of ILTs.

References

Adelmann, P. K. & Zajonc, R. B. (1989). Facial efference and the experience of emotion. *Annual Review of Psychology*, *40*, 249-280.

Aguinis, H., Simonsen, M. M., & Pierce, C. A. (1998). Effects of nonverbal behaviour on perceptions of power bases. *Journal of Social Psychology, 138*, 455-469.

Allen, P., Kaut, K., & Lord, R. (2008). Emotion and episodic memory. In E. Dere, A. Easton, L. Nadel, and J. P. Huston (Eds.), *Handbook of behavioral neuroscience: Episodic memory research.* Vol. 18, 115-132. Elsevier Science.

Antonakis, J., & Dalgas, O. (2009). Predicting Elections: Child's Play! *Science , 323*, 1183.

Barger, P. B., & Grandey, A. A. (2006). Service with a smile and encounter satisfaction: emotional contagion and appraisal mechanisms. *Academy of Management Journal , 49*, 1229-1238.

Bless, H. (2003). The consequences of mood on the processing of social information (pp.391-412). In A. Tesser & N. Schwarz (Eds). *Blackwell handbook of social psychology: Intraindividual processes*. Malden, MA: Blackwell.

Bono, J. E., & Ilies, R. (2006). Charisma, positive emotions and mood contagion. *Leadership Quarterly, 17,* 317-334.

Bono, J. E., & Judge, T. A. (2004). Personality and transformational and transactional leadership: A meta-analysis. *Journal of Applied Psychology, 89,* 901-910.

Brown, D. J., & Keeping, L. M. (2005). Elaborating the construct of transformational leadership: The role of affect. *Leadership Quarterly, 16,* 245-273.

Buller, D. B., & Aune, R. K. (1988). The effects of vocalics and nonverbal sensitivity on compliance: A speech accommodation theory explanation. *Human Communication Research, 14*, 301-332.

Cherulnik, P. D., Donley, K. A., Wiewel, T. S., & Miller, S. R. (2001). Charisma is contagious: The effect of leaders' charisma on observers' affect. *Journal of Applied Social Psychology, 31*, 2149-2159.

Cosmides, L. & Tooby, J. (2000). Evolutionary psychology and the emotions In M. Lewis & J. M. Haviland-Jones (Eds.), *Handbook of emotions, 2nd Edition.* (pp. 91-115.) NY: Guilford.

Cuddy, A. J. C., Fiske, S. T., & Glick, P. (2007). Warmth and competence as universal dimensions of social perceptions: The stereotype content model and the BIAS map. *Advances in Experimental Social Psychology, 40,* 61-149.

Darwin, C. (1872/1965). *The expression of the emotions in man and animals.* Chicago: The University of Chicago Press. (Originally published, 1872.).

Deckers, L. (2001). *Motivation: Biological, psychological and environmental*. Needham Heights, MA.: Allen & Bacon.

Dehaene, S. (2014). *Consciousness and the brain: Decipehering how the brain codes oru thoughts*. New York, NY. Penguin Books.

DeGroot, T., Aime, F., Johnson, S. & Kluemper, D. (2011). Does talking the talk help walking the walk? An examination of the effect of vocal attributes in leader performance. *Leadership Quarterly, 22,* 680-689.

Dickson, M. W., Resick, C. J., & Hanges, P. J. (2006). Systematic variation in organizationally-shared cognitive prototypes of effective leadership based on organizational form. *Leadership Quarterly, 17*, 487-505.

Dinh, J. E., & Lord, R. G. (April, 2013). *Implicit leadership theories and the dynamics of leadership perceptions.* Paper presented at the 28th Annual conference of the Society for Industrial and Organizational Psychology (Houston, TX).

Eden, D., & Leviatin, V. (1975). Implicit leadership theory as a determinant of the factor structure underlying supervisory behavior scales. *Journal of Applied Psychology, 60*, 736-740.

Ekman, P., Friesen, W. V., & Hager, J. C. (2002). *Facial action coding system: The manual.* USA: Research Nexus division of Network Information Research Corporation.

Engle, E. M., & Lord, R. G. (1997). Implicit theories, self-schemas, and leader-member exchange. *Academy of Management Journal, 40,* 988-1010.

Epitropaki, O., & Martin, R. (2004). Implicit leadership theories in applied settings: Factor structure, generalizability, and stability over time. *Journal of Applied Psychology, 89*, 293-310.

Epitropaki, O., Sy, T., Martin, R., Tram-Quon, S., Topakas, A. (2013). Implicit leadership and followership theories "in the wild": Taking stock of information processing approaches to leadership and followership in organizational settings. *Leadership Quarterly, 24*, 858-881.

Felfe, J., & Schyns, B. (2010). Follower's personality and the perception of transformational leadership: Further evidence for the similarity hypothesis. *British Journal of Management, 21*, 339-410.

Fiske, S. T., & Taylor, S. E. (2013). *Social cognition: From brains to culture (2nd Ed.).* Thousand Oaks, CA: Sage.

Fleishman, E. A. (1953a). The description of supervisory behavior. *Journal of Applied Psychology, 37*(1), 1-6.

Foti, R. J. & Hauenstein, N. M. A. (2007). Pattern and variable approaches in leadership emergence and effectiveness. *Journal of Applied Psychology, 92,* 347-355.

Foti, R. J., Knee, R., & Backert, R. G. (2008). Multi-level implications of framing leadership perceptions as a dynamic process. *Leadership Quarterly, 19,* 178-194.

Freeman, J. B., & Ambady, N. (2011). A dynamic interactive theory of person construal. *Psychological Review, 118,* 247-279.

Fridlund, A. J. (1994). *Human facial expression: An evolutionary view.* San Diego, CA: Academic.

Friedman, R. S., & Forster, J. (2002). The influence of approach and avoidance motor actions on creative cognition. *Journal of Experimental Social Psychology, 38,* 41-55.

Giessner, S. R., & Schubert, T. W. (2007). High in the hierarchy: How vertical location and judgments of leaders' power are interrelated. *Organizational Behavior and Human Decision Processes, 104,* 30-44.

Gordon, M. (1987). *The stanislavsky technique: Russia. A workbook for actors.* New York: Applause.

Griffith, J., Connelly, S., Thiel, C., & Johnson, G. (2015). How outstanding leaders lead with affect. An examination of charismatic, ideological, and pragmatic leaders. *Leadership Quarterly, 26,* 502-517.

Gross, J. J. (Ed.). (2007). *Handbook of emotion regulation.* New York: Guilford Press.

Hanges, P. J., Lord, R. G., & Dickson, M. W. (2000). An information processing perspective on leadership and culture: A case for connectionist architecture, *Applied Psychology: An International Review*, 49, 133–161.

Hansbrough, T. Lord, R. & Schyns, B. (2015) Reconsidering the accuracy of follower leadership ratings. *Leadership Quarterly, 26*, 220-237.

Hareli, S., & Hess, U. (2009). What emotional reactions can tell us about the nature of others: An appraisal perspective on person perception. *Cognition and Emotion, 24*, 128-140.

Hatfield, E., Cacioppo, J., & Rapson, R. L. (1994). *Emotional contagion*. New York: Cambridge University Press.

House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V. (2004). *Culture, leadership, and organizations: The GLOBE study of 62 societies.* Thousand Oaks, CA: Sage.

Isen, A. (1987). Positive affect, cognitive processes, and social behavior. *Advances in Experimental Social Psychology, 20*, 203-253.

Judge, T. A., Piccolo, R. F., & Ilies, R. (2004). The forgotten ones? The validity of consideration and initiating structure in leadership research. *Journal of Applied Psychology, 89*(1), 36-51.

Keller, T. (1999). Images of the familiar: Individual differences and implicit leadership theories. *Leadership Quarterly, 10*, 589-607.

Keltner, D., & Ekman, P. (2000). Facial expression of emotion. In M. Lewis & J. Haviland-Jones (Eds.), *Handbook of emotion* (pp. 236-249). New York: Guilford Press.

Kemper, T. D. (2006). Power and status and the power-status theory of emotions. In J. Stets & J. Turner (Eds.) *Handbook of the sociology of Emotions* (pp. 87–113). New York, NY: Springer.

Kenney, R. A., Blascovich, J., & Shaver, P. R. (1994). Implicit leadership theories: Prototypes for new leaders. *Basic and Applied Social Psychology, 15*, 409-437.

Krumhuber, E., Manstead, A., & Kappas, A. (2006). Temporal aspects of facial displays in person and expression perception: The effects of smile dynamics, head-tilt, and gender. *Journal of Nonverbal Behaviour, 31*, 39-56.

LeDoux, J. (1996). *The emotional brain: The mysterious underpinnings of emotional life.* New York: Simon & Schuster.

LeDoux, J.E. & Phelps, E. A. (2000). Emotion networks in the brain. In M. Lewis & J. Haviland-Jones (eds.) *Handbook of Emotion,* 2nd ed. NY: Guilford.

Liu, J., Harris, A., & Kanwisher N. (2002). Stages of processing in face perception: An MEG study. *Nature Neuroscience, 5*, 910–916.

Lord, R. G., Brown, D. J., Harvey, J. L., & Hall, R. J. (2001). Contextual constraints on prototype generation and their multilevel consequences for leadership perceptions. *Leadership Quarterly, 12*, 311-338.

Lord, R. G., Foti, R. J., & DeVader, C. L. (1984). A test of leadership categorization theory: Internal structure, information processing, and leadership perceptions. *Organizational Behavior and Human Performance, 34*, 343-378.

Lord, R. G., Foti, R. J. & Phillips, J. S. (1982). A theory of leadership categorization. In *Leadership: Beyond establishment views*. (pp. 104-121). Hunt, J.G., Sekaran, U. & Schriesheim, C. Carbondale IL: Southern Illinois University Press.

Lord, R. G., & Maher, K. J. (1991/1994). *Leadership and Information Processing: Linking Perceptions and Organizational Performance*. New York: Routledge, Chapman & Hall.

Lord, R. G., & Shondrick, S. J. (2011). Leadership and knowledge: Symbolic, connectionist, and embodied perspectives. *Leadership Quarterly*, 22, 207-222.

McDonald, H., Sulsky, L., & Brow, D. (2008). Leadership and perceiver cognition: Examining the role of self-identity in implicit leadership theories. *Human Performance, 21,* 333–353.

Marsh, A. A., Adams, R. B., & Kleck, R. E. (2005). Why do fear and anger look the way they do? Form and social function in facial expressions. *Personality and Social Psychological Bulletin, 31,* 1–14.

McArthur, L. Z., & Baron, R. M. (1983). Toward an ecological theory of social perception. *Psychological Review, 90,* 215-238.

Montepare, J. M., & Dobish, H. (2003). The Contribution of Emotion Perceptions and Their Overgeneralizations to Trait Impressions. *Journal of Nonverbal Behavior, 27,* 237-254.

Muthén, L. K. & Muthén, B.O. (1998–2014). *Mplus Users's Guide*. Los Angeles: Muthén & Muthén.

Naidoo, L. J., & Lord, R. G. (2008). Speech imagery and perceptions of charisma: The mediating role of positive affect. *Leadership Quarterly, 19,* 283–296.

Niedenthal, P. M., Barsalou, L. W., Winkielman, P., Krauth-Gruber, S., & Ric, F. (2005). Embodiment in attitudes, social perception, and emotions. *Personality and Social Psychology Review, 9,* 184-211.

Niedenthal, P. M., Winkielman, P., Mondillon, L., & Vermeulen, N. (2009). Embodiment of emotion concepts. *Journal of Personality and Social Psychology, 96,* 1120-1136.

O'Malley, A.L., Ritchie, S.A., Lord, R.G., Gregory, J.B. & Young, C.M. (2009). Incorporating embodied cognitions into sensemaking theory: A theoretical examination of embodied processes in a leadership context. *Current Topics in Management, 14*, 151-182.

Offermann, L. R., Kennedy, J. K., & Wirtz, P. W. (1994). Implicit leadership theories: Content, structure, and generalizability. *Leadership Quarterly , 5*, 43–58.

Pillai, R. (1996). Crisis and the emergence of charismatic leadership in groups: An experimental investigation. *Journal of Applied Social Psychology, 26*, 543-562.

Prodromou, D., & Ioannidou-Procopiou, E. (2008). *Bank of Cyprus Annual report.* Nicosia, Cyprus: J. G. Cassoulides & Son Ltd.

Roseman, I., Antoniou, A., & Jose, P. (1996). Appraisal determinants of emotions: Constructing a more accurate and comprehensive theory. *Cognition and Emotion, 10*, 241-277.

Rosette, A. S., Leonardelli, G. J., Phillips, K. W. (2008). The white standard: Racial bias in leader categorization. *Journal of Applied Psychology, 93*, 758-777.

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

Rumelhart, D. E., & McClelland, J. L. (1986). PDP models and general issues in cognitive science. In D. E. Rumelhart & J. L. McClelland (Eds). *Parallel distributed processing: Explorations in the microstructure of cognition: Vol. 1. Foundations* (pp.110-146). Cambridge, MA: MIT Press/Bradford Books.

Rush, M. C., Thomas, J. C., & Lord, R. G. (1977). Implicit leadership theory: A potential threat to the internal validity of leader behavior questionnaires. *Organizational Behavior and Human Performance, 20*, 93-110.

Scherer, K. (1999). Appraisal theory. In T. Dalgleish, & M. Power, *Handbook of Cognition and Emotion.* (pp. 637–663). New York: John Wiley.

Schmid, M. M., & Hall, J. A. (2004). Who is the boss and who is not? Accuracy of judging status. *Journal of Nonverbal Behavior, 28,* 145-165.

Schwarz, N. (2002). Situated Cognition and the Wisdom of Feelings: Cognitive Tuning. In L. B. Feldman, & P. Salovey, *The wisdom in feeling.* (pp. 144-166). New York: Guilford Press.

Schyns, B., Felfe, J., & Blank, H. (2007). Is charisma hyper-romanticism? Empirical evidence from new data and a meta-analysis. *Applied Psychology: An International Review, 56,* 505-527.

Scott, K. A., & Brown, D. J. (2006). Female first, leader second? Gender bias in the encoding of leadership behavior. *Organizational Behavior and Human Decision Processes, 101,* 230-242.

Secord, P. F. (1958). Facial features and inference processes in interpersonal perception. In R. Taguiri, & L. Petrullo, *Person Perception and Interpersonal Behavior.* (pp. 300-315). Stanford, CA: Stanford University Press.

Shondrick, S. J., Dinh, J. E., & Lord, R. G. (2010). Developments in implicit leadership theory and cognitive science: Applications to improving measurement and understanding alternatives to hierarchical leadership. *The Leadership Quarterly , 21*, 959–978.

Smith, J. A., & Foti, R. J. (1998). A pattern approach to the study of leadership emergence. *Leadership Quarterly, 9,* 147-160.

Srull, T. K., & Wyer, R. S. 1989. Person memory and judgment. *Psychological Review, 96,* 58-83.

Stanislavski, C. (1965). *An Actor Prepares.* New York: Theater Arts Books.

Stewart, P. A., Bucy, E., & Méhu, M. (2015). Strengthening bonds and connecting with followers. *Politics and the Life Sciences, 34*, 1-20.

Stewart, P. A., Méhu, M., & Salter, F. K. (2015). Sex and leadership: Interpreting competitive and affiliative facial displays based on workplace status. *International Public Management Journal, 18*, 190-208.

Stewart, P., Waller, B., & Schubert, J. (2009). Presidential speech making style: Emotional response to micro-expressions of facial affect. *Motivation and Emotion, 33*, 125-135.

Sy, T., Shore, L.M., Strauss, J., Shore, T.H., Tram, S., Whiteley, P., Ikeda-Muromachi, K. (2010) Leadership perceptions as a function of race-occupation fit: the case of Asian Americans. *Journal of Applied Psychology, 95*, 902-919.

Thagard, P., & Kunda, Z. (1998). Making sense of people: Coherence mechanisms. In S. J. Reed & L. C. Miller (Eds.). *Connectionist models of social reasoning and social behavior* (pp. 3-26). Mahwah, N.J.: LEA.

Trichas, S. (2015). New methods exploring facial expressions in the context of leadership perception: Implications for educational leaders. In K. Beycioglu, & P. Pashiardis, *Multidimensional Perspectives on Principal Leadership Effectiveness.* (pp. 205-225). New York: IGI Global.

Trichas, S., & Schyns, B. (2012). The face of leadership: perceiving leaders from facial expression. *Leadership Quarterly, 23*, 545-566.

Van Kleef, G., Homan, A., Beersma, B., van Knippenberg, D., van Knippenberg, B., & Damen, F. (2009). Searing sentiment or cold calculation? The effects of leader emotional displays on team performance depend on follower epistemic motivation. *Academy of Management Journal, 52*, 562-580.

Wehrle, T., Kaiser, S., Schmidt, S., & Scherer, K. R. (2000). Studying the dynamics of emotional expression via synthesized facial muscle movements. *Journal of Personality and Social Psychology, 78*, 105-119.

Zebrowitz, L. A. (1997). *Reading faces : window to the soul?* Boulder; Press, Oxford: Westview.

Zebrowitz, L. A., & Montepare, J. M. (2008). Social Psychological Face Perception: Why Appearance Matters. *Social and Personality Psychology Compass, 2*, 1497–1517.

Notes

[1] The FACS inter-rater index or the “agreement index” is a reliability test for FACS coding. This can be found in the FACS investigator guide (Ekman et al., 2002, p. 37). Formula: (exact number of agreements for the two coders x 2)/(all the scorings from both coders).

Table 1: Means, Standard Deviations and Pearson Correlations for Focal Study Variables.

Variables		M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ILT Measures																			
1	Sensitivity	6.80	1.18	*.80*															
2	Intelligence	8.09	0.86	.19	*.70*														
3	Potency	5.98	1.52	.26	.43	*.75*													
4	Dynamism	8.22	0.73	-.02	.54	.39	*.75*												
5	Dedication	7.80	1.15	.15	.41	.35	.54	*.72*											
6	Masculinity	3.76	1.93	-.07	.20	.31	.11	.07	*.70*										
7	Tyranny	2.61	1.31	.02	.17	.36	.09	.10	.40	*.85*									
8	ILT Endorsement	0.00	0.59	.37	.71	.75	.65	.63	.49	.52	*.69*								
Leadership Perception & Trait Perception Measures																			
9	Leadership Perception	4.87	1.89	.14	.13	-.01	.07	.05	.04	.10	.13	--							
10	Sensitivity	5.81	1.74	.12	.20	.11	.17	.20	.05	.15	.24	.42	*.92*						
11	Intelligence	6.08	1.69	.02	.17	.05	.15	.10	.12	.15	.18	.65	.52	*.91*					
12	Potency	4.09	1.65	.12	.09	.25	-.01	.04	.19	.30	.24	.55	.32	.56	*.78*				
13	Dynamism	4.56	2.24	.08	.05	.02	.02	-.03	.08	.16	.09	.77	.33	.68	.69	*.94*			
14	Dedication	5.81	1.92	.08	.13	.11	.14	.13	.06	.11	.19	.51	.54	.72	.55	.58	*.91*		
15	Masculinity	4.20	2.04	.07	.14	.09	.04	.03	.12	.16	.16	.55	.43	.48	.49	.55	.41	*.83*	
16	Tyranny	3.53	1.46	.06	-.01	.11	-.02	-.04	.03	.22	.08	-.09	-.30	-.16	.20	-.05	-.06	.01	*.82*

Note. $N = 227$. Correlations of .13 or higher are significant at $p < .05$. Cronbach's alpha is reported on the matrix diagonal.

Table 2: Comparison of Happy and Nervous Emotion Conditions on ILT and Perceptions Variables.

	Condition				
	Happy (*n* = 121)		**Nervous (*n* = 106)**		
	M	*SD*	*M*	*SD*	***t* (*df*=225)**
ILT Scores					
Sensitivity	6.9	1.1	6.7	1.3	1.11
Intelligence	8.2	0.8	8.0	0.9	2.27*
Potency	6.1	1.4	5.8	1.7	1.43
Dynamism	8.3	0.6	8.2	0.8	1.91
Dedication	8.0	1.1	7.6	1.2	1.51
Masculinity	3.6	1.8	4.0	2.0	1.18
Tyranny	2.7	1.4	2.5	1.2	1.66
Endorsement	.08	.62	-.09	.54	2.15*
Leadership Perception Scores					
Overall Leadership perceptions	5.6	1.9	4.0	1.5	6.82**
Sensitivity	6.2	1.6	5.4	1.8	3.85**
Intelligence	6.6	1.7	5.5	1.5	5.00**
Potency	4.3	1.8	3.8	1.5	2.16*
Dynamism	5.3	2.3	3.7	1.9	5.93**
Dedication	6.3	1.9	5.3	1.9	3.82**
Masculinity	4.7	2.1	3.6	1.8	4.20**
Tyranny	3.2	1.4	3.9	1.4	- 4.11**

*$p < .05$; **$p < .01$.

Figure 1 Participants' descriptions of underlying emotions for the static facial expression representing apexes of the video scenarios.

(a) **Happy frame**

(b) **Nervous frame**

Figure 2. Mediational model of leader facial emotion expression effects on leadership trait attributions, as mediated through overall leadership impressions.