

FEMALE LEADERSHIP ADVANTAGE: A PERSONALITY-BASED EXPLANATORY
MODEL OF THE GENDER GAP IN TRANSFORMATIONAL LEADERSHIP

BY

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ABSTRACT

Academic discussion of the female leadership advantage (Eagly & Carli, 2003) has emphasized the empirical finding that women are rated slightly higher in transformational leadership compared to men. The current study seeks to explain this gender gap, by specifying three personality-based theoretical mechanisms that enhance transformational leadership: (a) communion (stereotypical femininity; favoring women), (b) emotional intelligence (favoring women), as well as an offsetting effect of (c) agency (stereotypical masculinity; favoring men). Meta-analytic data confirm the theorized full mediation model. Because these three unique mechanisms operate in different directions, their individual indirect effects are notable but their cumulative indirect effect is small and near-zero. Implications for personality-based explanations of gender effects in leadership perceptions are discussed.

Keywords: gender, transformational leadership, agency, communion, emotional intelligence, meta-analysis

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CHAPTER 1: INTRODUCTION

When thinking of great leaders throughout history, many people might think of Mahatma Gandhi, Abraham Lincoln, Nelson Mandela, Winston Churchill, etc. One thing these leaders have in common is that they all happen to be of one gender: men. Indeed, the traditional prototype or stereotype of a great (or good) leader has typically been male and masculine, historically (Koenig et al., 2011). Such masculine leader stereotypes could also create a disadvantage for women seeking or performing in leadership roles, such that it is more difficult for women to become or be perceived as a good leader, due to the mismatch or incongruity between the role expectations for women and the role expectations for leaders (Eagly & Karau, 2002). Indeed, various discrimination-based theories of gender gaps in leadership attainment and leader evaluations have received a great deal of attention (i.e., Think Manager—Think Male: Schein, 1973; Role Congruity Theory: Eagly & Karau, 2002; Lack of Fit Theory: Heilman, 2001), as these theories are typically used to explain the underrepresentation or undervaluing of women in leadership roles (i.e., female leadership disadvantage).

However, the contention that women might, in fact, have a leadership *advantage* in contemporary society has also been popularized in recent years (Paustian-Underdahl et al., 2014). One version of the female leadership advantage perspective (cf. Eagly & Carli, 2003; Vecchio, 2002; Yukl, 2002) proposes that women have an advantage in leadership because women have more skills and experiences in interpersonal relationships, inclusive decision making, caregiving, and power-sharing (Grant, 1988; also see Lipman-Blumen, 1983; Vecchio, 2002). When authors (e.g., Eagly & Carli, 2003; Eagly, 2007) refer to the female leadership advantage, they often cite meta-analytic empirical evidence of various kinds.

Gender Differences in Leadership Style

Eagly and Johnson (1990) meta-analyzed the gender differences in various leadership styles, including interpersonal style, task style, interpersonal-task style continuum, and democratic-autocratic style continuum. Task style refers to a leadership style with an orientation to task accomplishment, such as coordinating activities to complete assigned tasks; whereas interpersonal style refers to a leadership style with a socioemotional orientation, focusing on the maintenance of interpersonal relationships such as the morale and welfare of the group members (Bales, 1950). Task style and interpersonal style were most famously developed in the Ohio State studies of leader behavior, where these two factors were respectively labeled as *initiation of structure* and *consideration* (e.g., Halpin, 1957; Halpin & Winer, 1957; Hemphill & Coons, 1957; Stogdill, 1963). Eagly and Johnson (1990) found that on average, women exhibited negligibly more interpersonal style than men did ($d = 0.04$, CI [0.01, 0.07], $k = 136$), while women exhibited an identical level of task style as men did ($d = 0.00$, CI [-0.03, 0.03], $k = 139$). Relatedly, when meta-analyzing the set of primary studies that measured interpersonal style and task style on a single interpersonal-task style continuum, men and women scored similarly ($d = -0.03$, CI [-0.10, 0.03], $k = 31$). The largest gender effect found in Eagly and Johnson's (1990) meta-analysis was in democratic style versus autocratic style. Women were found to exhibit a more democratic style versus autocratic style (on the democratic-autocratic style continuum) than men on average ($d = 0.22$, CI [0.15, 0.29], $k = 23$; Eagly & Johnson, 1990). In general however, the gender gaps in leadership styles found in this meta-analysis were almost always near-zero.

The construct validity of Eagly and Johnson's (1990) meta-analysis has also raised concerns (Vecchio, 2002). First, the gender effects were averages across a wide range of

measures, including Leader Behavior Description Questionnaire (LBDQ; Stogdill, 1963; Stogdill et al., 1962), Leadership Effectiveness and Adaptability Description (LEAD; Hersey & Blanchard, 1977, 1982), Leadership Opinion Questionnaire (Fleishman, 1953, 1957, 1960), Organizational Climate Description Questionnaire (Halpin, 1966), and so on; with these instruments all designed to assess different constructs. Eagly and Johnson's (1990) meta-analysis also included measures such as Least Preferred Co-Worker scale (Fiedler, 1967) that have not shown adequate convergent validity with more validated and established measures of leadership style (e.g., LBDQ; Stogdill, 1963; Stogdill et al., 1962). Second, this meta-analysis was largely based on leaders' self-ratings (197 out of the total 370 primary studies included in the meta-analysis used leaders' self-ratings of leadership), and Eagly and Johnson (1990) did not report the gender effects separately by rating source (e.g., reporting gender effects for self-rating vs. other-rating separately). Therefore, it is possible the results from Eagly and Johnson (1990) could have been largely driven by leaders' self-stereotype or social desirability, instead of observed leadership behaviors (as observed by others).

Along the same lines, a more recent meta-analysis on paternalistic leadership style (Hiller et al., 2019) shows that the gender gaps in authoritarianism ($r = -0.01$, $\rho = -0.01$, CI [-0.06, 0.04], $k = 11$, $N = 4,385$), benevolence ($r = -0.01$, $\rho = -0.01$, CI [-0.04, 0.01], $k = 11$, $N = 5,236$), and morality ($r = 0.03$, $\rho = 0.03$, CI [0.00, 0.07], $k = 7$, $N = 2,754$) were also close to zero. Altogether, this evidence supports the contention that the gender differences in leadership styles may be negligible and near-zero.

Gender Differences in Leadership Effectiveness

Besides the gender differences in leadership styles, research has also looked into whether there is a gender difference in leadership effectiveness (e.g., Paustian-Underdahl et al., 2014).

Measures of leadership effectiveness included in Paustian-Underdahl et al.'s (2014) meta-analysis consist of: (a) leader performance, (b) leadership ability, (c) measures of satisfaction with leaders, (d) measures of satisfaction with leaders' performance, (e) coding/counting of effective leadership behaviors, and (f) evaluations of organizational productivity/team performance. Paustian-Underdahl et al.'s (2014) meta-analysis found that women are perceived to be slightly but non-significantly more effective leaders than men (overall $d = -0.05$, $k = 99$, $N = 101,676$). Importantly, this gender difference is larger and statistically significant when looking at only other-ratings of leader effectiveness (other-rating $d = -0.12$, $k = 78$, $N = 96,893$). Further, when looking at only self-ratings of leader effectiveness, male leaders exhibited a higher mean than female leaders (self-rating $d = .21$, $k = 19$, $N = 4,711$). In other words, the direction of the gender gap in leader effectiveness ratings depended entirely on whether the leader effectiveness was self-reported. However, the construct validity of Paustian-Underdahl et al.'s (2014) meta-analysis is a potential source of ambiguity (the same as in all past meta-analyses of leadership effectiveness), because there is no standardized measurement of leadership effectiveness typically used in the literature.

Gender Differences in Transformational Leadership

Perhaps the best evidence for an actual female leadership advantage comes from the domain of transformational leadership (Eagly et al., 2003). Transformational leaders are defined as leaders who give vision and sense of mission, earn respect and trust (charisma), convey high expectations and communicate purposes effectively (inspiration), encourage attentive thinking and problem solving (intellectual stimulation), and offer individual attention and mentor followers individually (individualized consideration; Bass, 1990). There are several potential reasons why transformational leadership style would be enacted or perceived to be enacted

especially well by women (cf. Eagly & Carli, 2003; Yoder, 2001). First, transformational leadership behaviors, unlike traditional leadership behaviors, are more androgynous and feminine (not exclusively masculine; Eagly & Carli, 2003). This characteristic of transformational leadership allows women to be more freed from the double-bind created by the role incongruity between their gender roles and their leader roles. Second, women might be especially adept at executing the more feminine facets of transformational leadership (e.g., individualized consideration) because of a spillover effect from their gender roles to their leader roles. Third, women who survived the double standard and glass ceiling in leader selection in organizations might possess more leadership skills than their male counterparts (who did not face the same hurdles in order to be in a leadership position; Eagly et al., 2003; see also Eagly & Carli, 2003). In support of this view, Eagly et al.'s (2003) meta-analysis found that overall women are rated as more transformational leaders than men are ($d = -0.10$, $k = 44$). This finding of a female leadership advantage was supported across different measures of transformational leadership: MLQ Norming Study $d = -0.11$; Other MLQ studies $d = -0.11$, $k = 26$; Studies using other measures $d = -0.09$, $k = 17$). Importantly, these gender effects are larger when only looking at subordinate ratings ($d = -0.15$, $k = 26$) compared to leader's self-ratings of transformational leadership ($d = -0.06$, $k = 26$). There has been evidence on measurement equivalence between men and women in transformational leadership specifically (Walumbwa et al., 2005) and in various other types of leadership (e.g., assessment center leadership rating, Anderson et al., 2006; authentic leadership, Caza et al., 2010). Therefore, this evidence suggests that the mean difference between men and women in transformational leadership (and leadership in the broader sense) should largely reflect true difference in the latent construct of transformational leadership. Due to the pattern of empirical findings just reviewed, in the current study we will focus on the

gender gap in transformational leadership. Specifically, we will focus on how transformational others perceive the leaders to be (separating self-rated transformational leadership and non-self rated transformational leadership). This is consistent with the definition of leadership, which usually largely focuses on how the leaders influence their followers and others (Winston & Patterson, 2006; Silva, 2016). Thus, there is some inherent logic in valuing and focusing on follower-rated (or other-rated) leadership.

Gender Roles and Leader Roles over Time

One thing that might have helped amplify the female leadership advantage even further in recent years could be the changing context and practices of leadership. Leadership has shifted from being established from access to economic, political, or military power (a focus on hierarchy and patriarchy) in the past, to being established from the ability to empower and engage followers as well as facilitate teamwork and collaboration (a focus on interdependency) in contemporary organizations (Lipman-Blumen, 1996; see also Eagly & Carli, 2003). Fondas' (1997) review of three popular contemporary management books—*Managing for Excellence* (Bradford & Cohen, 1984), *Leading Self-directed Work Teams* (Fisher, 1993), and *Reengineering Management* (Champy, 1995)—contends that feminization is the unifying thread for new ideal managers. Specifically, textual analysis on these three popular contemporary management books reveals three themes: (a) surrender control and share responsibility, (b) help and develop others, and (c) build a connected network of relationships. This review shows that authors of popular contemporary management books call on feminine traits in their writing of the new ideal of management. This is consistent with the popularization of transformational leadership for the past few decades. In sum, the type of command and control [agentic] leadership that contributes to the female leadership disadvantage might be eroding, while the

type of caring and persuading [communal] leadership that contributes to the female leadership advantage might be heightening in contemporary society (Eagly & Carli, 2003).

Eagly and Carli (2003) specifically emphasize that there is especially a rising female leadership advantage in contemporary society because of (a) a shift in women's traits, and (b) a change in the roles of leaders. These notions are reviewed below. First, women's traits have shifted to be more similar to the traits of men because women now spend more time in paid labor and less time in domestic labor in recent years. Recent meta-analytic evidence (Hsu et al., 2021) has shown that the gender gaps in self-reported agency and communion have both narrowed over time (from 1973 to 2019). The gender gaps in job characteristics such as prestige, power, freedom, feeling of accomplishment, leadership, responsibility, and recognition also have a general narrowing trend over time (from the 1970s to 1990s; Konrad et al., 2000). Gender gaps in risk taking have also declined over time in more recent years (1981 to 1997) compared to earlier years (1964 to 1980; Byrnes et al., 1999). These findings are consistent with the assumptions of social role theory (Eagly, 1987) that the social roles men and women occupy serve to shape their self-perceived and other-perceived traits. Indeed, findings from a series of five experiments show that other-perceived gender-stereotypical traits (masculine physical: athletic, etc., feminine physical: pretty, etc., masculine personality: competitive, etc., feminine personality: affectionate, etc., masculine cognitive: analytical, etc., feminine cognitive: imaginative, etc., factors derived using factor analysis from Cejka & Eagly, 1999) are speculatively predicted by participants to become more similar over time and into the future (from 1950 to 2050; Diekmann & Eagly, 2000). Similarly, in a study of ratings of the agency of women in general, ratings made by male managers in 1989 (Heilman et al., 1989) differed from ratings made by managers and undergraduate students around 2005, who rated women in general

as higher on agentic traits (Duehr & Bono, 2006). Meta-analytic evidence also shows that more people perceive men and women to be equal in terms of competence over time (from 1946 to 2018; Eagly et al., 2020). These changes in the self-perceptions and other-perceptions (e.g., stereotypes) of women's traits could help women to be perceived as more leader-like.

Second, the roles and practices of leaders have also changed. The classic “think manager—think male” paradigm research (Schein, 1973, 1975) proposes and shows that the characteristics of a successful middle manager are more similar to the ascribed characteristics of men in general (ICC = .62 rated by male managers in 1973; ICC = .54 rated by female managers in 1975) than women in general (ICC = .06 rated by male managers in 1973; ICC = .30 rated by female managers in 1975) in the 1970s. Heilman et al. (1989) replicated the study (with male managers only) and showed a strong statistically significant relationship between schemas of successful manager and men in general (ICC = .54), but not for schemas of successful manager and women in general (ICC = -.24). “Think manager-think male” has also been found to be a global phenomenon (for both male and female management students in Germany, Great Britain, Japan, and People's Republic of China; and especially among male management students in the U.S.; Schein & Mueller, 1992; Schein et al., 1996). However, in later studies, manager role is no longer sex-typed when rated by female managers (Brenner et al., 1989) or by female management students in the U.S. (Dodge et al., 1995; Schein et al., 1989). A more recent study (Duehr & Bono, 2006) replicated the study with both manager and student samples. Results showed that both male managers and female managers see much resemblance between men and manager (ICC = .61 from male managers; ICC = .49 from female managers) as well as between women and manager (ICC = .63 from male managers; ICC = .70 from female managers). However, less change in student raters' gender stereotypes were found. There was no correlation

between male students' view of successful manager and women (ICC = .10). Relative to male managers in 1989, managers and undergraduate students in around 2005 viewed successful managers as less agentic and more communal. Managers in more recent years also rated women higher on agentic traits, compared to ratings in previous years (Duehr & Bono, 2006). Koenig et al. (2011) meta-analyzed and found that people perceive leader roles to be more agentic (vs. communal; the difference score between agency and communion [agency minus communion]; from 1979 to 2007) and more masculine (vs. feminine; a single bipolar masculine vs. feminine rating scale; from 1975 to 2005) in older studies. These findings suggest that people (and especially female managers and female management students) have started to view the characteristics of successful middle managers as having resembling both the characteristics of men in general and women in general to a similar degree, indicating some decline in the think manager-think male phenomenon (Schein, 2001). These changes in how people view leadership roles and the trend to see a match between the traits of leaders and women could also help women to have more opportunity in to be viewed positively in leadership positions. Based on the above propositions and findings, it seems that conditions exist in which women are perceived as better leaders than men are. However, it is still unclear what mechanisms give women an edge to be better leaders. The current paper focused specifically on one category of potential mechanisms that can explain the gender gap in transformational leadership—personality and individual differences.

Personality-Based Leadership Theories

The theory of leadership categorization (Lord et al., 1984) proposes that people have *implicit theories of leadership*, such that people have certain ideas of what most leaders are like (prototypes). For example, people find specific traits (e.g., charisma, masculinity, etc.)

characteristic of the cognitive schema for leaders (Offermann et al., 1994). This conceptualization of personality and leadership (Lord et al., 1986) is rooted in a social-cognitive perspective (e.g., Mischel, 1973), which suggests that personality traits should influence social perceptions because observers tend to use others' personality traits to help organize their perceptions of others (Winter & Uleman, 1984). According to this view, the personality traits of the leaders should affect how they are perceived as a leader. A model of leader attributes and leader performance (Zaccaro, 2007) further proposes an integrated model where attributes (e.g., personality and cognitive abilities, social appraisal and problem-solving skills) operate through leader processes to predict leadership outcomes (i.e., leader emergence, leader effectiveness, and leader advancement and promotion). Based on the theory of leadership categorization (Lord et al., 1984) and a model of leader attributes and leader performance (Zaccaro, 2007), personality traits could be one potential reason that helps explain the *female leadership advantage*—i.e., the observed gender gap in transformational leadership.

Agency and Communion

Traditionally, agency has been an advantageous trait for leaders to possess. For example, agency (also called *masculinity*) has been found empirically to be one of the strongest predictors of both leadership emergence and leadership effectiveness (Lord et al., 1986; Mann, 1959), and this finding has been echoed in research on the related trait of dominance (Hogan, 1978; Judge et al., 2002; Smith & Foti, 1998; Stogdill, 1948). Indeed, one classic study (Megargee, 1969) showed in a lab experiment that the high-dominance individual in a mixed-dominance dyad tended to emerge as the leader, unless the high-dominance individual was a woman paired with a low-dominance man, in which case the man was chosen as leader. A more recent meta-analysis (Badura et al., 2018) has shown that: (a) women are less likely to be chosen as a leader, and (b)

this gender-leader emergence effect can be largely explained by agency [masculinity]. In other words, it is possible that agentic personality serves as a mediator for gender effects.

Wiggins (1991) argues that both agentic (i.e., getting ahead) and communal (i.e., getting along) traits are essential for individuals to be able to function well in human society. An individual needs to be agentic enough in order to be in charge and be able to protect their own resources for survival, while they need to be communal enough in order to maintain relationships, be popular and be able to avoid sabotage from other people. As such, being either agentic or communal could be functional. We contend that both traits can be functional in being perceived as an effective leader. However, agency and communion are gendered traits that have consistently shown gender differences across time. A recent meta-analysis has shown that, on average, men are more agentic than women ($g = .40$, $k = 928$, $N = 254,731$) and women are more communal than men ($g = -.56$, $k = 937$, $N = 254,465$; Hsu et al., 2021). Therefore, gendered traits such as agency and communion could help explain the slight gender gap in transformational leadership, such that the agentic leadership advantage for men and the communal leadership advantage for women could cancel each other out, resulting in the slight female leadership advantage (Eagly et al., 2003). Altogether, based on the circumplex of interpersonal variables (Wiggins, 1991), we propose that both agency and communion would have a positive relationship with transformational leadership, and that both agency and communion would mediate the effect of gender on transformational leadership, explaining the gender gap in transformational leadership.

Hypothesis 1: Agentic traits have a positive relationship with transformational leadership.

Hypothesis 2: Agentic traits will mediate the effect of gender on transformational leadership.

Hypothesis 3: Communal traits have a positive relationship with transformational leadership.

Hypothesis 4: Communal traits will mediate the effect of gender on transformational leadership.

Emotional Intelligence

Goleman's (1995, 1998; Goleman et al., 2001) best-selling popular press books have fueled the popularization of emotional intelligence. One reason for the popularity of this work is Goleman's (1998a) claim that "IQ and technical skills are important, but emotional intelligence is the sine qua non of leadership" (p. 82). In other words, cognitive ability simply serves as a "threshold capabilities", whereas emotional intelligence is an essential to be able to be great leaders. Goleman (1998a) advanced five components of emotional intelligence at work: (a) self-awareness, (b) self-regulation, (c) motivation, (d) empathy, and (e) social skill, and explained why emotional intelligence matters more than intelligence. To begin, cognitive function is worse when people are emotionally disturbed. Yet, on the other hand, emotional intelligence helps people to be perceptive and attentive to the emotions of others, to be able to manage conflict, to be able to communicate in a more constructive and helpful way, to be able to help build a climate where diversity is valued instead of a source of conflict, and to be able to collaborate with others more effectively (Goleman, 1996).

Empirically, EI has been defined in two ways: (a) ability EI and (b) mixed EI. Ability EI was defined as the ability to understand emotions and apply emotions and emotional knowledge to improve the thinking process (Mayer et al., 2008). Whereas mixed EI was defined (more broadly) as noncognitive ability or skill (Bar-On, 1997), socially or emotionally intelligent behaviors (Bar-On, 2004), and emotion-related personality traits (Petrides & Furnham, 2003). Much of the criticism on EI has focused on mixed EI because of its broad definition (simply

based on the exclusion of cognitive ability) and the lack of discriminant validity with personality traits. Indeed, meta-analysis shows that mixed EI is a hodgepodge of other well-known traits including: (a) ability EI, (b) self-efficacy, (c) self-rated performance, (d) conscientiousness, (e) emotional stability, (f) extraversion, and (g) general mental ability (Joseph et al., 2015). Yet, ability EI has been argued and supported empirically to predict organizational outcomes (Daus & Ashkanasy, 2005). Therefore, the current study only focuses on ability EI that is measured using performance-based measures (i.e., measures exclusively using right-wrong multiple-choice tests of EI administered to the leaders themselves).

Ability EI is commonly understood using the Four-Branch Model of ability EI (Mayer & Salovey, 1997; Salovey & Mayer, 1990), where ability EI is consist of (a) perceiving emotion accurately, (b) utilizing emotions to improve thinking process, (c) making sense of emotions, and (d) regulating emotions. George (2000) proposes that the four components of ability EI contribute to effective leadership. She defined effective leadership as having many of the components of transformational leadership including (a) provide visions, (b) stimulate intelligence, (c) motivate confidence, (d) encourage flexibility, and (e) give meaning, and argues that leaders high in EI will be better equipped with the socioemotional skills to enact these effective leadership behaviors because these behaviors are emotion-driven. Based on the George's (2000) propositions and the links between the components of ability EI and transformational leadership, we propose that EI will positively predict transformational leadership.

Hypothesis 5: Emotional intelligence has a positive relationship with transformational leadership.

As mentioned earlier, meta-analysis found that women are more transformational leaders than men ($d = -0.10$, $k = 44$; Eagly et al., 2003). Eagly et al. (2003) contend that the reason why

women are more transformational leaders is because women are more communal. However, they did not look at socio-emotional skills. Another potential explanation for the slight female transformational leadership advantage (Eagly et al., 2003) is that women tend to be higher on emotional intelligence than men (performance-based EI $d_{\text{corrected}} = 0.52$, $k = 14$, $N = 2,216$; Joseph & Newman, 2010). Transformational leadership involves more socio-emotional aspects of leadership than traditional leadership. Women were found to be better at perceiving nonverbal cues in meta-analyses (Hall, 1978; McClure, 2000) and have more complex emotion knowledge (Ciarrochi et al., 2005). Thus, women's higher emotional intelligence might be one reason why there is a slight female advantage in transformational leadership.

Hypothesis 6: Emotional intelligence will mediate the effect of gender on transformational leadership.

CHAPTER 2: METHOD

In order to test the integrated theoretical model of the gender gap in transformational leadership (Figure 1), we combined meta-analytic correlations into an overall correlation matrix, which then served as the basis for path analysis (i.e., meta-analytic SEM; Viswesvaran & Ones, 1995). We chose to use meta-analyses, instead of a primary study, because meta-analyses allow the investigation of moderators across different type of studies/samples (e.g., do studies/samples using different rater source yield different effect sizes?). This characteristic of meta-analysis is particularly beneficial for the current study because we are especially interested in looking at non-self rated transformational leadership and self-rated transformational leadership separately. In order to compile the overall meta-analytic correlation matrix, we used a combination of published bivariate meta-analyses and also conducted eight original bivariate meta-analyses.

Original Meta-analyses

For relevant bivariate relationships that have already been meta-analyzed, we extracted effect sizes directly from previous meta-analyses (see Table 1). For relationships that have not been meta-analyzed, we conducted eight original meta-analyses in the current study. These relationships include (a, b) performance-based emotional intelligence with agency and communion, (c, d, e, and f) transformational leadership [both self-rated and non-self-rated] with agency and communion, and (g, h) transformational leadership [both self-rated and non-self-rated] with performance-based emotional intelligence.

Literature Search

To identify primary studies to include in the original meta-analyses in the current study, we searched within papers that cited the commonly-used measures of the variables of interest, using the Google Scholar ‘search within citing articles’ search function.

For the relationships of (a, b) emotional intelligence with agency and communion, we used the keywords "*MSCEIT*" OR "*MEIS*" OR "*STEU*" (i.e., the names of commonly used performance-based EI measures; to avoid the common term *STEM*, we only used *STEU* as one of our keywords) to search within papers that cited commonly-used validated agency and communion measures, including the Bem Sex Role Inventory (BSRI; Bem, 1974) and personal attributes questionnaire (PAQ; Spence & Helmreich, 1978; Spence et al., 1974, 1975).

For the relationships of (c, d, e, and f) transformational leadership with agency and communion, we used the keywords "*Multifactor Leadership Questionnaire*" OR "*Global Transformational Leadership*" OR "*Leadership Practices Inventory*" OR "*Transformational Leadership Inventory*" (i.e., the names of commonly used transformational leadership measures) to search within papers that cited commonly-used, validated measures of agency and communion measures, including the BSRI (Bem, 1974) and PAQ (Spence & Helmreich, 1978; Spence et al., 1974, 1975).

For the relationship between (g, h) transformational leadership and performance-based emotional intelligence, we used the keyword "*MSCEIT*" OR "*MEIS*" OR "*STEU*" (i.e., the names of commonly used performance-based EI measures; to avoid the common term *STEM*, we only used *STEU* as one of our keywords) to search within papers cited several commonly used validated transformational leadership measures, including the Multifactor Leadership Questionnaire (MLQ; Bass, 1985), Global Transformational Leadership scale (GTL; Carless et al., 2000), Leadership Practices Inventory (LPI; Posner & Kouzes, 1988), and Transformational Leadership Inventory (TLI; Podsakoff et al., 1990). Overall, 845 results were returned from the above keyword searches for papers that cited seminal works (i.e., Bem, 1974; Spence &

Helmreich, 1978; Spence et al., 1974, 1975; Bass, 1985; Carless et al., 2000; Posner & Kouzes, 1988; Podsakoff et al., 1990).

Inclusion Criteria

Studies were included in the meta-analysis according to the following rules. First, a primary study had to report sufficient statistics to calculate an effect size (e.g., correlation coefficient r) for one of the proposed relationships in the current study. Second, the samples in the primary studies needed to be adult samples (e.g., undergraduate samples and working adults). Third, only primary studies written in English were included in the current meta-analysis.

For the relationships involving emotional intelligence (i.e., the relationship of emotional intelligence with agency, communion, and transformational leadership), a primary study had to specifically measure the leaders' EI using a performance-based ability EI measure (i.e., the MSCEIT; Mayer et al., 2003, MEIS; Mayer et al., 1999, and STEU/STEM; MacCann & Roberts, 2008). That is, the leader needed to have taken a test of performance-based ability EI (i.e., a multiple-choice test that contains right and wrong response options).

For the relationships involving transformational leadership (i.e., the relationships of transformational leadership with agency, communion, and emotional intelligence), a primary study had to measure transformational leadership using one of the validated transformational leadership measures, including the Multifactor Leadership Questionnaire (MLQ; Bass, 1985), Global Transformational Leadership scale (GTL; Carless et al., 2000), Leadership Practices Inventory (LPI; Posner & Kouzes, 1988), and Transformational Leadership Inventory (TLI; Podsakoff et al., 1990).

Applying these criteria resulted in the inclusion of five effect sizes for the EI-Agency relationship, five effect sizes for the EI-Communion relationship, six effect sizes for the Agency-

TFL (non-self report) relationship, eight effect sizes for the Communion-TFL (non-self report) relationship, seven effect sizes for the EI-TFL (non-self report) relationship, four effect sizes for the Agency-TFL (self report) relationship, three effect sizes for the Communion-TFL (self report) relationship, and 18 effect sizes for the EI-TFL (self report) relationship. A summary of the literature searches and exclusion/inclusion process can be seen in Figure 2.

Insert PRISMA chart here; Figure 2

Coding

For each primary study, sufficient statistics (e.g., correlation coefficient r) for effect size calculation were extracted. We also coded potential moderators of the relationships proposed in the current study. First, *date of study* was coded. Consistent with past research (Grijalva et al., 2015; Twenge et al., 2008), the date of study for published papers was coded as 2 years prior to publication, and for unpublished papers was coded as the year of the dissertation/thesis or conference paper. *Publication type* was coded as either published (i.e., journal articles) or unpublished (i.e., dissertations/theses). *Sample type* was coded as either organizational sample or student sample. *Type of industry* (e.g, manufacturing and education) was coded for organizational samples. *Colleg major* (e.g, management) was coded for student samples. *Sample country* was coded for each primary study. *Rater* was coded (e.g., leader self rating, subordinate rating, upper-level supervisor rating). *Sample age* was coded as the average age of the sample in the primary study. *Measurement instrument* was coded (i.e., PAQ or BSRI for agency and communion; MLQ, TLI, GTL, or LPI for transformational leadership; MSCEIT, MEIS, or STEU/STEM for performance-based EI). *Form of measurement instrument* was further coded (e.g., short-form BSRI vs. long-form BSRI).

To ensure the independence of samples included in the current meta-analyses, when multiple effect sizes (e.g., using different measurement instruments) were reported for a sample, we used the composite formula to obtain a single effect size for the sample (when sufficient statistics were reported in the primary study; Ghiselli et al., 1981; Sackett & Ellingson, 1997). When insufficient statistics were reported, we used the average correlation instead of the composite correlation. When the same samples were reported in multiple primary studies, we used the more recent, published version.

To examine the accuracy of the coding procedures listed above, all primary studies included in the current meta-analyses were coded by each of two coders independently. Interrater reliability [Kappa ($\kappa = .58-.100$) and percentage match (84%-100%)] showed agreement between raters across coding categories.

Analysis

Based on the meta-analytic procedures outlined in Hunter and Schmidt (2015), attenuation for unreliability in both X and Y was corrected. We corrected individually for each study's locally-reported Cronbach's α . When Cronbach's α was not reported, we used the average α from all other primary studies in the current meta-analysis, for each variable. For the published meta-analyses by Eagly et al. (2003) and Hsu et al. (2021), the original authors did not apply corrections for attenuation. To be consistent with the corrections used in other effect sizes in the current correlation matrix, we therefore corrected the Eagly et al. (2003) and Hsu et al. (2021) effects for unreliability in the DV (cf. the gender variable was not corrected for unreliability). In these corrections, we used the following estimates for average Cronbach's α : (a) agency $\alpha = .79$ (Badura et al., 2018, p. 345), (b) communion $\alpha = .80$ (Badura et al., 2018, p. 345), (c) non-self-rated transformational leadership $\alpha = .88$ (Lee & Carpenter, 2018, p. 258), and

(d) self-rated transformational leadership $\alpha = .86$ (Lee & Carpenter, 2018, p. 258). For effect sizes involving gender, we assumed that gender was coded with complete reliability (Cronbach's $\alpha = 1.0$), and thus did not apply a correction for attenuation for this variable.

To test the hypothesized mediated relationships, path analysis was conducted using the meta-analytic correlation matrix (see Table 1). Consistent with past meta-analytic path analyses (Badura et al., 2018; Joseph & Newman, 2010), because the current study aims to understand the theoretical relationships between the latent constructs of gender, agency, communion, EI, and transformational leadership, we chose to use meta-analytic correlations corrected for attenuation (i.e., estimates of true relationship between latent constructs). For meta-analytic correlations extracted from published bivariate meta-analyses, when meta-analytic correlations corrected for attenuation in X and Y were not reported in the published bivariate meta-analyses, we used the Schmidt and Hunter correction approach as outlined in Hall and Brannick (2002) to correct for artifacts for those uncorrected meta-analytic correlations. When conducting the path analysis, we used both the minimum N and the harmonic mean N (Viswesvaran & Ones, 1995) across different cells in the meta-analytic correlation matrix. The directions and statistical significance of the results found using the minimum N and the harmonic mean N were identical. Given the considerable sample size differences among the meta-analytic correlations in the meta-analytic correlation matrix, we report the results using the minimum N in the results section.

To examine the categorical moderators (e.g., rater), we used modified asymptotic confidence intervals to determine whether the correlations are statistically significantly different across conditions (Zou, 2007). To examine the continuous moderators (e.g., date of study), we used sample-weighted least squares regression (Aguinis et al., 2011; Schmidt & Hunter, 2015; Steel & Kammeyer-Mueller, 2002).

CHAPTER 3: RESULTS

Eight Original Meta-Analyses

Meta-analytic results for the agency-TFL and communion-TFL relationships are reported in Table 2 and Table 3. Agency had a positive but not statistically significant relationship with TFL (non-self-reported): ($r = .20, \rho = .27, k = 6, N = 420, 95\% \text{ CI } [-.06, .45]$), failing to support Hypothesis 1. However, supporting Hypothesis 3, communion was positively related to TFL (non-self-reported): ($r = .44, \rho = .50, k = 8, N = 779, 95\% \text{ CI } [.32, .57]$). When looking at self-reported transformational leadership, both agency ($r = .25, \rho = .31, k = 4, N = 820, 95\% \text{ CI } [.11, .39]$) and communion ($r = .30, \rho = .36, k = 3, N = 589, 95\% \text{ CI } [.11, .50]$) were positively related to self-reported TFL.

Meta-analytic results for the EI-TFL relationship are reported in Table 4. Supporting Hypothesis 5, EI was positively related to TFL (non-self-reported): ($r = .12, \rho = .13, k = 6, N = 618, 95\% \text{ CI } [.04, .20]$). When looking at self-reported transformational leadership, EI was positively related to self-reported TFL ($r = .25, \rho = .29, k = 17, N = 1,923, 95\% \text{ CI } [.08, .50]$).

Meta-analytic results for the agency-EI and communion-EI relationships are reported in Table 5. Both agency ($r = -.0009, \rho = -.0005, k = 5, N = 1,172, 95\% \text{ CI } [-.05, .05]$) and communion ($r = .05, \rho = .07, k = 5, N = 1,172, 95\% \text{ CI } [-.06, .16]$) did not have a statistically significant relationship with EI.

Moderator Analyses

Using modified asymptotic confidence intervals (Zou, 2007) to test categorical moderators for rating source of transformational leadership, we found that the agency-TFL relationship did not differ when TFL was non-self-reported (e.g., $r = .20, \rho = .27, k = 6, N = 420, 95\% \text{ CI } [-.06, .45]$), compared to when TFL was self-reported/rated by the leader themselves (r

= .25, $\rho = .31$, $k = 4$, $N = 820$, 95% CI [.11, .39]; $\Delta\rho = .04$, 95% CI [-.23, .38], $p > .05$; see Tables 2 and 6). The communion-TFL relationship also did not differ when TFL was non-self-reported (e.g., $r = .44$, $\rho = .50$, $k = 8$, $N = 779$, 95% CI [.32, .57]), compared to when TFL was self-rated by the leader themselves ($r = .30$, $\rho = .36$, $k = 3$, $N = 589$, 95% CI [.11, .50]; $\Delta\rho = -.14$, 95% CI [-.41, .09], $p > .05$; see Tables 3 and 6). We found that the EI-TFL relationship is weaker when TFL was rated by others (e.g., $r = .12$, $\rho = .13$, $k = 6$, $N = 618$, 95% CI [.04, .20]), compared to when TFL was rated by the leader themselves ($r = .25$, $\rho = .29$, $k = 17$, $N = 1,923$, 95% CI [.17, .33]; $\Delta\rho = .16$; 95% CI [.02, .26], $p < .05$; see Tables 4 and 8).

For sample country moderator, we found that the agency-TFL relationship is stronger in US samples ($r = .36$, $\rho = .43$, $k = 3$, $N = 484$, 95% CI [.33, .43]), compared to non-US samples ($r = .10$, $\rho = .13$, $k = 5$, $N = 564$, 95% CI [-.10, .31]; $\Delta\rho = .30$, 95% CI [.10, .54], $p < .05$; see Tables 2 and 6). Interestingly, the communion-TFL relationship is weaker in US samples ($r = .27$, $\rho = .31$, $k = 4$, $N = 548$, 95% CI [.06, .49]), compared to non-US samples ($r = .47$, $\rho = .53$, $k = 5$, $N = 628$, 95% CI [.41, .52]; $\Delta\rho = -.22$, 95% CI [-.47, -.01], $p < .05$; see Tables 3 and 7). The EI-TFL relationship is did not differ in US samples ($r = .14$, $\rho = .16$, $k = 10$, $N = 937$, 95% CI [.07, .21]), compared to non-US samples ($r = .22$, $\rho = .26$, $k = 12$, $N = 1,430$, 95% CI [.11, .33]; $\Delta\rho = -.10$, 95% CI [-.22, .06], $p > .05$; see Tables 4 and 8).

For publication type moderator, we found that the agency-TFL relationship is weaker in published papers ($r = .15$, $\rho = .21$, $k = 7$, $N = 756$, 95% CI [-.03, .34]), compared to unpublished papers ($r = .36$, $\rho = .43$, $k = 3$, $N = 484$, 95% CI [.33, .38]; $\Delta\rho = .22$, 95% CI [.06, .47], $p < .05$; see Tables 2 and 6). The communion-TFL relationship did not differ in published papers ($r = .46$, $\rho = .53$, $k = 7$, $N = 820$, 95% CI [.36, .55]), compared to unpublished papers ($r = .27$, $\rho = .31$, $k =$

4, $N = 548$, 95% CI [.06, .49]; $\Delta\rho = .22$, 95% CI [-.02, .47], $p > .05$; see Tables 3 and 7). We found that the EI-TFL relationship did not differ in published papers ($r = .15$, $\rho = .18$, $k = 7$, $N = 824$, 95% CI [.07, .23]), compared to unpublished papers ($r = .22$, $\rho = .26$, $k = 23$, $N = 2,333$, 95% CI [.15, .29]; $\Delta\rho = -.08$, 95% CI [-.19, .04], $p > .05$; see Tables 4 and 8).

Using sample-weighted least squares regression for continuous moderators (Aguinis et al., 2011; Schmidt & Hunter, 2015; Steel & Kammeyer-Mueller, 2002), we found that date of study does not moderate the agency-TFL ($\beta = -.056$, $p > .05$; *n.s.*; Table 9), the communion-TFL ($\beta = -.031$, $p > .05$; Table 10), or the EI-TFL ($\beta = .226$, $p > .05$; *n.s.*; Table 11) relationship. For sample age moderator, we found that sample age does not moderate the agency-TFL ($\beta = -.091$, $p > .05$; *n.s.*; Table 9), the communion-TFL ($\beta = -.295$, $p > .05$; *n.s.*; Table 10), or the EI-TFL ($\beta = .00$, $p > .05$; *n.s.*; Table 11) relationship.

Mediator Analyses

To test the hypothesized mediating relationships, we conducted path analysis using the meta-analytic correlation matrix shown in Table 1, with the minimum sample size N . We chose to use the minimum sample size when running the path analyses in order to be conservative, because of the considerable difference in the samples sizes among the meta-analytic correlations, and the fact that several of the proposed mediator relationships had modest sample sizes (ranging from 420 to 1,172). All path analyses and mediation tests were also run using the harmonic mean N , and the direction and statistical significance of the results were identical to the results reported here using the minimum N . Six theoretical models were run and compared (Model 1a compared with 1b, and 2a compared with 2b, 2c, and 2d; see Table 12). Model comparisons were made on the basis of change in CFI, with a model difference being interpreted as meaningful when it $\Delta\text{CFI} > .01$ (Cheung & Rensvold, 2002).

The hypothesized full mediation model (Model 1a: shown in Figure 1) displayed good overall fit ($\chi^2_{(df=1)} = 1.327$, RMSEA = .016, CFI = 1.00, NNFI = .996, SRMR = .006). Model 1b (partial mediation, including the direct effect from gender to TFL) was a saturated model with zero degrees of freedom, and therefore displayed perfect fit by design. We compared Model 1a and 1b using change in CFI (Cheung & Rensvold, 2002) and retained Model 1a as the better model. Path coefficients for Model 1a are shown in Figure 3. All hypothesized paths were statistically significant in the expected directions.

For the model comparisons among Models 2a, 2b, 2c, and 2d (models including both transformational leadership [non-self report] and transformational leadership [self report] as 2 DVs), Model 2a (hypothesized full mediation model: shown in Figure 4) displayed good overall fit ($\chi^2_{(df=2)} = 11.517$, RMSEA = .0384, CFI = .995, NNFI = .961, SRMR = .013). We next specified a series of partial mediation models, for the sake of model comparison. Model 2b (adding a direct path from gender to non-self-reported TFL) displayed comparably good overall fit ($\chi^2_{(df=1)} = 9.503$, RMSEA = .0665, CFI = .995, NNFI = .930, SRMR = .012), as did Model 2c (adding a direct path from gender to self-reported TFL; $\chi^2_{(df=1)} = 1.990$, RMSEA = .0227, CFI = .999, NNFI = .992, SRMR = .0052). Model 2d (saturated model, with both direct paths from gender to self- and non-self-reported TFL) displayed perfect fit by design (zero degrees of freedom). When comparing Models 2a, 2b, 2c, and 2d using change in CFI, we retained Model 2a as the best fitting model. Path coefficients for Model 2a are shown in Figure 4. All paths were statistically significant in the expected directions.

To test the indirect effects specified in the mediation hypotheses (H2, H4, and H6), we next used Monte Carlo confidence intervals to test whether the indirect effects are statistically significant (Preacher & Selig, 2012; see Table 13). In particular, we tested whether the product

of the path coefficients of $X \rightarrow M$ (e.g., Gender \rightarrow Agency) and $M \rightarrow Y$ (e.g., Agency \rightarrow TFL) was statistically significant. As shown in Table 13, three indirect effects: a) Gender \rightarrow Agency \rightarrow TFL, b) Gender \rightarrow Communion \rightarrow TFL, c) Gender \rightarrow EI \rightarrow TFL were tested, and all three were statistically significant—suggesting that agency, communion, and EI jointly mediate the relationship between gender and transformational leadership (supporting H2, H4, and H6, as well as the overall hypothesized model shown in Figure 1).

Publication Bias Analysis

Egger's test of the intercept (Egger et al., 1997) and the trim and fill procedure (Duval & Tweedie, 2000) were conducted to examine publication bias in each of the eight original meta-analyses (see Table 15 for both Egger's test of intercept and trim and fill results, and Figure 5 for the funnel plot for each of the eight meta-analyses). Egger's test of the intercept (Egger et al., 1997) suggested that 4 of the 8 original meta-analyses were potentially impacted by publication bias. The trim and fill procedure (Duval & Tweedie, 2000) also suggested that 4 out of the 8 meta-analytic relationships were impacted by publication bias overall, but flagged a different set of 4 studies. Overall, when k is small as it was in these original meta-analyses, publication bias analyses should likely be ignored or interpreted with extreme caution (Shewach et al., 2019). We further note that results using publication type (published vs. unpublished) as a moderator were presented in the results section.

CHAPTER 4: DISCUSSION

There has been growing academic discussion of the *female leadership advantage* over the past decades (Eagly & Carli, 2003; Paustian-Underdahl et al., 2014; Vecchio, 2002; Yukl, 2002), largely motivated by the finding of a small advantage for women in non-self-reported measures of transformational leadership (Eagly et al., 2003). However, it is unclear why women might be better transformational leaders compared to men. Therefore, one main goal of the current study is to identify and test potential personality-based individual differences that might give women an advantage in leadership.

Results confirm two, offsetting sets of phenomena. First, communal personality (i.e., stereotypical femininity, marked by warmth and compassion) and emotional intelligence both help women to be perceived as better leaders than men. Second, agentic personality (i.e., stereotypical masculinity, marked by assertiveness and dominance) helps men to be perceived as better leaders than women. These three mechanisms (communion, agency, and emotional intelligence) operate simultaneously and result in a near-zero cumulative gender effect on transformational leadership.

Theoretical Contributions

Although the idea of female leadership advantage (Paustian-Underdahl et al., 2014; cf. Eagly & Carli, 2003; Vecchio, 2002; Yukl, 2002; Grant, 1988; also see Lipman-Blumen, 1983; Vecchio, 2002) has been increasingly noted in recent years, many of the classic and better-known theories of gender gaps in leadership attainment and leader evaluations—those that favor men—have continued to receive a great deal of attention (i.e., Think Manager—Think Male: Schein, 1973; Role Congruity Theory: Eagly & Karau, 2002; Lack of Fit Theory: Heilman,

2001). These classic theories are typically used to explain the underrepresentation or undervaluing of women in leadership roles (i.e., female leadership *disadvantage*).

The currently proposed personality-based explanatory model of the gender gap in transformational leadership supports the existence of two sets of countervailing theoretical mechanisms, articulating and supporting both a *female leadership advantage* (via communion and emotional intelligence) and a *female leadership disadvantage* (via agency). The current study also shows that these mechanisms not only help explain the gender gap in transformational leadership, but that the same mechanisms also explain the gender gap in leadership self-efficacy/self-rated transformational leadership.

We also tested moderators to examine whether the agency-transformational leadership, communion-transformational leadership, and emotional intelligence-transformational leadership relationships could be different across conditions. One major distinction we made was separating the rating source for transformational leadership. Among the agency-transformational leadership, communion-transformational leadership, and emotional intelligence-transformational leadership relationships, the rating source for transformational leadership only made a difference in the relationship between emotional intelligence and transformational leadership, such that the relationship between emotional intelligence and transformational leadership is stronger when transformational leadership is self-rated versus other-rated. This finding is interesting, because emotional intelligence is the only variable that was measured using performance-based measures (i.e., ability tests with right-wrong questions, that measured *actual* emotional knowledge and skill; e.g., Mayer et al., 2003; MacCann & Roberts, 2008). This suggests that self-rated TFL is not merely a reflection of hubris, arrogance, and overconfidence; but rather self-rated TFL might

additionally be reflective of an accurate assessment of one's emotional competence, which manifests in interpersonal situations (such as leadership scenarios; Goleman, 1998a).

Another interesting pattern is that the relationship between agency and transformational leadership is stronger in US samples compared to non-US samples, whereas the relationship between communion and transformational leadership is stronger in non-US samples compared to US samples. This could be due to the strong emphasis on and valuing of agentic traits (e.g., assertiveness), particularly for leaders, in North American cultures. On the other hand, many non-US countries tend to value communal traits (e.g., caring) more, compared to the US (Chhokar et al., 2007).

Practical Implications

The double-bind (created by the role incongruity of gender roles and leader roles) for (potential) female leaders has been one mainstream concept used to describe the challenges women in leadership roles may face in contemporary organizations. In this female leadership narrative, women face the dilemma of either choosing to be agentic (congruent with their leader role, but incongruent with their gender role), or choosing to be communal (incongruent with their leader role, but congruent with their gender role). However, the results from the current study suggest that agency and communion are both beneficial to being perceived as a (good) leader. Women do not have to choose agency *or* communion. Women can be *both* agentic and communal. Doing so would potentially help women be perceived as better leaders. Similarly, though not having the dilemma of the double-bind like women, men also need not choose between being agentic or communal. The results from the current study suggests that agency and communion help people in general to be perceived as a leader (regardless of their gender).

Specifically, the current study suggests that one way to be perceived as a transformational leader is to be *both* assertive and compassionate.

The current study also found that emotional intelligence helps people to be perceived as a more transformational leader. Organizations hoping to strengthen their leadership could consider implementing emotional intelligence training (Cherniss & Adler, 2000). Research using experimental designs has shown that it is possible to increase emotional intelligence through training (Nelis et al., 2009). Therefore, emotional intelligence training could be one effective way to increase overall transformational leadership in organizations.

Limitations and Future Research Directions

First, the original meta-analyses in the current study focused exclusively on a small number of validated measurement instruments (e.g., EI was measured using performance-based ability EI measures only; leadership was measured using TFL measures only), in order to enhance construct validity. As a result, some of the original meta-analyses in the current study were based on a small number of primary studies/samples (*k*'s ranged from 4 to 17; *N*'s ranged from 420 to 1,923). Future meta-analytic research could wait until more primary data accumulate, to increase the sample size.

Second, all of the primary studies included in the original meta-analyses in the current study were correlational studies (i.e., non-experimental designs). Accordingly, we could not draw causal inferences from the current study. Third, one limitation of all meta-analyses is that researchers can only study relationships that have been investigated by previous studies. In the current study, the agency-EI and communion-EI relationships were based on particularly small numbers of primary studies/samples, because little past research had examined the relationships between agency and EI, and between communion and EI.

With respect to future research, the current set of findings raises additional questions about role congruity theory (Eagly & Karau, 2002). In particular, it is less clear that the leadership role is entirely masculine. Rather, the current set of results highlights that the transformational leadership role in particular may contain elements of communion/stereotypical femininity and emotional competence. Perhaps the leadership role is multifaceted, in a manner that includes both stereotypically masculine and stereotypically feminine features simultaneously.

Also, the current design was unable to assess interaction effects. For instance, we could not assess whether agency predicted TFL better for men (see Kim et al., 2020), or whether communion and EI predicted TFL better for women. Another limitation of the current study is that potential interaction effects between the mediators cannot be tested. For example, we could not test whether being both high in communion and EI at the same time would lead to an even greater leadership advantage. In other words, we could not test whether communion is more effective for leadership when people have high EI.

Methodologically, all meta-analytic SEM (MASEM) studies potentially have the issues of using a mixture of subpopulations. Therefore it could be unclear whether results generalize to any particular subpopulation. One effort we made hoping to remedy this issue was breaking down the samples into categories (e.g., by countries). Another common issue for MASEM studies is construct validity. Almost always, multiple measurement instruments are used to measure one single variable, therefore, multiple measurement instruments are usually included in the meta-analysis. Including a range of various measurement instruments could raise the concern of construct validity because different measurement instruments might not be measuring and reflecting the same construct. One effort we made to minimize this construct validity concern in

the current study was to be selective with the measurement instruments we included. For example, for emotional intelligence, we exclusively focused on performance measures of ability-based EI.

Conclusion

The current study shows that the gender gap in transformational leadership could be jointly explained by three personality-based mechanisms (i.e., agency, communion, and emotional intelligence). Specifically, communion and emotional intelligence could help explain the *female leadership advantage*, whereas agency could help explain a countervailing *female leadership disadvantage*. This set of findings expands upon Eagly's (1987) social role theory-based set of explanations (i.e., sex roles of agency/masculinity and communion/femininity) to also incorporate knowledge and skills-based tests of emotional intelligence (i.e., social and emotional skill) simultaneously in the development of transformational leadership. Altogether, these three mechanisms, working in different directions, aggregate to a near-zero total gender gap in transformational leadership. The near-zero total effect hides a set of more substantial underlying gendered leadership phenomena (female leadership advantage based on communion and emotional intelligence, and male leadership advantage based on agency) that work in opposing directions to offset each other.

CHAPTER 5: FIGURES AND TABLES

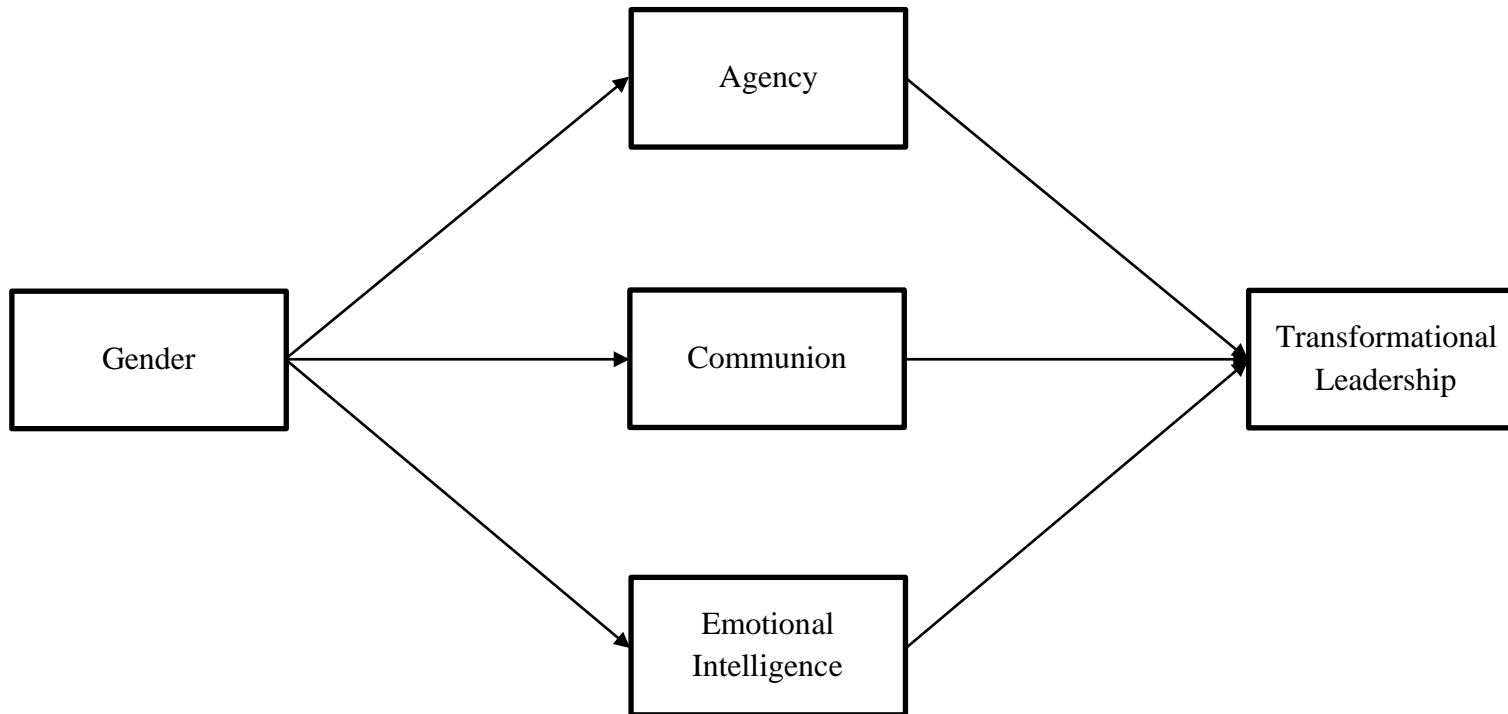


Figure 1. A Gender-Agency/Communion/EI Model of Transformational Leadership

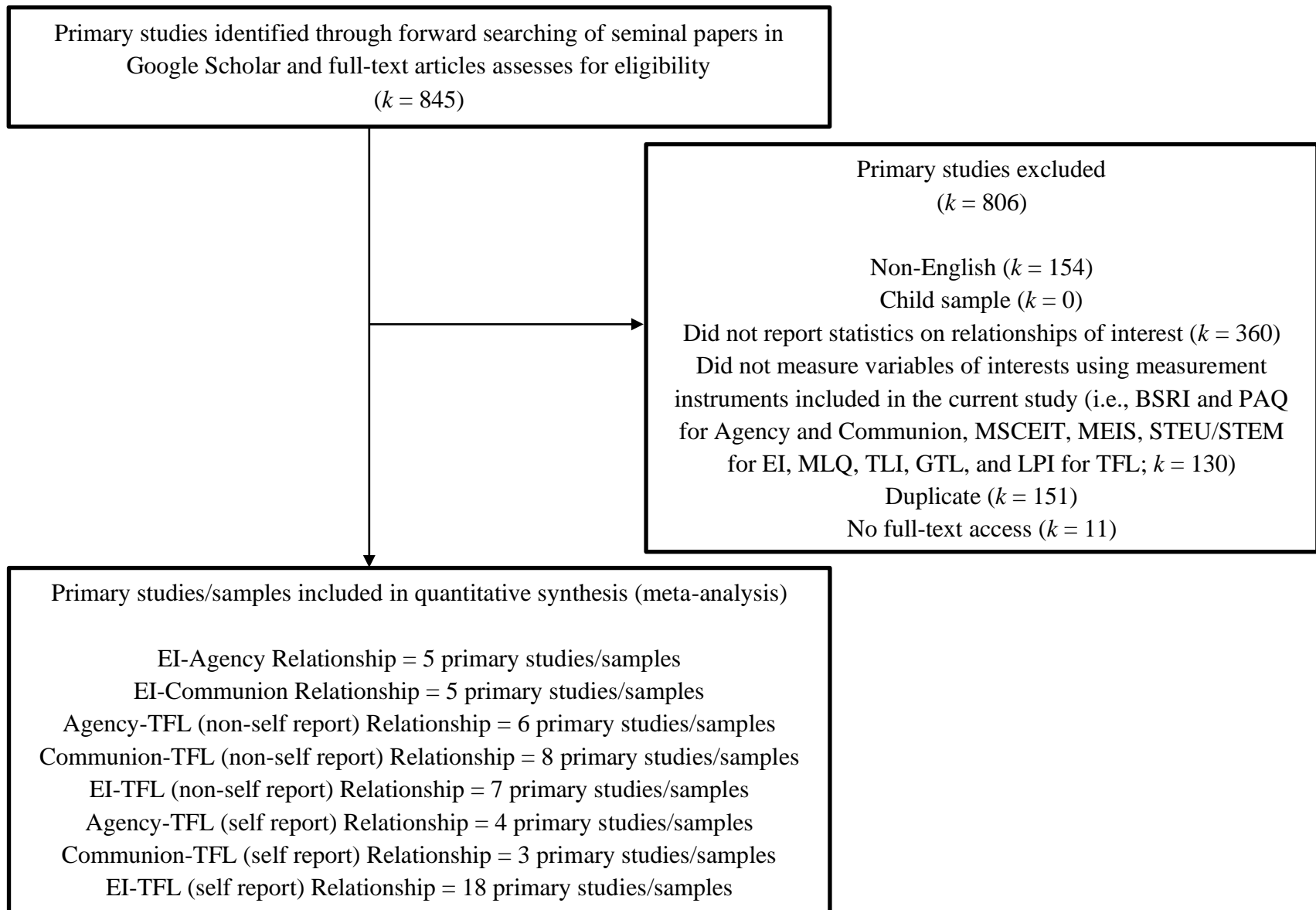


Figure 2. Flow Chart for Meta-Analytic Literature Search

Table 1.

Meta-Analytic Correlation Matrix of Gender, Agency, Communion, Emotional Intelligence, and Transformational Leadership

	1.	2.	3.	4.	5.
1. Gender	-				
2. Agency	.23 ^b	-			
	928/254,731				
3. Communion	-.30 ^b	.09 ^c	-		
	937/254,465	554/110,243			
4. Emotional Intelligence (performance-based ability EI measure only)	-.25 ^d	-.0005 ^a	.07 ^a	-	
	14/2,216	5/1,172	5/1,172		
5. Transformational Leadership (non-self report)	-.09 ^e	.27 ^a	.50 ^a	.13 ^a	-
	10/2,996	6/420	8/779	6/618	
6. Transformational Leadership (leader's self-report)	-.15 ^e	.31 ^a	.36 ^a	.29 ^a	.27 ^f
	10/836	4/820	3/589	17/1,923	23/2,784

Note. Each cell contains ρ (the mean sample size-weighted meta-analytic correlation corrected for attenuation), followed by k number of effect sizes and N sample size. ^a Original meta-analysis. ^b Hsu et al. (2021). ^c Badura et al. (2018). ^d Joseph & Newman (2010). ^e Extracted from Eagly et al. (2003, pp. 576-577). ^f Lee & Carpenter (2018). Gender: F = 1, M = 2.

Table 2. Meta-analytic results for Agency and Transformational Leadership

	<i>k</i>	<i>N</i>	<i>r</i>	ρ	<i>SD</i> ρ	95% CI	80% CV
Agency-Transformational leadership	10	1,240	.23	.30	.25	[.10, .37]	[-.02, .61]
Rater							
Self-Rated TFL	4	820	.25	.31	.15	[.11, .39]	[.12, .51]
Other-Rated TFL	6	420	.20	.27	.37	[-.06, .45]	[-.20, .74]
Subordinate	6	420	.20	.27	.37	[-.06, .45]	[-.20, .74]
Sample type							
Organizational sample	9	1,026	.21	.27	.27	[.06, .36]	[-.07, .61]
Student sample	1	214	.36	.42	.00	[.36, .36]	[.42, .42]
Type of industry							
Banking	2	76	.43	.49	.00	[.42, .43]	[.49, .49]
Education	1	52	.42	.46	.00	[.42, .42]	[.46, .46]
Mixed	4	567	.32	.42	.16	[.19, .45]	[.21, .63]
Sample country							
US	3	484	.36	.43	.00	[.33, .43]	[.43, .43]
Other	5	564	.10	.13	.25	[-.10, .31]	[-.19, .45]
Publication type							
Published	7	756	.15	.21	.29	[-.03, .34]	[-.17, .58]
Unpublished	3	484	.36	.43	.00	[.33, .38]	[.43, .43]

Note. *k* = number of effect sizes in the meta-analysis; *N* = total sample size in the meta-analysis; *r* = uncorrected correlation; ρ = correlation corrected for attenuation in the predictor and criterion; *SD* ρ = standard deviation of the corrected correlation; CI = confidence interval around *r*; CV = credibility interval around ρ . Moderation tests for date of study and sample age (both continuous moderators) appear in Table 9.

Table 3. Meta-analytic results for Communion and Transformational Leadership

	<i>k</i>	<i>N</i>	<i>r</i>	ρ	<i>SD</i> ρ	95% CI	80% CV
Communion-Transformational leadership	11	1,368	.38	.44	.20	[.27, .50]	[.19, .69]
Rater							
Self-Rated TFL	3	589	.30	.36	.18	[.11, .50]	[.13, .59]
Other-Rated TFL	8	779	.44	.50	.19	[.32, .57]	[.26, .75]
Subordinate	8	779	.44	.50	.19	[.32, .57]	[.26, .75]
Sample type							
Organizational sample	10	1,154	.37	.43	.21	[.24, .50]	[.15, .70]
Student sample	1	214	.45	.51	.00	[.45, .45]	[.51, .51]
Type of industry							
Banking	2	76	.62	.67	.00	[.59, .65]	[.67, .67]
Education	2	116	.31	.33	.30	[-.12, .75]	[-.06, .71]
Mixed	5	862	.35	.41	.21	[.18, .52]	[.14, .68]
Sample country							
US	4	548	.27	.31	.22	[.06, .49]	[.03, .59]
Other	5	628	.47	.53	.00	[.41, .52]	[.53, .53]
Publication type							
Published	7	820	.46	.53	.12	[.36, .55]	[.37, .68]
Unpublished	4	548	.27	.31	.22	[.06, .49]	[.03, .59]

Note. *k* = number of effect sizes in the meta-analysis; *N* = total sample size in the meta-analysis; *r* = uncorrected correlation; ρ = correlation corrected for attenuation in the predictor and criterion; *SD* ρ = standard deviation of the corrected correlation; CI = confidence interval around *r*; CV = credibility interval around ρ . Moderation tests for date of study and sample age (both continuous moderators) appear in Table 10.

Table 4. Meta-analytic results for Emotional Intelligence and Transformational Leadership

	<i>k</i>	<i>N</i>	<i>r</i>	ρ	<i>SD</i> ρ	95% CI	80% CV
Emotional Intelligence-Transformational leadership	28	2,953	.20	.23	.16	[.14, .26]	[.03, .43]
Rater							
Self-Rated TFL	17	1,923	.25	.29	.16	[.17, .33]	[.08, .50]
Other-Rated TFL	6	618	.12	.13	.02	[.04, .20]	[.11, .16]
Subordinate	5	472	.15	.17	.00	[.06, .23]	[.17, .17]
Mix of other raters (i.e., supervisor, peer, and subordinate)	1	146	.03	.03	.00	[.03, .03]	[.03, .03]
Mixed (e.g., self mixed with other)	5	412	.08	.09	.03	[-.02, .18]	[.05, .13]
Sample type							
Organizational sample	26	2,419	.20	.24	.18	[.13, .27]	[.01, .46]
Other sample	2	534	.17	.21	.00	[.15, .20]	[.21, .21]
MBA working student sample	1	375	.16	.19	.00	[.16, .16]	[.19, .19]
Mixed sample (i.e., including both students and nonstudents)	1	159	.20	.23	.00	[.20, .20]	[.23, .23]
Type of industry							
Banking	1	138	.08	.09	.00	[.08, .08]	[.09, .09]
Education	7	521	.11	.13	.00	[.04, .18]	[.13, .13]
Welfare Compensation and Job Search Activities	1	102	.28	.32	.00	[.28, .28]	[.32, .32]
Manufacturing	1	133	.08	.09	.00	[.08, .08]	[.09, .09]
Hospitality	1	142	.22	.24	.00	[.22, .22]	[.24, .24]
Religious Organizations	1	27	.01	.01	.00	[.01, .01]	[.01, .01]
Mixed	8	703	.27	.32	.30	[.09, .46]	[-.06, .71]
Sample country							
US	10	937	.14	.16	.07	[.07, .21]	[.07, .25]
Other	12	1,430	.22	.26	.21	[.11, .33]	[-.01, .53]
Publication type							
Published	7	824	.15	.18	.07	[.07, .23]	[.09, .27]
Unpublished	23	2,333	.22	.26	.17	[.15, .29]	[.04, .47]

Note. *k* = number of effect sizes in the meta-analysis; *N* = total sample size in the meta-analysis; *r* = uncorrected correlation; ρ = correlation corrected for attenuation in the predictor and criterion; *SD* ρ = standard deviation of the corrected correlation; CI = confidence interval around *r*; CV = credibility interval around ρ . Moderation tests for date of study and sample age (both continuous moderators) appear in Table 11.

Table 5. Meta-analytic results for Emotional Intelligence with Agency and Communion

	<i>k</i>	<i>N</i>	<i>r</i>	ρ	<i>SD</i> ρ	95% CI	80% CV
Emotional intelligence							
Agency	5	1,172	-.0009	-.0005	.00	[-.05, .05]	[-.0005, -.0005]
Communion	5	1,172	.05	.07	.15	[-.06, .16]	[-.12, .25]

Note. *k* = number of effect sizes in the meta-analysis; *N* = total sample size in the meta-analysis; *r* = uncorrected correlation; ρ = correlation corrected for attenuation in the predictor and criterion; *SD* ρ = standard deviation of the corrected correlation; CI = confidence interval around *r*; CV = credibility interval around ρ .

Table 6. Results for Agency-Transformational Leadership Categorical Moderators.

Variable	Value
Rater	
Self vs. other	$\Delta\rho = .04, 95\% [-.23, .38], p > .05$
Sample country	
US vs. non-US	$\Delta\rho = .30, 95\% [.10, .54], p < .05$
Publication type	
Published vs. unpublished	$\Delta\rho = .22, 95\% [.06, .47], p < .05$

Table 7. Results for Communion-Transformational Leadership Categorical Moderators.

Variable	Value
Rater	
Self vs. other	$\Delta\rho = -.14, 95\% [-.41, .09], p > .05$
Sample country	
US vs. non-US	$\Delta\rho = -.22, 95\% [-.47, -.01], p < .05$
Publication type	
Published vs. unpublished	$\Delta\rho = .22, 95\% [-.02, .47], p > .05$

Table 8. Results for Emotional Intelligence-Transformational Leadership Categorical Moderators.

Variable	Value
Rater	
Self vs. other	$\Delta\rho = .16, 95\% [.02, .26], p < .05$
Sample country	
US vs. non-US	$\Delta\rho = -.10, 95\% [-.22, .06], p > .05$
Publication type	
Published vs. unpublished	$\Delta\rho = -.08, 95\% [-.19, .04], p > .05$

Table 9. Multiple regression analysis for the Agency-Transformational Leadership relationship.

Variable	Model 1	Model 2	Model 3
Date of study	-.056		.053
Sample age		-.091	-.134
R^2	.003	.008	.009

Note. Regression coefficients are standardized. * $p < .05$.

Table 10. Multiple regression analysis for the Communion-Transformational Leadership relationship.

Variable	Model 1	Model 2	Model 3
Date of study	-.031		.124
Sample age		-.295	-.350
R^2	.001	.087	.099

Note. Regression coefficients are standardized. * $p < .05$.

Table 11. Multiple regression analysis for the Emotional Intelligence-Transformational Leadership relationship.

Variable	Model 1	Model 2	Model 3
Date of study	.226		.243
Sample age		.00	-.063
R^2	.051	.00	.055

Note. Regression coefficients are standardized. * $p < .05$.

Table 12. Fit statistics for alternative theoretical models.

Models	χ^2	<i>df</i>	$\Delta \chi^2$	RMSEA	CFI	Δ CFI	NNFI	SRMR
<u>Model 1a</u> ^{a,c} : Gender-Agency-Communion-EI-TFL (Full Mediation)	0.434	1	--	.0	1.000	--	1.023	.0061
Model 1b ^{a,d} : Gender-Agency-Communion-EI-TFL (Partial Mediation)	0 (saturated model)	0	0.434	.0000	1.000	.000	1.000	.0061
<u>Model 2a</u> ^{b,c} : 2 DVs (Self and Other TFL): Gender-Agency-Communion-EI (Full Mediation)	2.513	2	--	.0247	.999	--	.990	.0127
Model 2b ^{b,d} : 2 DVs (Self and Other TFL): (add direct path from Gender to Other-rated TFL)	2.073	1	.44	.0506	.997	.002	.958	.0116
Model 2c ^{b,e} : 2 DVs (Self and Other TFL): (add direct path from Gender to Self-rated TFL)	0.434	1	2.079	.0	1.00	.001	1.022	.0052
Model 2d ^{b,f} : 2 DVs (Self and Other TFL): (add 2 direct paths from Gender to Self- and Other-rated TFL)	0 (saturated model)	0	2.513	.0000	1.000	.001	1.000	.0000

Note. Models judged to fit best are in boldface and underlined. * Δ CFI > .01 (Cheung & Rensvold, 2002).

^a Includes only non-self report transformational leadership as the only DV.

^b Includes both non-self and self report transformational leadership as two DVs.

^c Does not include any direct paths from gender to any transformational leadership outcomes variables.

^d Includes a direct path from gender to non-self report transformational leadership.

^e Includes a direct path from gender to self report transformational leadership.

^f Includes direct paths from gender to both non-self and self report transformational leadership.

N = 420.

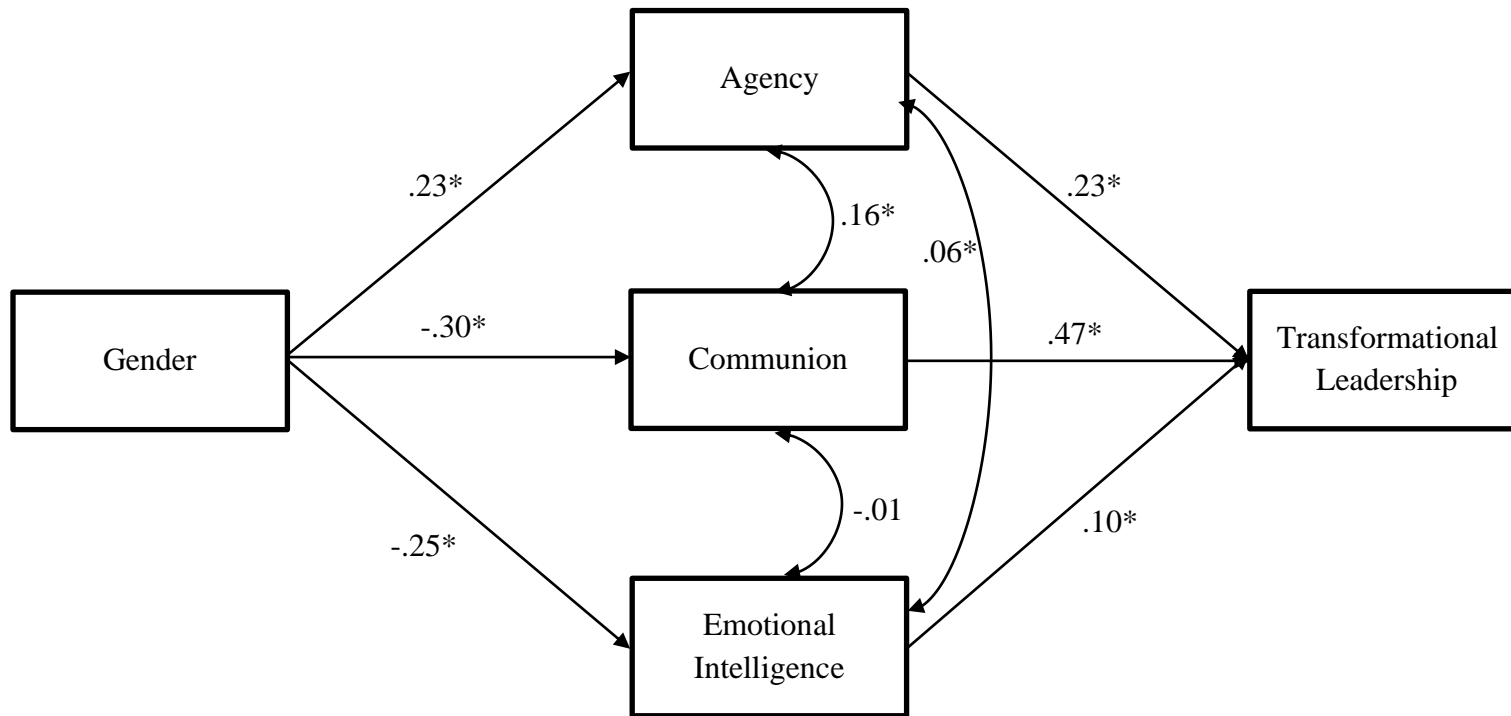


Figure 3. Path Model Results for The Gender-Agency/Communion/EI Model of Transformational Leadership (Model 1a)

Note. Standardized path coefficients (β 's) are presented. $N = 420$; $\chi^2(1) = .434$; RMSEA = .0, CFI = 1.000; NNFI = 1.023; SRMR = .0061; * $p < .05$.

Table 13. Test of indirect effects for the gender-transformational leadership relationship.

Path	Product of coefficients	Indirect effect	95% Monte Carlo CI	Statistically significant
Gender→Agency→TFL	(.230)*(.228)	.0524	[.0271, .0833]	Yes
Gender→Communion→TFL	(-.300)*(.473)	-.1419	[-.1943, -.0948]	Yes
Gender→Emotional Intelligence→TFL	(-.250)*(.097)	-.0243	[-.0485, -.0039]	Yes

Note. TFL = transformational leadership. Indirect effects tests are based on path coefficients from Model 1a.

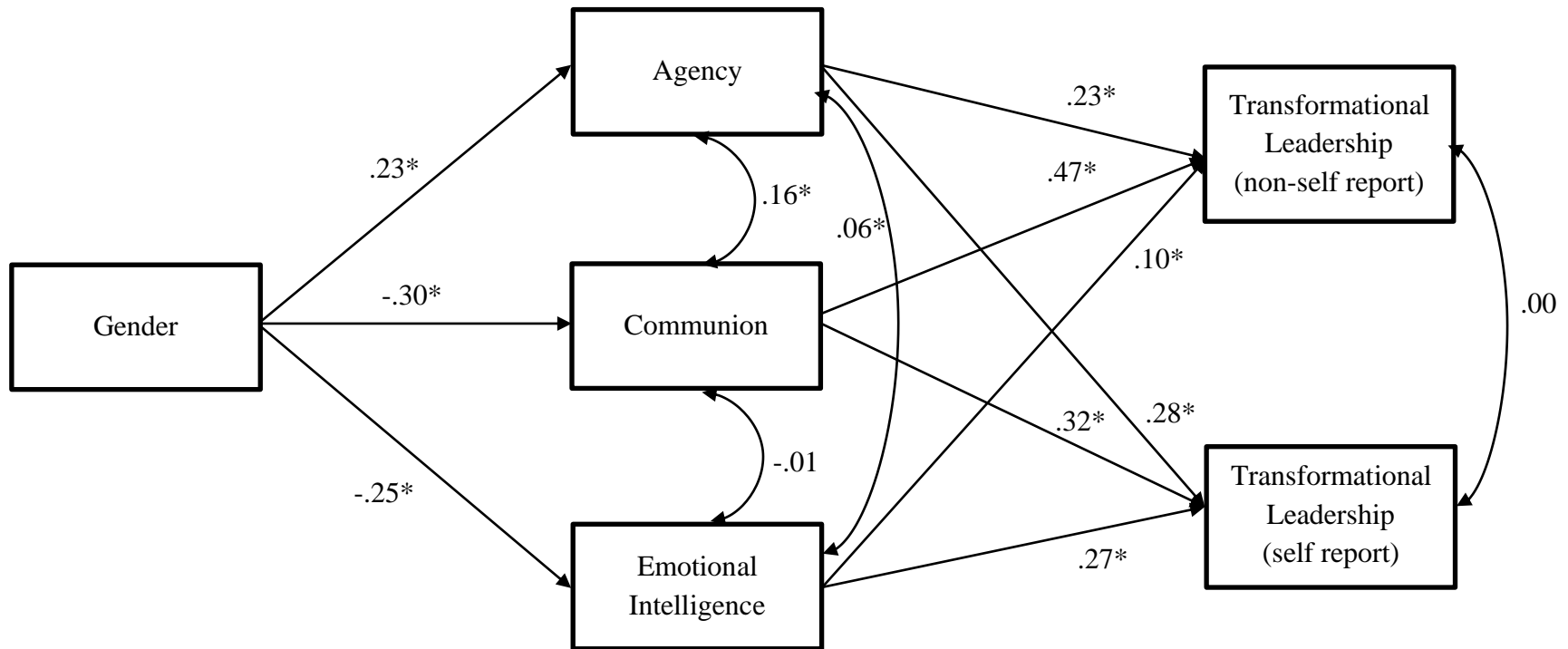


Figure 4. Path Model Results for The Gender-Agency/Communion/EI Model of Transformational Leadership (Model 2a)
Note. Standardized path coefficients (β 's) are presented. $N = 420$; $\chi^2(2) = 2.513$; RMSEA = .0247, CFI = .999; NNFI = .990; SRMR = .0127; * $p < .05$.

Table 14. Test of indirect effects for the gender-nonsel self report and self report transformational leadership relationship.

Path	Product of coefficients	Indirect effect	95% Monte Carlo CI	Statistically significant
Gender→Agency→TFL (non-self)	(.230)*(.228)	.0524	[.0268, .0837]	Yes
Gender→Communion→TFL (non-self)	(-.300)*(.473)	-.1419	[-.1945, -.0948]	Yes
Gender→Emotional Intelligence→TFL (non-self)	(-.250)*(.097)	-.0243	[-.0483, -.0041]	Yes
Gender→Agency→TFL (self-report)	(.230)*(.282)	.0649	[.0348, .0998]	Yes
Gender→Communion→TFL (self-report)	(-.300)*(.316)	-.0948	[-.1361, -.0597]	Yes
Gender→Emotional Intelligence→TFL (self-report)	(-.250)*(.268)	-.0670	[-.1012, -.0376]	Yes

Note. Indirect effects tests are based on path coefficients from Model 2a.

Table 15. Publication bias results using Egger's test of intercept (Egger et al., 1997) and Trim and fill procedure (Duval & Tweedie, 2000).

Relationship	Egger's test of intercept		Trim and fill procedure			
	β_0	95% CI	publication bias adjusted r	observed uncorrected r	k	missing k
a) Agency-Transformational leadership (non-self rated)	.87	[-.12, 1.86]	-.04	.20	6	3
b) Communion-Transformational leadership (non-self rated)	.55	[.45, .65]	.43	.44	8	1
c) Agency-Transformational leadership	.51	[.22, .80]	.21	.25	4	1
d) Communion-Transformational leadership	.85	[.19, 1.51]	.30	.30	3	0
e) EI-Transformational leadership	.02	[-.07, .11]	.12	.12	6	0
f) EI-Transformational leadership (self rated)	.15	[.04, .26]	.25	.25	17	0
g) Agency-EI	-.08	[-.18, .02]	-.0009	-.0009	5	0
h) Communion-EI	-.06	[-.25, .12]	-.04	.05	5	3

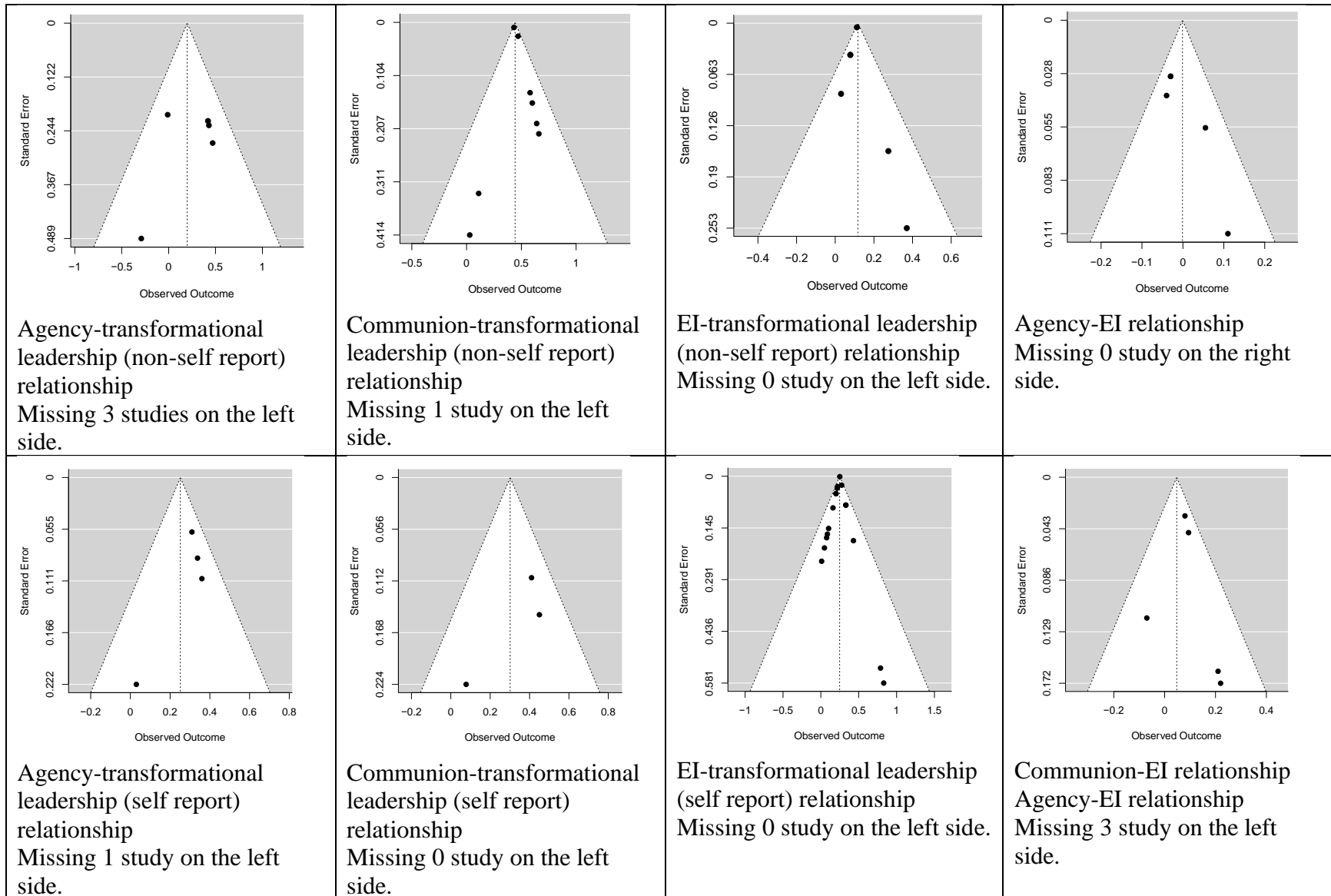


Figure 5. Funnel plots for original meta-analyses

Table 16. Keywords Used for the Primary Study Literature Search

Relationship	Keywords Used/Existing Meta-analysis Used	Search within papers cited
Gender and TFL	Eagly et al. (2003)	N/A
Gender and EI	Joseph & Newman (2010)	N/A
Gender and Agency; Gender and Communion	Hsu et al. (2021)	N/A
Agency and Communion	Badura et al. (2018)	N/A
Leader's EI (ability EI performance measure) and TFL	<i>"MSCEIT" OR "MEIS" OR "STEU"</i>	Bass (1985) Podsakoff et al. (1990) Carless et al. (2000) Posner & Kouzes (1988)
Agency and TFL; Communion and TFL	<i>"Multifactor Leadership Questionnaire"</i> <i>OR "Global Transformational Leadership"</i> <i>OR "Leadership Practices Inventory" OR</i> <i>"Transformational Leadership Inventory"</i>	Bem (1974) Spence & Helmreich (1978) Spence et al. (1974) Spence et al. (1975)
EI and Agency; EI and Communion	<i>"MSCEIT" OR "MEIS" OR "STEU"</i>	Bem (1974) Spence & Helmreich (1978) Spence et al. (1974) Spence et al. (1975)

Note. TFL = transformational leadership. EI = emotional intelligence.

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