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Meta-Analysis of the Relationships Between Different Leadership Practices and Organizational, Teaming, Leader, and Employee Outcomes*

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The meta-analysis described in this paper evaluated the relationships between 11 types of leadership practices and 7 organizational, teaming, leader, and employee outcomes. A main focus of analysis was whether the leadership practices were differentially related to the study outcomes. Studies were eligible for inclusion if the correlations between leadership subscale measures (rather than global measures of leadership) and outcomes of interest were reported. The random effects weighted average correlations between the independent and dependent measures were used as the sizes of effects for evaluating the influences of the leadership practices on the outcome measures. One hundred and twelve studies met the inclusion criteria and included 39,433 participants. The studies were conducted in 31 countries in different kinds of programs, organizations, companies, and businesses. Ninety-six percent of the practice-outcome effect sizes were statistically significant where approximately half of the relationships were moderated by organizational types (for-profit, not-for-profit, education, healthcare, government, etc.). Results indicated that the 11 types of leadership practices were differentially related to the study outcomes even in the presence of considerable between study heterogeneity. Implications for leadership development are described.

Keywords: Leadership Practices; Leader Behavior; Organizational, Teaming, Leader, and Employee Outcomes; Meta-Analysis; Moderators

A common definition of leadership is "a process whereby an individual influences a group of individuals to achieve a common goal" (Northouse, 2004, p.3) . There is, however, little consensus about a generally agreed upon definition of leadership. Silva (2016), for example, noted that many authorities contend that there are more than 1,000 definitions of leadership. DuBrin (2001) once stated that there are as many definitions of leadership as there are published studies on the topic. This is not

surprising given the fact that there are many different leadership theories, with each theory emphasizing the importance of different leadership traits, characteristics, and behavior (e.g., Amanchukwu, Stanley, & Ololube, 2015; Dinh et al., 2014; Khan, Nawaz, & Khan, 2016).

Avolio, Walumbwa and Weber (2009), as part of their review of contemporary theories of leadership, concluded that "part of the evolution of leadership theory and research will…involve further defining what actually defines leadership from [both] a content perspective…and a process perspective" (p. 442). The leadership theories described as worthy of further research included, but were not limited to, authentic leadership (Gardner, Cogliser, Davis, & Dickens, 2011), shared leadership (Drescher, Korsgaard, Welpe, Picot, & Wigand, 2014), distributed leadership (Tian, Risku, & Collin, 2016), transformational leadership (Gillespie & Mann, 2004), and transactional leadership (Judge & Piccolo, 2004). These types of leadership have also been described as collaborative leadership (Rubin, 2009), collective leadership (Contractor, DeChurch, Carson, Carter, & Keegan, 2012), participatory leadership (Somech, 2005), and charismatic leadership (Conger, Kanungo, & Menon, 2000). All of these types of leadership focus on what leaders do to promote followers' commitment to an organization's mission and goals; the roles, responsibilities, and behavior of followers needed to achieve organizational goals and objectives; and what leaders do to promote followers' acquisition and use of desired behavior and skills (Bass, 1990; House, Hanges, Javidan, Dorfman, & Gupta, 2004; Winston & Patterson, 2006).

Both Dinh et al. (2014) and Lord, Day, Zaccaro, Avolio, and Eagly (2017), as part of historical and contemporary reviews of leadership theory and research, describe the types of leadership listed above as part of a contemporary emphasis on leader roles, behavior, and practices, and how these influence not only employees' judgments of organizational and leader qualities but also employee (follower) beliefs, attitudes, and job-related satisfaction and performance. Lord et al. (2017) also noted that our understanding of leadership has been facilitated by meta-analyses of leadership studies including, but not limited to, research syntheses examining leadership practice-study outcome measure relationships.

There are literally thousands of research studies that include investigations of the relationships between different leadership theories and outcomes of interest where the studies have been subjected to systematic reviews and meta-analyses. A PsycINFO search for "leadership AND meta-analysis," for example, produced more than 50 of these types of research syntheses. Examination of the meta-analyses finds, however, that the majority of reviews examined the relationships between leadership theories measured at a global level and outcomes of interest (e.g., Banks, McCauley, Gardner, & Guler, 2016; Hoch, Bommer, Dulebohn, & Wu, 2018; Tian et al., 2016). This is the case despite the fact that different types of leadership include specific characteristics, dimensions, and domains (see especially Dinh et al., 2014).

Most research reviews of leadership studies include findings showing that global measures of leadership are related to a wide range of outcomes, including, but not limited to, organizational engagement and performance (Choudhary, Akhtar, & Zaheer, 2013; Jung, Chow, & Wu, 2003; Yammarino, Dionne, Schriesheim, & Dansereau, 2008), team and workgroup performance (Barnett & Weidenfeller, 2016; D'Innocenzo, Mathieu, & Kukenberger, 2016; Ilies, Nahrgang, & Morgeson, 2007),

employee trust in and allegiance to leaders (Dirks & Ferrin, 2002), employee belief appraisals (Arbabi & Mehdinezhad, 2016), employee psychological well-being (Arnold, 2017), and employee job satisfaction and performance (Miller & Monge, 1986). Nearly all meta-analyses of leadership-outcome relationships have investigated particular outcomes of interest despite the fact that there are many different outcomes of leadership (Hiller, DeChurch, Murase, & Doty, 2011).

There have been only a few meta-analyses of the relationships between leadership subscale measures and outcomes of interest (e.g., Dumdum, Lowe, & Avolio, 2002; Lowe, Kroeck, & Sivasubramaniam, 1996; Wang, Oh, Courtright, & Colbert, 2011). Dumdum et al. (2002) and Lowe et al. (1996) both meta-analyzed the relationships between the *Multifactor Leadership Questionnaire* subscale measures and particular outcomes of interest, whereas Wang et al. (2011) investigated the relationships between a number of different measures of leadership practices and seven different performance outcomes. In all three meta-analyses, the leadership practices subscale measures were differentially related to the study outcomes as evidenced by the sizes of effects for different outcomes, although only Lowe et al. (1996) tested for leadership-outcome measure differences.

The meta-analysis described in this paper both builds on and expands upon previous research reviews of leadership practices-outcome relationships. The meta-analysis, however, differed from previous research syntheses in a number of important ways. First, multiple measures of different types of leadership practices were the focus of investigation rather than the analysis of measures of just one or a few types of leadership. This permitted analyses of specific types of leadership practices rather than tests of different leadership theories. Second, operational definitions of different kinds of leadership practices were the focus of investigation rather than loosely described conceptual constructs as has been the case in the majority of previous research reviews. The particular leadership practices constituting the focus of investigation included behavior that leaders use to engage and support employees' involvement in achieving organizational goals and objectives. Third, the analyses of leadership practices-study outcome relationships was accomplished in terms of the different leadership practices and a number of different outcome measures rather than in terms of only one or two outcomes of interest. The meta-analysis included seven organizational, leader, team and workgroup, and employee (followers) outcome measures. Fourth, an explicit emphasis was placed on identifying which types of leadership practices were related to which types of outcomes in order to determine if certain leadership practices ought to be emphasized in terms of achieving or producing desired outcomes.

Wang et al. (2011) advised researchers that it is both methodologically and theoretically important to include multiple measures of leadership in a meta-analysis in order to have converging evidence about leadership practice-outcome measure relationships. As a result, no constraint was placed on the types of leadership measures that were the focus of investigation in primary studies as long as they included measures of the types of leadership listed earlier. The types of leadership constituting the focus of investigation, and the measures used to assess different dimensions of leadership, were extensively analyzed in order to identify leadership practices that could be operationally defined and which were amendable to be learned for improving knowledge and skills. The Methods section

of the report includes a detailed description of how more than 60 leadership subscale measures were content analyzed to identify different types of leadership practices. Each practice emphasizes the behavior leaders use to engage employees in actions for achieving organizational goals and objectives. The practices are all stated in terms of leader behavior that can be observed and measured. This process resulted in the 11 different leadership practices in Table 1.

Table 1. Key Characteristics of Each of the Leadership Practices

Leadership Practice	Key Characteristics
Organizational Visioning	Leaders clearly describe the vision of the organization; the values and beliefs that are the foundations for the vision; actively engage employees in discussions and activities promoting employee commitment to foundational beliefs, values, sense of purpose, and desired performance; and "depict a future that is credible, realistic, attractive, inspiring, and better than the status quo" (O'Connell, Hickerson, & Pillutla, 2010, p.105).
Motivational Communication	Leaders talk positively about the organization and employees; how employee strengths and assets make important contributions to organizational goals and practices; and how "expression of positive and encouraging messages about the organization and [makes] statements that build [employee] motivation and confidence" (Rafferty & Griffin, 2004, p. 332).
Modeling Desired Behavior	Leaders lead by example in a manner where modeling desired behavior serves as exemplars to clearly communicate what he or she expects from employees to "increase the levels of those behavior among followers" (Brown & White, 2009, p. 126) where a leader's behavior and actions are consistent with his or her belief appraisals (Emiliani, 2003).
Encouraging Employee Input and Feedback	Leaders solicit employee input and feedback to improve organization practices and to encourage frequent and ongoing employee engagement as a means to strengthen leader-employee and employee-employee actions consistent with organizational visioning and goals (Lewis, 2014).
Soliciting Creative Solutions	Leaders seek creative, alternative, and innovative ways of improving organizational and employee practices that challenges deeply held beliefs and ways of achieving organizational goals (King Duvall, 1999).
Shared Decision-Making	Leaders engage employees in shared leadership characterized by collaboration and participatory decision-making with a focus on methods and strategies for achieving organizational goals. Shared decision-making is a particular type of confidence-building practice that influences employee and team commitment to organizational goals (Barnett & Weidenfeller, 2016).
Relationship-Building Practices	Leaders engage in behavior that is sensitive and responsive to employees' values, needs, and individual differences in order to build trusting relationships and open communication between a leader and employees where "high-quality relationships are considered mature partnerships based on respect, trust, and mutual obligation for one another" (Uhl-Bien, 2003, p. 134).
Confidence-Building Practices	Leaders provide employees opportunities to participate in organizational processes that instill pride and build employee confidence where leader-provided confidence-building experiences (Kanter & Fox, 2016) are one practice for strengthening employee beliefs and improving job performance (Axelrod, 2017).

Table 1 (continued)

Leadership Practice	Key Characteristics
Coaching Practices	Leaders provide employees supportive guidance and feedback on organizational and individual practices in ways that build on existing employee strengths and promote improvements in employee performance (Ely et al., 2010).
Performance Expectations	Leaders clearly articulate behavior expectations in terms of both organizational and individual employee practices and insist on high levels of performance in order to achieve organizational goals that clearly communicate high but reasonable performance expectations that "increases employees' *understanding and confidence* in their work" (Moynihan, Wright, & Pandey, 2012, p. 319).
Performance Rewards	Leaders provide positive feedback in response to collective and individual accomplishments where "contingent rewards provides rewards for [employee] effort and recognizes good performance" (Odumeru & Ifeanyi, 2013, p. 359).

The 11 leadership practices can be categorized as leader-centered practices (organizational visioning, motivational communication, and modeling desired behavior), shared responsibility practices (encouraging employee input and feedback, soliciting creative employee solutions, and shared decision-making), employee capacity-building practices (relationship-building practices, confidence-building practices, and coaching practices), and employee behavioral practices (performance expectations and performance rewards). A similar categorization of leadership practices was proposed by Alban-Metcalfe and Alimo-Metcalfe (2016). These leadership experts, for example, called leader-centered practices *Leading and Developing the Organization*, shared decision making *Leading the Way Forward*, and capacity-building practices *Leading and Developing Individuals*.

The leader-centered practices emphasize what leaders do to facilitate employee understanding of and buy-in to an organization's vision and goals, and how a leader communicates his or her commitment to the vision and goals. Shared responsibility practices emphasize what leaders do to actively engage employees in actions and behavior that contribute to individual and collective decision-making for achieving an organization's goals and objectives. The employee capacity-building practices emphasize what leaders do to strengthen leader-employee relationships and cooperation, and how leaders support and encourage employees' contributions to improving their performance. The employee behavioral practices emphasize the types of employee behavior considered necessary for achieving an organization's goals and objectives and the employee rewards for achieving those outcomes. The four sets of practices, and individual practices within sets, include the active ingredients and core elements of the types of leadership practices that were the focus of the meta-analysis.

This research report includes descriptions of (a) the methodology used to conduct the research synthesis, (b) the major findings from the meta-analysis, and (c) the implications of the results for informing adoption and use of evidence-based leadership practices. The *American Psychological Association* standards for conducting a meta-analysis and reporting the results were followed in completing the systematic review (Appelbaum et al., 2018). An online supplemental report includes the meta-analysis protocol, detailed information about the subscale items used to measure the

11 leadership practices, a complete list of the outcome measures used in the studies in the meta-analysis, and tables of the results summarized in the text (Dunst & Hamby, 2018).

Method

Search Sources

The primary sources of studies for the meta-analysis were studies in research reviews of the types of leadership practices constituting the focus of investigation and results from controlled vocabulary, keyword, and natural language searches of five electronic databases. Both sources were supplemented by Google Scholar searches and examination of the reference sections of all retrieved leadership studies.

The electronic databases searched for studies were PsycINFO, ERIC, EBSCO, Proquest Central, and PubMed. The thesauri for each database were the sources of controlled vocabulary terms. These terms were searched together with the types of leadership constituting the focus of investigation. The leadership terms included authentic, distributed, transactional, transformational, shared, and their variants (e.g., collective, collaborative, participative). Both complete and truncated leadership search terms were used in addition to the controlled vocabulary terms in separate boolean searches to locate candidate studies. All of the search results, including those in Google Scholar, were sorted using the relevance function to ensure optimal matches with the search terms. No time limit was placed on the searches for candidate studies.

Inclusion Criteria

The full text of all candidate studies was examined for determining study eligibility. Studies were included if the correlations between one or more of the leadership practices in Table 1 and an organizational, teaming or workgroup, leader, or employee outcome measure was reported. Leadership studies were only included if the leadership measures were completed by employees who made judgments of individuals in immediate leadership or management roles. Studies included in the meta-analyses were published in English and limited to those reported in journal articles or book chapters where supplemental information was found.

Studies were excluded if only global measures of leadership were correlated with the study outcomes (e.g., Adıgüzelli, 2016; Drescher et al., 2014; Patiar & Wang, 2016; Walumbwa, Wang, Wang, Schaubroeck, & Avolio, 2010). Studies were also excluded if the outcome measures were so specific to a study that they could not be categorized in the manner described below (e.g., Avolio, Waldman, & Einstein, 1988; Ensley, Hmieleski, & Pearce, 2006; Krishnan, 2002).

Categorization of the Leadership and Outcome Measures

The leadership practices in Table 1 were measured using both widely used scales (e.g., Avolio & Bass, 2004; Avolio, Gardner, & Walumbwa, 2007; Bass & Avolio, 1990) as well as investigator-developed or adapted measures (e.g., Hiller, Day, & Vance, 2006; Rogers, 1987). The measures were described as subscales, dimensions, domains, subdimensions, or factors which hereafter are referred to as leadership practices.

The items measuring the different leadership practices were content analyzed to ensure they were measuring particular types of leadership practices for purposes of categorizing the measures. Sixty-four different leadership practices measures were

used in the studies in the meta-analysis. An iterative process was used by 3 of the 5 authors until there was agreement that different sets of items were measuring the same or very similar types of leadership practices (Dunst & Hamby, 2018). Appendix A includes the particular subscales or measures that were used for assessing the 11 types of leadership practices constituting the focus of investigation (see Table 1). In those cases where a subscale included items measuring more than one type of leadership practice, the subscale was assigned to the leadership practice with the largest number of subscale items measuring that type of practice. In those instances where factor analyses were reported, the subscale was assigned to the leadership practice with items having the highest factor loadings. The complete list of subscale items for each leadership practice can be found in the supplemental report (Dunst & Hamby, 2018).

There were 138 different outcome measures in the studies in the meta-analysis. The items on the outcome measures were content analyzed to both categorize the measures and to be assured the items on the different outcome measures were in fact measuring the same or very similar constructs. The items on all scales were examined by the first author to categorize them by type of measure where the categorization and item overlap was examined by a second author for establishing agreement. In those instances where there was a disagreement, item-by-item examination of the scale indicators was done by both authors to resolve outcome measure categorization.

The outcomes included two organizational measures (organizational citizenship and organizational commitment), three teaming/workgroup measures (team functioning, team performance, and collective efficacy), four leader measures (satisfaction with leader, leader effectiveness, leader motivation, and trust in leader), and fourteen employee measures. The employee measures were further categorized as belief appraisals, psychological health, job satisfaction, or job performance. The categorization of the outcome measures is shown in Appendix B. The particular scales listed for the different measures are the ones used most often in the meta-analysis and are representative of the types of scales used for measuring the different study outcomes. The complete list of outcome measures is included in the supplemental report (Dunst & Hamby, 2018).

Coding Procedure

The first author identified the variables to be included in the meta-analysis database for subsequent analysis. The variables included the names of the study author(s), article title, journal name, year of publication, number of study participants, participant gender and age, types of employees/staff, types of organizations, country where the studies were conducted, name of the leadership measures, the names of the leadership subscales, the leadership practices measured by the subscales, the outcome measures, type of outcome, and all the correlations between the independent and dependent measures. The database also included other variables that were reported too infrequently to be used in any analyses (e.g., study participants' years of formal education, years of experience, length of employment). All data coding and entry was completed by a Data Analyst with extensive experience and expertise in meta-analysis, and were double checked for ascertaining accuracy by two other authors.

Distributions of all variables were first examined to identify data entry and coding errors. These were examined by two of the

authors, and where indicated, were double-checked with results reported in the original studies and corrections made if necessary.

In those cases where a study had two or more outcome measures of the same construct, the effect sizes were averaged and used as the best estimate of the size of effect between a leadership practice and the outcome. As a result, the number of effect sizes for each leadership practice equaled the number of studies for that outcome.

Methods of Analysis

MedCalc (Schoonjans, 2017) was used to run diagnostics of the relationships between the different leadership practices and the study outcomes where far-out values were deleted (Tukey, 1977). The error-bar charts and box-and-whisker plots of the distributions of effect sizes were also examined for detecting outliers. There were 77 sets of effect size analyses (11 leadership practices x 7 outcome measures) where only five (6%) outliers were deleted from the database.

Comprehensive Meta-Analysis (Borenstein, Hedges, Higgins, & Rothstein, 2018) was used to compute the weighted average correlations between the leadership practices and study outcomes. Random effects average correlations were used as the sizes of effect for the relationships between the independent and dependent variables using the Fisher Z_r transformation of the correlation coefficients (Lipsey & Wilson, 2001). Random effects rather than fixed effects models were used to compute the average sizes of effect because of the heterogeneity in the studies as described below.

The Z-test was used to determine if the sizes of effect differed significantly from zero (Shadish & Haddock, 2009). The 95% confidence intervals for the weighted average correlations were used as indices of the precision of the sizes of effects where an average effect size with a confidence interval not including zero indicates that the weighted average correlation differs significantly for zero at $p < .05$ (Lipsey & Wilson, 2001). I^2 was used to test for the heterogeneity (inconsistency) of the average effect sizes to evaluate between study variability (Higgins, Thompson, Deeks, & Altman, 2003).

$Q_{Between}$ was used to determine if there were differential relationships between each leadership practice and the seven types of study outcomes (Borenstein et al., 2018). The $Q_{Between}$ test is an analog to an omnibus *F*-test for testing between group mean effect size differences in a one-way ANOVA (Lipsey & Wilson, 2001). Post-hoc follow-up tests were conducted as indicated.

$Q_{Between}$ was also used to evaluate the effects of the categorical moderators on the sizes of effects between the leadership practices and study outcomes, and meta-regression was used to evaluate the effects of continuously scored moderator variables. The moderators included year of publication, number of study participants, the economies of country in which the studies were conducted, the status of democracy in each country, type of organization (program, business, company, etc.), and type of employee/staff. The United Nations (2018) categorization of countries according to major developed, developed, and developing economies was used to group countries for the moderator analyses. The *Democracy Index Scores* (The Economist, 2017) were used as a second country moderator which is based on five separate measures of democratic processes (electoral process, governmental functioning, political participation, political culture, and civil liberties) averaged to obtain an overall democracy score. Type of organization was first coded by grouping the studies as either for-profit or not-for-profit

businesses or organizations. Second, the for-profit businesses were sub-grouped as either service-based or product-based, and the not-for-profit organizations were sub-grouped using the United Nations (2003) *International Classification of Non-Profit Organizations*. Type of study participant was coded as front line workers, managers, or a combination of both.

Results

Number of Citations

The six electronic database searches yielded between 14,800 (PsycINFO) and 639,000 (Google Scholar) citations. The search results in each database were sorted by relevance and the full text of each citation was examined until 40 consecutive citations included no relevant data. As part of the search for candidate studies, 41 research reviews were located that included studies of the types of leadership being investigated (see Dunst & Hamby, 2018). The reviews included 1660 studies that were retrieved as potential candidates for inclusion in the meta-analysis. In addition, the reference sections of all retrieved studies were examined for other candidate studies. More than 25,000 articles were retrieved for possible inclusion in the meta-analysis. One hundred and twelve (112) studies met the inclusion criteria. The complete list of citations is included in Appendix C.

Study Characteristics

The 112 studies included 39,433 participants. The studies were conducted in 31 different countries. Table 2 shows the distribution of the studies by world region (United Nations, 2017). Approximately half of the studies were conducted in North America, and 73% were conducted in countries with major developed or developed economies (Australasia, Europe, and North America). The average *Democracy Index Score* for the 31 countries was 7.59 (SD = 1.67) and ranged between 2.45 (Iran) and 9.39 (Sweden).

Table 2. Number and Percent of Studies by World Regions

World Regions	Number	Percent
North America	51	45.5
United States[1]	42	37.5
Canada[1]	9	8.0
Europe	20	17.9
Germany[1]	6	5.4
Belgium[2]	4	3.6
Austria[2]	2	1.8
Switzerland[2]	2	1.8
Denmark[2]	1	0.9
Finland[2]	1	0.9
Poland[2]	1	0.9
Slovenia[2]	1	0.9
Spain[2]	1	0.9
Sweden[2]	1	0.9
Australasia	10	8.9
Australia[2]	7	6.2
New Zealand[2]	3	2.7

Table 2 (continued)

World Regions	Number	Percent
Asia	14	12.5
India[3]	3	2.7
Malaysia[3]	3	2.7
Taiwan[3]	3	2.7
China[3]	1	0.9
Pakistan[3]	1	0.9
Singapore[3]	1	0.9
South Korea[3]	1	0.9
Thailand[3]	1	0.9
Middle East	13	11.6
Iran[3]	3	2.7
Israel[3]	3	2.7
Turkey[3]	3	2.7
United Arab Emirates[3]	2	1.8
Egypt[3]	1	0.9
Jordan[3]	1	0.9
Sub-Saharan Africa	4	3.6
South Africa[3]	2	1.8
Kenya[3]	1	0.9
Tanzania[3]	1	0.9

1 = Major developed economies, 2 = Developed economies, and 3 = Developing economies (United Nations, 2018).

Selected characteristics of the studies and study participants are shown in Table 3. The studies were published between 1985 and 2017 with the majority (79%) published after 2000. The sample sizes in the studies varied considerably. Forty-one percent of the studies included fewer than 200 participants, whereas 20% included 500 or more participants.

Table 3. Selected Characteristics of the Studies and Study Participants

Moderator Variables	Number	Percent
Year of Publication (N = 112)[a]		
1985-1990	8	7
1991-1995	5	5
1996-2000	10	9
2001-2005	18	16
2006-2010	27	24
2011-2015	33	29
2016+	11	10
Sample Sizes (N = 112)		
26-100	18	16
101-200	28	25
201-300	19	17
301-400	14	13
401-500	10	9
501-600	5	4
601-1000	11	10
1001-1640	7	6

Table 3 (continued)

Moderator Variables	Number	Percent
Type of Organization (N = 112)		
For Profit Companies (Product-Oriented)	33	29
For Profit Companies (Service-Oriented)	19	17
Educational Programs	17	15
Healthcare Organizations/Practices	13	12
Government Agencies	14	13
Mixed Samples	13	12
Not-for-Profit	3	3
Participant Role (N = 112)		
Frontline Staff	57	51
Managers	27	24
Managers/Frontline Staff	17	15
Other (e.g., University Students)	11	10
Participant Gender (N = 98)		
Male	19109	53
Female	17092	47
Participant Age (N = 78)		
Less than 30	13	17
30 – 35	20	26
36 – 40	17	22
40 – 45	18	23
46 – 50	8	10
50 +	2	3

[a]Number of studies including the study or participant characteristics.

The types of programs, organizations, companies, and businesses where the studies were conducted were also quite varied. These included for-profit companies (e.g., banks, hotels, insurance), educational programs (e.g., universities, high schools, elementary schools), healthcare organizations (e.g., hospitals, nursing care, mental health programs), governmental agencies (e.g., state, local, law enforcement), churches and religious organizations, research and development programs, etc. The positions or participant roles in the programs, organizations, companies, and businesses included front line staff or employees who evaluated the leadership practices of their immediate supervisor or manager (51%), program or organization managers who judged the leadership practices of their immediate supervisors (24%), or a combination of both (25%). In those studies reporting participant gender (88%) and age (70%), the participants were almost equally divided between males and females. The majority of participants (71%) were between 30 and 45 years of age.

Omnibus Findings

The number of effect sizes, sample sizes, average weighted correlational coefficients, 95% confidence intervals, *Z*-test statistic, associated *p*-values, and the I^2 statistic for the heterogeneity in the average effect sizes for the relationships between each of the 11 leadership practices measures and the seven study outcomes are shown in Table 4. The number of effect sizes (*k*) equals the number of studies since multiple outcome measures

of the same constructs in a study were averaged so that there was only one size of effect for each outcome in each study.

Table 4. Relationships Between the Leadership Practices and Study Outcomes

Leadership Practices/Outcomes	*k*	N	Weighted Average *r*	95% CI	Z	*p*-value	I^2
Organizational Visioning							
Leader Entrustment	12	6006	.69	.54, .80	6.72	.000	98
Job Satisfaction	12	6636	.45	.21, .63	3.57	.000	99
Organizational Engagement	17	10,860	.41	.26, .54	4.96	.000	99
Psychological Health	7	1104	.32	.20, .43	4.89	.000	73
Job Performance	6	2771	.25	.17, .33	5.75	.000	75
Belief Appraisals	10	4435	.20	.13, .27	5.71	.000	75
Team Effectiveness[a]	0	-	-	-	-	-	-
Motivational Communication							
Leader Entrustment	31	9638	.66	.59, .72	13.64	.000	97
Organizational Engagement	18	8590	.41	.24, .55	4.48	.000	99
Team Effectiveness	10	1867	.37	.26, .47	6.31	.000	76
Job Satisfaction	19	10,167	.35	.21, .47	4.70	.000	98
Psychological Health	12	3308	.33	.18, .46	4.14	.000	95
Belief Appraisals	8	3833	.26	.17, .35	5.30	.000	88
Job Performance	7	1752	.25	.18, .32	6.77	.000	47
Modeling Desired Behavior							
Leader Entrustment	12	5334	.55	.48, .62	11.91	.000	92
Team Effectiveness	8	2096	.37	.22, .51	4.68	.000	93
Psychological Health	5	1410	.37	.22, .50	4.58	.000	85
Organizational Engagement	15	6893	.32	.26, .38	10.21	.000	84
Job Satisfaction	9	3709	.29	.22, .36	7.84	.000	77
Belief Appraisals	13	4796	.29	.20, .37	6.36	.000	89
Job Performance	7	3502	.20	.11, .29	4.19	.000	85
Encouraging Employee Input and Feedback							
Leader Entrustment	8	2548	.54	.47, .60	7.60	.000	75
Team Effectiveness	7	2051	.43	.32, .53	7.07	.000	88
Organizational Engagement	7	2221	.33	.25, .41	7.60	.000	75
Psychological Health	3	1264	.33	.14, .49	3.44	.000	89
Belief Appraisals	9	3067	.32	.24, .40	7.11	.000	84
Job Satisfaction	5	1702	.22	.16, .27	7.11	.000	37
Job Performance	4	1573	.15	-.03, .31	1.64	.102	92
Soliciting Creative Employee Solutions							
Leader Entrustment	44	15,701	.61	.56, .65	18.24	.000	95
Team Effectiveness	17	3918	.38	.29, .46	7.14	.000	88
Organizational Engagement	36	17,326	.32	.27, .36	12.82	.000	90
Job Satisfaction	31	16,425	.32	.22, .40	6.45	.000	97
Psychological Health	16	4506	.31	.23, .39	6.92	.000	88
Belief Appraisals	18	6962	.30	.23, .36	8.33	.000	88
Job Performance	13	4813	.21	.14, .28	5.87	.000	81

Table 4 (continued)

Leadership Practices/Outcomes	*k*	N	Weighted Average *r*	95% CI	Z	*p*-value	I^2
Shared Decision Making							
Psychological Health[a]	1	43	.64	-	-	-	-
Leader Entrustment	4	3692	.57	.45, .67	7.83	.000	95
Organizational Engagement	7	6030	.38	.22, .52	4.45	.000	98
Job Satisfaction	5	2095	.33	.29, .37	15.77	.000	0
Team Effectiveness	4	1833	.31	.08, .52	2.63	.009	84
Belief Appraisals	3	1879	.26	.04, .45	2.29	.022	87
Job Performance	3	1887	.22	.17, .26	9.57	.000	0
Relationship-Building Practices							
Leader Entrustment	15	6977	.58	.48, .68	8.65	.000	97
Team Effectiveness	7	2051	.42	.29, .53	5.88	.000	91
Psychological Health	5	1410	.36	.22, .48	4.87	.000	81
Organizational Engagement	17	8866	.30	.24, .35	9.97	.000	86
Belief Appraisals	14	5270	.30	.20, .39	5.56	.000	93
Job Satisfaction	10	5372	.24	.19, .29	9.41	.000	67
Job Performance	4	2661	.20	.04, .35	2.39	.017	92
Confidence-Building Practices							
Leader Entrustment	19	4759	.64	.54, .72	9.86	.000	96
Team Effectiveness[a]	1	130	.63	-	-	-	-
Organizational Engagement	12	3737	.48	.26, .65	3.96	.000	98
Job Satisfaction	10	3856	.36	.06, .61	2.36	.018	99
Psychological Health	10	3095	.31	.24, .37	8.63	.000	72
Job Performance	4	1454	.24	.13, .35	4.33	.000	77
Belief Appraisals	3	1068	.10	.03, .16	2.95	.003	9
Coaching Practices							
Leader Entrustment	31	9638	.66	.58, .72	12.80	.000	97
Psychological Health	12	3308	.38	.28, .46	7.27	.000	88
Job Satisfaction	20	10,055	.36	.22, .48	4.76	.000	98
Organizational Engagement	19	8306	.35	.29, .41	10.02	.000	90
Team Effectiveness	10	1794	.35	.26, .43	7.75	.000	52
Job Performance	7	1752	.26	.17, .34	5.69	.000	65
Belief Appraisals	7	2151	.21	.07, .34	2.89	.004	90
Performance Expectations							
Leader Entrustment	6	4253	.37	.27, .47	6.31	.000	93
Team Effectiveness[a]	2	152	.37	-.02, .67	-	-	-
Job Satisfaction	6	3430	.27	.13, .40	3.75	.000	93
Belief Appraisals	3	1626	.27	-.01, .51	1.93	.054	96
Organizational Engagement	8	5477	.25	.17, .33	5.87	.000	89
Psychological Health[a]	1	43	.32	-	-	-	-
Job Performance	3	1887	.08	.04, .13	3.67	.000	0
Performance Rewards							
Leader Entrustment	25	8886	.56	.50, .62	14.28	.000	93
Team Effectiveness	8	1619	.28	.06, .47	2.52	.012	91
Organizational Engagement	20	10,231	.29	.23, .34	10.11	.000	87
Psychological Health	9	2378	.23	.15, .30	6.06	.000	61
Job Satisfaction	19	11,667	.21	.08, .33	3.26	.000	98
Job Performance	7	1349	.15	.05, .24	2.94	.003	65
Belief Appraisals	7	3365	.12	.05, .19	3.39	.000	71

[a]Outcomes not included in the between outcome effect size comparisons (see Table 5).

Seventy-two of the 77 leadership practices-outcome measure relationships (94%) included 3 or more effect sizes with sample sizes between 1068 and 17,326. The *Z*-test statistic for 70 of the 72 leadership practices-outcome average effect sizes (97%) were statistically significant, $Q_{Between}$ = 2.29 to 18.24, p_s = .022 to .000. In every case, greater reported use of the leadership practices was associated with positive study outcomes. Examination of the 95% confidence intervals for the average effect sizes shows that the majority of the sizes of effects are reasonable estimates of the population means despite the fact that the I^2 tests of heterogeneity for most average sizes were large. The latter was not unexpected given the large number of differences in the studies in the meta-analysis as described above.

Between Outcome Measure Comparisons

A main interest in the meta-analysis was the extent to which the leadership practices were differentially related to the seven types of outcome measures. Eleven $Q_{Between}$ outcome measure comparisons found that the leadership practices were differentially related to all of the outcome measures. The findings are shown in Table 5. The results indicate that the average weighted effect sizes for each of the outcome measures for each leadership practice in Table 4 are not the same, or stated differently, the strength of the relationships between each leadership practice and the study outcomes are differential rather than similar.

Table 5. $Q_{Between}$ Results for the Differences in the Sizes of Effects for the Between Study Outcome Comparisons

Leadership Practices	$Q_{Between}$	*df*[a]	*p*-value
Organizational Visioning	32.31	5	.000
Motivational Communication	66.49	6	.000
Modeling Desired Behavior	39.77	6	.000
Encouraging Employee Input/Feedback	52.25	6	.000
Soliciting Creative Solutions	98.75	6	.000
Shared Decision Making	34.83	5	.000
Relationship-Building Practices	32.42	6	.000
Confidence-Building Practices	72.76	5	.000
Coaching Practices	56.40	6	.000
Performance Expectations	33.06	4	.000
Performance Rewards	91.37	6	.000

See Table 4 for the outcome measures not included in the analyses if *df* is less than 6.

Close inspection of the distribution of the effect sizes for each leadership practice and the study outcomes indicate that the size of effects are larger for nonemployee outcomes (organizational engagement, team effectiveness, and leader entrustment) compared to employee specific outcomes (personal belief appraisals, psychological health, job satisfaction, and job performance). Post-hoc between type of outcome measure comparisons confirmed this observation. In 10 of the 11 $Q_{Between}$ comparisons, the sizes of effects for the leadership-nonemployee outcomes were larger than those for the leadership practice-employee outcomes. These results are shown in Table 6.

Table 6. Average Weighted Correlations for the Employee vs. NonEmployee Outcome Measures

	Employee Outcomes[a]		NonEmployee Outcomes[b]				
Leadership Practices	Average r	95% CI	Average r	95% CI	*Q*Between	*df*	*p*-value
Organizational Visioning	.34	.23, .44	.54	.42, .65	6.36	1	.012
Motivational Communication	.32	.24, .39	.55	.47, .62	18.72	1	.000
Modeling Desired Behavior	.28	.23, .32	.42	.36, .48	13.89	1	.000
Encouraging Employee Input	.26	.20, .32	.44	.38, .50	17.34	1	.000
Soliciting Creative Solutions	.30	.25, .34	.47	.42, .51	27.30	1	.000
Shared Decision Making	.29	.21, .37	.42	.32, .52	3.96	1	.047
Relationship-Building Practices	.27	.22, .32	.44	.37, .51	13.52	1	.000
Confidence-Building Practices	.30	.18, .41	.58	.48, .66	13.94	1	.000
Coaching Practices	.33	.25, .40	.53	.46, .59	15.01	1	.000
Performance Expectations	.23	.13, .33	.31	.24. .38	1.84	1	.174
Performance Rewards	.20	.12, .26	.43	.36, .49	23.78	1	.000

[a]Belief appraisals, psychological health, job satisfaction, and job performance.
[b]Organizational engagement, team effectiveness, and leader entrustment.

Post-hoc follow-up tests for between type of outcome measure (employee and nonemployee) comparisons for each leadership practice found nine significant differences for the non-employee outcomes, $Q_{Between}$ = 6.56 to 65.79, df = 1 to 2, p_s = .038 to .000, but only three significant differences for the employee outcomes, $Q_{Between}$ = 7.74 to 21.53, df = 2 to 3, p_s = .021 to .000. The leadership practices that were associated with differences between the three non-employee outcomes were organizational visioning, motivational communication, modeling desired behavior, encouraging employee input and feedback, soliciting creative solutions, shared decision-making, relationship-building practices, coaching, and performance rewards.

In all nine sets of analyses, the average sizes of effect between the leadership practices and leader entrustment were the largest (ranging between .54 and .69), whereas the average effect sizes between the leadership practices and both organizational engagement and team effectiveness were smaller (ranging between .28 and .43). Examination of the three non-employee outcome measures in Table 4 shows that the relationships between the leadership practices and these two outcomes were much the same, whereas the sizes of effect for these outcomes and leader entrustment were quite different. This was confirmed by between outcome measure (leader entrustment vs. organizational engagement + team effectiveness) post-hoc follow-up analyses where 8 of the 10 leadership practices-outcome measure relationships were larger for leader entrustment compared to organizational engagement and team effectiveness (see Dunst & Hamby, 2018).

The three leadership practices that were associated with differences in the employee outcomes were shared decision-making, $Q_{Between}$ = 15.44, df = 2, p = .000, confidence building practices, $Q_{Between}$ = 21.53, df = 3, p = .000, and performance expectations, $Q_{Between}$ = 7.74, df = 2, p = .021. The sizes of effect tended to be largest for job satisfaction and smallest for job performance (see Table 4). In contrast to the nonemployee outcomes, there was no discernible pattern of relationships between the leadership practices and employee outcomes. Rather there were considerable variations in terms of which leadership

practices were related to which employee outcomes.

Moderator Analyses

Whether study or participant characteristics moderated the relationships (sizes of effects) between the leadership practices and study outcomes were evaluated for year of publication, sample size, country economic status, country democracy index, type of organization, and employee/staff roles and positions (see Dunst & Hamby, 2018). Neither year of publication nor study sample size moderated most of the leadership practice-outcome measure relationships. The *Q* tests for meta-regression year of publication were $Q = .01$ to 2.62, $df = 1$, $p_s = .105$ to .917, for the 11 leadership practices, indicating no discernible effect for this study variable. The same analyses for study sample size produced a significant difference only for soliciting creative employee solutions, $Q = 3.85$, $df = 1$, $p = .050$. There was a small downward trend in the sizes of effect as study sample sizes increased. There were no significantly different trends in the relationships between the other leadership practices and the study outcomes as a function of study sample size, $Q_s = .03$ to 3.40, $df_s = 1$, $p_s = .065$ to .859.

The *Q* tests for the meta-regression analyses of the relationships between the country democracy scores and the leadership practices produced significant results for only organizational visioning, $Q = 4.06$, $df = 1$, $p = .044$, and confidence-building practices, $Q = 5.29$, $df = 1$, $p = .0214$. In both analyses, the sizes of effect were smaller in countries with higher democracy scores.

The position of the employees in the studies also did not influence the relationships between the leadership practices and study outcomes. There was only one significant effect for encouraging employee input and feedback, $Q_{Between} = 11.37$, $df = 2$, $p = .003$. The effect size for managers was larger than the effect size for front line staff.

The relationships between the leadership practices and study outcomes were moderated by United Nations categorization of country economies for organizational visioning, $Q_{Between} = 16.33$, $df = 2$, $p = .000$, motivational communication, $Q_{Between} = 9.83$, $df = 2$, $p = .007$, modeling desired behavior, $Q_{Between} = 6.78$, $df = 2$, $p = .034$, and confidence building practices, $Q_{Between} = 9.26$, $df = 2$, $p = .010$. These differences are shown in Figure 1. In the analyses of organizational visioning, motivational communication, and confidence building practices, the sizes of effects are largest for countries with developing economies and smallest for countries with developed economies. In contrast, the sizes of effect for modeling desired behavior are largest for countries with developed and highly developed economies and smallest for countries with developing economies.

The relationships between the leadership practices and study outcomes were also moderated by type of program, organization, company, or business for five of the leadership practices (organizational visioning, motivational communication, modeling desired behavior, relationship building, and shared decision making), $Q_{Between} = 10.22$ to 55.92, $df_s = 2$ to 6, $p_s = .006$ to .000. Figure 2 shows the aggregated mean effect sizes for the relationships between these particular leadership practices and the study outcomes for the different types of organizations. The sizes of effect are smallest for governmental and educational agencies and largest for not-for-profit organizations and for-profit service businesses.

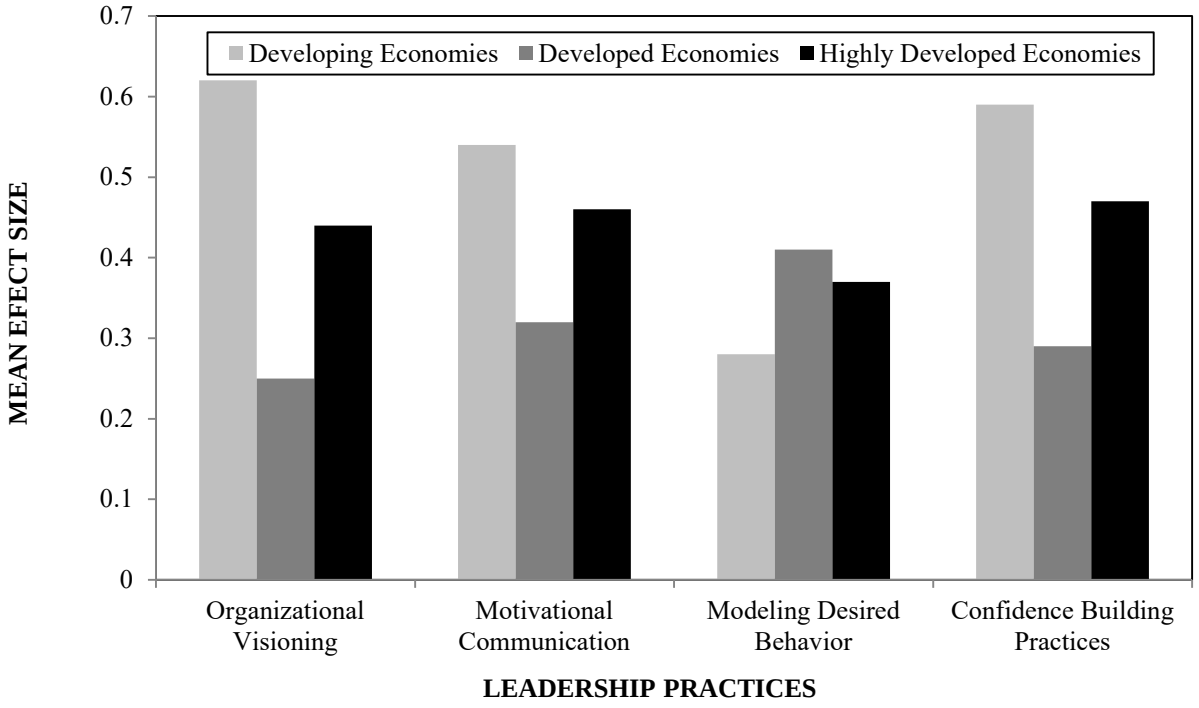

Figure 1. Moderating effects of country economies on the relationships between four leadership practices and the study outcomes.

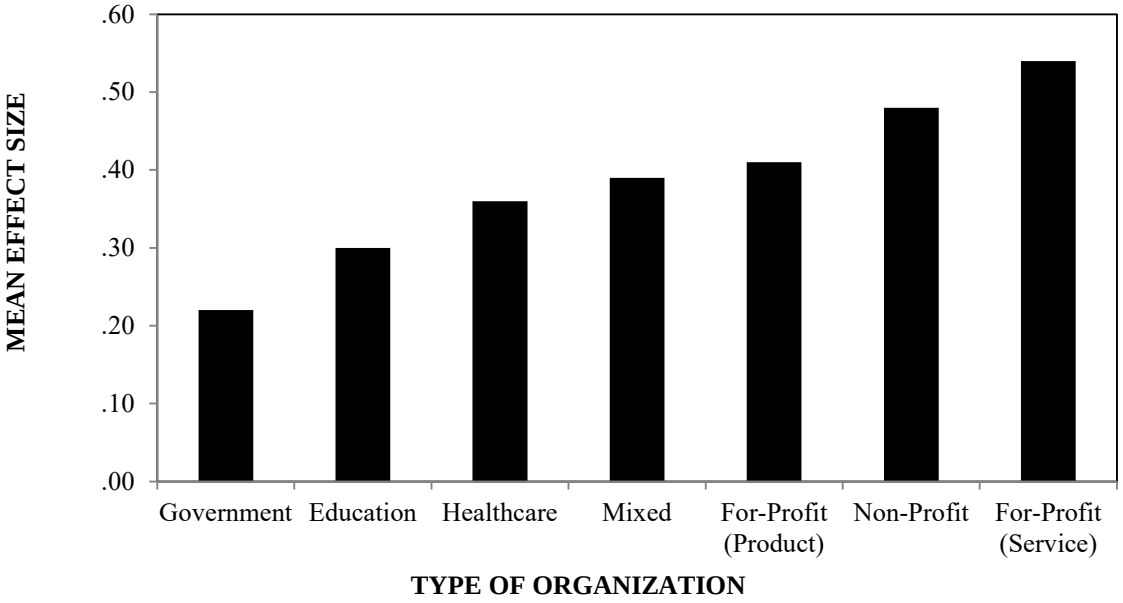

Figure 2. Moderating effects of type of organization on the relationships between the leadership practices and study outcomes.

Discussion

Results showed that the 11 leadership practices were associated with more positive study participant judgments of organizational engagement, team effectiveness, leader entrustment, and the four employee outcomes (personal belief appraisals, psychological health, job satisfaction, and job performance). In every set of analysis, more frequent use of the leadership practices was associated with more positive outcomes albeit at different strengths of relationships (Table 4). The results, taken together, indicate that there were multiple positive benefits associated with the use of the leadership practices.

Both Dinh et al. (2014) and Lord et al. (2017) noted the importance of including multiple leadership measures and multiple outcome measures in a meta-analysis for improving our understanding of which kinds of leadership practices are related to which kinds of organizational, team and workgroup, leader, and employee outcomes as was done in our research synthesis. This proved to be especially illuminating. On the one hand this resulted in operationally defined leadership practices and internally consistent sets of outcome measures, and on the other hand permitted considerable specificity in terms of leadership practices-outcome measure relationships and identification of which leadership practices were related to which outcomes.

Results also indicated that the strength of relationships between the leadership practices and study outcomes was stronger for nonemployee (organizational engagement, team effectiveness, and leader entrustment) compared to employee outcomes. The average sizes of effects for the latter ranged between .20 and .34 (Medium = .30) and for the former ranged between .31 and .58 (Medium = .47). Follow-up analyses found that the sizes of effects between the leadership practices were largest for leader entrustment and smallest for employee job performance. To the best of our knowledge, this meta-analysis is the only research synthesis that has included a number of different outcome measures for showing the manner in which leadership practices are differentially related to the outcomes examined in our study. In contrast, most previous meta-analyses and research syntheses tended to focus on only one or a few outcome measures (e.g., Barnett & Weidenfeller, 2016; D'Innocenzo et al., 2016; Jung et al., 2003).

Results from the meta-analysis add to the knowledge base in terms of understanding which types of leadership measures are related to which kinds of outcomes (Dumdum et al., 2002; Lowe et al., 1996; Wang et al., 2011). Our findings are consistent with results reported in Dumdum et al. (2002) for the relationships between leadership subscale measures and employee performance and satisfaction, results reported in Lowe et al. (1996) for the relationships between leadership practices subscale measures and leader effectiveness, and results reported in Wang et al. (2011) for the relationships between leadership practices subscale measures and individual, team, and organizational performance. The present study adds to these results for the relationships between different measures of leadership practices and other study outcomes.

The relationships between the leadership practices and study outcomes were related to only two moderator variables. The relationships between the leadership practices and study outcomes differed as a function of the economies of the country where the studies were conducted and type of program, organization, company, or business. The effects of country economies

on the leadership practices-outcome measure relationships were generally counter-intuitive, whereas the effects for type of organization were as expected. Use of the types of leadership practice investigated in the meta-analysis tend to be more difficult in hierarchical organizations and less so in nonhierarchical organizations (Borins, 2002; Hull & Lio, 2006; Perry & Rainey, 1988).

Theory and research in public and private sector organizations suggests that the effectiveness of leadership practices varies by type of organization (Baltaci & Balci, 2017; Hooijberg & Choi, 2001). Examination of the pattern of results in Figure 2 for the relationship between organization type and the sizes of effect for leadership practice-outcome measure is consistent with this expectation. The types of organizations shown in Figure 2 are roughly ordered from those that are public (governmental and educational) to those that are private (for profit and not-for-profit) where the use of the same leadership practices were differentially related to the strength of the relationships with the study outcomes. Notwithstanding the moderator effects, the relationships between the leadership practices and study outcomes were statistically significant for all types of organizations (Dunst & Hamby, 2018).

It is important to note that the studies included in the meta-analysis differed considerably in terms of a number of participant and study variables (see Tables 2 and 3). This diversity was evidenced by the heterogeneity (inconsistency) in the average effect sizes for the leadership practices-outcome measure relationships in nearly all analyses (see Table 4). In a random effect model, which was used in the meta-analysis, this indicates that the estimated effect sizes for the leadership-outcome relationships varied as a function of differences in other aspects of the studies as shown in the moderator analyses. Despite the inconsistency found in the meta-analysis, the patterns of findings were very much the same in terms of the direction of effect for individual study leadership practice-study outcome relationships. This was evidenced by the fact that 99% of the 844 effect sizes for the relationship between the independent and dependent variables were positive where 97% of the confidence intervals did not include zero.

Implications for Practice

Whereas previous meta-analyses and research syntheses have focused primarily on the relationships between different theories of leadership (authentic, shared, transformational, transactional, etc.) and outcomes of interest, the present meta-analysis examined the relationships between operationally defined leadership practices and study outcomes, where the leadership practices included behavior indicators amendable to being adopted and used by leaders to influence organizational, leader, team and workgroup, and employee outcomes. Practice-based research syntheses of the sort described in this paper emphasize identification of the key characteristics, active ingredients, and core elements of practices that are related to desired outcomes (Green, 2008; Rycroft-Malone & Bucknall, 2010) in order to inform which practices account for the largest amounts of variance in the study outcomes. This has direct implications for leadership development (Avolio, 2011) and the types of implementation practices (Dunst & Trivette, 2012) that can be used to promote adoption of leadership practices.

Fixsen et al. (2005), as part of their review of implementation research, noted the importance of distinguishing between practices used by an implementation agent (e.g., mentor or coach) and the practices used by intervention agents (e.g., leaders) to

produce desired changes or outcomes (e.g., employee commitment to an organization's mission). Implementation practices include, but are not limited to, the types of professional development used to support and strengthen leaders' adoption and use of desired leadership practices. Findings from adult learning research, for example, point to the types of professional development that are effective in terms of leader development (e.g., Dimmock, 2012; Dunst, Trivette, & Hamby, 2010; Ely et al., 2010). The adult learning methods and strategies identified by experts for leadership development include authentic learning experiences (Baron, 2016; Hezlett, 2016; McCall, 2004), coaching and mentoring (Ely et al., 2010; Risley & Cooper, 2011), performance feedback (Atwater & Waldman, 1998; Pinnington, 2011), and opportunities for reflection with mentors, coaches, or peers (Jacobsen & Anderson, 2017; Pinnington, 2011). Taken together, these adult learning practices are the key features of competency enhancing professional development practices (Brittain & Bernotavicz, 2014). As noted by Avolio et al. (2009), a future issue in leadership research and practice includes "assessing and developing the use of evidence-based [leadership development] strategies" (p. 442). The results from the meta-analysis point to the types of leadership practices that ought to be the focus of the leadership development strategies.

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Appendix A

Categorization of the Leadership Measures for the Meta-Analysis

Leadership Practice/Subscale	Scale	Source
Organizational Visioning		
Articulating a Vision	*Transformational Leader Behaviors Inventory*	Podsakoff et al. (1990)
Idealized Influence Behavior	*Multifactor Leadership Questionnaire*	Avolio and Bass (2004)
Visioning and Mobilizing	*Transformational Leader Behaviors Inventory*	Podsakoff et al. (1990)
Dramatizes Mission	*Leader Behavior Scale*	Behling and McFillen (1996)
Identifying a Vision	*Charismatic Leadership Scale*	House (1998)
Inspiring a Shared Vision	*Leadership Practices Inventory*	Kouzes and Posner (1988)
Inspirational Motivation	*Transformational Leadership Questionnaire*	Loganathan and Krishnan (2010)
Supportive Distributive	*Distributed Leadership Inventory*	Hulpia and Devos (2009)
Visioning and Mobilizing	*Collective Leadership Assessment*	Turning Point National Program Office (2012)
Vision and Strategy	*Learning Organizations Practices Profile*	O'Brien (1994)
Motivational Communication		
Inspirational Motivation	*Multifactor Leadership Questionnaire*	Avolio and Bass (2004)
Charismatic Leadership	*Multifactor Leadership Questionnaire*	Bass (1985)
Inspirational Communication	*Charismatic Leadership Scale*	House (1998)
Management Practices	*Learning Organizations Practices Profile*	O'Brien (1994)
Modeling Desired Behavior		
Providing an Appropriate Model	*Transformational Leader Behaviors Inventory*	Podsakoff et al. (1990)
Modeling the Way	*Leadership Practices Inventory*	Kouzes and Posner (1988)
Idealized Influence Behavior	*Transformational Leadership Questionnaire*	Loganathan and Krishnan (2010)
Behavior Integrity	*Behavior Integrity Measure*	Simons et al. (2007)

Appendix A (continued.)

Leadership Practice/Subscale	Scale	Source
Modeling Desired Behavior, continued.		
Internalized Moral Perspective	*Authentic Leadership Questionnaire*	Avolio et al. (2007)
Internalized Moral Perspective	*Authentic Leadership Inventory*	Neider and Schriecheim (2011)
Idealized Influence Attributed	*Transformational Leadership Questionnaire*	Loganathan and Krishnan (2010)
Encouraging Employee Input and Feedback		
Self-Awareness	*Authentic Leadership Questionnaire*	Avolio et al. (2007)
Self-Awareness	*Authentic Leadership Inventory*	Neider and Schriecheim (2011)
Communicative Transparency	*Communication Openness Measure*	Rogers (1987)
Soliciting Creative Employee Solutions		
Intellectual Stimulation	*Multifactor Leadership Questionnaire*	Avolio and Bass (2004)
Balanced Processing	*Authentic Leadership Questionnaire*	Avolio et al. (2007)
Intellectual Stimulation	*Transformational Leader Behaviors Inventory*	Podsakoff et al. (1990)
Balanced Processing	*Authentic Leadership Inventory*	Neider and Schriecheim (2011)
Challenging the Process	*Leadership Practices Inventory*	Kouzes and Posner (1988)
Intellectual Stimulation	*Transformational Leadership Questionnaire*	Loganathan and Krishnan (2010)
Individual and Team Practice	*Learning Organizations Practices Profile*	O'Brien (1994)
Reward and Recognition	*Learning Organizations Practices Profile*	O'Brien (1994)
Shared Decision-Making		
Fostering Group Goals	*Transformational Leader Behaviors Inventory*	Podsakoff et al. (1990)
Planful Alignment	*Investigator Developed*	Mascall et al. (2008)
Problem Solving	*Collective Leadership Scale*	Hiller et al. (2006)
Cooperative Leadership	*Distributed Leadership Inventory*	Hulpia and Devos (2009)
Participative Decision-Making	*Distributed Leadership Inventory*	Hulpia and Devos (2009)

Appendix A (continued)

Leadership Practice/Subscale	Scale	Source
Shared Decision-Making (continued.)		
Team Empowerment (Shared)	*Shared and Vertical Leadership Questionnaire*	Pearce and Sims (2002)
Shared Leadership	*Team Multifactor Questionnaire*	Bass and Avolio (1994)
Sharing Power and Influence	*Collective Leadership Assessment*	Turning Point National Program Office (2012)
Relationship-Building Practices		
Relational Transparency	*Authentic Leadership Questionnaire*	Avolio et al. (2007)
Displays Empathy	*Leader Behavior Scale*	Behling and McFillen (1996)
Relational Transparency	*Authentic Leadership Inventory*	Neider and Schriecheim (2011)
Individualized Consideration	*Transformational Leadership Questionnaire*	Loganathan and Krishnan (2010)
Confidence-Building Practices		
Idealized Influence	*Multifactor Leadership Questionnaire*	Avolio and Bass (2004)
Idealized Influence Attributed	*Multifactor Leadership Questionnaire*	Avolio and Bass (2004)
Provides Opportunities for Success	*Leader Behavior Scale*	Behling and McFillen (1996)
Enabling Others to Act	*Leadership Practices Inventory*	Kouzes and Posner (1988)
Coaching Practices		
Individualized Consideration	*Multifactor Leadership Questionnaire*	Avolio and Bass (2004)
Provides Individualized Support	*Transformational Leader Behaviors Inventory*	Podsakoff et al. (1990)
Supportive Leadership	*Charismatic Leadership Scale*	House (1998)
Development and Mentoring	*Collective Leadership Scale*	Hiller et al. (2006)
Support and Consideration	*Collective Leadership Scale*	Hiller et al. (2006)
Developing People	*Collective Leadership Assessment*	Turning Point National Program Office (2012)
Supervisory Practices	*Learning Organizations Practices Profile*	O'Brien (1994)

Appendix A (continued.)

Leadership Practice/Subscale	Scale	Source
Performance Expectations		
High Performance Expectations	*Transformational Leader Behaviors Inventory*	Podsakoff et al. (1990)
Shared Leadership	*Shared and Vertical Leadership Questionnaire*	Pearce and Sims (2002)
Performance Rewards		
Contingent Reward	*Multifactor Leadership Questionnaire*	Avolio and Bass (2004)
Contingent Reward	*Transformational Leader Behaviors Inventory*	Podsakoff et al. (1990)
Personal Recognition	*Transformational Leader Behaviors Inventory (Investigator Adapted)*	Podsakoff et al (1990)
Assures Followers of Competence	*Leader Behavior Scale*	Behling and McFillen (1996)
Encouraging the Heart	*Leadership Practices Inventory*	Kouzes and Posner (1988)

Appendix B

Categorization of the Leadership Study Outcome Measures

Outcome Measures	Most Frequently Used Scales	Sources
Organizational Engagement		
Organizational Citizenship	*Organizational Citizenship Behavior*	Organ (1990)
	Extra-Role Performance Scale	Podsakoff and MacKenzie (1994)
	Organizational Citizenship Behavior	Smith et al. (1983)
Organizational Commitment	*Organizational Commitment Scale*	Allen and Meyer (1990), Meyer and Allen (1993)
	Organizational Commitment Questionnaire	Mowday et al. (1979)
	Organizational Commitment Questionnaire	Porter et al. (1974)
Team Effectiveness		
Team Functioning	*Perceived Unit Effectiveness Scale*	Shortell and Rousseau (1989), Shortell et al. (1991)
	Work Team Effectiveness (Investigator Developed)	Hiller et al. (2006)
	Interpersonal Collaboration Scale	Laschinger and Smith (2013)
Team Performance	*Work Group Performance Criterion (Investigator Developed)*	Hater and Bass (1988)
	Project Group Performance Scale (Investigator Developed)	Kelley (1992)
	Team Coordination Scale	DeChurch and Haas (2008)
Collective Efficacy	*Conditions of Work Effectiveness Questionnaire*	Laschinger et al. (2001)
	Collective Efficacy Scale	Salanoya et al. (2003)
	Group Performance Scale	Conger et al. (2000)
Leader Entrustment		
Satisfaction with Leader	*MLQ Satisfaction with Leadership Subscale*	Avolio and Bass (2004)
	Minnesota Satisfaction Questionnaire	Weiss et al. (1967)
	Job Diagnostic Survey	Hackman and Oldham (1975)

Appendix B (continued.)

Outcome Measures	Representative Scales	Sources
Leader Effectiveness	*MLQ Effectiveness Subscale*	Avolio and Bass (2004)
	Group Interaction	Gartwright and Zander (1960)
	Leader Effectiveness	Hinkin and Tracey (1994)
Leader Motivation	*MLQ Extra Effort Subscale*	Avolio and Bass (2004)
	Group Interaction	Gartwright and Zander (1960)
Trust in Leader	*Trust in and Loyalty to Leader*	Podsakoff et al. (1990)
	Conditions of Trust Inventory	Butler (1991)
	Global Trust (Investigator Developed)	Gillespie and Mann (2004)
Employee Belief Appraisals		
Personal Self-Efficacy	*Psychological Capital Questionnaire*	Luthans et al. (2007)
	Maslach Burnout Inventory	Maslach and Jackson (1981)
	Psychological Empowerment Scale	Spreitzer (1995)
Personal Commitment	*Utrecht Work Engagement Scale*	Schaufeli et al. (2006)
	Psychological Empowerment Scale	Spreitzer (1995)
	Creative Behavior Scale	George and Zhou (2001)
Personal Motivation	*Goal Orientation Scale*	VandeWalle (1997)
	Personal Responsibility Index	Dunst, et al. (2011)
	Follower Belief Scale	Behling and McFillen (1996)
Employee Psychological Health		
Job Stress[a]	*Nursing Stress Scale*	Gray-Toft and Anderson (1981)
	Perceived Strain Scale	Felfe and Liepmann (2006)
	Recovery-Stress Work Questionnaire	Jimenez and Kallus (2005)
Positive Well-Being	*Modified Trait Meta Mood Scale*	Salovey et al. (1995)
	Positive and Negative Affect Scale	Watson et al (1988)
	Recovery-Stress Work Questionnaire	Jimenez and Kallus (2005)

Appendix B (continued.)

Outcome Measures	Representative Scales	Sources
Negative Well-Being[a]	*Positive and Negative Affect Scale*	Watson et al (1988)
	Negative Motions Scale	Fiebig and Kramer (1998)
General Well-Being	*Recovery-Stress Work Questionnaire*	Jimenez and Kallus (2005)
	Job-Related Affective Well-Being Scale	van Katwyk et al. (2000)
	Spiritual Well-Being Scale	Ellison (1983)
Poor Mental Health[a]	*General Health Questionnaire*	Makowska and Merecz (2001)
Employee Job Satisfaction		
Job Satisfaction	*Minnesota Satisfaction Questionnaire*	Weiss et al. (1967)
	Employee Satisfaction Scale (Investigator Developed)	Berson and Linton (2005)
	Job Descriptive Index	Smith et al. (1985)
Employee Burnout[a]	*Maslach Burnout Inventory*	Maslach and Jackson (1981)
	Job Stress and Burnout	Dubisnsky et al. (2004), Dhaliwal (2008)
Role Conflict/Ambiguity[a]	*Recovery-Stress Work Questionnaire*	Jimenez and Kallus (2005)
	Role Clarity/Ambiguity/Conflict Scale	Rizzo et al. (1970)
	Areas of Worklife Scale	Leiter and Maslach (2002)
Intent to Leave[a]	*Intent to Leave Scale (Investigator Developed)*	Bycio et al. (1995)
	Job InsecurityMeasure	Hellgren et al. (1999)
	Turnover Intentions (Investigator Developed)	Rafferty and Griffin (2004)
Employee Job Performance		
Employer Rated Performance	*Individual Manager Performance (Investigator Developed)*	Hater and Bass (1988)
	In-Role Employee Performance	Williams (1989)
	Job Performance (Investigator Developed)	Moss and Ritossa (2007)

Appendix B (continued).

Outcome Type	Representative Scales	Sources
Employee Rated Performance	*General Performance Scale*	Roe et al. (2000)
	Goal Orientation Instrument	VandeWalle (1997)
	Job-Related Learning Scale	Loon and Casimir (2008)

[a]The signs of the correlation coefficients were reversed in instances where higher outcome measure scores indicated poor functioning.

Appendix C

Studies Included in the Meta-Analysis

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