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„Meta-Analysis of Leadership Effectiveness in Times of Accelerated Competition“

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Contents

Figures

Tables

Abstract

This study investigated the relevance of leadership styles in the face of contemporary changes. To achieve this, the relationship between leader characteristics and leadership effectiveness criteria was meta-analysed for two periods and compared (N = 112,913). In absolute terms, transformational leadership (k = 152) and leader-member exchange (k = 173) displayed strong relevance for objective and subjective performance, commitment, trust, organizational citizenship behaviour and job satisfaction. In relative terms, only transformational leadership demonstrated an increase in its correlation to objective performance from .25 to .30. The relevance of both leadership styles roughly remained at the same level in terms of commitment, trust and organizational citizenship behaviour. Against the hypotheses the relationship with subjective performance and job satisfaction deteriorated noticeably for both leadership styles. Sufficient data were not available for intelligence, emotional intelligence and substitutes for leadership. Finally, the results supported Bernhard Bass's (1985) and John Kotter's (2012) proposition about the relevance of transformational leadership in times of crises, change and pressure. Generally, transformational leadership and leader-member exchange represent important job resources for the world of business today.

Keywords: Meta-Analysis, Leadership Effectiveness, Transformational, LMX, Organizational Change, Competitive Advantage

Introduction

"[P]eople – the company's most precious asset."
Coimbatore K. Prahalad and Gary Hamel (1990, 87)

Leaders impact a company's competitiveness because "leadership is a resource for team performance" (Kaiser et al., 2008, 96p). They combine, coordinate and guide efforts of their teams while also offering role models so that followers pursue designated goals (Kaiser et al., 2008). Systematic leader development in a company is hard to copy and therefore a source of competitive advantage (Lowe & Gardner, 2001, 495), as has been proposed in the resource based view of competition (Barney & Clark, 2009, 140p).

"[A]bout 50% of executives derail"
Robert, B. Kaiser, Robert Hogan & Bartholomew Craig (2008, 102)

Any change in the situation of leader competences has a potential to erode a company's competitive advantage. Every second leader is incompetent and will derail, as is suggested by an analysis of 11 surveys about base rates for management failure (Hogan et al., 2009, 3p).[1]

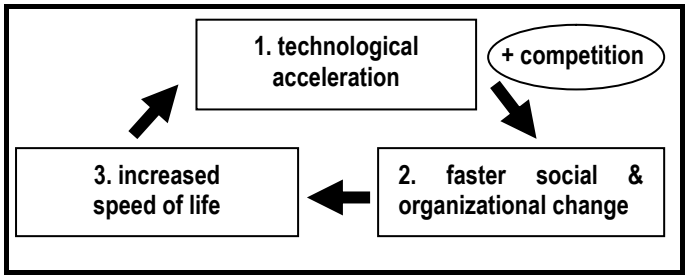
[1] Such an uncompelling perspective met fierce resistance from the leadership development industry (Hogan et al., 2009, 20).

Costs for a failed executive are estimated to lie between €0.75 million to €2 million (Hogan et al., 2009, 2) – plus hidden costs, e.g. loss of knowledge, employees and customers. Furthermore, work experience may be worsened by interaction with bad leaders: Hogan and colleagues (Hogan, 2007, 106, cited by Hogan, 2009, 3) found that 75% of working adults state "that the most stressful aspect of their job is their immediate boss". From a global perspective, the importance of competent leaders is globally on the top agenda for executives, as was established from worldwide interviews conducted with 883 executives in the People Advantage Study from the Boston Consulting Group (Strack et al., 2012, 8). European companies have been spending around €5,000 for leadership development per executive per year (Anderson, 2003).[2] Worldwide investment in leadership training is estimated to amount to €40 billion per year (Raelin 2004, 131).[3] Moreover, changed circumstances might even enlarge the base rate of incompetent superiors.

> "Perhaps the greatest challenge business leaders face today is how to stay competitive amid constant turbulence and disruption."
>
> John Kotter (2012, 46)

An accelerated pace of change has been observed in diverse working contexts (Hamel & Breen, 2008, 15pp; Kotter, 2012, 46; Ulferts et al., 2013, 162; Strack et al., 2012, 20; Hasebrook & Maurer, 2011, 7). Constant examples of turbulence and disruption have shaped the recent competitive environment (Kotter, 2012, 46). Hartmut Rosa (2005, 124pp) integrated underlying change characteristics within a comprehensive framework, this being known as the circle of acceleration.

Figure 1: Circle of acceleration[4]



1. Technological acceleration: Technological developments trigger changes in business practices. Available hard disk space has exploded since the early start of this century (Kotter, 2014, 2), see Figure 2. Hardware and software become rapidly outdated (Cascio, 2003, 419; Freyermuth, 2000, 75pp). Worldwide interconnectedness increased substantially at the end of the 1990s (Hoonakker, 2014, 12), see Figure 2. Production processes also accelerated

[2] The Financial Times, Monitor Group and professional service companies supported this survey.
[3] Exchange rates, for calculating the € value, are based on finanzen.net for 2004, 2011 (cf. Finanzen.net, 2013).
[4] Modified from Hartmut Rosa (2013, 44).

(Backhaus & Gruner, 1997, 40), and more could be done in less time (Rosa, 2013, 28pp). Such developments enabled research and development departments to come up with more and more innovations, as can be concluded in patent registrations per year (Kotter, 2014, 2), see Figure 2. This might have contributed to increasingly fierce competition.

Figure 2: Sample technological impacts on competition

Illustration of higher interconnectedness:
Estimated number of internet users worldwide, in millions[5]

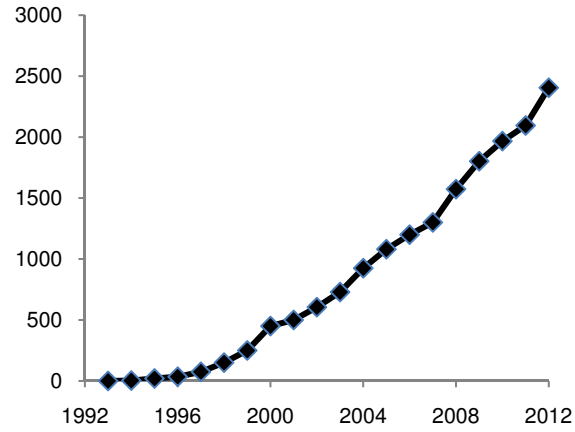


Illustration of the potential for information overload:
Growth in hard disk space, in gigabytes[6]

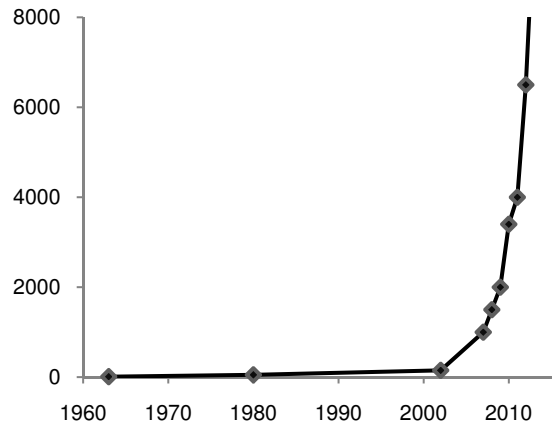


Illustration of the increased number of innovations for product markets:
Annual patent application, in thousands[7]

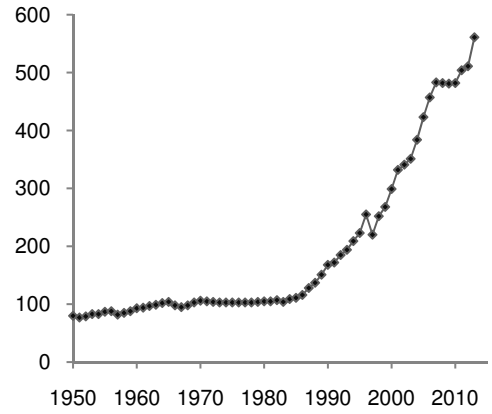
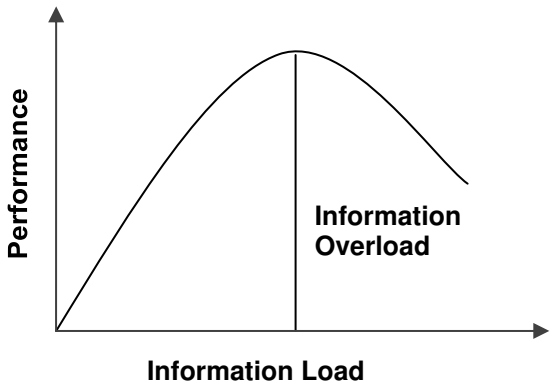


Illustration of the impact of higher information intensity:
Threshold theory of information overload[8]



2. Accelerated social and organizational change: Higher rates of organizational change have resulted in more flexible and adaptive daily work (Kalleberg et al., 1998, 181). New software and higher amounts of data have strengthened the capability for lifelong learning (Cascio, 2003, 419; Freyermuth, 2000, 75pp). Knowledge, experience and expectations

[5] Adapted from Hoonakker (2014, 12). The author retrieved the data from: ClikZ, Computer Industry Almanac, Global Research, Internet World Stats, NUA.
[6] Adapted from Kotter (2014, 2).
[7] Adapted from Kotter (2014, 2). John Kotter retrieved the data from the US Patent and Trademark Office (on patents filed). Please note: There is a time-lag between patent application and market launch.
[8] Adapted from Eppler & Mengis (2004, 326) and Schroder and co-authors (1975, 70, 250).

increasingly diminish in terms of value and need more frequent updates and renewal than ever before (Rosa, 2013, 22pp). Moreover, information overload has become a factor with regard to the issue of effective work. Having more information is, at a certain level, associated with decreasing performance (Eppler & Mengis, 2004, 326), see Figure 2. For example, executive reports vary by 5 - 300 pages and 45 – 300 indicators per page (Hirsch et al., 2008, 328).

With regard to **information overload**, there are three factors other than technology and organizational design that impede efficient information processing (Eppler & Mengis, 2004, 330p): a) Information quality: This is about the amount, ambiguity (i.e. about outcomes and implications), novelty, complexity or intensity of information (Eppler & Mengis, 2004, 327p). b) Individual information processing capacity: This capacity is limited (cf. Miller, 1956; Cowan, 2001; Vogel et al., 2001; for a thorough review see Baddeley, 2007). A person's experience (Swain & Haba, 2000, 193) and motivation may also influence information processing (Muller, 1984, 305). c) Tasks and processes: Complexity and the frequent switching of contexts make information processing difficult (Eppler & Mengis, 2004, 331).
In the view of the above, changed social and organizational processes could be associated with technological development and pressure to stay competitive.

3. Increased pace of life: As a consequence of this phenomenon, multitasking (Rosa, 2013, 26pp), working at higher speed (Parent-Thirion et al., 2012, 53), overtime and longer working days have shaped individual job experiences. This also means a greater sense of time pressure (Szollos, 2009, 339) and work intensification (Parent-Thirion et al., 2012, 8). Such factors result in an atmosphere that represents an increased pace of life (Rosa, 2013, 26pp). Finally, pressure to perform tends to reinforce the cycle of acceleration.

However, this perspective must also be regarded from a critical point of view. Changes not necessarily make certain leadership styles obsolete. More rigorous leader selection processes could have more impact on performance because "managers are rarely chosen on the basis of their talent for leadership" (Kaiser et al., 2008, 102). Robert M. Grant questions whether contemporary developments are substantial enough to justify enormous changes in business practices – e.g. management principles still function reasonably well (Grant, 2008, 474).

Therefore, this thesis investigated the relevance of leadership competences that potentially changed in the early 21st century in order to contribute to this debate and to determine the relevance of leader competences in leader selection and development processes.

1. Review of relevant leadership competences

This chapter presents the relevant variables for analysis. These predictors and effectiveness criteria are elaborated in detail and finally integrated within the job demands-resources model.

1.1 Leader characteristics

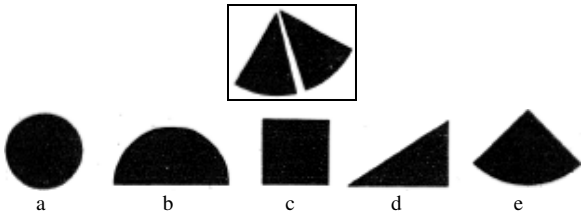
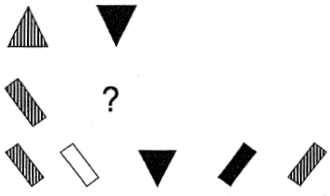
Leader characteristics were applied as predictor variables in the analysis. These comprise one cognitive competence, three social competences and one alternative concept. The following paragraphs elaborate these five characteristics.

1.1.1 Intelligence

Information overload demands handling of highly complex information at a faster rate (Eppler & Mengis, 2004, 326). Knowledge and experiences are becoming outdated faster than ever before (Rosa, 2013, 22pp; Backhaus & Gruner, 1997, 40). Taking these two developments into consideration, it could be stated that information processing and reasoning together with the ability to learn have become more important. These capabilities are captured within the concept of intelligence. Consequently, intelligence was assumed to have become more important for performance.

John E. Hunter concluded from his analysis that more intelligent people differ from other people in their ability to acquire new knowledge more rapidly. This, in turn, was supposed to increase their job performance (Hunter, 1986, 342). Klaus D. Kubinger and Stefana Holocher-Ertl defined intelligence as a prerequisite to acquiring experience and to developing the competence to perform an activity (Kubinger & Holocher-Ertl, 2014, 26). Furthermore, in intelligence tests reasoning (figural, numerical and verbal) is a common test component (Amthauer et al., 2001, 25; Arendasy et al., 2010, 25) – this is important for processing information effectively. Additionally, intelligence tests often differentiate between inherent (fluid) and experience based (crystallized) intelligence (Cattell, 1987, 92p).

Table 1: Sample intelligence test items[9]

Arithmetic operators	Figure selection	Matrices
7 ? 2 ? 4 = 10 The correct answer is 7 * 2 - 4 = 10	 a b c d e The correct answer is e)	 a b c d e The correct answer is d)

[9] The second sample items from the subscales 06, 07 and 09 of the IST 2000 R (Form A) (Amthauer et al., 2001, 13, 15, 19) are presented (with friendly permission of the Hogrefe Verlag).

These capabilities are relevant for the understanding of complex material, decision making, analytical and critical thinking, abstraction and mental capacity for problem solving. As more intelligent people are able to acquire new knowledge more rapidly, their job performance in turn becomes more optimised (Hunter, 1986, 342). The validity of intelligence has been meta-analysed by several authors: for predicting manager performance its validity was at .58 (Schmidt & Hunter, 1998, 264), for general jobs at .51 (Schmidt & Hunter, 1998, 264), for group performance between .12 and .33, and for perceived leadership effectiveness between .17 and .29 (Judge et al., 2004a, 546; Derue et al., 2011, 29).

1.1.2 Transformational leadership

Driven by technological development and innovations, increasingly fierce competition has been observed (Rosa 2013, 28-35). Also economic crises have appeared to occur more frequently (Ulferts et al., 2013, 162). An accelerated pace of change has been observed in diverse social and organizational contexts (Hamel & Breen, 2008, 15pp; Kotter, 2012, 46; Ulferts et al., 2013, 162; Strack et al., 2012, 20; Hasebrook & Maurer, 2011, 71). Such scenarios have seemed to make a more flexible and agile approach necessary (Kotter, 2012, 49; Hamel & Breen, 2008, 15pp). John Kotter proposed that "[t]he game is all about vision, opportunity, agility, inspired action, and celebration – not project management, budget reviews, reporting relationships, compensation, and accountability to a plan" (Kotter, 2012, 49). Moreover, a gap in available talent has been observed. Thus, acquisition and retention of talented employees has become more important so that companies do not lose their competitive advantage (Strack 2012, 20; Chambers, 1998, 46pp). In 1985, Bernhard Bass proposed that transformational leadership was becoming more important in times of crises or when flexible work in *ad hoc* teams was required (Bass, 1985, 153-168). Consequently, transformational leadership was assumed to have become more important for performance and social influence on followers. It is a proactive "[a]pproach to leadership that focuses on the way that leaders transform group goals and actions" (Bass 1985, 157; Hogg & Vaughan 2008, 648). Transformational leaders instil individual followers with respect and provide a focus on emotionally and cognitively challenging and admirable tasks in order to boost performance (Lowe et al. 1996, 388). Previously meta-analysed samples suggest that this style can have an impact on effectiveness criteria (Judge & Piccolo, 2004, 756, 760) – see the following table.

Table 2: Correlations of transformational leadership and effectiveness criteria

Objective performance .26	Perceived effectiveness .64	Job satisfaction .58

There are four components of transformational leadership: charisma, inspirational motivation, intellectual stimulation and individual consideration – see table below for sample items.

Table 3: Components of transformational leadership and sample items[10]

1) Charisma "The leader instills pride, faith and respect, has a gift for seeing what is really important, and transmits a sense of mission which is effectively articulated" (Lowe et al., 1996, 388).	'has my respect' 'arouses awareness about important issues'
2) Inspirational motivation They provide meaning by articulating an appealing vision and challenge with high standards (Judge & Piccolo, 2004, 755).	'articulates a compelling vision'
3) Intellectual stimulation They arouse the viewing of tasks from other angles by encouraging others to search for new ways to attain goals (Bass, 1985, 115).	'suggests different angles' 'seeks different views'
4) Individual consideration By mentoring and coaching, leaders listen to individual concerns and promote development. This respectful interaction makes others feel highly valued and pushes self-confidence (Bass, 1985, 96).	'teaches and coaches' 'focuses your strengths'

Transformational leadership and transactional leadership differ conceptually. Transactional leaders motivate usually by rewards and punishments. Transactional leadership competence is, however, a basis for transformational influence on employees. Judge and Piccolo concluded after meta-analysing the relationship between these two leadership styles that both are interrelated. It made sense that a transactional leader-follower relationship was a precondition for transformational influence – which is in conformity with the augmentation hypothesis (Judge & Piccolo, 2004, 756, 765).

In addition, it must be stated that charisma is seen as independent of transformational leaders by some authors (Conger et al., 1997, 292). In fact, the tests for each concept differ slightly in the dimensions that they measure. They are also highly convergent (Rowold & Heinitz, 2007, 130). Thus, they were combined in the following analysis while leaving their relative relationship to leadership effectiveness open.

Finally, certain situations facilitate the impact of transformational leaders. From an external perspective, these relate to times of change, organizational problems, discontinuity and market downturns. Internally they relate to settings which demand flexible or ad hoc teamwork, teams with non-repetitive, ill-defined or ill-structured tasks, low authority, pressure to make an effort and to innovate technologically (Bass, 1985, 153-168).

[10] Items for intellectual stimulation are from Bass & Avolio (1997, 3), the rest is from Avolio and co-authors (Avolio et al., 1999, 450).

1.1.3 Emotional intelligence

The retention of employees has become more important. The relationship with followers can be assumed as one way when it comes to retaining talented employees. In times of high demands and fast-paced work (Parent-Thirion et al., 2012, 53), in order to handle issues arising from frequently occurring crises (Ulferts et al., 2013, 162) or *ad hoc* initiatives (Kotter, 2012, 48pp) a leader should be able to perceive emotions of followers accurately so she or he can react accordingly to demands or problems in order to maintain performance (Joseph & Newman, 2010, 61). Therefore, emotional intelligence was assumed to have become more important for performance and social influence on followers. "Emotional intelligence concerns the ability to carry out accurate reasoning about emotions and the ability to use emotions and emotional knowledge to enhance thought" (Mayer et al., 2008, 511). Emotionally competent persons have the ability to focus on tasks with less interference from emotions, less distraction, better decision making skills, more frustration tolerance and self-control (Mayer et al., 2008, 512p).

O'Boyle and co-authors aggregated tests to three underlying theoretical models. 1) The ability-based model (e.g. MSCEIT), and 2) the mixed model (e.g. EQ-i) have been most commonly applied. 3) Self-report or peer-based measures of the Mayer-Salovey model have been applied less frequently (O'Boyle, 2011, 792, 796). Their correlations with rated job performance measures were aggregated by O'Boyle and co-authors (2011, 797) as follows:

Table 4: Correlations of emotional intelligence and effectiveness criteria

ability-based models: .24	mixed measures: .28	self-/peer ratings: .30

MSCEIT and EQ-i are the most commonly applied scales. The **MSCEIT** (Mayer-Salovey-Caruso Emotional Intelligence Test) (Mayer et al., 2008, 507) includes the subdimensions 1) manage emotions in order to reach designated goals, 2) understand emotional expressions and 3) sensitively identify emotions in oneself and others. The **EQ-i** from Bar-On consists of five components (Cherniss, 2010, 111p). These are 1) intrapersonal and 2) interpersonal skills, as well as competences in 3) adaptability, 4) stress management and 5) general mood regulation. These scales have been used to analyse the relationship between leader competence and outcomes (cf. Joseph & Newman, 2010; O'Boyle, 2011).

1.1.4 Leader-member exchange

The relationship concerning followers can be perceived as something which is meant to motivate followers – which is, as pointed out in the case of transformational leadership, due to the necessity to work with more flexibility and agility (Kotter, 2012, 49; Hamel & Breen,

2008, 15pp). For talent retention the quality of relationships with employees was also assumed to shape a rewarding workplace where followers show more commitment (Rockstuhl et al., 2012, 1101). Leader-member exchange is a "[t]heory of leadership in which effective leadership rests on the ability of the leader to develop good quality personalised exchange relationships with individual members" (Hogg & Vaughan, 2008, 320). Accordingly, leader-member exchange (LMX) was assumed to have become more important for performance and social influence on followers. High quality LMX relationships motivate followers to internalize the group's and the leader's goals, whereas low quality LMX relationships only make followers comply with goals. Not all followers can be treated equally well – some are selected as 'in-group' (Hogg & Vaughan 2008, 320p).

Previous meta-analyses studies also suggest that high quality interaction with followers makes a difference for effective and satisfied followers (Gerstner & Day, 1997, 833; Dulebohn et al., 2012, 1732, 1735) – see the following table.

Table 5: Correlations of LMX and leadership effectiveness criteria

Objective performance .34[b]	Perceived effectiveness .30[a]	Organizational commitment .47[b]
Trust .73[b]	Org. citizenship behaviour .39[b]	Job satisfaction .49[b]

a (Gerstner & Day, 1997, 833), b (Dulebohn et al., 2012, 1732, 1735)

Four dimensions can be used for the analysis of the relationship between leaders and followers (Liden and Maslyn, 1998, 56). These are 1) liking, 2) professional respect, 3) contribution and 4) loyalty. The next table illustrates sample items for each subscale.

Table 6: Components of leader-member exchange and sample items

1) Liking	"I like my supervisor very much as a person."
2) Professional respect	"I admire my supervisor's professional skills."
3) Contribution	"I do not mind working my hardest for my supervisor."
4) Loyalty	"My supervisor would defend me to others in the organization if I made an honest mistake."

1.1.5 Substitutes for leadership

Business contexts have become more complex (Eppler & Mengis, 2004, 330p). Leaders might not be able to oversee all job issues themselves. Gary Hamel recommended that employees should receive more autonomy in decision taking (Hamel & Breen, 2008, 15pp). This in turn, would lead to democratization of decisions and decentralization. For example, employees get the training and are empowered to perform controls themselves instead of employing quality inspectors (Hamel, 2013). Such influences concern context factors other than leaders. Steven

Kerr and John M. Jeremier proposed a framework on substitutes for leadership (1978, 378). In a world of rising demands on followers, a) their own competence, b) the task structure and c) organizational structures could serve as important determinants for goal attainment. This is why substitutes for leadership were chosen as a promising predictor of performance and social influence on followers.

Substitutes for leadership generally comprise "situational variables that can substitute for, neutralize, or enhance the effects of a leader's behavior" (Podsakoff et al., 1996, 380). Situations may be structured in such a way as to enable employees to perform "which render relationship and/or task-oriented leadership not only impossible but also *unnecessary*" (Kerr & Jermier, 1978, 395). That means these situational characteristics are supposed to moderate the relationship between leadership styles and effectiveness criteria. There are 14 characteristics for the above mentioned three subfacets as is shown in the next table.

Table 7: Substitutes for leadership - 14 characteristics in 3 subfacets[11]

Subordinate characteristics

1. Competence and experience	2. Need for independence
3. Professional orientation	4. Indifference toward organizational rewards

Task characteristics

5. Routine work/ low ambiguity	6. Low variation in work methods
7. Self-feedback for goal accomplishment	8. Intrinsic satisfaction

Organizational characteristics

9. Formalization (explicit plans, goals, responsibilities)	10. Inflexibility in rules/ processes
11. Effective intra organizational support	12. High group cohesiveness
13. Rewards outside leader's control	14. Spatial distance to superior

In the meta-analysis of Podsakoff and co-authors (1996, 384-389) only certain subscales correlated considerably (i.e. above .30) with effectiveness criteria, these being 1. task feedback with a) job satisfaction (.42) and with b) organizational commitment (.32), in addition, 2. intrinsically satisfying tasks with c) job satisfaction (.56) and d) organizational commitment (.49), and also 3. group cohesiveness with e) job satisfaction (.33).

To conclude, five characteristics were deducted, one for intellectual competence, three for social competence and one that concerns the determinants of a job that are not directly connected to a leader.

[11] Adapted from Kerr & Jermier (1978, 378). These characteristics are usually not aggregated into one score.

1.2 Leadership effectiveness criteria

The above mentioned leadership characteristics make sense if they have an impact on companies. Frequently applied criteria were selected for the analysis. Objective performance criteria and social criteria could be distinguished. These are 1) objective performance 2) perceived effectiveness 3) affective commitment 4) leader trust, and general subjective organizational criteria like 5) organizational citizenship behaviour and 6) job satisfaction (Dulebohn et al., 2013, 444; Rockstuhl et al., 2012, 1101). Reliability is reported in the case of ratings (subjective criteria) and it indicates how clear the rating scale measures a criterion[12]. Sample items provide further insight into the criteria.

1) Objective performance concerns measures (not ratings) e.g. consolidated unit performance or the percentage of the attainment of individual or the group's annual goals (Howell & Avolio, 1993, 894p).[13] This measure is the closest to real performance[14]. Often time lags occur between leader actions and performance results – long-term performance is preferable. Moreover, some studies differentiated between different criteria for objective performance, i.e. effectiveness criteria (profit growth, sales growth, and market share growth) and efficiency criteria (ROI, ROS, ROA) (Menguc et al., 2007, Agle et al., 2006). As efficiency criteria are influenced by many external factors, the effectiveness criteria were explicitly selected if available in articles.

2) Perceived effectiveness reflects subjective performance ratings by superiors about their subordinates or team members about their leader (e.g. Wayne & Ferris, 1990, 491). Even though they are related to performance, the largest part of their variance is related to one dimension, this being the liking of the person in question (Kaiser et al., 2008, 98).

3) Affective organizational commitment is a rating of the intensity of a connection to one's organization, e.g. "I really feel as if this organization's problems are my own" (α=.85) (Meyer & Allen, 1983, 118). Unfortunately not every study differentiates between commitment scales – the full scale from Meyer and Allen includes affective, continuance and normative commitment which constitutes altogether organizational commitment. Studies with only a general correlation to Meyer and Allen's scale were integrated as affective commitment.

4) Trust in the leader draws on the openness between leaders and followers, e.g. "My employer is open and upfront with me." (α=.84) (Robinson & Rousseau, 1994, 251).

[12] In fact, the retest-reliability measures how consistently persons answer questions on (at least two) test dates.
[13] Individual and group measures will not be split due to the limited number of articles.
[14] There is often confusion about "*how leaders are perceived* with *how their teams perform*" – so the emphasis on objective or multiple measures is important (Kaiser et al., 2008, 97-101).

5) Organizational citizenship behaviour of employees is about extra effort and actions not required by an employment contract (Carpenter et al., 2014, 551). Nevertheless, these contribute towards an effective performance of teams and the organization in general, e.g. "Is always ready to lend a helping hand to those around him/her." (Podsakoff et al., 1990, 121). This criterion is especially important, as John Kotter pointed out in his concept that 'voluntary' teams were necessary for agile projects because these teams enable rapid changes in an organization in order to increase its competitiveness (Kotter, 2012, 49).

6) Job satisfaction is a concept which defines the relationship that a person has with her or his job. Job satisfaction in connection with performance has been discussed controversially (Saari & Judge, 2001, 398). However, in their meta-analysis Saari and Judge (2001, 398p) found a correlation of .30, after application of corrections for sampling and measurement error. They argue that the relation to absenteeism and job turnover lies around -.25. Hence, the impact on retention of competent employees made it a criterion of choice[15] also because it tended to be regularly applied in leadership studies. A sample measure is the job diagnostics survey, e.g. "I am generally satisfied with the kind of work I do in this job" (Hackman & Oldham, 1980, 283).

1.3 Specification of the hypotheses

This section highlights the two periods for the analysis and the hypotheses.

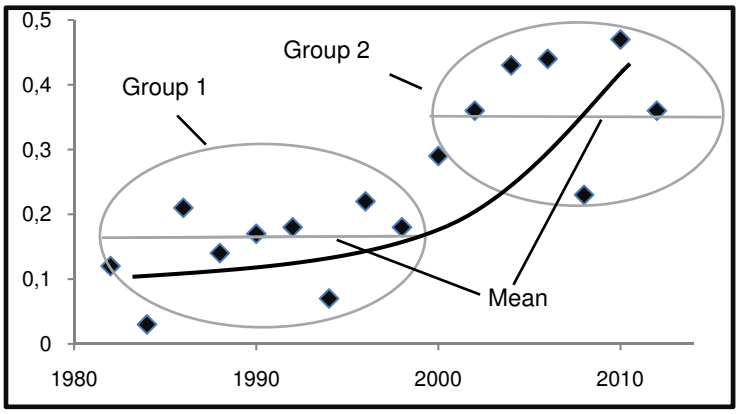
Three data sources have already been presented in order to illustrate change. In Figure 2 (page 3) three sample developments could be observed. In terms of interconnectedness, the late 1990s could be stated as the starting point. For hard disk drives the first five to seven years after 2000 could be seen as the initial point. Patent registration surged in the 1990s and increased in the late 1990s even more. There does not seem to be a clear point in which an overall change happened.

Moreover, there are lagging effects from being connected through the internet and its application in everyday businesses; the same applies for data masses that are made possible by increasingly larger hard disk drives; also registered patents need years for development and market launch. What is more, articles that investigated the relationship between leadership characteristics and organizational outcomes have a publication lag. One to three years can pass from data collection to final publication in a journal, and therefore analysis, peer-review and approval from journal committees all need time.

[15] Job turnover was not included as such a discrete issue was assumed to be often not answered truthfully.

In fact, change has been an ongoing phenomenon – in 1979 John Kotter had already published an article about change management strategies (cf. Kotter & Schlesinger, 1979). The issue these days is that change occurs at a more rapid pace – many authors pointed this out with reference to the period of the late 20th and early 21st century (Hamel & Breen, 2008, 15pp; Kotter, 2012, 46; Rosa, 2005, 83pp; Ulferts et al., 2013, 162; Green, 2001, 53; Strack et al., 2012, 20; Hasebrook & Maurer, 2011, 71). The following figure illustrates a potentially considerable increase in correlations.

Figure 3: An extreme case of group differences in validities



2001 was chosen as starting point for the second group of correlations. Therefore, samples before 2001 are relevant for group 1 and all samples from the beginning of 2001 are relevant for group 2. Many points make it a solid approach. Each period is about the same length (15 years). Change was stated as ongoing. So, if change has really been going on noticeably and changing the relationships of the variables, then such periods were comparatively assumed to differ sufficiently. Therefore, a cutting point at 2001 appeared plausible for the purpose of showing changes. More and more articles were published after 1980, so these two periods were expected to provide enough samples for the analysis.

Hypotheses were stated for each of the leadership predictors.

Hypothesis 1: The correlation between intelligence and a) objective performance, and b) perceived effectiveness increased.

Hypothesis 2: The correlation between transformational leadership and a) objective performance, b) perceived effectiveness, c) affective commitment, d) leader trust, e) organizational citizenship behaviour and f) job satisfaction increased.

Hypothesis 3: The correlation between emotional intelligence and a) objective performance, b) perceived effectiveness, c) affective commitment, d) leader trust, e) organizational citizenship behaviour and f) job satisfaction increased.

Hypothesis 4: The correlation between leader-member exchange and a) objective performance, b) perceived effectiveness, c) affective commitment, d) leader trust, e) organizational citizenship behaviour and f) job satisfaction increased.

Hypothesis 5: The correlation between substitutes for leadership[16] and a) objective performance, b) perceived effectiveness, c) affective commitment, d) leader trust, e) organizational citizenship behaviour and f) job satisfaction increased.

On the whole, this thesis pursued three goals. It aimed to

1) contribute towards the debate on the impact of changes on leadership practices;

2) add to its application on leader selection and development; and

3) illuminate the impact of changed relevance on leader characteristics as a job resource.

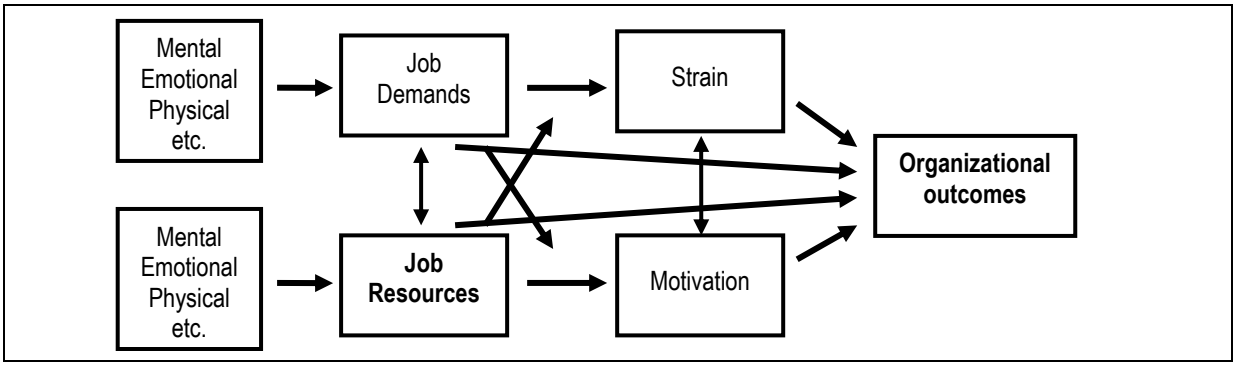
1.4 Integration within the job demands-resources model

If leadership characteristics change in terms of their importance, their effect as job resources might also change. As mentioned earlier, "leadership is a resource for team performance" (Kaiser et al., 2008, 96p) and affects the quality of a job (e.g. satisfaction) for employees (Hogan, 2009, 3). The job demands-resources model was chosen for implementing practical results from this analysis in broader research contexts.

In the job demands-resources model, factors that exist in jobs can be classified as either demands or as resources. These are generally physical, psychological, social, or organizational aspects. Job demands include work pressure, unfavourable physical conditions and emotionally demanding interactions. Job resources comprise job aspects that are functional, reduce job demands and stimulate personal development. Furthermore, demands and resources influence individual job aspects, job strain and motivation, which in turn impact organizational outcomes. Strain is associated with psychological and physical costs and impaired goal accomplishment while motivation is linked to work commitment and high performance. Job strain increases when employees have fewer resources available than they would usually need to fulfil a certain or a rising amount of job demands (Bakker & Demerouti, 2007, 310-313). Motivation increases when supportive colleagues are available or adequate performance feedback is provided. This, in turn, may foster effort, satisfaction and job performance.

[16] Substitutes for leadership appeared as a predictor that literally substitutes the other four leader characteristics. However, there are more leadership styles. It was assumed that all predictors could increase in relevance while other leadership styles not included here decreased in terms of relevance. This means that there does not need to be a contradiction.

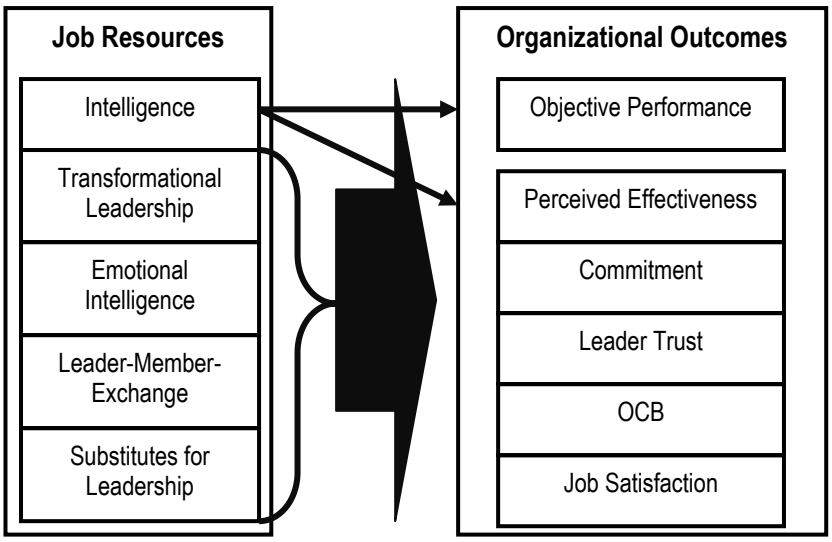
Figure 4: The Job Demands-Resources Model [17]



Bakker and Demerouti pointed out that often only negative outcomes have been regarded, e.g. burnout and ill health (Bakker & Demerouti, 2007, 310). This study therefore attempts to contribute to the resource side of the job demands-resources model.

As pointed out above, leadership characteristics are associated with organizational outcomes (effectiveness criteria). Unfortunately, underlying processes between leadership styles and subsequent job outcomes are largely unclear. These are correlations, not causal relationships. Many authors have highlighted the value of investigating underlying processes (causality among variables, influence moderators, etc.), and their impact on performance (Dulebohn et al., 2012, 1743; Dirks & Ferrin, 2002, 624; Podsakoff et al., 1996, 397). For this reason, the impacts on motivational processes and moderating effects of the social outcomes on objective performance could not be included. The following figure illustrates the factors that were chosen for analysis in comparison with the illustration above.

Figure 5: Relationships between job resources and outcomes in this thesis [18]



[17] Modified from Bakker and Demerouti (2007, 313).
[18] As stated above, intelligence was associated with objective and perceived performance.

2. Methodology

Both, the retrieval and selection as well as the subsequent meta-analysis of the retrieved data are elaborated in detail in this chapter.

2.1 Literature criteria, data selection and quality checks

A meta-analysis is a quantitative review. It averages correlations between one leadership style and one criterion from several relevant studies. The following selection criteria were chosen in order to avoid impacts from moderators which would otherwise have diluted the results.

Selection criteria for samples:

1. Western cultures: Only studies from *Western countries* were selected (these being the US, Canada, United Kingdom, New Zealand, Australia, Germany, Lithuania, Denmark, Sweden, Norway, Netherlands, France, Greece, Portugal, Italy, Spain and Mexico) – in fact, exactly 70% were from samples in the US. That means samples from South America, the Middle East, Africa or Asia were sorted out to avoid dilution due to cultural differences, even though numerous articles were available for these settings.

2. Published samples: Studies that were not available in university databases, Google scholar or unpublished ones were not included. Unpublished samples might not have gone through peer-review processes. Consequently, samples with details about participants were chosen.

3. Business settings: *Military, government* and *student* settings were *excluded*. These alternative settings might not have been exposed similarly to competition and to the accelerated pace of change compared with business settings. This means that government and military settings were usually not exposed to fierce competition for financial resources and customers; the same applies for public education. Student samples appeared less empirically supportive; an artificial leader-follower relationship in one university course was perceived as different from a long-term relationship between a leader and followers in a company. Besides, leadership emergence was not chosen as issue in this meta-analysis. What is more, the meta-analysis on leadership effectiveness and on personality from Judge, Bono, Ilies and Gerhardt (2002, 773) showed substantial differences in results between business, military and student settings. For example, agreeableness scored -.04 (negatively) on business and military, while scoring .18 on student samples. Another example is openness, which scored .23 on business, .06 on military and .28 on student settings. As a result, the impact of change was assumed to be different in businesses compared to military, government and education settings. So, the latter three were not included in the analysis. Exceptions were, for example, full-time workers who were recruited by students for a study, and MBA-students who actually worked full-time and took part on a weekend based MBA.

Data search and selection procedures

The procedures for data search and retrieval strategies and selection are described below.

1. Intelligence

For Intelligence the meta-analysis of Judge, Colbert and Ilies (2004) served as the source for period 1 samples from 1926 to 2002. 95 samples were cited in their meta-analysis. Of these, 27 were unpublished samples and, thus, basically not available. The remaining 68 samples included 65 studies between 1926 and 2000 (some studies contained more than one sample), plus one article from 2001 and two from 2002. Of 68, 38 were available in the databases from the University of Vienna, Vienna University of Economics and Business and in Google-Scholar. Unfortunately, only one (!) article before 2001 could be identified with a relevant setting and sample (the vast amount concerned military and student samples[19]) – that single article was by Connelly and co-authors (2000). For this reason, an analysis would not provide any meaningful results. That is why the analysis for intelligence and leadership effectiveness criteria was aborted.

2. Transformational leadership

The database PsycInfo assisted in the search for abstracts on transformational leadership samples. Studies for transformational leadership facets (charisma, inspirational motivation, intellectual stimulation and individual consideration) were integrated into the overall transformational leadership scale – even though in some cases only one facet was provided (e.g. charisma, cf. Sosik, 2005). Some subscales tended to relate in a stronger way to criteria (charisma), but too few samples were available to compare their effects. 830 articles were found, with 448 potentially relevant ones being identified and retrieved, and all in all 152 samples were available for business settings; 29 were selected for the first period and 123 for the second one. The sample size was 68,242.

3. Emotional intelligence

The meta-analyses of Joseph and Newman (2010) and O'Boyle and co-authors (2011) provided an overview of available samples for each of the three models. From this it became evident that emotional intelligence had to be excluded due to a lack of data. Studies were only conducted for objective and perceived effectiveness data analyses in previous meta-analyses. Even for these two criteria (that are normally the most abundant source for meta-analyses) only a hand full of samples were available. This indicated that other criteria were scarcely

[19] Besides, studies with 'ratings of intelligence' were excluded due to the impact of social desirability. Such a measure would also not be comparable with generally applied tests.

investigated in studies and were, hence, not further analysed. Altogether, for the ability-based model were nine articles available[20] and seven articles were available for the self-/peer rating model. With regard to the mixed-model, for both criteria only 27 samples were available, even without the selection for relevance (this usually resulted in half the number of samples which would further be divided into objective and subjective performance) (O'Boyle, 2011, 796). Hence, a sufficient number of samples was not available. As a consequence, an informative analysis about emotional intelligence could not be provided and was, thus, not further pursued.

4. Leader-member exchange

The meta-analysis of Rockstuhl, Dulebohn, Ang and Shore (2012, 1115-1130) provided 242 potentially relevant samples (excluding samples with other effectiveness criteria like, for example, distributional justice and non-Western cultures). Four keywords for the retrieval of peer-reviewed articles from 2011-2014 (April) were used: "Leader-member exchange" OR LMX AND "Leader*" with the specification 'abstract or author supplied abstract'. Moreover, "correlation*" was searched with the specification 'all text' – contemporary and high quality studies will usually include statistical specifications[21]. This term has been used in articles that sought to make a contribution towards comparable research. For older and relevant articles this might be an exclusion criterion, but studies before 2000 were found via lists in meta-analyses. For contemporary studies in quality journals, such statistical specifications were assumed to be included. So, from 2011 to 2014 the PsycInfo database ('all journals' and 'abstracts' fields marked) was searched. 119 articles were found and 36 could be added to the previously retrieved articles; these covered 16 relevant articles from 187 articles found with the same keywords under EBSCO. Finally, this resulted in 173 relevant samples (articles often comprise more than one relevant sample); 68 for period 1 and 105 for period 2 – with a total sample size of 44,671.

5. Substitutes for leadership

The meta-analysis of Podsakoff, MacKenzie and Bommer (1996) provided a comprehensive list of samples about substitutes for leadership. Of 21 samples, 12 had to be excluded, because these comprised irrelevant samples (non-business, etc.). Thereafter the PsycInfo and EBSCO databases were both separately searched (keywords: "substitut* for leadership" AND leadership OR leader* OR manage* OR executive*; including the search options 'abstracts'

[20] Also Joseph and Newman (2010) analysed the ability-based model. They did not report more samples.
[21] Please note: Only samples with correlations were implemented in the analysis. This applied for all predictors.

and 'all articles for PsycInfo'; 'abstract or author supplied abstract' in EBSCO). PsycInfo provided 51 articles, with EBSCO providing 36 articles. All 51 articles were retrieved. Finally, nine articles were relevant from 1979-1997 and three were relevant from 2002-2013. These included a sample size of N = 900. Of the 14 sub-facets, not all were available in these articles. If more than one was available for a criterion from one period, then there was never more than one from the second period available. Furthermore, to implement the subscales to an overall result seemed counterproductive due to the evident lack of unanimity among the subscales. Data sources were not numerous enough to provide an informative answer with a meta-analysis. Therefore, the analysis was stopped for this predictor.

At the end of the data retrieval and selection procedures it became clear that analyses were only possible for transformational leadership and leader-member exchange (N = 112,913).

2.2 Meta-analysis, statistical corrections and quality criteria

A meta-analysis according to Hunter and Schmidt (2004) was methodologically applied in order to aggregate results from relevant studies. Their approach has been applied for numerous meta-analyses on leadership effectiveness – as standard approach – (cf. Judge et al., 2004a; O'Boyle et al., 2012; Rockstuhl et al., 2012), and was therefore chosen for this analysis.

Common measurement issues needed to be considered for an informative meta-analysis. These were the corrections for 1. sampling errors and 2. measurement errors in predictor and criteria scales. In addition, 3. the variability of the mean correlation and 4. the variability in the individual correlations needed to be taken into account.[22] The so-called correction for range restriction generally increases validity of predictor criteria relationships in case of a difference between population and analysed samples. Only in the case of intelligence would range restriction have had to be considered because intelligence is a measure standardized for a general population whereas leaders are only a special (normally high performing) part of the population.[23] However, as too few samples were available, range restriction was not applied. The first four explanations draw on Hunter and Schmidt's publication (2004, 76, 204-207). Finally, the z-test represents a mean for comparing meta-analytical results (Quinones et al., 1995, 895p).

[22] Please note: Range restriction corrections were not implemented, because there was no assumption that extreme correlations on the bottom or top would be missing. Moreover, the strict selection for samples with business settings appeared to provide somewhat realistic data if available from many studies.

[23] A sample of leaders has a smaller range of intelligence scores than the population. Thus, the correlation will always be underestimated if no intelligence test is suitably standardized for leaders (cf. Judge et al. 2004, 548).

1. Sampling error concerns the difference between a correlation from a sample and its population. The larger a sample is, the smaller the sampling error will be. Thus, samples need to be weighted according to their proportion to the whole sample (Hunter & Schmidt, 2004, 81pp).

$$\bar{r} = \sum_{i=1}^{k} n_i r_i \Big/ \sum_{i=1}^{k} n_i$$

Thus, each correlation is multiplied by its sample size. The sum of these values is divided by the whole sample size of the predictor on the criterion.

$$\sigma_r^2 = \sum_{i=1}^{k} n_i (r_i - \bar{r})^2 \Big/ \sum_{i=1}^{k} n_i$$

The same applies for the variance of the average correlation; the corrected variance is needed for the confidence and credibility interval, see below. This results in the frequency weighted average variance.

$$\sigma_e^2 = \frac{(1 - \bar{r}^2)^2}{\bar{N} - 1}$$

The frequency weighted average squared error is obtained by substracting the squared sampe size weighted average from 1, then squaring the result and dividing it by the average sample size minus 1.

$$\hat{\sigma}_\rho^2 = \sigma_r^2 - \sigma_e^2$$

$$\sqrt{\hat{\sigma}_\rho^2} = SD_{\hat{\rho}}$$

Subtracting the frequency weighted average squared error, enables the variance in its population to be derived. Its square root is the corrected standard deviation which is necessary for the confidence and credibility intervals.

2. Measurement error concerns the accuracy of collected values for predictors or criteria. Here the alpha value, α, was applied – it specifies how well all items on average score on the whole scale. If not available the retest reliabilty was applied.

$$\hat{\rho} = \frac{\bar{r}}{\bar{A}}$$

The sampling error corrected mean is corrected by the attenuation factor.

$$\bar{A} = ave(a) \times ave(b)$$

$$a = \sqrt{r_{xx}}\,;\; b = \sqrt{r_{yy}}$$

It consists of the average of the square rooted reliabilities of the predictor, multiplied by the average of the square rooted reliabilities of the criterion (Hunter & Schmidt, 2004, 97).

3. A **confidence interval** (CI) estimates the variability in relation to the estimated mean correlation. It is a quality criterion. An interval crossing zero shows high uncertainty in the practical value of a predictor-criterion relationship.

$$CI = \hat{\rho} \pm 1{,}96 \times \frac{SD_{\hat{\rho}}}{\sqrt{k}}$$

The standard error[24] is needed for the interval. It is the corrected standard deviation, divided by the square root of the number of

[24] Please bear in mind the implicit statement from the CI formula for the standard error: $SE_{\bar{\rho}} = \frac{SD_{\hat{\rho}}}{\sqrt{k}}$.

studies in the corresponding average correlation (Hunter & Schmidt, 2004, 98).

4. A **credibility interval (CV)** allows one to check if 90% of the individual correlations lie above zero (the other 10% lie above the upward limit of the interval). A high number of outliers might call for a moderator analysis or data quality checks. It is conventionally set to 80% (Hunter & Schmidt, 2004, 205).[25]

$$CV = \hat{\rho} \pm 1{,}28 \times SD_{\hat{\rho}}$$

The interval for the variability of individual correlations is estimated with the z-value for 80% and the corrected standard deviation.

5. Analysis of changed relevance of leadership predictors

Z-tests determine if two meta-analytical correlations differ considerably (Quinones et al., 1995, 895p) – correlations until 2000 (period 1), and those beginning at 2001 (period 2).

$$Z = \frac{(M_{\hat{\rho}1} - M_{\hat{\rho}2})}{\sqrt{SE_{M_{\hat{\rho}1}}{}^2 - SE_{M_{\hat{\rho}2}}{}^2}}$$

The differences between the correlations are divided by the square root of the differences of their standard errors. Z-scores greater than 1.96 or smaller than -1.96 indicate statistically relevant differences at $p < .05$ level. So the z-test takes the correlations, standard errors and the amount of included samples from each period into account.

From a mathematical point of view the larger standard error is deducted from the smaller so that the value under the square root is never negative. It is their difference which counts here as the quotient.

3. Results

The first part of this chapter provides the results for the hypothesized relationships. The second part presents a comparison of the results per predictor with results from other studies.

3.1 Overall results

As mentioned in the method section about data collection, sufficient data were only available for leader-member exchange and transformational leadership. Thus, for intelligence, emotional intelligence and substitutes for leadership, no meaningful results could be reported.

[25] The formulae applied here were pretested on the available tables from Dulebohn and colleagues (2012, 1135) and from Judge and research team (2002, 772) to recalculate their results – and reproduced the intervals successfully.

3.1.1 Transformational leadership

As is shown in the following table, the overall correlations were clearly above zero. Leader trust ($\hat{\rho}$=.64), affective commitment ($\hat{\rho}$=.52) and job satisfaction ($\hat{\rho}$=.51) displayed the strongest overall correlations with transformational leadership, followed by perceived effectiveness ($\hat{\rho}$=.46), OCB (organizational citizenship behaviour) ($\hat{\rho}$=.43) and objective performance ($\hat{\rho}$=.28).

Table 8: Relationship of transformational leadership and criteria over time

							CI (95%)		CV (80%)	
		k	N	$\bar{r}$	$\hat{\rho}$	SD_ρ	Lower	Upper	Lower	Upper
1987- 2000	Objective performance	13	4,229	.23	**.25***	.15	.17	.33	.06	.44
2001-2014	Objective performance	28	6,940	.27	**.30***	.20	.23	.37	.05	.56
Overall	Objective performance	41	11,169	.26	**.28**	.18	.23	.34	.06	.51
1987- 2000	Perceived Effectiveness	16	4,317	.51	.58	.17	.49	.66	.36	.80
2001-2014	Perceived Effectiveness	66	39,901	.38	.43	.28	.36	.50	.08	.78
Overall	Perceived Effectiveness	82	44,218	.40	**.46**	.22	.41	.51	.18	.74
1987- 2000	Affective Commitment	**5**	2,426	.46	.53	.02	.51	.54	.50	.55
2001-2014	Affective Commitment	26	8,165	.45	.52	.13	.47	.57	.35	.68
Overall	Affective Commitment	31	10,591	.45	**.52**	.11	.48	.56	.37	.66
1987- 2000	Leader Trust	**5**	2,710	.58	.64	.20	.47	.82	.39	.90
2001-2014	Leader Trust	14	3,488	.54	.64	.25	.51	.78	.32	.97
Overall	Leader Trust	19	6,198	.55	**.64**	.24	.53	.75	.34	.94
1987- 2000	OCB	**5**	2,764	.37	.44	**.30**	.18	.70	.06	.82
2001-2014	OCB	30	27,982	.37	.43	.17	.37	.49	.21	.64
Overall	OCB	35	30,746	.37	**.43**	.18	.37	.49	.20	.67
1987- 2000	Job Satisfaction	**7**	3,408	.47	.56	.18	.43	.69	.34	.79
2001-2014	Job Satisfaction	30	16,374	.42	.49	.16	.43	.55	.29	.70
Overall	Job Satisfaction	37	19,782	.43	**.51**	.17	.45	.56	.29	.72

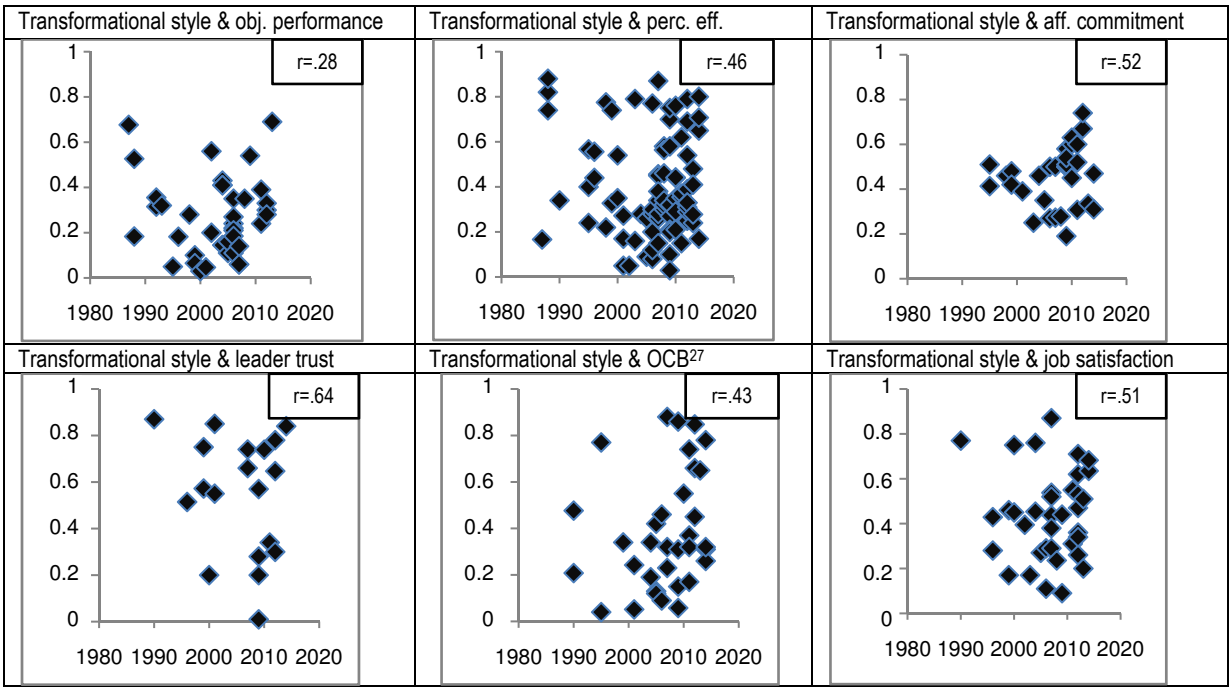
k = number of correlations; N = combined sample size; $\bar{r}$ = mean uncorrected correlation; $\hat{\rho}$ = estimated true score correlation; SD_ρ= corrected standard deviation; CI = confidence interval; CV = credibility interval.
* Significant changed relevance at .05 alpha level.

The variability in OCB (1987-2000) was considerably higher than in the rest of the samples (SD_ρ=.30). However, all criteria excluded zero in both intervals, indicating that their relationship was distinguishable from zero across situations. Noticeably, the first periods of affective commitment, leader trust, organizational citizenship behaviour and job satisfaction are based on only five to seven samples.

The following illustrations show the development of the importance of the relationship between transformational leadership and the effectiveness criteria. These graphs present the

input of individual studies for each predictor-criterion relationship[26]. The spread of correlations increased visibly in the first decade of the 21st century.

Figure 6: Correlations between transformational leadership and criteria



With regard to the hypothesis testing: objective performance included an increased performance from period 1 to period 2 – the corrected average correlation ($\hat{\rho}$) grew from .25 to .30.

For subjective criteria it plummeted considerably for perceived performance from .58 to .43 and for job satisfaction from .56 to .49. It fell slightly for affective commitment from .53 to .52 and for OCB from .44 to .43. For leader trust it remained at .64.

The z-test for objective performance, thus, included the two correlations .25 and .30 and their squared standard errors, .0376 and .0014.[28] The result, -3.27, was smaller than the critical value -1.96 ($p < .05$) and, therefore, significant [29]. For the other correlations no z-test was performed, because contrary directions of the relationship were not expected from the theoretical point of view of the above stated literature.

[26] Each dot stems from one of the included studies.
[27] OCB = Organizational Citizenship Behaviour
[28] From a mathematical point of view the larger standard error is deducted from the smaller so that the value under the square root is not negative. It is their difference which counts here for this part of the formula.
[29] Please note: A corrected standard deviation of .26 instead of .20 for period 2 would have resulted in a non-significant result.

Summary of Hypothesis 2

a) The relationship between objective performance and transformational leadership became stronger, from .25 to .30, at a significant level ($p < .05$).

b) The relationship with perceived effectiveness changed strongly in the opposite direction.

c) The relationship between affective commitment and transformational leadership decreased.

d) The relationship for leader trust and transformational leadership dropped also.

e) The relationship between OCB and transformational leadership decreased.

f) The relationship between job satisfaction and transformational leadership plummeted.

3.1.2 Leader-member exchange

As is shown in the following table, the overall correlations were clearly different from zero. Job satisfaction ($\hat{\rho}$=.54) displayed the most substantial relationship, followed by affective commitment ($\hat{\rho}$=.51). Both, OCB and perceived effectiveness were at ($\hat{\rho}$=.34).

All relationships excluded zero in both intervals and could be stated as different from zero throughout all situations.

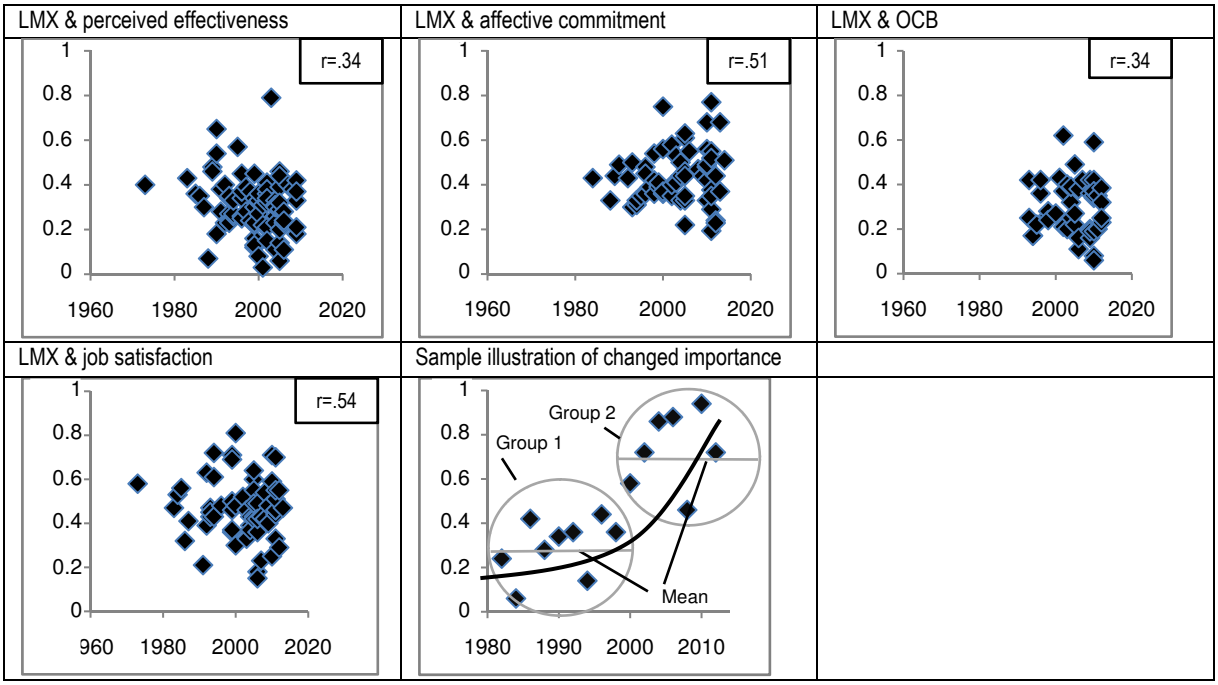
Table 9: Relationship of leader-member exchange and criteria over time

							CI (95%)		CV (80%)	
		k	N	$\bar{r}$	$\hat{\rho}$	SD_ρ	Lower	Upper	Lower	Upper
1973- 2000	Perceived Effectiveness	36	7,780	.32	.36	.09	.33	.39	.25	.47
2001-2013	Perceived Effectiveness	40	9,466	.29	.33	.11	.29	.36	.19	.46
Overall	Perceived Effectiveness	76	17,246	.30	**.34**	.10	.32	.37	.22	.47
1973- 2000	Affective Commitment	19	3,365	.42	.49	.06	.46	.52	.41	.57
2001-2013	Affective Commitment	39	12,458	.45	.52	.11	.48	.55	.37	.66
Overall	Affective Commitment	58	15,823	.44	**.51**	.10	.48	.53	.38	.63
1973- 2000	OCB	10	2,293	.29	.34	.05	.31	.37	.27	.40
2001-2013	OCB	34	7,923	.30	.35	.09	.32	.38	.23	.46
Overall	OCB	44	10,216	.30	**.34**	.08	.32	.37	.24	.45
1973- 2000	Job Satisfaction	21	3,582	.49	.58	.11	.54	.63	.44	.73
2001-2013	Job Satisfaction	37	9,388	.44	.51	.14	.47	.56	.34	.69
Overall	Job Satisfaction	58	12,970	.47	**.54**	.13	.51	.58	.37	.71

Note: k = number of correlations; N = combined sample size; $\bar{r}$ = mean uncorrected correlation; $\hat{\rho}$ = estimated true score correlation; SD_ρ= corrected standard deviation; CI = confidence interval; CV = credibility interval.
* Significant changed relevance at .05 alpha level.

The graphs below show the deviation from the sample of changed importance of the relationship between LMX and the criteria. These individual correlations show an increase in the variability and number of studies over time, but no clear direction.

Figure 7: Correlations between LMX and criteria, plus an ideal sample



With regard to the hypothesis, objective performance was dismissed due to a lack of available studies. For affective commitment and OCB a marginal growth, from .42 to .45, and from .34 to .35, could be perceived. A small drop in relevance could be observed in job satisfaction, from .58 to .51, and in perceived effectiveness, from .36 to .33.

Thus, z-tests were performed for the relationships of LMX with affective commitment, and LMX with OCB. For affective commitment the correlations were .42 and .45, and the standard errors were .0002 and .0003. The value of -2.50 was smaller than -1.96 ($p < .05$) and, thus, statistically supports the hypothesis for changed importance. The OCB correlations of .34 and .35 and their standard errors .00024 and .00023 resulted in -4.07 which was more negative than -1.96 and, therefore, also slightly significant from a statistics perspective.

Summary of Hypothesis 4

a) The relationship between LMX and objective results could not be investigated due to a lack of studies.

b) The relationship between LMX and perceived effectiveness changed in the opposite direction.

c) The relationship between LMX and affective commitment became significantly stronger.

d) The relationship between LMX and leader trust was not checked due to a lack of data.

e) The relationship between LMX and OCB became significantly stronger.

f) The relationship between LMX and job satisfaction changed in the opposite direction.

3.2 Comparison with predictors from other meta-analyses

In the case of the six criteria, further predictors have been meta-analysed in recent years. Those with at least a moderate relationship with the leadership criteria were reported relative to the above stated results[30].

3.2.1 Objective performance

The meta-analytical details from different studies are provided in the following table. Initiating structure (ρ̂=.30), transformational leadership (ρ̂=.28) and consideration (ρ̂=.28) exhibited the strongest correlation for objective performance in companies, followed by transactional leadership[31] (ρ̂=.24).

Table 10: Overall relationships of predictors and objective performance

						CI (95%)		CV (80%)	
	k	N	$\bar{r}$	ρ̂	SD_ρ	Lower	Upper	Lower	Upper
Initiating Structure (Judge et al., 2004b, 40)	27	2,079	.23	**.30**	-	-	-	-	-
Transformational Leadership*	41	11,169	.26	**.28**	.18	.23	.34	.06	.51
Consideration (Judge et al., 2004b, 40)	27	2,008	.23	**.28**	-	-	-	-	-
Transactional leadership on group effectiveness (Podsakoff et al., 2006, 128)	19	1,361	.21	**.24**	.24	.15[a]	.33[a]	-.07	.55
Transactional leadership on group effectiveness (Judge & Piccolo, 2004, 760)	16	3,227	-	**.16**	-	-	-	-	-

Note: k = number of correlations; N = combined sample size; $\bar{r}$ = mean uncorrected correlation; ρ̂ = estimated true score correlation; SD_ρ= corrected standard deviation; CI = confidence interval; CV = credibility interval.
a: 90% instead of 95% confidence interval.
*Results from this thesis – only samples with business settings and western cultures were selected for the analysis.

3.2.2 Perceived effectiveness

Leadership ratings were the most commonly applied way to assess effective leaders. Transactional leadership (ρ̂=.55) and consideration (ρ̂=.50) correlated substantially with perceived effectiveness. Transformational leadership followed next (ρ̂=.46). The correlation with initiating structure was at (ρ̂=.39), for LMX from this study the correlation was at (ρ̂=.34) and for Dulebohn and co-authors it was also at (ρ̂=.34). Thereafter LMX from Rockstuhl and co-authors (ρ̂=.30) displayed a moderately strong correlation with rated effectiveness of a team's leader. Further moderate relationships were exhibited by mixed emotional intelligence (ρ̂=.28), extraversion (ρ̂=.25), ability measures of emotional intelligence (ρ̂=.24), openness (ρ̂=.23) and intelligence (ρ̂=.21).

[30] In several analyses information about intervals or single statistical indicators were not available. These are marked by " - ".
[31] Indeed, 2 years before Podsakoff and co-authors, Judge and Piccolo (2004, 760) analysed transactional leadership / contingent reward for group effectiveness with a correlation of (ρ̂=.16).

The confidence and credibility intervals for intelligence, transformational and transactional leadership, LMX studies, both emotional intelligence measures, openness and extraversion were distinguishable from zero. For consideration and initiation structure the intervals were missing, however, the authors reported that they were above zero (Judge et al., 2004b, 40).

Table 11: Overall relationships of predictors and perceived effectiveness

						CI (95%)		CV (80%)	
	k	N	$\bar{r}$	$\hat{\rho}$	SD_ρ	Lower	Upper	Lower	Upper
Transactional Leadership (Judge & Piccolo, 2004, 760)	18	3,886	-	**.55**	-	-	-	-	-
Consideration (Judge et al., 2004b, 40)	20	1,605	.39	**.50**	-	-	-	-	-
Transformational Leadership*	82	44,218	.40	**.46**	.22	.41	.51	.18	.74
Initiating Structure (Judge et al., 2004b, 40)	20	1,960	.28	**.39**	-	-	-	-	-
LMX*	76	17,246	.30	**.34**	.10	.32	.37	.22	.47
LMX (Dulebohn et al., 2012, 1735)	108	25,322	.30	**.34**	.19	.30	.37	.11	.56
LMX (Rockstuhl et al. 2012, 1101)	99	23,024	.29	**.30**	.11	.27	.33	.16	.45
Emotional Intelligence[32] (O'Boyle et al., 2010, 797) Mixed Measures	27	3,961	.24	**.28**	.01	.19	.28	.19b	.38b
Extraversion[33] (Judge et al., 2002, 773)	13	-	-	**.25a**	-	-	-	-	-
Emotional Intelligence[34] (O'Boyle et al., 2010, 797) Ability Measures	9	700	.21	**.24**	.03	.10	.31	.01b	.41b
Openness (Judge et al., 2002, 773)	9	-	-	**.23a**	-	-	-	-	-
Intelligence[35] (Judge et al., 2004a, 545)	151	40,652	.17	**.21**	.17	.24	.30	.05	.48

Note: k = number of correlations; N = combined sample size; $\bar{r}$ = mean uncorrected correlation; $\hat{\rho}$ = estimated true score correlation; SD_ρ = corrected standard deviation; CI = confidence interval; CV = credibility interval.
a For these corrected correlations confidence and credibility intervals excluded zero (Judge et al., 2002, 773).
b: 90% instead of 80% credibility interval.
*Results from this thesis – only samples with business settings and western cultures were selected for the analysis.

3.2.3 Affective commitment

The commitment to a leader and or the organization has been examined by numerous meta-analyses. Transformational leadership (for business settings) from this analysis ($\hat{\rho}$=.52), LMX from three analyses – the analysis performed here ($\hat{\rho}$=.51), Rockstuhl and colleagues ($\hat{\rho}$=.48), and Dulebohn and co-authors for organizational commitment ($\hat{\rho}$=.47) stood out considerably. Further substantial relationships were displayed by transformational leadership ($\hat{\rho}$=.45), transactional leadership ($\hat{\rho}$=.43) from Podsakoff and co-authors, LMX related to affective

[32] For Mixed measures incorporate abilities and social competences, e.g. Bar-On (2002) and Wolff (2005).
[33] For Judge et al. (2002, 773) only the number of studies (k) were available for business settings.
[34] Ability measures are the traditional concept from Mayer and research team (2002).
[35] Judge and colleagues also included military, government and education, and non-Western country samples.

commitment (not the overall organizational commitment measures) ($\hat{\rho}$=.41) and transactional leadership from Jackson and author team ($\hat{\rho}$=.37)[36]. A moderately negative correlation displayed laissez-faire leadership ($\hat{\rho}$=-.30). Uncorrected (i.e. underestimated) correlations were relationships that existed in respect of destructive leadership ($\hat{\rho}$=-.21) and substitutes for leadership – task feedback lay at ($\hat{\rho}$=.32) and intrinsically satisfying tasks at ($\hat{\rho}$=.49).

Table 12: Overall relationships of predictors and affective commitment

						CI (95%)		CV (80%)	
	k	N	$\bar{r}$	$\hat{\rho}$	SD_ρ	Lower	Upper	Lower	Upper
Transformational Leadership*	31	10,591	.45	**.52**	.11	.48	.56	.37	.66
LMX*	58	15,823	.44	**.51**	.10	.48	.53	.38	.63
LMX (Rockstuhl et al. 2012)[37]	70	16,675	.42	**.48**	.10	.45	.51	.35	.61
LMX on Organizational commitment (Dulebohn et al., 2011, 1735)	58	22,520	.41	**.47**	.15	.43	.51	.30	.65
Transformational Leadership (Jackson et al., 2013, 91)	116	39,211	-	**.45**	.11	.24	.66	.24c	.66c
Transactional Leadership on organizational commitment (Podsakoff et al., 2006, 128)	29	10,431	.38	**.43**	.09	.41a	.46a	.31	.55
LMX on affective commitment (Dulebohn et al., 2011, 1735)	21	8,118	.36	**.41**	.17	.34	.48	.20	.62
Transactional Leadership (Jackson et al., 2013, 91)	51	19,015	-	**.37**	.13	.35	.38	.11c	.63c
Laissez-faire (Jackson et al., 2013, 91)	15	6,404	-	**-.30**	.13	-.37	-.23	-.55	-.04
Destructive Leadership on organizational commitment (Schyns et al., 2013, 147)	14	5,540	-.21	**-**	-	-.24	-.18	-	-
Substitutes for Leadership (Podsakoff et al. 1996, 386p)									
Task Feedback	17	4,473	.32	**-**	.12a	-	-	-	-
Intrinsically satisfying Task	20	5,162	.49	**-**	.13a	-	-	-	-

Note: k = number of correlations; N = combined sample size; $\bar{r}$ = mean uncorrected correlation;
$\hat{\rho}$ = estimated true score correlation; SD_ρ= corrected standard deviation; CI = confidence interval; CV = credibility interval.
a: Jackson and colleagues (2014) chose a more tight credibility interval of 95% instead of 80%, which is less sensitive to outliers.
b: Here the uncorrected standard deviations are presented.
*Results from this thesis – only samples with business settings and western cultures were selected for the analysis.

3.2.4 Leader trust

Leader trust related strongly to LMX measures from Dirks and Ferrin ($\hat{\rho}$=.77) and LMX from Rockstuhl and co-authors ($\hat{\rho}$=.72), for transactional leadership ($\hat{\rho}$=.67) and for transformational leadership ($\hat{\rho}$=.64). Intervals of all analyses were different from zero.

[36] The meta-analysis from Jackson and co-authors included more recent and 44% more articles, thus ($\hat{\rho}$=.37) may provide a more accurate value for transactional leadership than the value from Podsakoff and co-authors ($\hat{\rho}$=.43).
[37] These authors included all settings such as military, government and education.

Table 13: Overall relationships of predictors and leader trust

						CI (95%)		CV (80%)	
	k	N	$\bar{r}$	$\hat{\rho}$	SD_ρ	Lower	Upper	Lower	Upper
LMX (Dirks & Ferrin, 2002, 618)	8	1,183	.69	**.77**	-	.66	.71	-	-
LMX (Rockstuhl et al., 2012, 1103)	15	4,084	.55	**.72**	.27	.58	.95	-	-
Transactional Leadership (Podsakoff et al., 2006, 128)	12	4,192	.59	**.67**	.12	.59	.75	.52	.82
Transformational Leadership*	19	6,198	.55	**.64**	.24	.53	.75	.34	.94

Note: k = number of correlations; N = combined sample size; $\bar{r}$ = mean uncorrected correlation;
$\hat{\rho}$ = estimated true score correlation; SD_ρ = corrected standard deviation; CI = confidence interval; CV = credibility interval.
*Results from this thesis – only samples with business settings and Western cultures were selected for the analysis.

3.2.5 Organizational citizenship behaviour

Organizational citizenship behaviour, i.e. voluntary effort going beyond contractually stipulated duties in a company, related substantially to transactional leadership ($\hat{\rho}$=.65), to transformational leadership ($\hat{\rho}$=.43) and moderately to LMX from Ilies[38] ($\hat{\rho}$=.37), to both LMX from Rockstuhl and co-authors ($\hat{\rho}$=.35) and LMX from this analysis ($\hat{\rho}$=.34).

No interval crossed zero. However, in the case of transactional leadership the standard deviation showed larger differences in the included correlations (SD_ρ=.32).

Table 14: Overall relationships of predictors and organizational citizenship behaviour

						CI (95%)		CV (80%)	
	k	N	$\bar{r}$	$\hat{\rho}$	SD_ρ	Lower	Upper	Lower	Upper
Transactional Leadership[39] (Podsakoff et al., 2006, 128)	22	8,131	.54	**.65**	**.32**	.52[a]	.78[a]	.24	.99
Transformational Leadership*	35	30,746	.37	**.43**	.18	.37	.49	.20	.67
LMX (Ilies et al., 2007, 272)[40]	50	9,234	.32	**.37**	.11	.33	.41	.22	.51
LMX (Rockstuhl et al. 2012, 1101)	62	11,950	.30	**.35**	.12	.31	.38	.20	.50
LMX*	44	10,216	.30	**.34**	.08	.32	.37	.24	.45

Note: k = number of correlations; N = combined sample size; $\bar{r}$ = mean uncorrected correlation;
$\hat{\rho}$ = estimated true score correlation; SD_ρ = corrected standard deviation; CI = confidence interval; CV = credibility interval.
a: A 90% instead of a 95% confidence interval was applied by the authors.
*Results from this thesis – only samples with business settings and Western cultures were selected for the analysis.

3.2.6 Job satisfaction

Finally, job satisfaction, an overall measure of personal work attitude, related considerably to transactional leadership from Judge and Piccolo ($\hat{\rho}$=.64). Then followed LMX from Rockstuhl and co-authors ($\hat{\rho}$=.55), LMX from this analysis ($\hat{\rho}$=.54), thereafter, contingent reward /

[38] As the study of Ilies and co-authors was from 2007 and the study of Rockstuhl and co-authors was from 2013, Rockstuhl provided a more up-to-date result – it included 12 more samples. However, both values were noticeably close together.
[39] In the analysis of Podsakoff and co-authors (2006, 128) the criterion was extra effort.
[40] 22 articles from their samples were unpublished. A broader confidence interval was used, this being 90% instead of 95%.

transactional leadership from Podsakoff and co-authors ($\hat{\rho}$=.52), transformational leadership ($\hat{\rho}$=.51), LMX from Dulebohn and co-authors ($\hat{\rho}$=.49) and consideration ($\hat{\rho}$=.46). Initiating structure ($\hat{\rho}$=.22) and non-contingent reward ($\hat{\rho}$=.17) showed moderate relationships. Destructive leadership and substitutes for leadership measures were only available without corrections. Destructive leadership displayed a moderately negative relationship ($\hat{\rho}$=-.34). The two substitutes, task feedback and intrinsically satisfying tasks, showed relatively strong relationships at ($\bar{r}$=.42) and ($\bar{r}$=.56) correspondingly – even without corrections.

All available intervals did not cross zero and standard deviations were not substantial – they varied from .10 to .16.

Table 15: Overall relationships of predictors and job satisfaction

						CI (95%)		CV (80%)	
	k	N	$\bar{r}$	$\hat{\rho}$	SD_ρ	Lower	Upper	Lower	Upper
Transactional Leadership (Judge & Piccolo, 2004, 760)	6	1,933	-	**.64**	-	-	-	-	-
LMX (Rockstuhl et al. 2012, 1101)	78	17,473	.46	**.55**	.15	.51	.58	.35	.74
LMX*	58	12,970	.47	**.54**	.13	.51	.58	.37	.71
Transactional Leadership (Podsakoff et al., 2006, 128)	43	11,461	.44	**.52**	.16	.47a	.57a	.31	.73
Transformational Leadership*	37	19,782	.43	**.51**	.17	.45	.56	.29	.72
LMX (Dulebohn et al., 2011, 1735)	88	22,520	.42	**.49**	.16	.45	.52	.29	.69
Consideration (Judge et al., 2004b, 40)	76	11,374	.40	**.46**	-	-	-	-	-
Initiating Structure (Judge et al., 2004b, 40)	72	10,317	.19	**.22**	-	-	-	-	-
Non-contingent Reward[41] (Podsakoff et al., 2006, 128)	10	4,089	.13	**.17**	.10	.12a	.22a	.04	.30
Destructive Leadership (Schyns et al., 2013, 147)	21	8,707	-.34	**-**	-	-.36	-.32	-	-
Substitutes for Leadership: (Podsakoff et al. 1996, 386p)									
Task Feedback	13	4,093	.42	**-**	.15	-	-	-	-
Intrinsically satisfying Task	16	5,726	.56	**-**	.13	-	-	-	-

Note: k = number of correlations; N = combined sample size; $\bar{r}$ = mean uncorrected correlation;
$\hat{\rho}$ = estimated true score correlation; SD_ρ= corrected standard deviation; CI = confidence interval; CV = credibility interval.
*Results from this thesis – only samples with business settings and western cultures were selected for the analysis.
a: A 90% instead of a 95% confidence interval was applied by the authors.

[41] Non-contingent behaviour is behaviour that is not tied to results and is potentially arbitrary.

4. Discussion

The objective of this thesis was to add to the debate on the impact of changes on leadership practices, to its application on leader selection and development and to the perspective of the merit of leadership as a job resource.

4.1 Impact of changes on leadership practices

In 1985 Bernhard Bass proposed that "[m]ore transformational leadership within organizations is needed in downturns of the economy and times of budget cutting" (Bass, 1985, 157). 30 years later John Kotter similarly proposed that "vision, opportunity, agility, inspired action, and celebration" had now become more important for competition (Kotter, 2012, 49). The results of this meta-analysis supported these views – transformational leadership has become more important for objective performance.

The overall findings underscore the importance for leaders to build relationships with employees and to motivate them. All correlations were well above zero – they ranged from .28 to .64 for transformational leadership and from .34 to .54 for LMX.

Transformational leadership correlates were usually stronger than leader-member exchange correlates in relation to effectiveness criteria. Perceived effectiveness was at .46 as compared to .34 for LMX, OCB was at .43 as compared to .34, and affective commitment was at .52, nearly equal to .51 for LMX. Job satisfaction was marginally larger for LMX at .54 as compared to .51 for transformational leadership. This shows transformational leadership as a slightly more effective leadership style – however, in that case the context might be highly important. Both concepts overlap in respect of the subscales individual consideration and charisma, but do not overlap in respect of intellectual stimulation and inspirational motivation (Dulebohn et al. 2011, 1738p).

The results also illustrated the problem of applying an overall effectiveness score to assess a leader's competence. In fact, for transformational leadership five of six criteria relationships decreased while one increased. For LMX, two relationships improved while two deteriorated (there was not enough data for leader trust and objective performance). In addition, the relative difference between the measures is high (between .28 and .64); so an average of all criteria would provide a diluted picture. If a leader scores .28 in job satisfaction, then this is well below the average. If a leader scores .64 in objective performance, then this is rather uniquely above the average. This means that differentiation between objective performance, perceived effectiveness, affective commitment, leader trust, OCB and job satisfaction is necessary when assessing a leader.

Another implication of this is that only three of 10 analysed relationships were at least in conformity with the hypotheses – other factors might have influenced the relationships. As pointed out, some correlations to criteria increased while others decreased. This indicates that these relationships might be embedded in a constellation of various influence factors.

Another conclusion could be that perceived effectiveness and job satisfaction have become less associated with these leadership styles. Perceived effectiveness is a subjective rating. Variability in this criterion has been explained by the degree of liking of the leader (Kaiser et al., 2008, 98), meaning that the impact of leaders might be perceived less optimistically by followers.

Other factors might have become better estimates for jobs satisfaction. Intrinsic satisfaction and task feedback represent two promising factors of substitutes for leadership (Podsakoff et al., 1996, 386p) – both were above .40 in a meta-analysis, even without error correction.

4.2 Implications for leader selection and development

The choice of selection and development criteria must be oriented towards the individual needs of a company. Transformational leadership and high quality relationships with followers (LMX) could contribute somewhat to a performance atmosphere (if it suits the corporate culture and expectation of employees). Relative to other leadership styles, these two were among the strongest correlates for the six effectiveness criteria.

Noticeably, transactional leadership showed remarkable relationships in connection with job satisfaction, extra effort (i.e. OCB) and perceived effectiveness. Moreover, transactional leadership has been identified as precondition for transformational influence (see augmentation hypothesis, Judge & Piccolo, 2004, 756, 765).

Perceived effectiveness (ratings) always scored higher than real performance. For transformational leadership, perceived effectiveness was at .46 compared to .28 for objective measures. This is consistent with previous studies (cf. Rockstuhl et al., 2012; Judge et al., 2002) and had already been pointed out (Kaiser et al. 2008, 98).

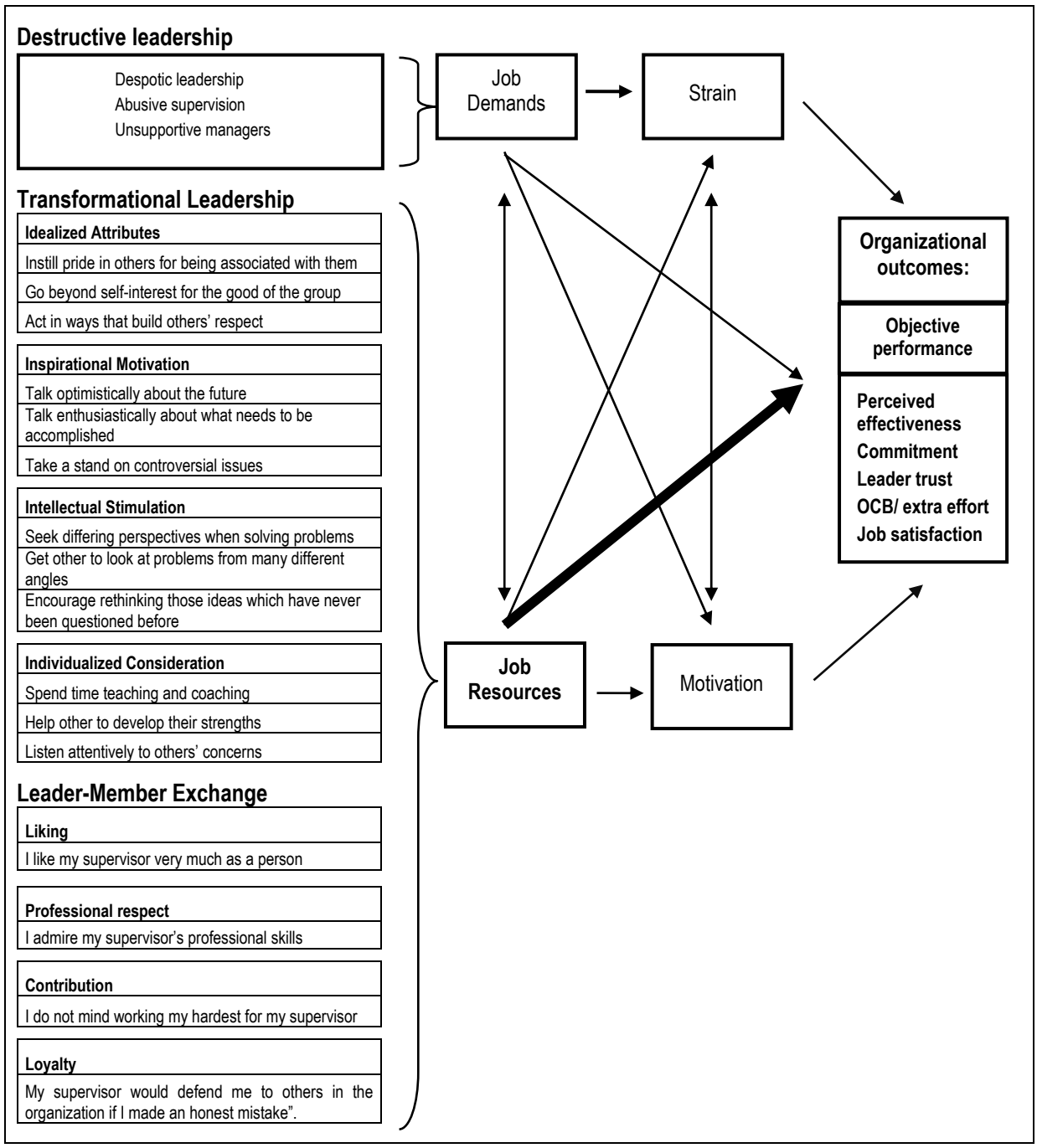
For objective performance, there were only a handful of leadership correlates available and these were not very considerable. Hence, there must be many more influences that probably affect objective performance.

Finally, application of criteria of leadership effectiveness in leader selection can help to avoid operational risks as pointed out above by the general 50% failure rate of leaders (Hogan et al., 2009, 3p). Competence in transformational interaction and LMX (i.e. high quality relationships) with followers was shown to impact leadership effectiveness criteria relatively strongly in comparison with other leadership traits and behaviours.

4.3 Leadership and its impact as a job resource

In previous meta-analyses and this meta-analysis it was shown that transformational leadership and leader-member exchange triggered positive reactions in the form of objective performance, perceived effectiveness of a group or a leader, affective and organizational commitment, leader trust, OCB (i.e. extra effort) and job satisfaction. It can therefore be assumed that both leadership styles serve as job resources – see illustration below. In the illustration the accentuated arrow marks the above analysed relationships.

Figure 8: Transformational leadership and LMX in the Job Demands-Resources Model[42]



[42] Adapted from Bakker and Demerouti (2007, 313). Items were retrieved from Bass & Avolio (1997, 3p) and Liden and Maslyn (1998, 56).

One could challenge the view of leadership as a resource. The so-called destructive leadership competences appear to be job demands that are likely to produce strain, as stated above about incompetent leaders (Hogan, 2009, 3). The issue of destructive leadership behaviours was meta-analysed by Schyns & Schilling (2013, 140). These could be proposed as potential job demands.

The interrelations between, for example, OCB and objective performance are not mentioned here, but would need further investigation. As already stated, it is rather a complex web of influence factors.

The results of many studies on transformational leadership and leader-member exchange – like this study – have come to the conclusion that their effects are considerably positively related to organizational outcomes. These leadership styles – among others – could become a means for exploring job demands-resources relationships in future research.

4.4 Strengths and limitations

Several strengths and drawbacks could be identified throughout the analysis process.

Settings selection: Business settings were explicitly chosen for this analysis. In contrast, governmental, educational and military contexts would obviously not be similarly subject to accelerated competition. The preceding meta-analysis from Judge and colleagues (2002, 773) showed sizeable differences in results between business, military and educational settings. Health care settings were assumed to be highly impacted by competition (cf. Lee, 2010). Furthermore, only Western culture samples were included. Thus, business specific results were sought by considering these potential moderator effects.

Data-coding: A strong criticism in relation to data coding has been that no 'levels of analysis' were differentiated (cf. Yammarino et al., 2005). This might have somewhat altered sample weighting. Further differentiation of levels would have somewhat diminished the data basis for each hypothesis. It is true that the results were often only based on a handful of studies that would even become further divided up if coded up for levels of analysis. Some articles only reported interviewed CEOs, others managers, others only followers and again others added all managers and their followers to one sample size. The last ones resulted, of course, in considerably larger numbers. This thesis reported the number of persons that provided ratings. In some cases only the number of managers was stated, as only these were interviewed. This might, of course, have more subjective effects – smaller samples have less impact after sampling error correction. However, overall results from the majority of employees were assumed to reflect a realistic and adequate picture for business settings.

Article retrieval: Not all articles in lists from meta-analyses (cf. Podsakoff et al., 1996; Rockstuhl et al., 2012) and databases could be retrieved. Nevertheless, articles from quality journals were generally available.

Country of samples: The majority of the samples (70%) were from the US. The results may, therefore, be most accurately applicable for US companies. However, due to cultural and economic similarities this aspect was concluded not to impact the generalisation towards a Western culture context.

Period selection: Periods for analysis were not only based on themes from literature, i.e. changes in the '21st century', but also were roughly of the same size with regard to the number of years. Though there were more publications after 2000, the choice of 2001 as starting point for period 2 finally resulted in enough samples for both periods.

Items produce an artificial relationship with trust: Both transformational and leader-member exchange styles seemed to overlap conceptually with leader trust. Strikingly, conceptual similarities can be found in items for transformational leadership; "Talk about the importance of trusting each other" (Bass & Avolio, 1997, 3). In LMX scales an item on loyalty also shows overlaps with trust concepts; "My supervisor would defend me to others in the organization if I made an honest mistake" (Liden and Maslyn, 1998, 56). If both variables partially measured an identical concept, then their relationship is artificially enlarged. This could be reflected in the considerably high relationships of .64 which was obtained for transformational leadership.

Method for meta-analysis: The status quo in the meta-analysis for leadership research of Hunter and Schmidt (2004) was applied (see previous meta-analyses, cf. Rockstuhl et al., 2012; Dulebohn et al., 2011; Ilies et al., 2007; Podsakoff et al., 2006; Dirks & Ferrin, 2002).

Significance-test: The applied z-test did not differentiate well between groups if their standard deviation was small. This was nearly consistently the case for all predictor-criteria relationships. Actually, small standard deviations are a sign of good quality of samples (fewer deviations). A meaningful significance was chosen if the real correlations also changed considerably. Otherwise one could ask the question what the merit of a change in a correlation of plus / minus .02 could provide.

Comparison to other Meta-analyses: It is worth noting that the underlying studies are generally 10 years old (for transactional leadership, initiating structure, consideration, big five traits and intelligence) and nearly 20 years old for substitutes for leadership. Due to their predictive value they might be less accurate indicators than more recent meta-analytic results.

4.5 Future research directions

Most importantly, the results concerned **correlations, not causal relationships**. Many authors pointed out that the value of investigating underlying processes (causality among variables, influence moderators, etc.), and a long-term perspective on these could provide valuable future improvements (Dulebohn et al., 2012, 1743; Dirks & Ferrin, 2002, 624; Podsakoff et al., 1996, 397).

Is the application of **different test instruments** for predictors or criteria **a moderator** for correlations? For example, is there a difference for correlations for charisma-specific scales and transformational leadership scales and certain criteria? Answers on these questions could provide information on underlying methodological moderators.

What **impact** do **substitutes for leadership** have on organizational outcomes? Intrinsic satisfaction and task feedback represent two promising factors of substitutes for leadership (Podsakoff et al., 1996, 386p). Both reached correlations above .40 even without error corrections. This could uncover relevant job resources. Task feedback can be quite valuable, as can be assumed from Hackman and Oldham's Job characteristics model. This model is fairly established as it has been cited by 1,571 articles from renowned journals (SSCI, 2014) and, thus, could provide a suitable means to explore this issue.

Several **meta-analytic results** were **partially more than 10 years old**. Updates for meta-analytic relationships of transactional leadership, initiating structure, consideration, big five traits, intelligence and substitutes with the presented criteria could provide further insights on the development in the field, their recent validity and into potential content for leader selection or leadership development trainings.

What **interrelations** have **outcome variables**? The OCB criterion (i.e. extra effort) could be associated with increased objective performance. Such relationships would clarify underlying processes and increase their applicability.

Outcome variables with other labels may exist. Conceptual overlapping between leadership effective criteria and available literature could provide further insights – for example, studies on job demands and resources used variables like engagement and well-being (e.g. Korunka et al., 2009, 251; Demerouti et al., 2000, 461). The degree of conceptual relationship and overlap of engagement and organizational citizenship behaviour, and of job satisfaction and well-being could provide more precise application.

4.6 Conclusions

Leadership and its impact on followers has been receiving much attention from both executives and researchers. Contemporary changes and the accelerated competitive environment were used as basis for the hypotheses about increased relevance of leadership characteristics. Finally, this thesis supports Bernhard Bass's (1985) and John Kotter's (2012) proposition about the relevance of transformational leadership in times of crises, change and pressure. In contrast, these leadership characteristics appeared to be less optimistically perceived in relation to effectiveness ratings and job satisfaction ratings.

General strengths of this study are the focus on business settings and the application of the status quo meta-analysis as the quantitative method in leadership research from John E. Hunter and Frank L. Schmidt (2004). Application of the levels of analysis approach could have shown a further differentiation between correlation samples. Finally, results were checked for significance and compared with absolute changes so as to be able to draw practical conclusions. There was not a sufficient number of samples in business settings for intelligence, emotional intelligence and substitutes for leadership. These predictors may deserve future investigation to determine their contemporary impact.

In practice, transformational leadership (k = 152) and leader-member exchange (k = 173) can be seen as meaningful correlates for objective and subjective performance, commitment, trust, organizational citizenship behaviour and job satisfaction (N = 112,913). Application of these leadership styles may depend on the organizational culture. Moreover, diagnosis of company specific leadership requirements remains a valuable factor for competition that can help to avoid expensive leader derailment.

In future a conceptual application or extension could be established through the Job Demands-Resources Model. The underlying relationships between leadership effectiveness criteria, motivational processes and outcomes might increase the applicability of leadership styles. Besides, leadership is usually seen as a job resource – provided that it is not destructive. Interrelations between performance and, for example, commitment, organizational citizenship behaviour and job satisfaction require further investigation.

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Appendix: Studies applied in the meta-analysis

Transformational Leadership

No.	Year	Article	N	TF	OCB	Rel.	AC	Rel.	LT	Rel.	JS	Rel.	PE	Rel.	OP	Rel.
1	1987	Waldman et al.	256										.17		.68	
2	1988	Deluga	117										.74			
3	1988	Hater & Bass	171										.82			
4	1988	Hater & Bass	141										.88			
5	1988	Hater & Bass	26	.90											.53	
6	1988	Hater & Bass	28	.90											.18	
7	1990	Ehrlich et al.	34	.78	.48	.66										
8	1990	Podsakoff et al.	988	.87	.21				.77	.73	.87	.90				
9	1990	Seltzer & Bass	138													
10	1990	Spangler & Braiotta	77	.95									.34	.81		
11	1992	Keller	462	.81											.32	
12	1992	Keller	440	.81											.36	
13	1993	Howell & Avolio	78	.78											.32	
14	1995	Bycio et al.	1,376	.90	.77		.41						.57			
15	1995	Comer et al.	30	.88									.40	0.98		
16	1995	Dubinsky et al.	174	.97	.04	.77	.51	.85	.28	.73			.24		.05	
17	1996	Mayo et al.	68	.81									.44	.89		
18	1996	Podsakoff et al.	1,200						.43		.51				.18	
19	1996	Russ et al.	538										.56			
20	1998	Geyer & Steyrer	376	.95											.28	.89
21	1998	Tracey & Hinkin	291	.87									.78	.90		
22	1998	Yammarino & Spangler	145	.94			.46	.86					.22	.91	-.15	.98
23	1999	Butler et al.	78	.85							.57					
24	1999	Howell & Hall-Merenda	426	.89											.10	
25	1999	MacNeeseSmith	*539*	.86			.48		.46				.33		.07	
26	1999	Pillai et al.	192	.96	.34	.94	.42		.17	.90	.75	.97				
27	1999	Sosik & Megarian	63	.94					.75	.88			.74	.83		
28	2000	Conger et al.	252	.82					.45		.20		.35			
29	2009	Flood et al.	79										.54	.84	.03	
1	2001	Goodwin et al.	309	.88	.24								.27			
2	2001	MacKenzie et al.	477	.86							.85	.88	.05	.86		
3	2001	Sosik	86	.89			.39				.55		.17			
4	2001	Sparks & Schenk	736		.05				.40						.05	
5	2002	Koene et al.	2,156	.85											.56	
6	2002	McCollKennedy & Anderson	121	.89											.20	
7	2002	Sosik et al.	64	.87									.05			
8	2003	Bono & Judge	680	.94			.25	.85					.16	.91		
9	2003	Bono & Judge	440						.17	.82						
10	2003	Hetland & Sandal	100	.79					.76				.79			

N = sample size; TF = transformational leadership (reliability of the test instrument); LMX = Leader-member exchange;
OCB = Organizational Citizenship Behaviour; AC = Affective Commitment; LT = Leader Trust;
JS = Job Satisfaction; PE = Perceived Effectiveness; OP = Objective Job Performance; Rel. = Reliability

No.	Year	Article	N	TF	OCB	Rel.	AC	Rel.	LT	Rel.	JS	Rel.	PE	Rel.	OP	Rel.
11	2004	Bettencourt	183	.93	.19	.92									.43	.65
12	2004	De Hoogh et al.	28	.82											.41	
13	2004	De Hoogh et al.	26	.81											.41	
14	2004	Scandura & Williams	365	.85					.45							
15	2004	Tosi et al	59	.91											.15	
16	2004	Waldman et al.	69	.88											.14	
17	2004	Whittington et al.	309	.97	.34	.95	.46	.83					.28	.92		
18	2005	Brown et al.	183	.78	.13	.71							.09	.87		
19	2005	Hofmann & Jones	448												.11	
20	2005	Howell et al.	101												.16	
21	2005	Richardson & Vandenberg	167	.98	.42	.89										
22	2005	Sosik	1,381	.90	.12								.26			
23	2005	Walumbwa et al.	242	.94					.27	.91						
24	2005	Walumbwa et al.	189	.94			.35	.91	.29	.91						
25	2006	Agle et al.	128												.24	
26	2006	Agle et al.	128												.22	
27	2006	Barbuto & Wheeler	388		.09				.11				.08			
28	2007	Casimir et al.	119								.66		.20			
29	2006	Ensley et al.	168	.79											.27	
30	2006	Ensley et al.	417	.75											.21	
31	2006	Jung & Sosik	218										.28			
32	2006	Keller	52	.82											.35	
33	2006	Martin & Bush	419										.77		.11	
34	2006	Piccolo & Colquitt	202	.96	.46	.94	.27	.86					.30	.93		
35	2006	Pundt et al.	154	.94			.50	.84								
36	2006	Waldman et al.	56	.88											.19	
37	2006	Xenikou & Simosi	300										.12			
38	2007	Aragon-Correa et al.	408	.85									.46	.89		
39	2007	Bartram & Casimir	150	.71							.74	.61	.34	.70		
40	2007	Boerner et al.	91	.78	.32	.62							.45	.79		
41	2007	Bono et al.	54	.93					.29	.85						
42	2007	Bruch & Walter	286	.87					.54	.75						
43	2007	Bruch & Walter	162	.87					.44	.75						
44	2007	Cicero & Pierro	95	.87	.23	.78										
45	2007	De Clerk	250		.88				.87				.87			
46	2007	Detert & Burris	223	.91									.38	.91		
47	2007	Detert & Burris	3,149	.91					.52	.69						
48	2007	Hult et al.	56												.06	
49	2007	Menguc	260												.14	
50	2007	Moss & Ritossa	326				.27						.15			
51	2007	Nemanich & Keller	344	.96									.26			
52	2007	Nemanich & Keller	447	.96					.38						.06	
53	2007	Rank et al.	186	.94			.50	.86					.28	.91		
54	2008	Boga & Ensari	82	.88									.58	.76		
55	2008	Castro et al.	249	.95			.28	.73	.24	.91						

N = sample size; TF = transformational leadership (reliability of the test instrument); LMX = Leader-member exchange;
OCB = Organizational Citizenship Behaviour; AC = Affective Commitment; LT = Leader Trust;
JS = Job Satisfaction; PE = Perceived Effectiveness; OP = Objective Job Performance; Rel. = Reliability

No.	Year	Article	N	TF	OCB	Rel.	AC	Rel.	LT	Rel.	JS	Rel.	PE	Rel.	OP	Rel.
56	2008	Garcia-Morales et al.	900	.85									.56			
57	2008	Kearney	49	.91									.46	.82		
58	2008	Ling et al.	121	.90									.30		.35	
59	2008	Schippers et al.	236	.85									.32			
60	2008	Walumbwa et al.	437	.91									.34	.86		
61	2009	Hughes & Avey	369	.96			.50	.94	.44	.91	.57	.81				
62	2009	Jung et al.	108	.77							.28	.82	.58	.89		
63	2009	Kearney & Gebert	62										.10	.86		
64	2009	Michaelis et al.	194	.91			.19	.88			.20	.78				
65	2009	O'Shea et al.	726	.98	.86	.85	.50	.88					.70	.79		
66	2009	Panagopoulos & Dimitriadis	128				.51						.27			
67	2009	Peterson et al.	105	.91											.54	
68	2009	Purvanova et al.	492	.92	.15	.93			.09							
69	2009	Rank et al.	161	.94									.32			
70	2009	Rowold et al.	100	.92			.58	.93								
71	2009	Rubin et al.	106	.96	.31	.89	.54	.80					.21	.88		
72	2009	Tekleab	214	.89									.75			
73	2009	Van Woerkom & De Reuver	138	.75									.20			
74	2009	Whittington et al.	209	.97	.06	.88					.01	.93	.03	.92		
75	2010	Belschak & Den Hartog	132	.88									.21			
76	2010	Charbonnier et al.	120	.93									.44	.87		
77	2010	Felfe & Heinitz	36	.97	-.24	.73	.60	.86					.35			
78	2010	Korek et al.	105	.96			.45	.88								
79	2010	Neufeld et al.	138	.79			.63	.76					.76	.82		
80	2010	Panagopoulos & Avlonitis	170										.44			
81	2010	Schwepker & Good	345	.96							.74	.87				
82	2010	Wang & Howell	263	.96	.55	.87							.29	.89		
83	2011	Balkundi et al.	56	0.92									.36	.87		
84	2011	Bernhard & O'Driscoll	224	.96	.17	.92	.60	.90	.55	.82						
85	2011	Franke & Felfe	201	.79			.31	.85								
86	2011	Menges et al.	18,094	.97	.37								.15			
87	2011	Sosik et al.	2,108	.90	.74	.82							.62	.83		
88	2011	Walumbwa & Hartnell	426	.94									.37	.84		
89	2011	Walumbwa et al.	146	.85	.32	.85					.34	.75			.24	.88
90	2011	Wieseke et al.	1,018	.90			.52	.72	.31	.84						
91	2011	Zhang & Peterson	79												.39	
92	2012	Brown & May	659						.26							
93	2012	Douglas	393	.85									.33	.83		
94	2012	Edwards & Gill	49		.66				.71				.69			
95	2012	Garcia-Morales et al.	168	.91									.39	.87		

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JS = Job Satisfaction; PE = Perceived Effectiveness; OP = Objective Job Performance; Rel. = Reliability

No.	Year	Article	N	TF	OCB	Rel.	AC	Rel.	LT	Rel.	JS	Rel.	PE	Rel.	OP	Rel.
96	2012	Gilstrap & Collins	206	.91					.36	.88	.78	.93				
97	2012	Groves & LaRocca	236	.84	.45	.89							.33	.88		
98	2012	Gundersen et al.	286	.96					.62	.70			.54	.82		
99	2012	Kelloway et al.	436	.91							.30	.74				
100	2012	Kovjanic et al.	410	.96			.67	.76	.53	.82						
101	2012	Kovjanic et al.	442	.95			.74	.80	.47	.85						
102	2012	Piccolo et al.	355	.91					.34	.84			.79	.88		
103	2012	Smith et al.	132	.75	.85	.98					.65	.75				
104	2012	Stoker et al.	38	.83									.25			
105	2012	Varella et al.	1,068										.29	.85		
106	2012	Wang & Howell	60	.97									.31	.89		
107	2012	Wilderom et al.	57	.72									.33	.72	.30	
108	2012	Wilderom et al.	46	.72											.33	
109	2012	Yu et al.	267												.28	
110	2013	Delbecq et al.	28	.85									.48	.69		
111	2013	Guay	215	.86									.41	.89		
112	2013	Mesu et al.	876	.84			.34	.71								
113	2013	Nielsen et al.	396	.87					.20							
114	2013	Nohe et al.	142	.84									.24	.86		
115	2013	Shannahan et al.	94	.94									.28	.87		
116	2013	Vlachos et al.	438						.51							
117	2013	Zacher & Jimmieson	61	.98	.65	.95									.69	
118	2014	Antonakis & House	3,582						.64				.65			
119	2014	Basford et al.	511	.92			.47	.85			.84	.82				
120	2014	Cavazotte et al.	109	.95	.31	.70										
121	2014	Dust et al.	306	.96	.26	.88							.17	.83		
122	2014	Quintana et al.	191		.78	.93			.68	.90			.71	.81		
123	2014	Van Dierendonck et al.	200		.32	.91	.31	.87	.29	.66			0.8	.92		

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JS = Job Satisfaction; PE = Perceived Effectiveness; OP = Objective Job Performance; Rel. = Reliability

Leader-member exchange

No.	Year	Article		N	TF	OCB	Rel.	AC	Rel.	LT	Rel.	JS	Rel.	PE	Rel.	OP	Rel.
1	1973	Graen et al.	*	202								.58	.80	.40	.79		
2	1973	Graen et al.	*	340								.47	.80	.43	.79		
3	1983	Green et al.		100	.84			.43	.86			.53	.78	*-.04*	.96		
4	1984	Seers & Graen	*	101	.89							.56	.85				
5	1985	Vecchio	*	45	.64							.32	.82				
6	1986	Scandura et al.		58	.86									.36	.88		
7	1986	Vecchio et al.	*	173	.82							.41	.68				
8	1987	Vecchio		303	.91									.35	.94		
9	1988	Blau		69	.87			.33	.89					.30	.74		
10	1989	Castleberry & Tanner		45	.88			.44	.86								
11	1989	Seers		154	.92									.48	.89		
12	1989	Zalesny & Kirsch	*	76										.46	.84		
13	1990	Nystrom	*	171	.79			.49	.90								
14	1990	Wayne & Ferris		96	.77									.65	.87		
15	1990	Wayne & Ferris		84	.81									.54	.91		
16	1991	Nathan et al.	*	292	.92							.21	**.84a**	.18	.89		
17	1991	Stepina et al.	*	81	.73							.39	.71	.28	.73		
18	1992	Dunegan et al.	*	152	.79									.38	.95		
19	1992	Schriesheim et al.	*	281	.81			.43	.91			.63	.86				
20	1992	Schriesheim et al.	*	115	.80							.43	.91	.40	.80		
21	1993	Duarte et al.		367	.82									.23	.89		
22	1993	Jones et al.	*	113	.90			.50	.85			.47	.67				
23	1993	Judge & Ferris	*	81	.83									.27	.67		
24	1993	Liden et al.		166	.80									.24	.93		
25	1993	Tansky	*	75	.85	.42	.86	.30	.85			.45	.88				
26	1993	Wayne & Green	*	73	.91	.25	.76										
27	1993	Wilhelm et al.		141	.92							.72	.89	.34	.87		
28	1994	Deluga & Perry	*	152	.91									.35	.89		
29	1994	Duarte et al.	*	261	.82									.23	.82		
30	1994	Kinicki & Vecchio		138	.89			.31	.91								
31	1994	Manogran et al.	*	282	.91	.17	.93	.33	.91			.61	.91				
32	1994	O'Driscoll & Beehr		136	.94							.43	.86				
33	1994	Phillips & Bedeian	*	1,994	.87									.26	.91		
34	1994	Scandura & Schriesheim	*	84	.86									.27	.93		
35	1994	Scott & Bruce	*	183	.90	.17	.89										
36	1995	Base & Green	*	225	.89	.22	.93	.35	.89	.70	.93						
37	1995	Keller & Dansereau	*	92	.69									.33	.92		
38	1995	Major & Kozlowski		248	.83			.48	.87			.48	.90				
39	1996	Anderson & Williams		465	.90	.36	.94										
40	1996	Bauer & Green	*	311	.94									.57	.91		

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JS = Job Satisfaction; PE = Perceived Effectiveness; OP = Objective Job Performance; Rel. = Reliability
* indicates that the values were retrieved from Rockstuhl and co-authors (2012, 1115-1130).

No.	Year	Article		N	TF	OCB	Rel.	AC	Rel.	LT	Rel.	JS	Rel.	PE	Rel.	OP	Rel.
41	1996	Green et al.		208	.89			.45	.91								
42	1996	Settoon et al.		102	.96	.42	.81	.36	.84					.34	.89		
43	1996	Vecchio & Norris	*	105	.80									.37	.93		
44	1996	Williams et al.		183	.95			.39	.81								
45	1997	Fernandes & Vecchio		332	.93									.26	.92		
46	1997	Wayne et al.	*	252	.90	.26	.86	.36	.87					.45	.92		
47	1988	Deluga		123	.88	.28	.93							.25	.94		
48	1998	DelVecchio	*	155	.85									.07	.81		
49	1998	Hutchison et al.		91	.92			.54	.93								
50	1998	Klein & Kim	*	59	.91									.28	.83		
51	1998	Maslyn & Fedor		513	.92	.24	.73	.42	.89								
52	1998	Schriesheim et al.	*	106	.82									.39	.84		
53	1999	Epitropaki & Martin		73	.92			.39	.76			.71	.90				
54	1999	Howell & Hall-Merenda		317	.80									.24	.89		
55	1999	Kacmar et al.		196	.92			.41	.87			.36	.87				
56	1999	Kraus		134	.89							.46	.88				
57	1999	Murphy & Ensher		54	.91							.37	.80	.37	.93		
58	1999	Pillai et al.		240	.89							.69	.87				
59	1999	Pillai et al.		160	.90							.50	.77				
60	1999	Tiemey et al.		159	.91									.30	.95		
61	1999	Wayne et al.	*	245	.91									.34	.87		
62	2000	Lee		250	.93			.56	.96			.81	.95				
63	2000	Liden et al.		337	.96			.36	.90			.30	.81	.12	.90		
64	2000	Masterson et al.	*	651	.89	.27	.78	.37	.74			.48		.16	.89		
65	2000	Pelled & Xin		90	.89					.49	.78			.13	.88		
66	2000	Pelled & Xin		195	.78					.42	.61			.22	.74		
67	2000	Schriesheim et al.		150	.86			.75	.85					.23	.77		
68	2000	Townsend et al.		150	.90	.43	.88							.45	.75		
1	2001	Gómez & Rosen		128	.90					.47	.93						
2	2001	Keller & Dansereau		138	.80									.27	.89		
3	2002	Dionne et al.												.33			
4	2002	Dunegan et al.	*	146	.79									.36	.95		
5	2002	Paglis & Green		127	.92	.21	.87							.08	.92		
6	2002	Polly		348	.92			.35	.82								
7	2002	Tierney et al.		100	.89	.62	.91	.58	.89			.52	.90				
8	2002	Van Breukelen et al.	*	152	.90			.40	.74								
9	2002	Van Dyne et al.		195	.90	.37	.88							.03	.89		
10	2002	Wayne et al.		211	.89	.20	.83	.41	.82					.31	.85		

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* indicates that the values were retrieved from Rockstuhl and co-authors (2012, 1115-1130).

No.	Year	Article		N	TF	OCB	Rel.	AC	Rel.	LT	Rel.	JS	Rel.	PE	Rel.	OP	Rel.
11	2003	Dunegan	*	193	.92			.53	.86			.46	.79				
12	2003	Goertzen		94	.94					.15	.76						
13	2003	Hochwarter		131				.53	.74			.33	.74				
14	2003	Hofmann et al.		127	.94	.40	.96										
15	2003	Kacmar et al.		188	.87									.22	.91		
16	2003	Kacmar et al.		153	.83									.32	.91		
17	2003	Uhl-Bien & Maslyn		232	.90	.32	.91	.33	.87					.36	.94		
18	2004	Bettencourt		183	.89	.25	.92	.44	.89					.41	.65		
19	2004	Brandes et al.		129	.93	.39	.92							.38	.93		
20	2004	Chan	*	147	.87			.50	.68								
21	2004	Harris		466	.93							.39	.71				
22	2004	Harris		418	.90							.43	.68				
23	2004	Jansen & Yperen	*	170	.93							.37	.88	.34	.85		
24	2004	Kraimer & Wayne		230	.93	.22	.84	.22	.89					.21	.86		
25	2005	Botero		123	.95	.49	.90					.43	.91				
26	2005	Connell		131	.90	.27	.88										
27	2005	Epitropaki & Martin		439	.91			.33	.84			.60	.75				
28	2005	Grosvenor		318	.91					.70	.67						
29	2005	Harris & Kacmar	*	255	.93									.15	.81		
30	2005	Harris et al.		402	.90							.42	.73				
31	2005	Harris et al.		183	.88							.55	.73				
32	2005	Heck et al.		312	.90			.61	.80			.64	.80				
33	2005	Morrow et al.		207	.94			.46	.74								
34	2005	Schyns et al.		252	.84			.63	.92								
35	2005	Schyns et al.		141	.89			.44	.77								
36	2005	Sias	*	400	.93			.35	.91			.49	.73				
37	2005	Varma et al.		162	.79									.79			
38	2005	Yeh	*	202	.88			.55	.89			.49	.89				
39	2006	Barbuto & Wheeler		388	.89	.11						.18		.11			
40	2006	Bauer et al.	*	67	.90									.33	.91		
41	2006	Elicker et al.		188	.88									.26	.71		
42	2006	Golden		294	.86							.36	.88				
43	2006	Harris & Kacmar		120	.89							.15	.88				
44	2006	Harris & Kacmar		402	.90							.42	.68				
45	2006	Liden et al.		834	.96									.23	.92		
46	2006	Piccolo & Colquitt		283	.93	.38	.94							.31	.93		
47	2006	Sparrowe et al.	*	177	.92	.16	.87										
48	2006	Tepper et al.		347	.74									.30	.87		
49	2006	Tepper et al.		207										.46	.88		
50	2007	Erdogan & Enders		248	.95							.43	.89	.14	.92		
51	2007	Harris et al.		136	.89							.23	.88				
52	2007	Kamdar & Van Dyne		230	.91	.42	.89							.39	.91		
53	2007	Ren		263	.89			.47	.83	.63	.79	.42	.89				
54	2008	Henderson et al.		278	.89									.29	.90		
55	2008	Hopper & Martin		74	.89							.54	.88				

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* indicates that the values were retrieved from Rockstuhl and co-authors (2012, 1115-1130).

No.	Year	Article		N	TF	OCB	Rel.	AC	Rel.	LT	Rel.	JS	Rel.	PE	Rel.	OP	Rel.
56	2008	Scandura & Pellegrini		228	.89					.29	.91						
57	2008	Sekiguchi et al.		125	.95	.42	.83							.44	.90		
58	2009	DeConinck		419	.95			.44	.87								
59	2009	Glibkowski		158	.86	.20	.72										
60	2009	Harris et al.		244	.94							.40	.89				
61	2009	Hoover		100	.90	.16	.75							.06	.91		
62	2009	Hrivnak	*	114	.88	.19	.92					.48	.92	.20	.95		
63	2009	Johnson et al.		245	.95	.36	.56							.32	.89		
64	2009	Karriker & Williams	*	217	.90	.34	.68	.48	.93								
65	2010	Brunetto et al.		1,064	.93			.42	.87								
66	2010	Carter		49		.08	.88										
67	2010	Collins & George		1,024	.89							.71	.93				
68	2010	Eisenberger et al.	*	251	.87	.19	.94	.33	.87					.23	.92		
69	2010	Eisenberger et al.	*	346	.84	.35	.91	.56	.83					.28	.81		
70	2010	Gaa		78	.85	.42	.90										
71	2010	Hansen		201	.89			.68	.91	.69	.81						
72	2010	Hansen		58	.83	.06	.84							.24	.85		
73	2010	Jenkins		160	.94	.37	.66										
74	2010	Kim et al.		233	.95	.59	.96										
75	2010	Markham		82	.91									.11	.92		
76	2010	Palacois		99	.93							.25	.88				
77	2010	Pellegrini & Scandura		215	.93			.48	.83			.59	.87				
78	2010	Rahn		210	.91			.49	.64								
79	2011	DeConinck		356	.93			.55	.87					.40	.76		
80	2011	Farr-Wharton et al.		1,480	.93			.38	.87								
81	2011	Farr-Wharton et al.		900	.93			.19	.84								
82	2011	Harris et al.		225	.90							.44	.80				
83	2011	Jordan & Troth		578	.84							.46	.81				
84	2011	Junker et al.		184	.92			.52	.83			.70	.76				
85	2011	Kraimer & Wayne		198	.94			.29	.86			.46	.84	.38	.82		
86	2011	Sears & Hacket		161	.93			.77	.93								
87	2011	Suazo		251	.89	.35	.88										
88	2011	Tekleab & Chiaburu		457	.90	.20	.81	.35	.69	.71	.84	.33	.90				
89	2011	Volmer et al.		279	.86							.51					
90	2011	Volmer et al.		279	.87							.55					
91	2011	Walumbwa et al.		429	.81	.39	.78	.24	.80					.33	.82		
92	2012	Brunetto et al.		1,283	.80			.44	.87								
93	2012	Douglas		393	.86									.42	.83		
94	2012	Fisk & Friesen		126	.92	.23	.83					.55	.91				
95	2012	Galletta et al.		1,343				.37	.83								
96	2012	Jackson & Johnson		229	.90	.32	.76							.18	.80		
97	2012	Kuvaas et al.		630	.78	.25	.94							.21	.95		
98	2012	Portogese et al.		395	.94			.23	.83								
99	2012	Sluss & Thompson		213	.72							.29	.90				
100	2012	Tse et al.		252	.94									.37	.94		

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* indicates that the values were retrieved from Rockstuhl and co-authors (2012, 1115-1130).

No.	Year	Article	N	TF	OCB	Rel.	AC	Rel.	LT	Rel.	JS	Rel.	PE	Rel.	OP	Rel.
101	2013	Graves & Luciano	283	.92			.37	.83			.47	.91				
102	2013	Hansen et al.	291	.89			.68	.91								
103	2013	Martinaityte & Sacramento	151	.89											.08	
104	2013	Neubert et al.	250	.95			.51	.89								
105	2014	Basford et al.	511	.92			.50	.85	.78	.82						

N = sample size; TF = transformational leadership; LMX = Leader-member exchange;
OCB = Organizational Citizenship Behaviour; AC = Affective Commitment; LT = Leader Trust;
JS = Job Satisfaction; PE = Perceived Effectiveness; OP = Objective Job Performance; Rel. = Reliability
* indicates that the values were retrieved from Rockstuhl and co-authors (2012, 1115-1130).

Abstract in German

Zusammenfassung

Diese Abschlussarbeit untersuchte die Relevanz von Führungsstilen im Kontext aktueller Veränderungen. Dafür wurden Meta-Analysen zu dem Zusammenhang zwischen Charakteristika von Führungskräften und Effektivitätskriterien für zwei Perioden durchgeführt und verglichen (N = 112.913). Über beide Perioden spiegelten der transformationale Führungsstil (k = 152) und Leader-Member Exchange (k = 173) eine starke Relevanz zu objektiver und subjektiver Leistung, Commitment, Vertrauen, Organizational Citizenship Behaviour und Arbeitszufriedenheit wider. Dabei erhöhte sich nur die Korrelation zwischen transformationalen Führungskompetenzen und objektiver Leistung – von 0,25 auf 0,30. Die Relevanz beider Führungsstile blieb bei Commitment, Vertrauen in die Führungskraft und Organizational Citizenship Behaviour etwa auf demselben Niveau. Entgegen der Hypothesen sank der Zusammenhang zu subjektiver Leistung und zu Arbeitszufriedenheit für beide Führungsstile. Zu den Merkmalen Intelligenz, Emotionaler Intelligenz und zu Substituten von Führung waren nicht ausreichend Daten verfügbar. Schließlich unterstützten die Ergebnisse die Aussage von Bernhard Bass (1985) und John Kotter (2012) zur Relevanz transformationaler Führungskompetenzen in Zeiten von Krisen, beschleunigtem Wandel und Leistungsdruck. Generell können der transformationale Führungsstil und das Leader-Member Exchange als wichtige Job-Ressourcen für die heutige Arbeitswelt angesehen werden.

Curriculum Vitae

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Kompetenzprofil

- Psychologisches Know-How: Durchführung diagnostischer Assessments / Potential-Analysen
  Abschlussarbeit zu Leadership-Kompetenzen in Zeiten beschleunigten Wettbewerbes
- Controllingkompetenz: 2 Jahre Erfahrung im Risiko-Controlling
  Publikation einer Abschlussarbeit über die Optimierung vom Management Reporting

Beruflicher Werdegang

03/2013 – 06/2014 **Erste Sparinvest KAG**, Werkstudent, Risiko Management:
- Konzeptuelle Ausarbeitungen zu Anforderungen seitens Wirtschaftsprüfern und der FMA (Finanzmarktaufsicht)
- Risiko-Controlling von Depot-Portfolios der Erste Group Bank
- Prozessdokumentation im Risiko Management
- Unterstützung bei Projekten des Operational Risk & Process Mgmt.

10/2013 – 03/2014 **Technische Universität Wien**, Projektmitarbeiter
Institut für Managementwissenschaften
Analyse der Organisationskultur eines Kunden
- Transkription von Interviews, Kodierung und Auswertung sämtlicher Daten
- Aufbereitung der Ergebnisse für die Abschlusspräsentation

09/2012 - 02/2013 **Erste Sparinvest KAG**, Vollzeitprojekt, Operational Risk & Process Mgmt.
- Modellierung sämtlicher Wertschöpfungsprozesse

Beratungs- und Projekttätigkeit im Risiko-Controlling:
- Erstellung und Validierung der Assessment-Unterlagen
- Operational Risk Assessment mit Führungskräften
- Risiko-Reporting: gesamte Auswertung in Excel automatisiert

10/2011 - 12/2012 **Universität Wien**, psychologische Leistungsdiagnostik
- Potentialanalysen ● Berufseignungsanalysen ● Assessment Center
- Reporting und Proposals zur Leistungsentwicklung

03/2010 - 07/2010 **Universität Wien**, Forschungspraktikum in der Leistungsdiagnostik
- Überprüfung von Testgütekriterien ● Stichprobe: 250 Schüler

09/2009 - 01/2010 **WU-Wien**, Crowdsourcing-Projekt in Kooperation mit Apple Inc. & Orange
- 2500 Teilnehmer rekrutiert ● Handy-App-Konzepte als Output

10/2008 - 01/2009	**WU-Wien**, Web 2.0 - Projekt in Kooperation mit der Außenwirtschaft Österreich (Wirtschaftskammer Österreich) ● Coaching durch Boston Consulting Group und Advisory House ● Leitung des Teams ● Präsentation im Festsaal der WU
07/2008 - 09/2008	**Toshiba Europe GmbH**, Praktikum in der Innovation Division ● Leadership-Development-Programm: Kommunikation an Führungskräfte ● Gestaltung und Kommunikation des hausinternen Vorschlags-Systems im Qualitätsmanagement ● Eigenständige Aneignung von Six-Sigma-/ Qualitäts-Management-Konzepten für die praktische Anwendung in Trainings von Mitarbeitern
03/2000 - 02/2004	**Saturn Neuss GmbH**, Teilzeittätigkeit, Software- & Computerabteilung ● Verkaufsgespräche & Kundenberatung ● Gestaltung des Sortiments ● selbstständige fachliche Weiterbildung ● Support bei Werbemaßnahmen

Ausbildung & Qualifikationen

seit 10/2006	**Psychologiestudium an der Universität Wien** ● Leistungsdiagnostik ● Wirtschaftspsychologie
vorauss. 11/2014	Diplom der Psychologie ● Abschlussarbeit: “Meta-Analysis of Leadership Effectiveness in Times of Accelerated Competition” am Institut für Arbeits- und Organisations-psychologie bei Professor C. Korunka
10/2004 - 09/2011	**Studium an der Wirtschaftsuniversität Wien (WU)** ● Unternehmensführung ● Entrepreneurship & Innovation
09/2011	Diplom der Internationalen Betriebswirtschaft ● Abschlussarbeit: „Information Overload im Management Reporting“ am Institut für Unternehmensführung bei Professor R. Eschenbach
07/2007 - 11/2007	**Auslandssemester an der Griffith Universität**, Australien ● Marketing Management & Strategy ● International Marketing ● Research Methods & Statistics (Psychology) ● Japanese Level 4
10/2004 - 09/2010	**Japanologiestudium an der Universität Wien**
09/2010	Bakkalaureat der Japanologie ● Abschlussarbeit: Moderation interkultureller Teams
08/2003 - 05/2004	**Deutsches Rotes Kreuz**, Zivildienst beim Rettungsdienst
06/2003	Abitur am Quirinus-Gymnasium in Neuss ● Latinum ● Graecum

Sprachen:	Englisch: verhandlungssicher Polnisch, Japanisch, Französisch: Grundkenntnisse
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Freizeittätigkeiten:	Lesen, Wandern, Mitwirkung i. d. Katholischen Hochschulgemeinde
Publikationen:	Szwarc, David (2012). Information Overload im Management Reporting: Gestaltungsansätze aus der kognitiven Psychologie. Saarbrücken: AV Akademiker-Verlag.

Eidesstattliche Erklärung

Ich versichere, dass ich die Diplomarbeit ohne fremde Hilfe und ohne Benutzung anderer als der angegebenen Quellen angefertigt habe, und dass die Arbeit in gleicher oder ähnlicher Form noch keiner anderen Prüfungsbehörde vorgelegen hat. Alle Ausführungen der Arbeit, die wörtlich oder sinngemäß übernommen wurden, sind als solche gekennzeichnet.

Wien, den 31.08.2014