# "Emotional intelligence": What does it measure and does it matter for leadership?

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## Abstract

Intuitively, “emotional intelligence” (EI) may seem like necessary condition for productive leader-member relations or effective leadership, as many writers have suggested. I show that this link does not hold up to empirical scrutiny when using strong methodological tests. I reanalyze secondary data and show that both trait (EQi and WLEIS) and ability (MSCEIT) models of EI are linearly dependent on intelligence and/or personality (with multiple r’s ranging from .48 to .76 depending on the measure used). Also, controlling for personality and general intelligence I show that emotional intelligence either does not predict or negatively predicts leader-member relations (LMX). As concerns predictors of leadership, the concept of EI has to be either reformulated or abandoned as I have suggested on repeated occasions.

**“**Emotional intelligence” (EI) has stormed pell-mell into the individual-differences psychology scene. Apart from conflicting evidence regarding the utility of the construct, EI proponents cannot come to an agreement as to how to define or how to measure EI; there is also considerable controversy regarding what EI is supposed to measure or predict. EI researchers have made some inroads by strengthening their theories and measures; yet, they still face disappointing empirical evidence and mounting criticism of their construct.

Part of the confusion regarding the construct stems from the broadness with which EI has been defined. Some have defined EI by exclusion; anything that is not IQ must be EI (see Sternberg, 1999, for a nice critique). The proponents of “trait” models, with Goleman (1995, 1998) at the helm, measure EI using self-rating questionnaires. Goleman and his colleagues have gone on to make some sensational but farandinical claims about EI; however, none of claims have been backed up with hard, peer reviewed data using strong controls. For instance, Goleman, Boyatzis, and McKee (2002) recently stated among other things that: “To get an idea of the practical business implications of these [EI] competencies, consider an analysis of the partners’ contributions to the profits of a large accounting firm. . . . those with strength in the self-regulation competencies added a whopping 390 percent incremental profit--in this case, $1,465,000 more per year. By contrast, significant strengths in analytic reasoning abilities added just 50% more profit. Thus, purely cognitive abilities help--but the EI competencies help far more” (p. 251).

Then there are those who, with Mayer, Caruso, and Salovey (1999) as their flag-bearers, see EI as an ability (see Ashkanasy & Daus, 2005). The “ability” model of emotional intelligence aims to emulate general intelligence both in form and measurement. These researchers use intelligence-type performance tests to gauge individual differences regarding emotional intelligence information processing and use of emotions in reasoning. The ability

and trait approaches have been at loggerheads, and rightly so, because they conceptualize and measure the construct in diametrically different ways.

The ability-based side has repeatedly sought to distance itself from the claims that Goleman and followers have made; evidently the criticism that has been leveled at the trait approaches is raising questions in the ability model too. In their most recent stand, Mayer, Salovey, and Caruso (2008) noted that "The original definition of EI conceptualized it as a set of interrelated abilities . . . .Yet other investigators have described EI as an eclectic mix of traits, many dispositional, such as happiness, self-esteem, optimism, and self-management, rather than as ability based . . . . This alternative approach to the concept—the use of the term to designate eclectic mixes of traits—has led to considerable confusion and misunderstandings as to what . . . EI is or should be" (p. 503).

Mayer et al. (2008) went on to make five recommendations regarding research in EI including: (a) focusing on serious research and avoiding sensational and journalistic-type claims regarding EI, (b) studying EI only as an ability, akin to general intelligence, (c) using only ability-type tests to gauge EI, (d) avoiding renaming established personality constructs as EI, and (e) the continuation of EI research to fill gaps in the literature. Although I am somewhat sympathetic to the calls made Mayer et al. (2008) who have done some serious work in this area, I was and still remain very skeptical of the construct (Antonakis, 2003, 2004); my reading of the literature suggests that current conceptualizations of EI are non-starters. Locke (2005) has gone so far as to say that the whole conceptualization of EI is fatally flawed. Many others have voiced very serious concerns regarding the EI construct from a basic research (Davies, Stankov, Roberts, 1998; Matthews, Zeidner, & Roberts, 2002; Roberts, Zeidner, & Matthews, 2001) as well as an applied research perspective (Feyerherm & Rice, 2002; Murphy, 2006; Zacarro & Horn, 2003; Zeidner, Matthews, & Roberts, 2004).

What is worse, however, is that practice, which is mostly using trait-based perspectives, is running way ahead of research, following claims such as: “My analysis of a myriad jobs found that emotional competence makes up about two thirds of the ingredients of star performance in general, but for outstanding *leaders* emotional competencies—as opposed to technical or cognitive cues—make up 80 to 100 percent of those listed by companies themselves as crucial for success” (Goleman, 1998, p. 187). As mentioned by Jordan, Ashton-James, and Ashkanasy (2006) it is claims such as these by Goleman and company that “have done considerable harm to the field” (p. 204).

Intuitively, the EI construct seems important and, judging by the success of popular writers like Goleman, it has captured the imagination of the masses (who might really *want* to believe that there is more to success than general intelligence or IQ). However, as I detail in this chapter there is simply not enough evidence to use EI in industrial or education settings. As mentioned by Matthews, Emo, Roberts, and Zeidner (2006), “We see little evidence in [EI] validation studies that would support the current use of existing EI measures for making real-life, high-stakes decision for individuals” (p. 25-26). Using EI tests that do not work is not only uneconomical; it is also unethical (Antonakis, 2003, 2004).

In this chapter, I argue that EI cannot possibly predict leadership relational outcomes or leadership effectiveness if tested using strong controls. Specifically, I make the case that EI models are beset with problems regarding their validity and I show that there is no evidence that links EI with leader relational outcomes (LMX) when controlling for competing constructs. I accomplish this goal by reanalyze secondary data to show that if anything matters for leader-member relations it is *personality* and *IQ*, and definitely not EI, as Smith (2006) in a previous chapter in this series has suggested.

## The claims and the evidence

The literature that is purported to support EI's predictive power for leadership is very flawed. Unfortunately, oft repeated claims may, after time, sneak in to mainstream literature. For example, Yukl (2008) who is known to be very critical of theories in general (even his own!), had this to say about extending his recently-proposed FLT theory: "Relevant [antecedent] skills include cognitive complexity, systems thinking, situational awareness, ability to learn, social intelligence, [and] emotional intelligence" (p. 718). Why is Yukl speculating in this manner, when he is usually very cautious and measured in what he says?

The problem is that researchers who have faith in the predictive power of EI have been long on claims but short on evidence regarding EI's utility for leadership. For instance, Neal Ashkanasy and associates—who have been valiant defenders of the ability-based model, particularly as an antecedent for leadership had this to say about the EI-leadership link:

> "George [2000] has . . . written compellingly about the logical tie between emotional intelligence and leadership. We agree wholeheartedly. Related, Ashkanasy and Tse [1998] argue convincingly that emotion-related variables can be important at every stage of the process linking transformational leadership and work group outcomes, and Prati et al. [2003] . . . argued that emotional intelligence skills were critical for effective team leadership and outcomes. We also argue that transformational leadership and specific aspects of emotional intelligence (emotion management) seem to have an intuitive and compelling relationship" (Daus & Ashkanasy, 2005, p. 459).

Later, Jordan et al. (2006) also claimed that EI is indispensable for leadership, though they did temper their tone somewhat while taking Goleman to school on his hyperbolic claims regarding the ostensive EI-leadership link. The evidence, however, that Jorden et al. cited was tangential or did not meet robust criteria for validation (refer to the criteria I detail below).

Jordan et al. (2006) listed three studies that they claimed supported their contention that EI really matters for leadership:

1. Sosik & Megerian (1999), who did not use an EI measure but established personality measures (thus violating what Jordan et al., 2006, p. 201 themselves stated regarding confounding the model with "personality traits that are only weakly related to emotional intelligence").

2. Rubin, Munz, and Bommer (2005), who used a measure of nonverbal decoding ability (and not a test specifically designed to tap EI)—also, even though they did not control for all the big five measures nor for IQ, Rubin et al. found a weak correlation of .17 between nonverbal decoding ability and transformational leadership (with appropriate controls in the regression equation I am almost sure this weak correlation would not predict leadership).

3. Lopes, Salovey, Côté, and Beers (2005), who used students (mean age of 21 years) and whose criterion measure was interpersonal sensitivity and prosocial tendencies and not leadership. In fact, Lopes et al. do not even mention the word "leader" or "leadership" once in their article. Worse, Lopes et al. found that after controlling both for the big five and IQ that the EI scores were only marginally related to the outcome measure, whose relevance for leadership is questionable.

I pointed out this flimsy evidence to Neal Ashkanasy and his associate Marie Dasborough and challenged them to produce strong evidence showing that EI matters for leadership (see Antonakis, et al., 2009). They were unable to produce *one* article that follows the criteria for validation that I list below and instead suggested that my criteria were too stringent, which if followed would dry up submissions to journals! I could not disagree more with them. We did, however, agree that ability models of EI might hold promise in extending the individual-differences literature. Although I would like to think that ability-models of EI might one day show their worth, at this point in time, however, the discussion regarding

whether EI predicts leadership is merely theoretical (Antonakis, Ashkanasy, & Dasborough, 2009). As concerns leader-member exchange (LMX) literature, not much work has been done to link individual differences to LMX (Youngcourt, Zhang, & Arvey, 2005) though some (e.g., Smith, 2006) have suggested that EI matters for LMX. I will come back to why EI might not matter for leader-member relations later.

As for my criteria for validation, I reproduce them below so that readers can determine themselves that the standards I use are conventional standards for test validation expected by top-level journals in applied psychology and management (see Antonakis, et al., 2009). Of course, the steps that list below were not invented by me. They are standard tests or design criteria that usually expected in top journals (unfortunately though, editors or reviewers sometimes fail to apply some of these standards, which is why weak research sometimes creeps through).

*The ten steps for testing psychometric instruments in leadership.*

Using these steps will ensure that the results are not confounded and are clearly interpretable. Note, I am not suggesting that a *single* study must demonstrate evidence of all these steps. I am suggesting that for a construct to be taken seriously, the collective literature regarding the construct must show evidence that the construct has passed these steps. Thus, for example, publishing a study that missing a particular step (e.g., test of convergent validity) is fine (depending on the step, of course), as long as there is evidence in the literature showing that that step was dealt with previously by another study.

The ten steps include (see Antonakis, 2004; Antonakis et al., 2009; see also Antonakis et al. 2004):

1. *Construct validity*: are the measures associated with their constructs as theory would suggest a priori? This step is usually tested using confirmatory factor analysis, which if passed suggests that the measures are reliably associated with their respective theoretical construct.

2. *Criterion validity*: do the constructs predict a practically-useful outcome (e.g., leadership)? This step is tested using regression or structural equation modeling-type methods to examine whether the variation in the construct is reliably associated with the variation in the dependent variable. Important in this step is also to consider the effects of measurement error, which is know to severely bias structural relations between parameters as well as bias the rest of the coefficients in the predictive equation (see Bollen, 1989; Kennedy, 2003)

3. *Discriminant validity*: do the constructs measure something different from competing constructs? In the case of EI, there is evidence to suggest that it overlaps too much with IQ and personality. Thus, for a new construct to be taken seriously, one must show that the construct is not linearly dependent on competing constructs. Note, again, measurement error must be considered in statistical tests; many researchers fail to consider measurement error or the multivariate predictive effects of other factors on the factor at hand—see Schulte, Ree and Carretta (2004) for a nice example showing how EI is almost wholly predicted by IQ, agreeability and gender when considering multivariate affects and measurement error.

4. *Convergent validity*: do tests measuring a similar construct correlate strongly with each other? If tests that are supposed to measure the same thing correlate strongly with each other than we know that these tests are reliably measuring a common construct. Of course, simply because measure are reliable does not mean they are valid; they might be reliably measuring the wrong construct.

5. *Incremental validity*: I consider this to be the litmus test of validity—does EI predict practically-useful outcomes controlling for IQ (ideally a *full* measure of fluid and crystallized ability[1]) and personality (the big five, i.e., neuroticism, extraversion, openness, conscientiousness, and agreeability)? This is the test that *really* matters and one that is often-times ignored. Again, effects will be inconsistent and will not converge to asymptotic

[1] A "short-cut" that I have seen some take is to give their newly-developed construct an unfair advantage by including a test of verbal ability only, instead a full test of general intelligence.

estimates (i.e., estimates will not improve, even with very large sample) if measurement error is not modeled or if there are omitted variables (e.g., IQ and personality) in the predictive equation.

There are some other important design steps that should be taken to ensure unambiguous findings and valid results, which include:

6. *Avoiding gathering leader self-reported measures of leadership*—leader self measures (of the leader's leadership ability) are known to be highly biased and inaccurate. Leadership style should be measured using others' perceptions (e.g., peers, subordinates, bosses).

7. *Obtaining leadership measures from one source (e.g., subordinates, peers, bosses) and leader individual differences from another (e.g., leader IQ, EI, personality)* to avoid problems associated with common-source/methods variance. That is, if only one source (e.g., subordinates) provides all ratings, the source will attempt to respond in a cognitively-consistent manner, which may inflate the resulting correlations among the measures.

8. *Use measures that were specifically designed to tap into EI*. The study of Sosik and Megerian (1999), for example, who passed-off measures of private and public self-consciousness, self-monitoring, personal efficacy, interpersonal control, social self-confidence, even-temperedness, and sensitivity, as "emotional intelligence" simply muddies the waters. Science cannot progress if existing constructs are recycled into something else.

9. *Use practicing leaders in real-world contexts*—because the dynamics of social interaction and hence antecedents of success are not the same in student and real-world settings it is important to use practicing leaders when testing predictive and incremental validity (i.e., predicting leadership or leader outcomes). Note, however, that it is may be fine to test for convergent or discriminant validity with student populations because measures of

personality or ability and their association with other individual-difference measures might not be too affected by age, experience, or context.

10. *Have an acceptable sample size and also control for hierarchical nestings if pertinent (i.e., levels of analysis).* An acceptable sample size means that the sample size is large enough to detect the effects (i.e., is not underpowered). Also, levels of measurement and testing need to be correctly aligned (refer to the literature on HLM, hierarchical linear or random-effects/coefficients modeling; for a brief introduction refer to Antonakis et al., 2004).

These 10 steps are not new nor are they exorbitantly taxing to implement across a research field. Establishing construct legitimacy takes time and effort. Unfortunately for the EI construct, there is still not enough evidence concerning the above steps for it to become a serious contender in the individual-differences arena.

## Why emotional intelligence will not matter for leader-member relations

As I have noted elsewhere (for details see Antonakis, 2003, 2004; Antonakis et al., 2009), what positive elements there may be in emotional intelligence that correlate with leader outcomes are already captured by established individual difference-constructs, namely the big five personality constructs (i.e., neuroticism, extraversion, openness, agreeability, and conscientiousness) and general intelligence. Indeed, a recent meta-analysis showed that EI does not predict job performance beyond IQ, though it did when only tested against personality (Van Rooy, & Viswesvaran, 2004). Of course, job performance and leadership emergence or effectiveness are not isomorphic. However, if a measure is supposed to predict performance in a general sense, and this in a number of domains (as does general intelligence or conscientiousness), then it should predict leadership too. Given the overlap of EI with general intelligence and the big five personality factors, however, I would be very surprised to see EI predict leadership in an incremental validity test.

I have also noted that inordinate high attunement to self and other emotional states might not be beneficial to effective leadership (Antonakis, 2003, 2004; Antonakis et al., 2009); by inordinately high I mean higher than would normally be the case. That is, an individual who exhibits a normal range in personality and IQ would certainly be able to gauge emotions in themselves and others and act on them as needed (if they were motivated to do so, which would depend on personality, mostly agreeableness and extraversion).

Being able to read emotions in others probably depends on a general information-processing ability because the observer has to abstract from repeated exposure to stimuli and link conditions to actions in a causally-effective manner. Thus, statements suggesting that EI is needed to be able to predict when subordinates will "be of good cheer when they are given a raise, or to suffer dissatisfaction and anxiety when given a bad performance appraisal" (Prati et al., p. 25) are simply inane; a normal individual with an average IQ could easily understand these condition-action scripts.

Another problem with individuals that are too emotionally sensitive (as are those who are high in need for affiliation) is that they would have difficulty in confronting others or maintaining a consistent position given that they are motivated to have intimate and harmonious relations with others (Antonakis & House, 2002). As concerns being highly tuned in on ones own emotion states I have noted that this mechanism might be maladaptive for leadership (Antonakis et al, 2009). That is, individuals who are overly sensitive to their own emotional states becomes anchored to knowledge of their own emotion states and, similar to the "illusion of transparency" phenomenon (see Gilovich, Savitsky, & Husted, 1998), overestimate the extent to which others can gauge this state. Consequently, they will get mired in these emotional states, particularly if they are self-conscious and vulnerable (i.e., they are highly concerned about what others think of them). These types of individuals will

have difficulty in federating followers around a vision and in keeping the bow on a steady course.

Thus, I argue that good leader-member relations (i.e., high trust, respect, and mutual obligation, Graen & Uhl-Bien, 1995), whether predicting LMX from the subordinate or from the leader comes from good old personality and general intelligence. For subordinates, I surmise that IQ will be very important, as would conscientiousness (which are reliable predictors of work performance, Salgado et al, 1998a, 1998b, Schmidt & Hunter, 1998)—these are the qualities that leaders would appreciate in subordinates, and thus engender good leader-follower relations. For leaders, extraversion, conscientiousness, openness (Judge et al, 2002) and general intelligence (Judge et al., 2004) should do the trick. These factors predict leader emergence or effectiveness; thus, because LMX measures effective leader-follower outcomes and is strongly linked to effective leader styles like transformational leadership (Howell & Hall-Merenda, 1999 ; Liden, Wayne, Zhao, & Henderson, 2008; Wang et al., 2006), I assume that the individual-difference factors will predict LMX in the same way.

My chapter is, therefore, a follow-up to that of Smith (2006) in an earlier volume of this series. Smith made specific proposition regarding the relation between EI and LMX proposing that that "Leader emotional intelligence will be positively related to leader-member exchange relationship quality as perceived by subordinates" (p. 182) and that "Member emotional intelligence will be positively related to leader-member exchange relationship quality as perceived by the leader" (p. 183.). The data from the studies that I will reanalyze looking at LMX both from a leader or a subordinate point of view will show that Smith's speculations were baseless.

Does EI depends on personality and gender and does EI matter for LMX?

Using a combination of relevant search terms, I scoured the literature for studies that had measured the following: EI (measured as a trait or as an ability), LMX, the big-five

personality factors, and general intelligence. I also asked colleagues and experts in LMX if they knew of such studies. Although I was not able to locate many studies, I managed to garner a handful that reported sufficient information for me to reanalyze the data using maximum likelihood estimation (I used the Mplus program). That is, I used the published data (i.e., the correlation matrix, means, standard deviations and estimates of the reliability of the constructs) to examine the extent to which the EI measures depended on personality and general intelligence or the extent to which EI predicted incremental variance in LMX while controlling for personality and general intelligence. These analyses have not been reported before, because the studies that published the data did not specifically examine these models (i.e., the studies were testing other hypotheses). Also, in many cases, the studies did not model measurement error (even though they had the information to do so), which is possible to do even in the context of regression analysis (i.e., errors in variable regression, see Cameron & Trivedi, 2005). Specifically, it is possible to reanalyze correlation matrixes using maximum likelihood estimation (Bollen, 1989) while correcting structural relations for measurement error by constraining the residual variance of the observed variable as follows (see Bollen, 1989): $\varepsilon = (1 - \rho) * var_x$, where $\rho$ is an estimate of the reliability and $var_x$ is the observed variance of the variable concerned. That is, the observed variable is modeled as a single indicator of a latent variable $\psi$ with the residual error, $\varepsilon$ of the observed variable constrained to the value calculated from the above equation.

*Reanalyzing the data from the Côté and Miners*

Côté and Miners (2006) examined the antecedents of task performance in a sample of working adults (N= 175; mean age = 41 years). Although Côté and Miners were not concerned in predicting LMX or EI from other individual differences, they gathered data on the following constructs too (some of which were substantive for their hypotheses others of which were control variables): EI (measured as an ability using the venerable Mayer-Salovey-

Caruso MSCEIT), IQ (using Cattell's Culture Fair Intelligence Test), the big-five personality factor (using the McCrae & Costa's NEO-PI), as well as LMX (using the Graen & Uhl-Bien LMX-7 measure).

Note that for this data set, LMX ratings were provided by leaders and the individual difference measures were provided by the followers (thus, there is no problem of common methods variance). Therefore, the prediction of LMX stems from the follower-side of the leader-follower LMX dichotomy meaning that we can directly test one of Smith's (2006) propositions. Refer to Table 1 for the data I used to estimate the model.

[Insert Table 1 here]

I first sought to predict EI from general intelligence and personality, treating the variables as observed (i.e., with perfect reliability) and then as latent (by modeling measurement error) to compare estimates as well as predicted r-squares. Refer to Table 2 for estimates.

[Insert Table 2 here]

As can be seem from Table 2, the variance predicted for in EI is rather substantial, whether using observed (r-square = .28; multiple r of .53) or latent variables (r-square = .39; multiple r of .62). It terms of variance predicted, this result is similar, but lower than that of Schulte et al., (2004), who found a multiple r of .81 (predictors were agreeability, general intelligence and gender). My results indicated that general intelligence (standardized beta = .54) and agreeability (standardized beta = .33) were significantly predictive of EI; however, if I had controlled for gender the r-square of the model may have been higher. With such results, it would be very unlikely that EI would predict LMX beyond personality and general intelligence. I then modeled LMX as an outcome of EI and the rest of the individual differences (both as observed and latent constructs). Refer to Table 3 for results.

[Insert Table 3 here]

Whether using observed or latent variables, EI did not predict LMX, though IQ did. Concerning the results with the latent factors, the only variable that was significantly predictive of LMX was IQ (standardized beta = .24).

*Reanalyzing the data from the Arteche, Berneth et al., Barbuto, and Judge et al. studies*

I borrowed the next data set from Arteche et al. (2008), who examined the relations between EI (using Bar-On EQi self reported "trait" measure), IQ (using the Watson-Glaser Critical Thinking Appraisal manual), and personality (using McCrae & Costa's NEO-PI) in a sample of employed adults (mean age = 43.91 years, N=446). I used this dataset primarily to see the extent to which I could predict the EI scores from IQ and personality. However, I also obtained estimates from Berneth et al. (2007a, 2008)—based on a sample of EMBAs (average age = 30.48, including ratings of supervisors whose average age was 40.59)—for the relation between follower-rated LMX (measured either using the LMX-7 of Scandura and Graen or a scale that that Bernet et al., 2007b developed, which correlates .86 with the LMX-7) and leader personality (using the McCrae and Costs's NEO-PI). I was also able to find an estimate ($r$ = .15) between a leader trait EI measure (which theoretically should correlate strongly with the Bar-On EQi) and follower-rated LMX (using the LMX-7) from Barbuto (2006). To give EI a fighting chance, I inputted an estimate of r = .20 for the correlation between IQ and LMX (note, in Judge et al.'s 2004 meta-analysis, they found a correlation of .27 across different leader IQ tests and leader outcome measures; the correlation between objective performance and objectively measured IQ was .33)[2]. As for the relation between sex and LMX, I estimated it to be .05, given that women should be rated slightly higher than mean (as is usually the case

[2] Also, to show that my estimate is reasonable, a study by Naidoo, Scherbaum, Goldstein, & Graen (2009) showed that leader GPA, which of course is not synonymous with intelligence (though it is strongly related to it, see Neisser et al., 1996), correlated with follower rated LMX across three times spans (mean $r$ = .31). Although this study is limited in that participants were students, note that these were engineering students working on a practical long-term project for a client organization; thus, their task and interactions in the team were more ecologically valid than a simple short-term experimental interaction.

with leadership in business samples, see Antonakis, Avolio, & Sivasubramaniam, 2003; Eagly, Johannesen-Schmidt, & van Engen, 2003). Finally, for the relation between LMX and age, I estimated that age should be slightly related to LMX (r = .10)--given that age and leadership effectiveness are generally weakly but positively correlated (Bass, 2008)[3].

Thus, using these estimates, I reconstructed a theoretical correlation matrix, reflecting the relations of the factors from the different studies, which is not entirely unreasonable to do and something akin to what other researchers have done in meta-analytic studies (e.g., Van Rooy, & Viswesvaran, 2004, when testing the incremental validity of EI over IQ). I realize that this procedure is not conventionally done; thus, the second set of results where I predict LMX from the individual differences should be considered as suggestive and interpreted with caution. Refer to the correlation matrix of the measures (Table 4).

[Insert Table 4 here]

I first modeled EI as a dependent variable assuming observed indicators (i.e., assuming perfect reliability). As noted in Table 5, the variance predicted in the Bar-on EI measure was high (r-square = .40; multiple r of .63). Neuroticism (standardized beta = -.36), Extraversion (standardized beta = .36), Openness (standardized beta = .11), and Agreeability (standardized beta = .10) were significant predictors. Conscientiousness approached significance (p = .06) and had a standardized beta of -.08, whereas IQ was unrelated to EI. When modeling measurement error, the variance predicted was very high (r-square = .53; multiple r of .73). The big five factors that were significant included neuroticism (standardized beta = -.40), Extraversion (standardized beta = .48), Agreeability (standardized beta = .13) and conscientiousness (standardized beta -.18). Openness was not significantly predictive, neither was IQ.

[Insert Table 5 here]

[3] Indeed, data (*n* = 247) I recently presented from European samples (Antonakis, 2007), indicated that the correlation between leader age and other-rated transformational leadership was only *r* = .06.

Again, with such strong linear dependences, it would be very odd if EI were to predict variance in dependent outcomes beyond the variance accounted for by the big five and IQ. Nonetheless, I examine whether leader EI could predict variance in follower-rated LMX using leader personality and IQ as control variables (to test Smith's second proposition). I estimated the model twice: once specifying a sample of 446 and once with a sample size of 100, to check the stability of the estimates (and to err on the side of caution because the estimates in the Bernet et al. study were based on a sample of 195 and those of the Barbuto study were based on a sample of 80 leaders). I then re-estimated the model using the latent variable specification. Refer to results in Table 6

[Insert Table 6 here]

Using observed indicators and a sample size of 446 in the input matrix showed that Neuroticism (standardized beta = -.11), Extraversion (standardized beta = .20), Openness (standardized beta = -.31), Conscientiousness (standardized beta = .17), IQ (standardized beta = .35), Sex (standardized beta = .10), and Age (standardized beta = .18) predicted LMX (r-square =. 21); EI (standardized beta = .11) approached significance too (p = .10). However, with a sample size of 100, only Openness and IQ remained significant (extraversion and conscientiousness approached significance at $p < .10$).

Next, results using latent variables, which are more trustable because they are less biased (i.e., more consistent) and using a sample of 446 indicated that LMX could be predicted (r-square =. 53) by Extraversion (standardized beta = .44), Openness (standardized beta = -.52), Conscientiousness (standardized beta = .16), IQ (standardized beta = .50), Sex (standardized beta = .11), and Age (standardized beta = .24). EI was not predictive, nor was Neuroticism—this result is a nice example of how estimates and *p*-values can severely biased when not taking into account measurement error. When specifying a sample size of 100, again

only IQ and Openness were significantly predictive. These results confirm that leader EI measured as a trait does not predict LMX perceptions of subordinates.

*Reanalyzing the data from Wong and Law, Berneth et al., Hsu et al., and Barbuto*

This analysis is essentially based on data published by Wong and Law (2002 see their Table 5), where they reported data for the big-five (McCrae and Costa's NEO-PI short form), the Wong and Law EI (WLEIS) scale, and the Bar-on EQi from a Chinese sample (n=116) of working employees at a Chinese university. Given that they reported two sets of correlations between the big five and the other factors, I averaged all estimates as I report in Table 7. Note that EQi and the WLEIS correlated strongly: the observed correlation was .63; corrected for error at the latent level I obtained an estimate of $r_{standardized}$ = .88, *SE* = .07, *z* = 13.20, $p < .001$. Thus, we can assume that the EQi and the WLEIS are essentially tapping the same construct, which is important for how I modeled EI, as I discuss below.

Next, using data reported by Hsu et al. (2008) I obtained an estimate of the relation of leader EI (i.e., using the Wong and Law EI scale) to follower-rated LMX (based the Bauer and Green LMX scale, which is essentially a replica of the Scandura and Graen LMX scale) in a Chinese sample (n = 55 leaders rated by 244 subordinates). This estimate was negative (*r* = -.08)[4], which I used for both the WLEIS-LMX and the EQi-LMX correlation[5]. I modeled the reliability of the WLEIS as .90, which coincidently is the alpha reported by Hsu et al. (2008) and the alpha I calculated from Table 6, using the interfactor correlations of the WLEIS scales of the Wong and Law study (note: they did not report the alpha of their full EI

[4] Although this correlation may seem unusually low, data (n=247) that I recently presented (Antonakis, 2007), indicated that the correlation between the four leader WLEIS facets and other-rated transformational leadership was *r* = .03, *r* = -.13, *r* = .08, and *r* = -.02.

[5] Given the negative correlation between EI and LMX, estimating the partial correlation in a model where I control for the big five is still utile, because the zero-order correlation does not take into account multivariate affects of the other variable nor of measurement error. Also, because the sample size for this study was small, I gave EI the benefit of the doubt and also tested the model while setting the EI-LMX correlation to .21. I obtained this estimate by averaging the correlations reported by Wong and Law (2002, see Table 10) for the correlation between leader EI and three follower outcomes: job performance (*r*=.13), follower job satisfaction (*r*=.26), and follower organizational citizenship behavior (*r*=.21).

scale as listed in their Table 5). Given that I could not obtain any estimates of the relations between the full big-five personality factors and LMX in a Chinese sample, I used the estimates that I reported in Table 4. Note, Vatanen (2003) reported the following correlations between the following leader personality factors and follower-rated LMX in a Chinese context: neuroticism (r = -.33), extraversion (r = .24), and conscientiousness (r = -.02). With the exception of conscientiousness, the direction of the correlations for extraversion and neuroticism are similar that what I use. Finally, I do not control for IQ in this model so as not to complicate the correlation matrix (and because I did not have any data from a Chinese sample, even remotely-related data on the LMX-IQ relation); given that IQ does not correlated with trait-based EI, this omission should not bias any of the partial coefficients.

Refer to Table 7 for the data I used to test the models.

[Insert Table 7 here]

As with the previous models, I first predict EI from the big five; these results are based on a the full correlation matrix of Wong and Law (2002) and are thus clearly interpretable. To save space, I use only the latent variable models, where I modeled the EQi and WLEIS separately (i.e., two correlated dependent variables) and jointly (as indicators of one latent EI factor with tau-equivalent loadings).

Note, the standardized loadings for the model where the EI indicators were modeled jointly were very high (i.e., $\lambda_1 = .85$; $\lambda_2 = .99$), suggesting that the two EI tests are tapping the same construct. Next, the model which predicted the "super" EI factor was significant (r-square = .31; multiple r = .56). Only conscientiousness was significant for this model (standardized beta = .45), as indicated in Table 8.

[Insert Table 8 here]

As for modeling the two dependent variables separately, results indicated that for the EQi model, the big five were collectively significantly predictive (r-square = .23, $p < .05$;

multiple r = .48), with only conscientiousness uniquely so (standardized beta = .35). For the model predicting the WLEIS, the big five were also collectively significantly predictive, though the variance predicted was much higher (r-square = .58, $p < .05$; multiple r = .76); again, conscientiousness was the only factor that was significant on its own (standardized beta = .71). Again, the big five predicted a hefty amount of variance in the EI measures.

Next, I modeled LMX as an outcome of the "super" EI factor as well as for the two EI factors separately. As before, these results should be interpreted with caution and are suggestive, given that the correlation matrix is stitched together from more than one data source.

[Insert Table 9 here]

As I report in Table 8 (first panel), the model was significant (r-square = .27, $p < .01$). Leader conscientiousness was positively predictive of follower LMX (standardized beta = .43); however, leader EI was negatively predictive of LMX (standardized beta = - .40). Extraversion approached significance (standardized beta = .25, $p < .10$). Modeling the EI factors separately produced similar results; I report the result for the WLEIS model only in the table (second panel). The model was significant (r-square = .40, $p < .05$) and again, leader conscientiousness (standardized beta = .77) and WLEIS (standardized beta = - .74) were predictive of follower LMX (results for EQi were essentially the same, though the variance predicted by the model was less, i.e., .24).

Given the small sample size of the Hsu et al. (2008), and as discussed previously, I reran the models setting the observed correlation between LMX and the EI factors to .21 while using the "super" EI factor. Refer to results in the third-panel of Table 9. Although all the coefficients were simultaneously different from zero (r-square = .18, $p < .05$), none of the factors approached significance (openness did approach significance, standardized beta = -.26,

$p < .10$). Thus, when giving EI a bit of a "head start", it still was unable to predict LMX when controlling for the big five factors.

## Discussion and conclusion

I recently had stated that "We have had enough propositions and armchair speculation regarding the utility of El. Now we want to see data. El's proponents should pit their boat against strong competitors (i.e., "g," "big five," etc). The El boat has hardly left its theoretical moorings. When it does it will suffer a calamity of titanic proportions. Then, perhaps, a new and improved El boat will be designed that will better serve the interests of science and business" (Antonakis, 2004, p. 179). As I predicted, when using strong controls the EI construct does not hold up to empirical scrutiny.

The results clearly showed that EI ability and trait models shared much variance with personality and/or intelligence. The MSCEIT depended significantly on general intelligence and agreeableness. For the EQi, significant predictors were neuroticism, extraversion, agreeableness, and conscientiousness (though in the Chinese sample only conscientiousness was predictive). As regards the WLEIS (in the Chinese sample), it was strongly dependent on conscientiousness (recall, however, that the big five had a multiple correlation of .76 with the WLEIS). With such dependencies, it was not surprising to see that EI did not predict LMX.

In testing the ability model, the most important predictors of LMX was general intelligence. In testing the incremental validity of the EI ability model only general intelligence was a significant predictor. As regarding the incremental validity test of the EQi traits model (in Anglo-Saxon settings), general intelligence, extraversion, and conscientiousness were significant predictors (unexpectedly, openness was negatively predictive). Finally, in the Chinese contexts, conscientiousness was positively predictive of

LMX and EI was *negatively* predictive or *unrelated* to LMX (in the latter, I was extremely lenient with EI). These results, insofar as the validity of EI is concerned, are hardly surprising; self-measures (trait) of EI overlap too much with personality (Matthews et al., 2002), and ability-based EI tests (e.g., MSCEIT) overlap too much with general intelligence (see Schulte et al., 2004).

As the results of this study indicate, the EI theory, whether from an ability or trait perspective, does not produce the stellar results that many would have expected. Matthews et al.'s (2002) suggestion that "EI researchers are trying to fly before they can walk" (p. 521) seems to have been very insightfulEI researchers should go back to the drawing board and devise other ways to measure this elusive construct.

A maximum in science is to avoid renaming established constructs something else, as is the case with many of the trait models of EI. As soberly mentioned by Matthews et al., (2002), "a test should not be labeled as a measure of EI when really it is a measure of some other, well-established personality trait or related individual-difference variable. . . If this practice were repeated throughout the scientific community, thousands of new (but redundant) tests would flood the market each year" (p. 45). Thus it behooves researchers to proceed cautiously in what might seem uncharted territory and to adequately examine the extent to which they may be re-exploring a construct that has been already discovered.

The results of this study are not without limitations specifically concerning the incremental validity results. Meta-analysts (Van Rooy & Viswesvaran, 2004), however, frequently impute validities in correlation matrixes so as simulate multivariate relations. Of course, having data that directly measures constructs in the same individuals is highly desirable, though in the absence of this data I did the next best thing. The results of my reanalysis of secondary data concerning the extent to which EI is predicted by general intelligence and personality, however, are without confound and can be validly interpreted.

To conclude, I trust that researchers will henceforth take the appropriate methodological controls when using EI measures for predictive purposes. Indeed, we are in need for more studies that examine the predictive validity of EI for leadership. With a bit more data, integrative, meta-analytical tests can be conducted to either give a new lease of life to EI or to shut it down for good.

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Table 1: correlations among variables using data from the Côté and Miners study

| Variable | Mean | SD | Alpha | Residual | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Neuroticism | 3.52 | 0.81 | 0.90 | 0.07 | 1.00 | | | | | | | |
| 2. Extraversion | 3.39 | 0.77 | 0.87 | 0.08 | -0.21 | 1.00 | | | | | | |
| 3. Openness | 3.83 | 0.49 | 0.70 | 0.07 | -0.15 | 0.32 | 1.00 | | | | | |
| 4. Agreeableness | 4.28 | 0.47 | 0.75 | 0.06 | -0.18 | 0.34 | 0.25 | 1.00 | | | | |
| 5. Conscientiousness | 4.01 | 0.58 | 0.78 | 0.07 | -0.29 | 0.01 | 0.03 | 0.13 | 1.00 | | | |
| 6. General intelligence | 102.80 | 17.56 | 0.81 | 58.59 | 0.07 | 0.08 | 0.09 | 0.00 | -0.21 | 1.00 | | |
| 7. Emotional intelligence (MSCEIT) | 97.49 | 16.57 | 0.92 | 21.97 | -0.03 | 0.08 | 0.11 | 0.23 | -0.14 | 0.47 | 1.00 | |
| 8. LMX | 4.17 | 0.56 | 0.85 | 0.05 | -0.06 | -0.09 | 0.00 | 0.04 | 0.05 | 0.20 | 0.19 | 1.00 |

Note: N=175. Residual refers to the value at which I constrained the residual variance when modeling the variable as a latent factor. The emotional intelligence test is an ability test.

Table 2: Predicting EI from personality and IQ using data from the Côté and Miners study

| Independent variables | Coef. | Std. Err. | *z* | *p*-value | 95% Conf. Interval | |
|---|---|---|---|---|---|---|
| | Treating independent variables as observed (R-square = .28, p < .001) | | | | | |
| Neuroticism | -1.09 | 1.41 | -0.77 | 0.44 | -3.85 | 1.68 |
| Extraversion | -1.23 | 1.54 | -0.80 | 0.42 | -4.24 | 1.78 |
| Openness | 0.68 | 2.33 | 0.29 | 0.77 | -3.88 | 5.24 |
| Agreeableness | 8.70 | 2.46 | 3.54 | 0.00 | 3.88 | 13.51 |
| Conscientiousness | -2.61 | 1.96 | -1.33 | 0.18 | -6.46 | 1.23 |
| General intelligence | 0.43 | 0.06 | 6.94 | 0.00 | 0.31 | 0.55 |
| Intercept | 31.76 | 17.40 | 1.83 | 0.07 | -2.33 | 65.86 |
| | Treating independent variables as latent (R-square = .39, p < .001) | | | | | |
| Neuroticism | -1.40 | 1.69 | -0.83 | 0.41 | -4.72 | 1.92 |
| Extraversion | -2.52 | 2.03 | -1.24 | 0.22 | -6.50 | 1.46 |
| Openness | -0.09 | 3.76 | -0.02 | 0.98 | -7.46 | 7.29 |
| Agreeableness | 12.84 | 3.75 | 3.42 | 0.00 | 5.49 | 20.19 |
| Conscientiousness | -3.16 | 2.77 | -1.14 | 0.25 | -8.59 | 2.27 |
| General intelligence | 0.54 | 0.08 | 6.57 | 0.00 | 0.38 | 0.70 |
| Intercept | 97.49 | 1.25 | 78.06 | 0.00 | 95.04 | 99.94 |

Note: Coefficient estimates are unstandardized. The emotional intelligence test is an ability test (MSCEIT).

Table 3: Predicting LMX from EI, personality and IQ using data from the Côté and Miners study

| Independent variables | Coef. | Std. Err. | *z* | *p*-value | 95% Conf. Interval | |
|---|---|---|---|---|---|---|
| | Treating independent variables as observed (R-square = .08, p < .05) | | | | | |
| Neuroticism | -0.05 | 0.05 | -0.88 | 0.38 | -0.15 | 0.06 |
| Extraversion | -0.10 | 0.06 | -1.73 | 0.08 | -0.22 | 0.01 |
| Openness | -0.01 | 0.09 | -0.09 | 0.93 | -0.18 | 0.17 |
| Agreeableness | 0.05 | 0.10 | 0.48 | 0.63 | -0.14 | 0.24 |
| Conscientiousness | 0.08 | 0.08 | 1.03 | 0.30 | -0.07 | 0.23 |
| General intelligence | 0.01 | 0.00 | 2.11 | 0.04 | 0.00 | 0.01 |
| Emotional intelligence (MSCEIT) | 0.00 | 0.00 | 1.38 | 0.17 | 0.00 | 0.01 |
| Intercept | 3.23 | 0.67 | 4.80 | 0.00 | 1.91 | 4.55 |
| | Treating independent variables as latent (R-square = .12, p < .05) | | | | | |
| Neuroticism | -0.05 | 0.06 | -0.83 | 0.41 | -0.18 | 0.07 |
| Extraversion | -0.13 | 0.08 | -1.67 | 0.10 | -0.28 | 0.02 |
| Openness | -0.01 | 0.14 | -0.10 | 0.92 | -0.29 | 0.27 |
| Agreeableness | 0.09 | 0.15 | 0.56 | 0.58 | -0.22 | 0.39 |
| Conscientiousness | 0.11 | 0.11 | 1.00 | 0.32 | -0.10 | 0.31 |
| General intelligence | 0.01 | 0.00 | 2.02 | 0.04 | 0.00 | 0.02 |
| Emotional intelligence (MSCEIT) | 0.00 | 0.00 | 0.84 | 0.40 | 0.00 | 0.01 |
| Intercept | 4.17 | 0.04 | 98.79 | 0.00 | 4.09 | 4.25 |

Note: Coefficients are unstandardized. The emotional intelligence test is an ability test.

Table 4: correlations among variables using data from Arteche, Berneth et al., Barbuto, and Judge et al. studies

| Variable | Mean | SD | Alpha | Residual | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Sex | 0.18 | 0.39 | 1.00 | 0.00 | 1.00 | | | | | | | | | |
| 2. Age | 43.91 | 7.90 | 1.00 | 0.00 | -0.21 | 1.00 | | | | | | | | |
| 3. Neuroticism | 61.77 | 20.54 | 0.84 | 67.50 | 0.10 | -0.10 | 1.00 | | | | | | | |
| 4. Extraversion | 129.57 | 19.31 | 0.80 | 74.58 | 0.12 | -0.16 | -0.38 | 1.00 | | | | | | |
| 5. Openness | 18.96 | 18.96 | 0.75 | 89.87 | 0.10 | -0.12 | -0.11 | 0.45 | 1.00 | | | | | |
| 6. Agreeableness | 120.62 | 15.01 | 0.68 | 72.10 | 0.08 | 0.11 | -0.15 | 0.01 | 0.06 | 1.00 | | | | |
| 7. Conscientiousness | 135.20 | 16.94 | 0.81 | 54.52 | -0.07 | 0.06 | -0.40 | 0.25 | -0.05 | 0.13 | 1.00 | | | |
| 8. General intelligence | 24.06 | 6.42 | 0.81 | 7.83 | 0.04 | -0.21 | 0.14 | -0.14 | 0.11 | 0.06 | -0.17 | 1.00 | | |
| 9. Emotional intelligence (EQi) | 102.60 | 7.55 | 0.89 | 6.27 | 0.05 | 0.01 | -0.49 | 0.52 | 0.32 | 0.16 | 0.16 | -0.06 | 1.00 | |
| 10. LMX | 5.34 | 1.14 | 0.91 | 0.12 | 0.10 | 0.05 | -0.21 | 0.13 | -0.16 | 0.01 | 0.23 | 0.20 | 0.15 | 1.00 |

Note: N=446. Residual refers to the value at which I constrained the residual variance when modeling the variable as a latent factor. The emotional intelligence test is a trait test.

Table 5: Predicting EI from personality and IQ using data from Arteche, Berneth et al., Barbuto, and Judge et al. studies

| Independent variables | Coef. | Std. Err. | *z* | *p*-value | 95% Conf. Interval | |
|---|---|---|---|---|---|---|
| | | Treating independent variables as observed (R-square = .40, p < .001) | | | | |
| Sex | 0.54 | 0.75 | 0.73 | 0.47 | -0.92 | 2.01 |
| Age | 0.05 | 0.04 | 1.23 | 0.22 | -0.03 | 0.12 |
| Neuroticism | -0.13 | 0.02 | -8.30 | 0.00 | -0.16 | -0.10 |
| Extraversion | 0.14 | 0.02 | 7.67 | 0.00 | 0.11 | 0.18 |
| Openness | 0.04 | 0.02 | 2.58 | 0.01 | 0.01 | 0.08 |
| Agreeableness | 0.05 | 0.02 | 2.57 | 0.01 | 0.01 | 0.09 |
| Conscientiousness | -0.04 | 0.02 | -1.90 | 0.06 | -0.07 | 0.00 |
| General intelligence | 0.02 | 0.05 | 0.47 | 0.64 | -0.07 | 0.11 |
| Intercept | 87.81 | 5.00 | 17.56 | 0.00 | 78.01 | 97.61 |
| | | Treating independent variables as latent (R-square = .53, p < .001) | | | | |
| Sex | 0.25 | 0.79 | 0.31 | 0.75 | -1.30 | 1.79 |
| Age | 0.06 | 0.04 | 1.42 | 0.16 | -0.02 | 0.14 |
| Neuroticism | -0.15 | 0.02 | -6.42 | 0.00 | -0.20 | -0.10 |
| Extraversion | 0.20 | 0.04 | 5.38 | 0.00 | 0.13 | 0.27 |
| Openness | 0.02 | 0.03 | 0.51 | 0.61 | -0.05 | 0.08 |
| Agreeableness | 0.08 | 0.03 | 2.48 | 0.01 | 0.02 | 0.14 |
| Conscientiousness | -0.08 | 0.03 | -2.84 | 0.00 | -0.13 | -0.02 |
| General intelligence | 0.05 | 0.06 | 0.82 | 0.41 | -0.07 | 0.18 |
| Intercept | 100.01 | 1.86 | 53.92 | 0.00 | 96.38 | 103.65 |

Note: Coefficient estimates are unstandardized. The emotional intelligence test is an ability test (EQi).

Table 6: Predicting LMX from EI, personality and IQ using data from Arteche, Berneth et al., Barbuto, and Judge et al. studies

| Independent variables | Coef. | Std. Err. | *z* | *p*-value | 95% Conf. Interval | |
|---|---|---|---|---|---|---|
| | | Treating independent variables as observed (R-square = .24, p < .001) | | | | |
| Sex | 0.10 | 0.04 | 2.42 | 0.02 | 0.06 | 0.55 |
| Age | 0.18 | 0.04 | 4.02 | 0.00 | 0.01 | 0.04 |
| Neuroticism | -0.11 | 0.05 | -2.05 | 0.04 | -0.01 | 0.00 |
| Extraversion | 0.20 | 0.06 | 3.65 | 0.00 | 0.01 | 0.02 |
| Openness | -0.31 | 0.05 | -6.51 | 0.00 | -0.02 | -0.01 |
| Agreeableness | -0.08 | 0.04 | -1.74 | 0.08 | -0.01 | 0.00 |
| Conscientiousness | 0.17 | 0.05 | 3.74 | 0.00 | 0.01 | 0.02 |
| General intelligence | 0.35 | 0.04 | 8.27 | 0.00 | 0.05 | 0.08 |
| Emotional intelligence (EQi) | 0.09 | 0.05 | 1.65 | 0.10 | 0.00 | 0.03 |
| Intercept | -0.36 | 0.97 | -0.37 | 0.71 | -2.56 | 1.75 |
| | | Treating independent variables as latent (R-square = .39, p < .001) | | | | |
| Sex | 0.30 | 0.14 | 2.20 | 0.03 | 0.03 | 0.57 |
| Age | 0.03 | 0.01 | 4.60 | 0.00 | 0.02 | 0.05 |
| Neuroticism | -0.01 | 0.01 | -1.00 | 0.32 | -0.01 | 0.00 |
| Extraversion | 0.03 | 0.01 | 3.82 | 0.00 | 0.01 | 0.04 |
| Openness | -0.03 | 0.01 | -5.84 | 0.00 | -0.05 | -0.02 |
| Agreeableness | -0.01 | 0.01 | -1.41 | 0.16 | -0.02 | 0.00 |
| Conscientiousness | 0.01 | 0.01 | 2.24 | 0.03 | 0.00 | 0.02 |
| General intelligence | 0.09 | 0.01 | 8.03 | 0.00 | 0.07 | 0.12 |
| Emotional intelligence (EQi) | 0.01 | 0.01 | 0.84 | 0.40 | -0.01 | 0.03 |
| Intercept | 3.82 | 0.33 | 11.73 | 0.00 | 3.18 | 4.46 |

Note: Coefficients are unstandardized

Table 7: correlations among variables using data from the Wong and Law, Berneth et al., Hsu et al., and Barbuto studies studies

| Variable | Mean | SD | Alpha | Residual | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Neuroticism | 3.29 | 0.67 | 0.81 | 0.08 | 1.00 | | | | | | | |
| 2. Extraversion | 3.54 | 0.55 | 0.73 | 0.08 | -0.21 | 1.00 | | | | | | |
| 3. Openness | 3.48 | 0.52 | 0.67 | 0.09 | 0.10 | 0.24 | 1.00 | | | | | |
| 4. Agreeableness | 3.79 | 0.53 | 0.73 | 0.08 | 0.05 | 0.18 | 0.09 | 1.00 | | | | |
| 5. Conscientiousness | 3.63 | 0.53 | 0.72 | 0.08 | -0.23 | 0.21 | 0.01 | 0.28 | 1.00 | | | |
| 6. Emotional intelligence (EQi) | 4.86 | 0.54 | 0.78 | 0.06 | -0.22 | 0.24 | 0.09 | 0.00 | 0.28 | 1.00 | | |
| 7. Emotional intelligence (WLEIS) | 4.95 | 0.79 | 0.90 | 0.06 | -0.20 | 0.26 | 0.10 | 0.18 | 0.51 | 0.63 | 1.00 | |
| 8. LMX | 3.10 | 0.78 | 0.81 | 0.12 | -0.21 | 0.13 | -0.16 | 0.01 | 0.23 | -0.08 | -0.08 | 1.00 |

Note: N=116. Residual refers to the value at which I constrained the residual variance when modeling the variable as a latent factor. The emotional intelligence tests are trait tests.

Table 8: Predicting EI from personality using data from the Wong and Law, Berneth et al., Hsu et al., and Barbuto studies

| Independent variables | Coef. | Std. Err. | *z* | *p*-value | 95% Conf. Interval | |
|---|---|---|---|---|---|---|
| | DV is one EI factor with two indicators: EQi and WLEIS (R-square = .31, p < .01) | | | | | |
| Neuroticism | -0.20 | 0.26 | -0.77 | 0.44 | -0.71 | 0.31 |
| Extraversion | 0.48 | 0.38 | 1.26 | 0.21 | -0.27 | 1.23 |
| Openness | 0.27 | 0.39 | 0.68 | 0.50 | -0.50 | 1.03 |
| Agreeableness | -0.43 | 0.38 | -1.13 | 0.26 | -1.18 | 0.32 |
| Conscientiousness | 1.20 | 0.44 | 2.74 | 0.01 | 0.34 | 2.06 |
| Intercept (EQi) | 4.86 | 0.05 | 94.50 | 0.00 | 4.76 | 4.96 |
| Intercept (WLEIS) | 4.95 | 0.07 | 72.44 | 0.00 | 4.82 | 5.08 |
| | DV is EQi (R-square = .23, p < .05) | | | | | |
| Neuroticism | -0.09 | 0.11 | -0.86 | 0.39 | -0.31 | 0.12 |
| Extraversion | 0.20 | 0.16 | 1.28 | 0.20 | -0.11 | 0.50 |
| Openness | 0.10 | 0.16 | 0.60 | 0.55 | -0.22 | 0.41 |
| Agreeableness | -0.20 | 0.15 | -1.29 | 0.20 | -0.50 | 0.10 |
| Conscientiousness | 0.37 | 0.16 | 2.29 | 0.02 | 0.05 | 0.68 |
| Intercept | 4.86 | 0.05 | 97.35 | 0.00 | 4.76 | 4.96 |
| | DV is WLEIS (R-square = .58, p < .001) | | | | | |
| Neuroticism | -0.03 | 0.15 | -0.19 | 0.85 | -0.32 | 0.26 |
| Extraversion | 0.18 | 0.21 | 0.86 | 0.39 | -0.23 | 0.59 |
| Openness | 0.16 | 0.22 | 0.75 | 0.46 | -0.26 | 0.58 |
| Agreeableness | -0.08 | 0.21 | -0.40 | 0.69 | -0.49 | 0.32 |
| Conscientiousness | 1.01 | 0.22 | 4.58 | 0.00 | 0.58 | 1.45 |
| Intercept | 4.95 | 0.07 | 67.78 | 0.00 | 4.81 | 5.09 |

Note: Coefficient estimates are unstandardized. The emotional intelligence tests are trait tests.

Table 9: Predicting LMX from EI and personality using data from the Wong and Law, Berneth et al., Hsu et al., and Barbuto studies

| Independent variables | Coef. | Std. Err. | *z* | *p*-value | 95% Conf. Interval | |
|---|---|---|---|---|---|---|
| | EI factor has two indicators: EQi and WLEIS[1] (R-square = .27, p < .01) | | | | | |
| Neuroticism | -0.21 | 0.23 | -0.92 | 0.36 | -0.67 | 0.24 |
| Extraversion | 0.57 | 0.34 | 1.67 | 0.10 | -0.10 | 1.23 |
| Openness | -0.53 | 0.34 | -1.55 | 0.12 | -1.20 | 0.14 |
| Agreeableness | -0.37 | 0.34 | -1.09 | 0.28 | -1.03 | 0.30 |
| Conscientiousness | 1.05 | 0.41 | 2.55 | 0.01 | 0.24 | 1.85 |
| EI "super factor" | -0.43 | 0.16 | -2.68 | 0.01 | -0.74 | -0.12 |
| Intercept | 5.34 | 0.11 | 50.85 | 0.00 | 5.13 | 5.54 |
| | EI factor is only WLEIS[1] (R-square = .40, p < .05) | | | | | |
| Neuroticism | -0.18 | 0.26 | -0.68 | 0.50 | -0.69 | 0.33 |
| Extraversion | 0.62 | 0.39 | 1.60 | 0.11 | -0.14 | 1.38 |
| Openness | -0.43 | 0.39 | -1.09 | 0.28 | -1.20 | 0.34 |
| Agreeableness | -0.32 | 0.38 | -0.85 | 0.40 | -1.06 | 0.42 |
| Conscientiousness | 1.86 | 0.74 | 2.53 | 0.01 | 0.42 | 3.30 |
| EI (WLEIS) | -1.24 | 0.51 | -2.46 | 0.01 | -2.23 | -0.25 |
| Intercept | 5.34 | 0.11 | 50.85 | 0.00 | 5.13 | 5.54 |
| | EI factor has two indicators: EQi and WLEIS[2] (R-square = .18, p < .05) | | | | | |
| Neuroticism | -0.12 | 0.23 | -0.50 | 0.62 | -0.56 | 0.33 |
| Extraversion | 0.33 | 0.33 | 0.99 | 0.32 | -0.32 | 0.99 |
| Openness | -0.66 | 0.34 | -1.95 | 0.05 | -1.33 | 0.01 |
| Agreeableness | -0.16 | 0.33 | -0.48 | 0.63 | -0.81 | 0.49 |
| Conscientiousness | 0.44 | 0.39 | 1.13 | 0.26 | -0.32 | 1.20 |
| EI "super factor" | 0.16 | 0.15 | 1.11 | 0.27 | -0.13 | 0.45 |
| Intercept | 5.34 | 0.11 | 50.85 | 0.00 | 5.13 | 5.54 |

Note: Coefficients are unstandardized.
[1]the observed correlation between EI and LMX was entered as -.08.
[2]the observed correlation between EI and LMX was entered as .21.