



Great man or great myth? A quantitative review of the relationship between individual differences and leader effectiveness

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This study presents a meta-analysis of 25 individual differences proposed to be related to effective leadership, with an emphasis on comparing trait-like (e.g. personality and intelligence) to state-like individual differences (e.g. knowledge and skills). The results indicate that although both trait-like (achievement motivation, energy, dominance, honesty/integrity, self-confidence, creativity, and charisma) and state-like (interpersonal skills, oral communication, written communication, administrative/management skills, problem-solving skills, and decision making) individual differences were consistent predictors of effective leadership, the impact of trait-like and state-like individual differences was modest overall and did not differ substantially ($r = .27$ and $.26$, respectively). Finally, organizational level of the leader, method of predictor and criterion measurement, and organization type moderated the relationship between individual differences and effective leadership.

For over a century (Carlyle, 1907; Craig & Charters, 1925; Terman, 1904), researchers have devoted considerable resources in pursuit of an answer to the question ‘what characteristics differentiate effective from ineffective leaders?’ Although early research was interpreted as yielding somewhat equivocal results, more recent evidence substantiates the link between individual differences and leadership (Day & Zaccaro, 2007). Evidenced by Lord, De Vader, and Alliger’s (1986) seminal review on the topic and ranging to the work of Judge and his colleagues (Judge, Bono, Ilies, & Gerhardt, 2002; Judge, Colbert, & Ilies, 2004), we have learned much about the role that individual differences play in effective leadership.

Despite these strides, research examining individual characteristics and leadership has progressed in a relatively unsystematic manner, making firm conclusions difficult

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(House & Aditya, 1997; Zaccaro, 2007). Indeed, in a recent review of the state of the individual differences–leadership literature, Zaccaro (2007) noted one of the primary barriers to progress in this stream of research is the lack of a ‘coherent and meaningful conceptual construction’ (p. 6). Given the complexity of leadership, an additional limitation of existing research is the use of frameworks that are ‘limited in their elucidation of central leader attributes’ (Zaccaro, 2007, p. 6). This trend is reflected in previous meta-analyses, which have focused exclusively on relatively narrow categories of individual differences (e.g. the ‘Big Five’ personality dimensions or intelligence). Given the proliferation of research examining individual differences over the last three decades, the somewhat narrow scope of prior meta-analyses, and the fragmented nature of the literature, the picture is still somewhat unclear with respect to the impact of individual differences on effective leadership (House & Aditya, 1997; Zaccaro, 2007).

In an attempt to organize this fragmented literature, a variety of conceptual frameworks have been forwarded in recent years (e.g. Bass, 1990; Day & Zaccaro, 2007; Kirkpatrick & Locke, 1991; Locke, 1991; Mumford, Zaccaro, Harding, Owen Jacobs, & Fleishman, 2000; Yukl, 2006; Yukl & Van Fleet, 1992; Zaccaro, 2007; Zaccaro, Kemp, & Bader, 2004). One central aspect to many modern frameworks is the distinction between trait-like and state-like individual difference correlates of effective leadership (Chen, Gully, Whiteman, & Kilcullen, 2000; Kirkpatrick & Locke, 1991; Locke, 1991; Yukl, 2006; Zaccaro, 2007). Following from the ‘Great Man¹’ perspective of leadership (Carlyle, 1907), the majority of prior individual-difference oriented leadership research emphasized dispositional precursors (referred to as trait-like/distal individual differences) of effective leadership, a trend further reflected in recent meta-analyses’ focus on trait-like individual differences (Judge *et al.*, 2002, 2004). Diverging from the historical emphasis on dispositional characteristics associated with the Great Man approach to leadership, recent research has shifted focus to state-like individual differences, usually in the form of knowledge and skills (Yukl & Van Fleet, 1992). A key distinction in these two perspectives is that research on state-like individual differences does not presume that the characteristics that distinguish effective from ineffective leaders are stable through the life-span. Importantly, although these two approaches have become a staple of modern leadership frameworks, empirical research on trait-like and state-like approaches has largely run in parallel, with few attempts at empirical integration.

Accordingly, the present study adopts a framework specifying both trait-like and state-like constructs in order to facilitate a meta-analysis of the role of individual differences in effective leadership. In doing so, this study contributes to the literature by: (a) using a coherent conceptual framework (House & Aditya, 1997; Zaccaro, 2007), (b) specifying a wide range of individual differences (Zaccaro, 2007), and (c) comparing the role of trait-like and state-like individual differences (Kirkpatrick & Locke, 1991; Locke, 1991; Mumford *et al.*, 2000; Yukl, 2006; Zaccaro, 2007; Zaccaro *et al.*, 2004). Specifically, we extend research on individual difference correlates of effective leadership by systematically examining the magnitude of the relationship between leader effectiveness and 25 individual differences, including 14 individual differences that have not been the subject of a meta-analytic review. Because effectiveness is arguably the most

¹The term ‘Great Man’ is used in reference to the historical line of research that considers the dispositional determinants of effective leadership. Because this theory has been historically referred to as the ‘Great Man’ theory of leadership, we retained this term in describing this line of research.

organizationally relevant outcome associated with leadership and has enjoyed the most research attention, this review focuses only on effective leadership, rather alternative outcomes (e.g. leader emergence and follower job satisfaction).

Trait-like and state-like individual differences

Historically referred to as the ‘Great Man’ approach to leadership, attempts to substantiate the dispositional components of leadership have persisted for almost as long as social scientists have attempted to measure individual differences (Galton, 1869). Underlying this research is the assumption that there are heritable traits that distinguish leaders from non-leaders (Day & Zaccaro, 2007). From this perspective, leaders are born, not made. Although this research fell out of favour for a time amid questions as to the evidentiary basis underlying disposition–leadership associations (Stogdill, 1948), recent years have seen a resurgence in the investigation of the relationship between trait-like individual differences and effective leadership (cf. Judge *et al.*, 2002, 2004). In contrast to prior leadership–individual difference research focusing primarily on dispositional antecedents of effective leadership, recent conceptual models have expanded their treatment beyond traditional, trait-like individual differences to include proximal, malleable individual differences. Although this distinction has taken many forms using a variety of terms, including trait-like versus state-like (Chen *et al.*, 2000; Zaccaro, 2007), proximal versus distal individual differences (Zaccaro, 2007), stable versus malleable individual differences (Day & Zaccaro, 2007), and traits versus skills (Kirkpatrick & Locke, 1991; Locke, 1991; Yukl, 2006; Yukl & Van Fleet, 1992), these conceptions have similar underlying themes.

A central similarity is the depiction of trait-like individual differences as having an indirect effect on leader effectiveness, whereas state-like constructs have a more direct effect on performance. For instance, Mumford *et al.* (2000), Yukl (2006), and Zaccaro (2007) propose leader ‘trait’ models in which state-like individual differences, such as oral communication skills are more proximal to outcomes, whereas trait-like individual differences, such as extraversion, impact effective leadership through their more proximal counterparts. From this perspective, one reason for the frequently documented modest impact of individual differences on effective leadership is the historical emphasis on more distal, trait-like individual differences, rather than more directly related, state-like individual differences. Given that variables with more direct paths have stronger relationships with criterion variables, this perspective implies stronger correlations for more proximal, state-like measures and effective leadership, relative to more distal, trait-like measures.

An additional common element is the presumption that trait-like individual differences are less malleable than state-like individual differences (Chen *et al.*, 2000; Day & Zaccaro, 2007; Zaccaro, 2007; Zaccaro *et al.*, 2004). When viewed in this light, the degree to which stable versus malleable individual differences are stronger predictors of leader effectiveness has important implications for the age old question, ‘Are leaders born or made?’ It is in this sense that we ask the degree to which Great Man theory is a great myth. If more proximal, state-like individual differences explain more variance in effective leadership than more distal, trait-like individual differences, our results will indicate that effective leaders, to some degree, can be made (e.g. developed). On the other hand, a finding of a stronger effect for trait-like individual differences would imply that to some extent, ‘leadership quality is immutable and, therefore, not amenable to developmental interventions’ (Zaccaro, 2007, p. 6). Practically, the historical emphasis

on dispositional individual differences leaves limited options for leader development – since characteristics associated with distal individual differences are assumed to be stable throughout the life-span (Day & Zaccaro, 2007). Alternatively, proximal, state-like individual differences may hold more promise for leader development, because characteristics such as knowledge and skills are malleable through carefully constructed developmental interventions (Mumford *et al.*, 2000).

Locke's (1991) individual difference framework

Locke (Kirkpatrick & Locke, 1991; Locke, 1991) presents a general framework which lists and categorizes individual differences necessary for effective leadership. Consistent with recent models (Day & Zaccaro, 2007; Mumford *et al.*, 2000; Yukl, 2006; Zaccaro, 2007), individual differences can be organized into two broad categories reflecting the distinction between distal (motives, traits, and ability) and proximal (knowledge and skills) individual differences. Although a variety of conceptual models specify the role that individual differences play in effective leadership, Locke's framework provides one of the most inclusive lists of individual differences. Thus, to provide as comprehensive treatment as possible, while working in the bounds of an existing framework (House & Aditya, 1997; Zaccaro, 2007), we primarily relied on Locke's framework in selecting individual differences to review. Nevertheless, there is a high degree of overlap in the state-like and trait-like individual differences specified in Locke's model and those proposed by other popular individual difference frameworks.

Trait-like individual differences

We identified 16 trait-like individual differences as precursors to effective leadership. Of these, 10 have been subject to prior quantitative review. Specifically, prior reviews have supported weak to moderate relationships between leader effectiveness and: dominance (Judge *et al.*, 2002; Lord *et al.*, 1986); achievement (Judge *et al.*, 2002); extraversion (Judge *et al.*, 2002; Lord *et al.*, 1986); and conscientiousness (Judge *et al.*, 2002). Prior meta-analyses revealed weak, albeit consistently non-zero relationships between self-confidence (labelled self-esteem; Judge *et al.*, 2002) and adjustment (labelled neuroticism; Judge *et al.*, 2002; Lord *et al.*, 1986) and leader effectiveness. Next, voluminous research has investigated the impact of charisma on leader effectiveness, and multiple meta-analytic reviews have substantiated this relationship, often reporting correlations in excess of .5 between charisma and leader effectiveness (Judge & Piccolo, 2004; Lowe, Kroeck, & Sivasubramaniam, 1996). Finally, although prior reviews consistently support a relationship between intelligence and leader effectiveness, the relationship varies in magnitude from modest (Judge *et al.*, 2004) to moderate (Lord *et al.*, 1986). Because of the strong empirical and theoretical links between these 10 individual differences and effective leadership, we do not provide a review of the empirical and theoretical literature here. The interested reader is referred to prior reviews for a more in-depth treatment (Bass, 1990; House & Aditya, 1997; Judge *et al.*, 2002, 2004; Judge & Piccolo, 2004; Kirkpatrick & Locke, 1991; Locke, 1991; Lowe *et al.*, 1996). However, the relationships between leader effectiveness and the remaining seven distal individual differences have not yet been subject to a systematic summary. Accordingly, this study contributes to the literature by providing a population estimate of the relationship between leader effectiveness and ambition, initiative, energy, need for power, honesty/integrity, creativity, and self-monitoring.

A motive is defined as a relatively stable individual characteristic that energizes and directs behaviour (cf. McClelland & Boyatzis, 1982). Previous motives not subject to review include ambition, initiative, energy, and need for power. Ambition is defined as a desire for success with respect to career progression and work unit effectiveness (Locke, 1991). Next, initiative refers to the willingness to take action by exerting additional effort to exceed expectations (Kirkpatrick & Locke, 1991). To the extent that individuals with high levels of ambition and initiative focus on task objectives, set challenging goals for their work-group, and emphasize the importance of effective performance, they are expected to be more effective leaders (McClelland & Boyatzis, 1982). Both ambition and initiative are commonly hypothesized by prior individual difference models (Bass, 1990; Kirkpatrick & Locke, 1991; Locke, 1991; Stogdill, 1948; Yukl, 2006). Energy is defined as a high degree of stamina and ability to maintain a high rate of activity and is frequently hypothesized as a key determinant of effective leadership (Bass, 1990; Daft, 1999; Kirkpatrick & Locke, 1991; Yukl, 2006; Yukl & Van Fleet, 1992). A leader must maintain a high level of energy in order to effectively perform in the face of the long hours and hectic schedule associated with leadership roles (Mintzberg, 1973). Finally, individuals with high levels of need for power are characterized by the satisfaction they derive from exerting influence over the attitudes and behaviours of others (Gough, 1969; McClelland & Boyatzis, 1982). The motive to influence is associated with seeking positions of authority, being attuned to the political climate of the organization, and the assertiveness needed to direct group activities and advocate for desired changes to the organization and as such, is a frequently proposed antecedent of effective leadership (House & Aditya, 1997; Locke, 1991; Yukl, 2006). These theoretical explanations are supported by empirical work substantiating the association between ambition (Stogdill, 1948), initiative (Russell & Domm, 1995), energy (Howard & Bray, 1988), and need for power (McClelland & Boyatzis, 1982) with leader effectiveness.

In addition to these motives, prior models specify a variety of distal, trait-like constructs associated with effective leadership. Honesty/integrity is defined as 'the correspondence between word and deed' and as 'being truthful and nondeceitful' (Locke, 1991, p. 24). The rationale for this relationship is that followers are less likely to be influenced by someone they do not trust. And, leaders gain trust by being consistent and predictable with subordinates (De Cremer, Van Dijke, & Bos, 2006). According to Yukl (2006), 'unless one is perceived as trustworthy, it is difficult to retain the loyalty of followers' (p. 187). Although a prior review examined the relationship between follower trust and leadership (Dirks & Ferrin, 2002), the relationship between integrity and leader effectiveness has not yet been the subject of a meta-analytic review, despite being consistently proposed as an individual difference precursor to effective leadership (Bass, 1990; Daft, 1999; Kirkpatrick & Locke, 1991; Locke, 1991; Northouse, 2004; Yukl, 2006; Yukl & Van Fleet, 1992).

It is also expected that to the extent a leader forwards novel solutions to problems, the leader will be able more effectively to resolve organizational problems and challenge followers to consider alternative approaches to address organizational problems (Bass, 1985). Although creativity has often been proposed as an important component of effective leadership (Bass, 1990; Daft, 1999; Locke, 1991), there is a dearth of research exploring this relationship. Still, existing research concerning the relationship between creativity and leader effectiveness has drawn relatively positive conclusions (Bass, 1990).

Finally, previous research has focused on the need for leaders to have the ability to adapt to a variety of situations (Bass, 1990; Stogdill, 1948; Zaccaro, Foti, & Kenny, 1991). The ability to adapt to situations is typified by the traits of self-monitoring

and flexibility. Conceptually, these individual differences are important antecedents of effective leadership insofar as they allow leaders to adjust their behaviour depending on the expectations of their subordinates and the demands of the situation. Self-monitoring entails the use of social cues to understand the needs and demands of a given social situation and to understand the impact of one's behaviour on others (Snyder, 1974). Previous research suggests that self-monitoring is an important predictor of leader emergence and conflict resolution (Baron, 1989; Dobbins, Long, Dedrick, & Clemons, 1990). Flexibility is concerned with the ability to alter one's behaviour contingent on the requirements of the situation. Those possessing the ability to change their behaviour depending on situational demands are more likely to emerge as leaders (Day, Schleicher, & Unckless, 2002; Garland & Beard, 1979) and the contingency theories of leadership imply that effective leaders should change their behaviour depending on the demands of the situation. By implication, contingency theories suggest that self-monitoring and flexibility are key determinants of effective leadership. Despite the clear conceptual rationale for the impact of self-monitoring and flexibility on effective leadership, these relationships have not yet been meta-analytically summarized.

State-like individual differences

Despite the increasing prominence of state-like individual differences in conceptual models of leadership, existing reviews of the relationship between individual differences and leadership have not considered the role of theoretically proximal individual differences. Consistent with multiple prior models (Borman & Brush, 1993; Yukl & Van Fleet, 1992), Locke (1991) suggested interpersonal skills, oral communication, written communication, administrative/management skills, problem-solving skills, decision making, and organizing and planning as important antecedents to effective leadership.

Many existing models specify some form of technical knowledge and past experience as individual difference determinants of leadership (Bass, 1990; Locke, 1991; Mann, 1965; Yukl, 2006). According to Yukl (2006), 'technical skills include knowledge about the methods, processes, and equipment for conducting the specialized activities of the managers' organizational unit' (p. 192). Clearly, technical knowledge should play an important role in the effectiveness of a leader in that a leader must be able to comprehend and direct the tasks of his/her work-group (Mann, 1965). Despite the intuitive appeal, relatively little research has explored the relationship between technical knowledge and leadership. Nevertheless, Bass (1990) noted that existing research examining this relationship has been supportive. Because past experience is also thought to be indicative of an understanding of the tasks that need to be done, leader experience is often associated with knowledge as an assumed correlate of leader effectiveness. However, previous research has been mixed with respect to the relationship between past experience and effective leadership (Fiedler, 1992).

Among modern individual difference-leadership models, interpersonal skills hold a prominent place as proximal predictors of leader effectiveness (Locke, 1991; Mumford *et al.*, 2000; Yukl, 2006; Yukl & Van Fleet, 1992). Interpersonal skills include a broad range of skills associated with an understanding of human behaviour and the dynamics of groups (Locke, 1991; Yukl, 2006). Interpersonal skills are postulated to be essential to effective leadership due to their association with higher quality relationships (McCall & Lombardo, 1983), which enhances the ability to influence organizational constituents (Dienesch & Liden, 1986). Existing models further posit that more specific interpersonal skills such as oral communication and written communication, are necessary for effective

leadership (Borman & Brush, 1993; Locke, 1991; Yukl & Van Fleet, 1992). Because of the importance of communicating organizational goals fluently and persuasively, communication skills are theorized to be related to effective leadership (Locke, 1991; Yukl, 2006).

Many frameworks also include administrative/management skills as important predictors of leader effectiveness (Borman & Brush, 1993; Locke, 1991; Mann, 1965; Yukl, 2006). Administrative/management skills include a variety of more narrowly defined skills such as organizing and planning, and problem-solving decision making, (Borman & Brush, 1993; Locke, 1991). According to Mann (1965), administrative skills are critical to effective leadership because they allow a manager to see interrelationships among issues and understand the impact that his/her actions has on the entire organization. Towards this end, previous research has supported the relationship between administrative/management skills and effective leadership as well as advancement to higher levels of organizational responsibility (Howard & Bray, 1988; Meriac, Hoffman, Woehr, & Fleischer, 2008).

The narrower forms of administrative/management skills also have strong conceptual linkages to effective leadership. Organizing and planning involves planning for upcoming events, approaching issues in an organized format, and using a strategic focus (Locke, 1991). Given that leaders' key responsibilities involve coordinating the work of multiple constituents, the ability to plan and organize work is likely crucial to leader effectiveness (Fayol, 1948). In addition, managers are faced with an excess of information on a daily basis; thus, the ability to organize this wealth of information should be a determinant of a leader's effectiveness. Problem-solving entails the ability to think logically and to exercise sound judgment to resolve organizational issues (Yukl, 2006). Problem-solving has long been recognized as a crucial component of effective leadership due to the ambiguous problems managers frequently face (Mintzberg, 1973). Problem-solving is expected to relate to a manager's ability to successfully resolve organizational problems, and in turn, their effectiveness. Finally, decision making is likely to be particularly important to leader effectiveness because managers frequently make decisions with incomplete information. Thus, a variety of individual difference frameworks propose that the ability to take decisive action when facing ambiguous problems predicts leader effectiveness (Borman & Brush, 1993; Locke, 1991).

Moderators

In addition to the proposed main effects, we investigate two situational (e.g. leader level and type of organization) and two methodological moderators (method of predictor and criterion measurement) of the individual difference–leader effectiveness relationship. With respect to leader level, at higher hierarchical levels, individual differences may play less of a role in the effectiveness of a leader. Higher level leadership situations are typically very complex with outcomes that are beyond the leader's control. In this context, a leader's success may be as much a function of environmental factors as the leader's individual differences. Similarly, individual difference–leader effectiveness relations for leaders at higher levels may be range restricted, as many high level leaders would have worked in managerial roles for sufficient time to allow for the attrition of those lacking necessary underlying characteristics needed for effective leadership (Schneider, 1987). On the other hand, the success of leaders at lower levels (e.g. front line supervisors) may be less contingent on external factors and accordingly, more a function of individual differences. Lower level leaders have gone through fewer instances of selection over the

course of their career and thus, the relevant individual differences of lower level leaders should be less influenced by range restriction. Because prior research and reviews have not typically considered leader level as a moderator, we do not speculate as to the specific moderating effect of leader level on the relationship between individual differences and leader effectiveness. Next, we extend Judge *et al.*'s review (2002) by investigating the influence of organization type on the relationship between individual differences and leader effectiveness. Although Judge *et al.* (2002) proposed that the relatively strong situation associated with government/military settings would limit the predictive power of individual differences, their study only examined the five constructs of the five-factor model. Thus, we extend their work by considering organization type as a moderator of an expanded set of individual differences.

The 25 individual differences reviewed in the present study have been measured using a variety of different methods including paper-and-pencil measures (e.g. self-reports of ability and personality), projective tests, and performance measures (e.g. assessment centre-type exercises). Some research suggested differential relationships between self-report and projective measures of personality and criterion variables, and between performance-based measures and self-report measures with respect to their predictive validity (Schmidt & Hunter, 1998). However, previous research has not examined the extent to which method of predictor measurement moderates the relationship between individual difference–leader effectiveness relationships. This type of information could be particularly important when designing selection systems that will be used to select leaders. Thus, this study will provide a summary of the extent to which method of predictor measurement moderates the relationship between individual differences and leader effectiveness.

Similarly, leader effectiveness has been operationalized using a variety of different methods in prior research. Of the previous methods used to measure effectiveness, subjective measures (e.g. ratings) have been relied upon the most frequently. Specifically, supervisor, peer, and subordinate ratings have each been used to measure effectiveness. However, to a lesser extent, researchers have used self-ratings and objective indices to operationalize leader effectiveness. Given evidence that subjective and objective measures assess somewhat different aspects of performance (Bommer, Johnson, Rich, Podsakoff, & Mackenzie, 1995), it is possible that the relationship between individual differences and subjective measures of effectiveness will differ from the relationship between individual differences and objective measures of effectiveness. In fact, in their review of the intelligence–leadership effectiveness relationship, Judge *et al.* (2004) found that the relationship between intelligence and objective effectiveness was significantly greater than the relationship between intelligence and ratings-based effectiveness indices. However, other than the review by Judge *et al.* (2004), prior reviews have not considered the impact of ratings-based versus objective effectiveness indices on individual difference–leader effectiveness relationships. Consequently, this study seeks to explicate the moderating influence of criterion measurement on this relationship.

Method

Literature search

A computer-based search using *Psychological Abstracts* (PsycINFO, 1966–2009) and Web of Science (1966–2009) was conducted to locate studies for the meta-analysis. We

used the search terms 'leader' and 'leadership' and the 25 individual difference constructs (e.g. intelligence, creativity, and integrity). This search resulted in 1,846 articles.

Inclusion criteria for meta-analysis

To be included in the meta-analysis, studies had to empirically examine the relationship between one or more of the focal individual characteristics and leader effectiveness (as opposed to emergence or follower satisfaction). We chose to focus on effectiveness because it is arguably the most practically relevant criterion variable. In addition, because the preponderance of the relevant literature has used effectiveness as a criterion, not enough studies examining each of the individual difference constructs and alternative criterion variables were available. Leader effectiveness was defined as objective and rating-based measures of the leader's overall effectiveness and performance. Other less common indices of leader effectiveness such as subordinate motivation were omitted in order to ensure that the leader effectiveness outcome was as homogeneous as possible. Second, studies had to report a correlation between the individual difference variable and leader effectiveness or other information that could be converted to a correlation coefficient. Using these inclusion criteria, 187 studies from the initial pool were retained for the meta-analysis. Six hundred and sixty-three independent data points were extracted from these studies (the majority of studies examined multiple variables) resulting in a total sample size of 146,851.

Coding procedures

Each of the studies included in the analyses was coded with respect to the individual differences measured as well as effect size estimates (correlations). In addition, we coded a variety of potential moderators of these relationships. Hierarchical level of the leader was coded as student, first line supervisors/low level managers, or mid/upper level managers. Next, consistent with Judge *et al.* (2002), organization type was coded as business or government/military. Predictor measurement method was coded as self-report, projective test, or performance-based measure. Measures such as self-reports of personality were coded as paper-and-pencil measures. Method of criterion measurement was coded as self-rated, other-rated, or objectively measured. We chose to separate self-other ratings due to historically low levels of self-other agreement and the different nomological networks of self and other ratings (Conway & Huffcutt, 1997; Mabe & West, 1982). Upon closer inspection we realized too few studies had used self-ratings as a criterion to facilitate meaningful comparisons ($k = 34$); accordingly, only 'others' ratings are used to investigate the moderating effect of criterion type. Two raters were used to code the studies. Both raters were given a common subset of 10% of the total studies to code independently. Average agreement was 89%. Discrepancies in coding procedures for categories below 90% agreement were discussed and solutions were identified.

Data analysis

Analyses were conducted using the Raju, Burke, Normand, and Langlois (1991) method. An adapted version of Arthur, Bennett, and Huffcutt (2001) SAS PROC MEANS was used to accommodate the Raju *et al.* method of meta-analysis. Each effect size was weighted by sample size and corrected for attenuation due to unreliability in both the predictor and criterion. When reliabilities were unreported, a distributional artifact correction

was constructed by averaging the reliability for all studies that did report reliability information. We report the Q statistic, which tests homogeneity in the true correlations across studies (Hunter & Schmidt, 1990). The Q statistic is distributed as an approximate chi-squared distribution and gives an indication that moderators are present when significant. If a significant Q statistic becomes non-significant when looking at separate moderator levels, or drops substantially, it suggests that the moderator explains variance in r . We also computed the 80% credibility interval (80% CV) and 95% confidence intervals (95% CI) to assess whether the validities are positive across situations (i.e. whether validities are non-zero). The credibility interval is formed using the standard deviation of r and refers to the distribution of parameter values or an estimate of the variability of individual correlations in the population (Hunter & Schmidt, 1990). Similar to confidence intervals, the credibility interval gives an indication of the lower bound estimate of the relationship between two variables. Specifically, the lower-bound 80% credibility value (80% LCV) indicates that 90% of the estimates of the true validity are above that value. Thus, if this value is greater than zero, one can conclude that the validity is non-zero. However, the 80% CV can be greater than zero and yet still have sizable variance in the validities after correcting for statistical artifacts (e.g. the range of the credibility interval is large). Under these conditions, it can be concluded that the validities are positive, although the actual magnitude may vary as a function of moderators (i.e. situational specificity).

Results

Individual differences and leader effectiveness

Table 1 presents the meta-analysis for each individual difference. Surprisingly, on aggregate, trait-like individual differences (motives, traits, and ability) were slightly more strongly related to leader effectiveness than were the more proximal, state-like individual differences (knowledge and skills). The trait-like individual differences most strongly correlated with leader effectiveness included: achievement motivation ($r = .28$), energy ($r = .29$), dominance ($r = .35$), honesty/integrity ($r = .29$), self-confidence ($r = .24$), creativity ($r = .31$), and charisma ($r = .57$). The 80% CV for each of the trait-like individual differences, sans initiative, flexibility, self-monitoring, and adjustment excluded zero, suggesting that the population correlation between the remaining trait-like characteristics and leader effectiveness is non-zero. However, the ranges of 80% CV and Q -values were generally quite large, indicating substantive moderators of these relationships.

Of the state-like individual differences, interpersonal skills ($r = .30$), oral communication ($r = .25$), written communication ($r = .24$), management skills ($r = .40$), problem-solving skills ($r = .39$), and decision making ($r = .52$) correlated the most strongly with leader effectiveness. Still, the Q values and the range of the credibility intervals suggested the presence of moderators. Of all the state-like individual differences, the 80% CV for only technical knowledge, past experience, and organizing and planning included zero.

Moderator analysis

Because the majority of the individual difference–effectiveness relationships evidenced the presence of moderators, we next examined substantive moderators of these

Table 1. Meta-analysis of the relationship between individual differences and leader effectiveness

Variable	Total sample size	Number of datapoints	Corrected statistics			95% confidence interval		80% credibility interval		Q
			R_{xy}	RHO	SD_RHO	Lower bound	Upper bound	Lower bound	Upper bound	
Trait-like	115,327	498	.22	.27	0.22	.26	.27	-.01	.55	7,202.47**
Achievement motivation	11,167	35	.23	.28	0.17	.27	.30	.06	.50	459.57**
Initiative	1,580	17	.15	.19	0.20	.14	.24	-.07	.44	92.69**
Ambition	199	3	.15	.05	0.05	.07	.33	.14	.26	5.33
Energy	2,285	13	.23	.29	0.15	.25	.32	.10	.47	85.43**
Need for power	2,009	8	.12	.16	0	.12	.21	.16	.16	9.61
Dominance	10,335	44	.27	.35	0.23	.33	.37	.06	.64	787.28**
Extraversion	14,506	39	.12	.15	0.08	.13	.16	.05	.25	155.93**
Conscientiousness	4,234	17	.13	.16	0.07	.13	.19	.08	.24	46.53**
Honesty/integrity	3,123	11	.25	.29	0.21	.26	.32	.03	.55	171.91**
Self-confidence	11,888	55	.21	.24	0.19	.22	.25	.01	.48	566.88**
Adjustment	9,223	18	.10	.12	0.01	.10	.14	-.03	.28	166.27**
Creativity	5,869	22	.24	.31	0.18	.28	.33	.08	.54	267.02**
Flexibility	4,745	15	.14	.19	0.17	.16	.21	-.03	.40	181.90**
Self-monitoring	2,468	16	.16	.19	0.16	.16	.23	-.01	.39	94.96**
Charisma	15,711	86	.48	.57	0.33	.56	.58	.14	.99	3,967.55**
Cognitive ability	15,985	99	.15	.17	0.11	.16	.19	.04	.31	340.56**
State-like	31,524	165	.20	.26	0.20	.25	.27	.01	.51	1,672.02**
Technical knowledge	6,455	12	.15	.19	0.17	.17	.21	-.03	.41	215.06**
Past experience	4,368	43	.08	.10	0.15	.07	.13	-.09	.30	166.68**
Interpersonal skills	2,953	26	.25	.30	0.18	.27	.34	.07	.54	159.15**
Oral communication	4,002	25	.22	.25	0.13	.22	.28	.08	.42	120.10
Written communication	2,264	12	.18	.24	0.06	.21	.28	.16	.33	38.39**
Management skills	879	14	.33	.40	0.22	.34	.45	.12	.67	79.68**
Problem-solving skills	3,574	7	.28	.39	0.23	.37	.42	.10	.69	287.91**
Decision making	2,811	9	.38	.52	0.19	.49	.55	.27	.76	211.83**
Organizing and planning	4,218	17	.16	.17	0.13	.14	.20	-.01	.34	98.63**

Note. For the following tables, R_{xy} is the uncorrected mean sample weighted correlation, RHO is the fully corrected mean correlation, SD_RHO is the standard deviation of the fully corrected correlation coefficient, and Q is the test for homogeneity in the true correlations across studies, where ** = $p < .01$ and *denotes $p < .05$.

relationships. As is common in meta-analysis, the data were insufficient to examine moderators of each individual difference in a fully crossed design. Accordingly, we examined leader level, type of organization, type of individual difference measure, and type of effectiveness measure separately for only those individual differences that had been examined in five independent samples for at least two levels of a specific moderator.

The results of the moderator analysis (Table 2) suggested that overall, individual differences are more strongly related to leader effectiveness for low level managers ($r = .33$) than for either student leaders ($r = .22$) or mid/upper level managers ($r = .26$). We also attempted to examine the moderating effect of leader level for each individual difference. Based on the reduced Q values and reduced range of credibility intervals, organizational level moderated the relationship between effective leadership and self-confidence, charisma, and past experience. These three individual differences were each more strongly related to leader effectiveness at lower levels (either student or lower level leaders) relative to higher levels. In contrast, leader level did not moderate the relationship between intelligence and leader effectiveness.

Next, organization type was considered as a moderator of individual difference–leader effectiveness relationships (Table 3). Overall, the relationship between individual differences and effectiveness did not differ between business and government settings ($r = .28$ and $.27$, respectively). Available data allowed us to examine the moderating role of organization type for 12 of the 25 specific individual differences. Dominance, self-confidence, and intelligence were more strongly correlated with leader effectiveness in business compared to government organizations. Although extraversion was more strongly related to effectiveness in business relative to government settings, the difference was modest. In contrast, adjustment, creativity, charisma, and interpersonal skills were significantly more strongly related to leader effectiveness in government compared to business settings.

Results concerning type of individual difference measure as a moderator of individual difference and leader effectiveness relationships are presented in Table 4. Across all of the individual differences, performance measures were the most strongly related to leader effectiveness ($r = .30$) followed by paper-and-pencil and projective measures ($r = .27$ and $.19$, respectively). Thus, the method used to measure individual differences appears to moderate the relationship between individual differences and leader effectiveness, such that performance measures and paper-and-pencil measures typically demonstrate stronger relationships with leader effectiveness than projective measures. With regard to the specific individual differences, paper-and-pencil measures of creativity and interpersonal skills were more strongly related to leader effectiveness than performance measures, whereas performance measures of organizing and planning, flexibility, and initiative were more strongly related to effectiveness than paper-and-pencil measures.

Finally, we examined type of criteria measure as a moderator of the relationship between individual differences and leader effectiveness (Table 5). Across individual differences, ratings of effectiveness ($r = .29$) were more strongly related to individual differences than were objective indices ($r = .21$). It was possible to examine the moderating effect of criterion type with specific individual differences for 13 of the 25 individual differences. Achievement motivation, dominance, self-confidence, creativity, charisma, past experience, and interpersonal skills were significantly more strongly related to ratings of leader effectiveness than objective measures. In contrast, energy level, flexibility, organizing and planning, and cognitive ability were more strongly related to objective measures than ratings of effectiveness.

Table 2. Individual difference–leader effectiveness moderated by leader level

Variable	Total sample size	Number of data points	Corrected statistics			95% confidence interval		80% credibility interval		Q
			R _{xy}	RHO	SD_RHO	Lower bound	Upper bound	Lower bound	Upper bound	
Student	43,104	123	.18	.22	0.18	.21	.23	-.02	.45	1,804.03**
First line sup./Low level manager	17,548	81	.29	.33	0.20	.31	.34	.07	.58	975.12**
Mid/upper level manager	12,519	107	.20	.26	0.07	.25	.28	-.08	.61	1,173.71**
Self-confidence										
Student	6,551	18	.23	.28	0.20	.26	.30	.03	.53	318.86**
Upper level	691	9	.19	.22	0	.15	.29	.22	.22	6.19
Charisma										
Student	1,004	5	.58	.70	0.34	.67	.73	.26	1.00	457.11**
Low level	3,018	7	.54	.60	0.18	.58	.62	.37	.83	256.14**
Upper level	4,227	27	.32	.47	0.33	.45	.49	.04	.90	812.15**
Cognitive ability										
Student	4,756	22	.19	.22	0.12	.19	.24	.06	.37	110.58**
Low level	1,887	24	.22	.24	0.09	.20	.29	.13	.35	46.84**
Upper level	315	9	.18	.22	0	.11	.32	.22	.22	8.55
Past experience										
Low level	922	19	.14	.16	0.19	.10	.23	-.08	.41	58.02**
Upper level	2,586	13	.03	.03	0.10	-.004	.07	-.09	.16	40.24**

Table 3. Individual difference–leader effectiveness moderated by organization type

Variable	Total sample size	Number of data points	Corrected statistics			95% confidence interval		80% credibility interval		Q
			R_{xy}	RHO	SD_RHO	Lower bound	Upper bound	Lower bound	Upper bound	
Business	52,430	337	.25	.28	0.22	.28	.29	.01	.56	3,320.78**
Government	62,841	203	.21	.27	0.22	.26	.28	–.01	.55	3,701.88**
Achievement motivation										
Business	2,493	24	.23	.26	0.12	.23	.30	.11	.41	70.79**
Government	6,150	7	.22	.28	0.14	.26	.30	.10	.46	150.65**
Dominance										
Business	3,455	17	.44	.53	0.15	.51	.56	.34	.73	193.95**
Government	4,047	12	.08	.10	0.05	.07	.13	.04	.16	27.37**
Extraversion										
Business	3,575	9	.17	.21	0.03	.18	.24	.17	.25	17.68*
Government	6,043	13	.12	.15	0.10	.13	.18	.02	.29	88.96**
Conscientiousness										
Business	586	5	.12	.14	0.18	.06	.22	–.09	.37	25.88**
Government	3,027	10	.14	.18	0	.14	.21	.18	.18	9.52
Self-confidence										
Business	4,676	26	.31	.37	0.13	.34	.39	.20	.54	152.11**
Government	4,082	14	.09	.12	0.24	.06	.12	–.21	.39	247.38**
Adjustment										
Business	1,550	11	.06	.07	0.14	.02	.12	–.11	.25	45.49**
Government	5,880	6	.14	.17	0.11	.14	.19	.03	.30	80.10**
Creativity										
Business	1,788	12	.13	.17	0.15	.12	.21	–.02	.36	56.09**
Government	3,501	6	.33	.42	0.08	.39	.44	.31	.52	45.42**
Charisma										
Business	7,958	48	.40	.41	0.34	.39	.43	–.02	.84	1,356.16**
Government	5,130	22	.58	.70	0.25	.69	.72	.38	1.02	1,317.62**

Table 3. (Continued)

Variable	Total sample size	Number of data points	Corrected statistics			95% confidence interval		80% credibility interval		Q
			R_{xy}	RHO	SD_RHO	Lower bound	Upper bound	Lower bound	Upper bound	
Cognitive ability										
Business	4,130	37	.21	.23	0.10	.20	.26	.11	.35	88.86**
Government	7,959	42	.10	.12	0.07	.10	.15	.04	.21	88.21**
Past experience										
Business	1,331	11	.04	.04	0.10	-.01	.09	-.08	.17	26.89**
Government	1,105	26	.22	.27	0.22	.22	.33	-.01	.55	93.48**
Interpersonal skills										
Business	2,079	19	.21	.25	0.15	.20	.29	.05	.44	76.56**
Government	466	5	.45	.56	0.24	.50	.62	.26	.86	65.04**
Oral communication										
Business	3,348	18	.21	.24	0.14	.21	.27	.06	.42	93.13**
Government	588	6	.23	.29	0.13	.21	.36	.12	.46	21.41**

Table 4. Individual difference–leader effectiveness moderated by predictor type

Variable	Total sample size	Number of data points	Corrected statistics			95% confidence interval		80% credibility interval		Q
			R_{xy}	RHO	SD_RHO	Lower bound	Upper bound	Lower bound	Upper bound	
Paper-and-pencil measure	99,537	440	.22	.27	0.24	.26	.28	−.04	.58	7,519.01**
Projective test	1,460	27	.16	.19	0.09	.14	.24	.07	.31	46.25**
Performance measure	27,878	157	.25	.30	0.15	.29	.31	.10	.49	1,005.39**
Achievement motivation										
Paper-and-pencil	5,096	14	.17	.21	0.21	.18	.24	−.06	.48	263.31**
Projective	906	18	.17	.19	0.12	.13	.26	.04	.35	36.47**
Initiative										
Paper-and-pencil	383	9	.10	.12	0.16	.02	.22	−.08	.32	24.77**
Performance	1,197	8	.16	.21	0.21	.15	.26	−.06	.48	67.04**
Creativity										
Paper-and-pencil	3,911	10	.31	.40	0.10	.37	.42	.27	.52	73.72**
Performance	1,958	12	.09	.11	0.15	.07	.16	−.08	.31	60.74**
Flexibility										
Paper-and-pencil	3,046	7	.06	.09	0.10	.05	.12	−.05	.22	45.51**
Performance	1,699	8	.28	.35	0.15	.31	.39	.16	.54	67.88**
Cognitive ability										
Paper-and-pencil	9,401	87	.17	.19	0.13	.17	.21	.03	.36	288.84**
Performance	2,035	10	.21	.23	0.09	.19	.27	.12	.34	30.52**
Technical knowledge										
Paper-and-pencil	1,657	5	.22	.30	0.31	.25	.34	−.09	.69	193.23**
Performance	759	6	.19	.23	0.13	.16	.30	.07	.39	22.32
Interpersonal skills										
Paper-and-pencil	855	6	.29	.36	0.31	.30	.42	−.03	.75	112.84**
Performance	2,098	20	.24	.28	0.11	.24	.32	.14	.42	53.72**
Organizing and planning										
Paper-and-pencil	1,705	4	.05	.06	0.14	.01	.10	−.12	.23	39.59**
Performance	2,513	13	.23	.25	0.05	.21	.28	.18	.31	24.86*

Table 5. Individual difference—leader effectiveness moderated by criterion type

Variable	Totalsample size	Number of data points	Corrected statistics			95% confidence interval		80% credibility interval		Q
			R _{xy}	RHO	SD_RHO	Lower bound	Upper bound	Lower bound	Upper bound	
Ratings	66,875	332	.24	.29	0.25	.29	.30	-.02	.61	5,299.88**
Objective	32,638	180	.19	.21	0.14	.20	.22	.03	.39	907.05**
Achievement motivation										
Ratings	1,573	9	.29	.38	0.37	.34	.42	-.09	.85	308.27**
Objective	3,920	18	.18	.20	0.10	.17	.23	.07	.33	66.94**
Energy level										
Ratings	602	6	.14	.18	0.14	.10	.25	.002	.35	20.23**
Objective	1,482	6	.31	.35	0.03	.30	.39	.30	.39	13.13**
Dominance										
Ratings	6,165	20	.30	.38	0.24	.36	.40	.08	.68	501.75**
Objective	929	10	.15	.17	0.12	.11	.23	.02	.32	25.02**
Self-confidence										
Ratings	8,849	29	.23	.26	0.20	.24	.28	-.00	.51	448.97**
Objective	1,452	10	.12	.13	0.18	.08	.18	-.10	.36	59.64**
Adjustment										
Ratings	1,805	8	.06	.07	0.12	.02	.11	-.08	.22	35.13**
Objective	2,573	5	-.01	-.01	0.07	-.05	.03	-.09	.08	17.15**
Creativity										
Ratings	1,598	8	.11	.15	0.14	.10	.19	-.04	.33	45.23**
Objective	805	7	.06	.06	0	-.01	.13	.06	.06	6.38
Flexibility										
Ratings	2,953	6	.06	.08	0.09	.05	.12	-.03	.20	33.44**
Objective	1,511	6	.29	.35	0.15	.31	.40	.16	.55	60.82**
Charisma										
Ratings	8,753	45	.55	.66	0.29	.65	.68	.30	1.00	2,433.42**
Objective	3,254	19	.14	.15	0.13	.12	.19	-.01	.31	73.33**

Table 5. (Continued)

Variable	Totalsample size	Number of data points	Corrected statistics			95% confidence interval		80% credibility interval		Q
			R _{xy}	RHO	SD_RHO	Lower bound	Upper bound	Lower bound	Upper bound	
Past experience										
Ratings	2,052	35	.16	.20	0.20	.16	.25	.46	.46	132.32**
Objective	810	6	.02	.03	0	-.04	.09	.03	.03	5.33
Interpersonal skills										
Ratings	1,092	7	.33	.41	0.24	.37	.47	.73	.73	102.87**
Objective	1,265	16	.22	.24	0.14	.19	.29	.43	.43	46.79**
Oral communication										
Ratings	1,405	9	.19	.24	0.21	.19	.29	.51	.51	26.89**
Objective	2,331	12	.23	.26	0.07	.22	.30	.35	.35	93.48**
Organizing and planning										
Ratings	2,272	8	.12	.13	0.13	.09	.17	.30	.30	49.99**
Objective	1,436	6	.26	.28	0.07	.24	.33	.37	.37	15.51**
Cognitive Ability										
Ratings	4,827	52	.11	.14	0.10	.11	.16	.26	.26	110.73**
Objective	4,929	25	.26	.28	0.10	.25	.30	.40	.40	81.46**

Discussion

The results of this study contribute to the extant literature in multiple ways. First, we provide the first direct comparison of trait-like and state-like individual difference predictors of effective leadership, including 14 previously unexamined individual differences. The results reveal that both trait-like and state-like individual differences are important correlates of effective leadership, and the overall relationship between effective leadership and state-like and trait-like individual differences does not differ greatly. In addition, our results highlight the 13 individual differences most important to effective leadership and provide evidence for the moderating role of method of predictor and criterion measurement and organizational level of the leader.

Main findings

To the degree that state-like individual differences are more causally proximal to effective leadership than their trait-like counterparts, the relationship between state-like individual differences and effective leadership should be stronger than that between trait-like individual differences and effective leadership. However, in contrast to prior research specifying state-like individual differences as more proximal to leader effectiveness (Mumford *et al.*, 2000; Zaccaro, 2007; Zaccaro *et al.*, 2004), our results suggest that on average, state-like and trait-like individual differences have a similar relationship with effective leadership. Based on this pattern of relationships, state-like individual differences are not necessarily more proximal to effective leadership than are trait-like individual differences, and by extension, trait-like individual differences might have a direct effect on effective leadership. In light of these results, theoretical models of individual differences and leadership should be specified to allow for a direct effect of trait-like individual difference on effective leadership, and future research should directly compare the influence of state-like and trait-like predictors of leader effectiveness. Nevertheless, is it possible that the relationship between leader effectiveness and specific trait-like individual differences (e.g. intelligence) are accounted for by more proximal individual differences (e.g. decision making).

The direct comparison of trait-like and state-like individual differences facilitates inferences with respect to the degree to which the characteristics associated with leadership are immutable, stable characteristics, as suggested by the 'Great Man' approach to leadership, or more malleable individual differences that have seen an increasing presence in individual difference models (Kirkpatrick & Locke, 1991; Locke, 1991; Yukl, 2006; Zaccaro, 2007; Zaccaro *et al.*, 2004). In particular, our results suggest that to some extent, immutable characteristics (e.g. traits) distinguish effective from ineffective leaders lending credence to the hypothesis that to some extent, leaders are born, not made. On the other hand, more malleable, state-like individual differences also explained meaningful variance in effective leadership, supporting the perspective that to some extent, effective leadership can be developed.

The results of the present analysis also point to the trait-like and state-like individual differences essential to effective leadership. Of the 25 individual differences examined, 13 constructs revealed moderate, consistently non-zero relationships with effective leadership, including seven trait-like individual differences (achievement motivation, energy, dominance, honesty/integrity, self-confidence, creativity, and charisma) and six state-like individual differences (interpersonal skills, oral communication, written

communication, management skills, problem-solving skills, and decision making). Specifically, the corrected correlation for each of these individual differences and effective leadership exceeded .20 and the CVs did not include zero, supporting a weak-to-moderate (Cohen, 1988), consistently non-zero relationship (Arthur, Bennett, & Huffcutt, 2001).

Despite consistent support for these individual differences, across the 25 constructs, the effect sizes were typically weak-to-moderate. That is, the corrected population relationship exceeded .30 for only seven of the individual differences (dominance, creativity, charisma, interpersonal skills, management skills, problem-solving skills, and decision making). In addition, it should be noted that the strongest effect emerged from constructs that may have been subject to common method effects. Specifically, decision-making skills, management skills, interpersonal skills, and problem-solving skills are commonly assessed by a leader's co-workers (e.g. in the context of multisource feedback), and in these studies, it is also common to ask the same rater to provide ratings of leader effectiveness, leading to a potential inflationary effect of common method variance. Similarly, the influence of common method effects is well documented in research on charismatic leadership (Judge & Piccolo, 2004). Therefore, the magnitude of these relationships should be interpreted with some degree of caution.

Although individual differences accounted for variance in effective leadership, a large proportion of the variance was left unexplained. Nevertheless, two caveats are in order. First, it is widely recognized that many factors impact the effectiveness of a leader (e.g. leader behaviour, environmental factors, and their interaction). Viewed in this light, these findings are not particularly surprising. Despite the presumed influence of the environment on leader effectiveness, this study also provides strong support for the main effects associated with certain individual differences. Next, the effect sizes presented here are only concerned with single, isolated individual differences. One would expect that the total proportion of variance explained in leader effectiveness by this collection of individual differences to be much greater than the variance explained by a single individual difference. In addition, the interaction among individual differences is expected to explain incremental variance beyond the main effects presented here (Zaccaro, 2007).

Comparison with prior research

Although this review investigates more individual differences than prior reviews of this literature, it is instructive to compare the results of this study to those reviews. First, our results support the contention that individual difference-behaviour relationships will be stronger when individual differences and behaviour measures are more closely matched (cf. Hough, 1998; Hogan & Holland, 2003). For instance, dominance was more strongly related to leader effectiveness than was extraversion in both Judge *et al.* (2002) and the present study. In addition, the characteristics most closely associated with the leadership role such as leadership motivation (dominance) and management skills were among the strongest individual difference correlates of leader effectiveness, a finding also consistent with the argument that narrow conceptualizations of individual differences that are more closely matched to the criterion domain should engender the strongest relationship with criterion variables (Hogan & Holland, 2003; Hough, 1998).

Next, both the present study and the most recent review concerning intelligence-leadership relationships (Judge *et al.*, 2004) found similar effects; and, compared to

the review by Judge *et al.* (2002) the effect sizes presented in the present study were quite consistent for dominance, achievement, and self-esteem/self-confidence. On the other hand, the effect sizes for extraversion and conscientiousness diverged to some degree across our studies. The divergent pattern of results for these constructs is likely due to Judge *et al.*'s (2002) inclusion of facets when estimating the relationship among broad five-factor model constructs and outcomes. For example, Judge *et al.* (2002) included dominance when calculating the effect for the broader construct, extraversion. Accordingly, their effects concerning the broader factors may be stronger due to the inclusion of narrower, but more theoretically aligned facets. Finally, the charisma-leader effectiveness relationship presented here is quite consistent with the relationship reported in Judge and Piccolo's (2004) review of the transformational leadership-effectiveness relationship.

Although it is important to replicate the results of prior reviews, the primary contribution of this study is the examination of 14 individual differences that had previously not been examined by prior reviews. The review of a wide range of individual differences resulted in an additional, indirect contribution of this study by explicating uncultivated streams of research. Of the 25 individual differences examined, 10 had been examined in 15 or fewer primary studies. In particular, the relationship between leader effectiveness and need for power, ambition, energy, honesty/integrity, flexibility, technical knowledge, written communication, management skills, problem-solving skills, and decision making had each been examined in fewer than 15 primary studies. Clearly, some of these individual differences have been examined with conceptually similar constructs under different labels (e.g. need for power as dominance). Still, many of the individual differences have been relatively unexamined, either by the name used here or with a conceptually similar construct. The lack of research focusing on these individual differences signals the need for additional research addressing these areas. To exemplify, the dearth of research examining integrity/honesty is particularly noteworthy. Given recent concern over ethical practices in organizations, the examination of the role of individual differences such as integrity plays in effective leadership warrants further attention.

Moderators of individual differences-leader effectiveness

Despite the support for individual difference correlates of effective leadership, many of these main effects are qualified by situational and methodological moderators. Across individual differences, slightly more variance in leader effectiveness was explained for lower level leaders (e.g. first line supervisors) relative to higher level leaders. As proposed earlier, perhaps at higher levels, success hinges on a variety of factors beyond the leader's control; whereas the effectiveness of a lower level manager may be less contingent on external influences. As such, it is not surprising that individual differences explained more variance in effectiveness at lower, as opposed to higher levels. An alternate explanation is that individual differences necessary for effective leadership are more range restricted at higher hierarchical levels, leading to reduced observed effects of individual differences. However, the relationship between individual differences and leader effectiveness for student leaders, a domain arguably the least impacted by range restriction, was similar to that of higher level leaders, suggesting that range restriction is not the primary explanation for the weak effects for higher level leaders. Interestingly, the relationship between intelligence and leader effectiveness was not moderated by organizational level, despite consistent support for the moderating

effect of job complexity on the relationship between intelligence and performance (Schmidt & Hunter, 1998). It is possible that effectively leading others is a complex undertaking in any situation, negating the moderating effect of organizational level on intelligence–performance relationships.

Method of predictor measurement had also not been examined previously as a moderator of individual difference–leader effectiveness relationships. Across individual differences, performance measures (e.g. work samples or assessment centres) and paper-and-pencil measures explained more variance in effectiveness than did projective measures of individual differences, and performance measures explained slightly more variance than paper-and-pencil measures. This finding is consistent with Wernimont and Campbell's (1968) argument that samples of behaviour (e.g. performance measures) should be superior predictors to signs (e.g. paper-and-pencil tests) in the prediction of subsequent performance. When considering specific individual differences with sufficient data to test for moderation, performance measures were more valid than paper-and-pencil measures of flexibility, organizing and planning, and initiative, whereas paper-and-pencil measures of creativity and interpersonal skills were more valid than performance measures. Consistent with Kaiser, Lindberg, and Craig's (2007) recent work on approaches to measuring flexibility, performance measures of flexibility had a much stronger effect on leader effectiveness than did paper-and-pencil measures of effectiveness. In addition, the weak effect of creativity may be attributable to the low base-rate of creativity and the inability of more open-ended, performance based measures to capture low base-rate behaviours.

Analyses examining method of criteria measurement suggested that across individual differences, ratings of leader effectiveness were slightly more strongly related to individual differences than objective measures of effectiveness. However, a closer inspection revealed that this effect depended on the specific individual difference. Interestingly, four of the six individual differences that related more strongly to ratings of effectiveness were constructs associated with social acumen (dominance, self-confidence, interpersonal skills, and charisma), whereas the strongest predictors of objective performance were more ability/behaviourally based constructs (energy-level, flexibility, organizing and planning, and cognitive ability). Consistent with research on implicit leadership theories (Lord, Foti, & DeVader, 1984), perhaps one must have the magnetic personality and desire to influence associated with charisma, self-confidence, interpersonal skills, and dominance to be evaluated by others as a leader but needs a strong work ethic (energy) and the underlying conceptual ability (organizing and planning, cognitive ability, and flexibility) to exact a meaningful influence on objective outcomes.

Finally, consistent with Judge *et al.* (2002), type of organization moderated the relationship between individual differences and effectiveness. First, adjustment was more strongly related to leadership in government/military settings. This finding may be due to the importance of emotional stability in military settings (Judge *et al.*, 2002). Unfortunately, too few studies had examined these relationships to separately examine the impact of adjustment in government versus military settings. In addition, charisma, interpersonal skills, creativity, and past experience were also stronger predictors of effectiveness in government/military, relative to business settings. On the other hand, dominance, self-confidence, and intelligence appear to be more important in business, compared to government/military settings. Although Judge *et al.* (2002) speculated that stronger relationships among individual differences and leadership in business were attributable to the relatively strong situations in government/military

organizations, our study used an expanded set of individual differences and found that individual differences are not uniformly better predictors of leader effectiveness in business relative to government/military settings. Thus, differential situation strength does not appear to fully explain the moderating influence of organization type. Future research investigating the reasons for the moderating influence of organization type is needed.

Limitations

Although this study sheds new light on the role of individual differences in effective leadership, it is not without limitations. First, consistent with prior meta-analyses, sample size constraints did not allow us to investigate moderation for all of the individual differences. Thus, each moderator was examined across all individual differences and with specific individual differences when sample size warranted such a comparison. In addition, sample size constraints did not allow for the simultaneous examination of multiple moderators of the same individual difference–effectiveness relationship. Consequently, although our results highlight a variety of substantive moderators of individual difference–leader effectiveness relationships, considerable variability in effect sizes typically remained when examining each moderator separately. This variability is somewhat misleading, given that the simultaneous inclusion of multiple moderators supported in this study would be expected to substantially reduce the variability in effect sizes. Nevertheless, to the extent that moderators are correlated with one another (e.g. if objective measures are primarily used in business as opposed to government/military settings), observed moderation effects may be confounded with one another. Still, the approach taken here of examining discrete moderators separately and the associated limitation is consistent with typical practice when conducting meta-analysis.

Because existing leadership–individual difference research has progressed in an unsystematic, fragmented fashion (House & Aditya, 1997), it was important to rely on an organizing framework when summarizing this literature. Our reliance on Locke’s framework rather than alternative individual difference frameworks (Bass, 1990; Mumford *et al.*, 2000; Northouse, 2004; Yukl, 2006; Zaccaro *et al.*, 2004) warrants discussion. We chose to rely on Locke’s framework as a vehicle to examine the impact of individual differences on leadership because it emphasized the trait-like and state-like distinction of interest and provided a comprehensive list of each type of individual difference. Despite these advantages, it is possible that potentially important individual differences were omitted from consideration as a result of our reliance on Locke’s framework. However, this concern is ameliorated by the high degree of overlap between the individual differences specified in Locke’s model and those specified by alternative models.

Next, we restricted our examination to studies operationalizing leader effectiveness as objective measures, ratings of leader effectiveness, and ratings of leader performance. We did so in an effort to ensure that our leader effectiveness outcome was as homogeneous as possible. Due to the limited research base, we were forced to omit follower related outcomes (e.g. follower attitudes and motivation). Future research should focus on expanding our findings to alternative criteria of leader effectiveness. Finally, due to trends in the literature, this meta-analysis focused on bivariate individual difference–leader effectiveness relations. Future research examining the mechanisms through which individual differences act on a leader’s ultimate level of effectiveness would

be particularly fruitful. In a similar vein, research incorporating pattern approaches to understanding the individual difference–leader effectiveness relationship are needed to fully understand the influence of individual differences on effective leadership (Zaccaro, 2007).

Summary and conclusions

The present research synthesizes the fragmented literature on the relationship between individual differences and effective leadership, with an emphasis on the distinction between trait-like and state-like individual differences. Based on our results, there does appear to be a systematic, dispositional-based component to being an effective leader, supporting the ‘Great Man’ approach to leadership; however, state-like individual differences were also important correlates of effective leadership, substantiating the expansion of leader–individual difference models to include more malleable individual differences. Despite these results, in isolation, each individual difference explained modest amounts of variance in leader effectiveness, at best. Thus, these results also leave room for additional correlates of effective leadership, such as leader behaviour, situational factors, and the interaction among individual differences.

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Studies included in the meta-analysis are denoted with an asterisk.

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