Leadership in Startups

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Abstract

This article outlines a model of when, why, and how founder-CEOs’ leadership behavior influences startup performance. The model is tested using a sample of 102 startups and their founder-CEOs, and feedback from 372 employees, rating their founder-CEOs’ leadership behavior. The results indicate that transformational leadership has a significant positive effect on startup performance. For transactional leadership as well as laissez-faire leadership no significant direct effects on startup performance were found. Furthermore, the size of the startup has a significant positive moderating effect on the relationship between laissez-faire leadership and startup performance, as well as a significant positive moderating effect on the relationship between the transactional leadership dimension management by exception and startup performance.

Keywords: startup performance; founder-CEO; leadership; size; startup

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Debating points

Based on the present article, we propose the following three points for discussion:

1. Why has leadership in startups been explored only marginally so far?
2. The present study focusses on the founder-CEO. How do research design and theoretical background change in case of a new venture team?
3. How does the founder-CEO’s leadership behavior change during the transition of the startup to growth?
Introduction

While leadership research can look back upon a long tradition (Day & Antonakis, 2012), entrepreneurship research finds itself in a comparatively nascent research state. Accordingly, only a few theoretical and empirical studies address the interface of both domains. This surprises, as leadership is of high relevance for the success of startups. The foundation and development of startups is inevitably connected with leadership. As a result, leadership is increasingly becoming part of the sphere of action of founder-CEOs and represents an essential factor for successful venture development (Cogliser & Brigham, 2004).

Within nowadays leadership research, the Full-Range-Leadership model (FRL-model) by Bass (1985) is the most widely spread and accepted leadership model (Bono, Hooper, & Yoon, 2012; Westerlaken & Woods, 2013). The model focuses on the relationship between the leader and the follower (Antonakis & House, 2002). In doing so, it differentiates among transformational leadership, transactional leadership and laissez-faire leadership. Transformational leadership is depicted as the most effective and active leadership behavior, while transactional leadership exhibits medium effectiveness and activity, and laissez-faire leadership is described as least effective and most passive leadership behavior (Bass, 1995).

Many empirical studies reported a positive relationship between transformational leadership behavior and different performance indicators, independent of whether the analyzed firms were startups or established firms (e.g. Gooty, Gavin, Johnson, Frazier & Snow, 2009; Walumbwa, Avolio & Zhu, 2008; Gumusluoglu & Ilsev, 2007; Wang, Tsui & Xin, 2011). Particularly, the relationship between transformational leadership and performance indicators on the individual level such as job motivation, job satisfaction or organizational commitment has proven to be significant (Avolio, Zhu, Koh, & Bhatia, 2004; Koene, Vogelaar, & Soeters, 2002). On the team level, studies substantiated a significant relationship between transformational leadership and team performance (e.g. Jung & Sosik, 2002; Kearney & Gebert, 2009; Schaubroeck, Lam, & Cha, 2007). On the organizational level, the results are partly ambiguous and not clearly interpretable (Wang, Oh, Courtright, & Colbert, 2011). The different contexts in which the diverse studies have been undertaken, can be a possible explanation for these conflicting results. Leadership success is likely to be influenced significantly by context variables such as firm development or company structure (Shamir & Howell, 1999; Lowe & Gardner, 2000; Porter & McLaughlin, 2006; Hunter, Bedell-Avers & Mumford, 2007). Therefore, the context in which leadership takes place should be incorporated in research.

The present study aims to address this research gap and focuses on the leadership behavior of founder-CEOs in a startup context. In doing so, the authors sought to improve the understanding of leadership in startups and to deliver new results concerning the influence of leadership behavior on organizational performance. We hope to discover indications of how leadership behavior influences the foundation and development phase of startups and how this relationship alters with progressing firm size.
Theoretical background

In the literature, the consideration of the context has often been postulated, but mostly neglected (Boal & Hooijberg, 2000; Pawar & Eastman, 1997; Shamir & Howell, 1999). It is suggested that leadership success is primarily influenced by the context, which can be described as for instance the business environment, the company life cycle or the firm structure (Hunter, Bedell-Avers, & Mumford, 2007; Lowe & Gardner, 2000; Porter & McLaughlin, 2006; Shamir & Howell, 1999).

Startups operate in a unique context which is characterized by the liability of newness, the liability of smallness and the liability of uncertainty (Stinchcombe, 1965). The liability of newness is associated with a lack of experience, and a high degree of flexibility and dynamic. In line with the liability of newness, research points out the liability of aging, too. This liability concerns the growing resistance against organizational transformation processes and improvements with increasing company age. In young enterprises, this resistance is much less developed which simplifies leadership in this context compared to leadership in established firms (Aldrich & Auster, 1985).

The limited base of resources in terms of financial and human resources is a central characteristic of the liability of smallness (Romanelli, 1989; Ahmadi & Helms, 1997). This liability often results in startups having a flat organization with a small number of hierarchy levels. In most cases, only one management level exists, which is led by the founder-CEO.

The liability of uncertainty distinguishes between internal and external uncertainty (Howell, 1971). Internal uncertainty is based on short company tradition and missing experience (Atherton, 2003). It is associated with a low level of developed routines and processes. External uncertainty concerns specific environmental conditions such as a complex and dynamic market in which young companies are operating.

These liabilities and the related context factors are mentioned in the theoretical studies of Bass (1995) as well as Shamir and Howell (1999). According to Bass (1995), transformational leadership behavior is the most effective in a context of organizations operating in a dynamic environment, are characterized by a decentralized organizational structure with lateral communication, and have to deal with changing tasks. Shamir and Howell (1999) discussed similar environmental conditions that affect transformational leadership and its outcomes. The authors described a dynamic and uncertain environment as the optimal setting for transformational leadership, a setting which is particularly found in the early phases of the company life cycle.

Additional factors that support the effectiveness of transformational leadership are a monistic corporate governance, complex and challenging tasks, company succession, or a high hierarchical position (Shamir & Howell, 1999). Thus, transformational leadership behavior is promoted by a high degree of organizational change and a related high degree of uncertainty, as well as by an open, flexible and collective organizational structure with a high level of task complexity.

In contrast to the theoretical support, the context of startups has seldom been subject of empirical studies, as portrayed by our systematic literature review on the topic of leadership in startups. Follow-
ing a simplified version of the procedure outlined by Tranfield, Denyer, and Smart (2003), we scanned the databases ABI/INFORM, EBSCO, Emerald, SAGE, ScienceDirect and Wiley, to include the most important journals in the domains of leadership and entrepreneurship. The sample of articles was identified based on the following three selection criteria: (1) Leadership behavior is explicitly analyzed in the context of startups. (2) The article is published in a scholarly peer-reviewed journal. (3) The article is of empirical nature. Following these steps, the literature search resulted in a sample of nine studies which are presented chronologically in table 1.
### Table 1

**Authors, sample, variables and main results for leadership studies in startups**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Sample</th>
<th>Variables</th>
<th>Main results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baum, Locke &amp; Kirkpatrick (1998)</td>
<td>127 firms operating in the timber industry, which, on average, are 8.45 years old (SD=2.55), achieved an annual sales of 2.3 million and employ 225 workers (SD=14.09).</td>
<td>MV: Charismatic leadership (vision content, vision attributes, vision communication)</td>
<td>Charismatic leadership behavior is a significant positive predictor for firm performance.</td>
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<td></td>
<td></td>
<td>DV: Venture growth (sales growth, employment growth, profit growth)</td>
<td>Features and content of the vision are significant positive predictors for the communication of the vision.</td>
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<td></td>
<td></td>
<td>CV: Firms’ size, age, and past venture growth</td>
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<tr>
<td>Ardichvili (2001)</td>
<td>138 startups and 150 established firms from Russia, of which 70% are retail or service businesses.</td>
<td>IV: Laissez-faire leadership, Management by Exception, contingent reward, transformational leadership</td>
<td>Inspirational motivation and charismatic leadership are found to be significantly higher for founders being the leaders than for managers.</td>
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<td></td>
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<td>DV: Performance (satisfaction, extra effort, effectiveness)</td>
<td>- Laissez-fair leadership and contingent reward are found to be significantly higher for managers than for founders.</td>
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<td></td>
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<td>CV: Leaders’ age, and gender</td>
<td>- Transformational leadership is a significant positive predictor for employee satisfaction in case of both, founders and managers.</td>
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<td></td>
<td>- Contingent reward is a significant positive predictor for employee satisfaction in the case of founders.</td>
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<td></td>
<td>- Contingent reward is not a significant predictor for satisfaction of followers.</td>
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<td>Ensley, Hmieleski &amp; Pearce (2006)</td>
<td>66 firms from the „Inc. 500-list“ USA. All firms are currently in an early development phase. Sales is $7'152'000, which has been growing by 634% - 10'432 % within the preceding years. The firms operate in 38 different industries, are on average 5.7 years old and hire 53 employees.</td>
<td>IV: Vertical and shared leadership</td>
<td>Vertical, directive leadership and vertical, transactional leadership are significant positive predictors for venture growth.</td>
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<td></td>
<td></td>
<td>DV: Venture growth (average annual revenue growth and average annual growth rate in the number of workers employed)</td>
<td>Vertical, transformational leadership and vertical, empowering leadership are significant negative predictors for venture growth.</td>
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<td></td>
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<td>CV: Firms’ age, size, and top management team size</td>
<td>- Shared, directive leadership and shared, transactional leadership are significant positive predictors for venture growth.</td>
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<td></td>
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<td></td>
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<td>Ensley, Pearce &amp; Hmieleski (2006)</td>
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<td>IV: Transactional and transformational leadership</td>
<td>Transformational leadership behavior is a significant negative predictor for firm performance.</td>
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<td></td>
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<td>DV: New venture performance (revenue, and employee growth)</td>
<td>- Transactional leadership behavior is a significant negative predictor for firm performance.</td>
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<td>MV: Environmental dynamism</td>
<td>- Environmental dynamism moderates the relationship between transactional leadership and firm performance significantly negative.</td>
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<td></td>
<td></td>
<td>CV: Firms’ age, size, and top management team size</td>
<td>- Environmental dynamism moderates the relationship between transformational leadership and firm performance significantly positive.</td>
</tr>
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<td>Jensen &amp; Luthans (2006)</td>
<td>62 firms from Midwestern U.S. states which employ on average 3.6 workers.</td>
<td>IV: Authentic leadership (Leadership behaviors, future orientation, and ethical climate of the organization)</td>
<td>Authentic Leadership is a significant positive predictor for job satisfaction, work happiness and organizational commitment.</td>
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<td></td>
<td></td>
<td>DV: Employees’ job satisfaction, organizational commitment and work happiness</td>
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<td></td>
<td></td>
<td>CV: Leaders’ age, education, gender, ethnic orientation, prior experience, familial relationship between entrepreneur-leader and associate</td>
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<td>Gumusluoglu &amp; Ilsev (2007)</td>
<td>43 Turkish firms operating in the software development industry. On average, these firms were found 5.8</td>
<td>IV: Transformational leadership</td>
<td>Transformational leadership is a significant positive predictor for the creativity of followers.</td>
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<tr>
<td></td>
<td></td>
<td>DV: Organizational innovation</td>
<td>- Transformational leadership is a significant positive predictor for the organization.</td>
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</tbody>
</table>
years ago and employ 9.4 workers. MV: Intrinsic motivation, psychological empowerment, perception of support for innovation, and creativity
CV: Followers’ educational level and job tenure

Hmieleski & Ensley (2007) 66 firms from the „Inc. 500-list“ USA. All firms are currently in an early development phase. Sales is $7'152'000, which has been growing by 634%-10'432 % within the preceding years. The firms operate in 38 different industries, are on average 5.7 years old and hire 53 employees. IV: Directive leadership (instruction and command, assigns goals, active management by exception, and contingent reprimand) and empowering leadership (encourages opportunity thinking, encourages self-reward, encourages independent action, and participative goal setting) DV: New venture performance (revenue and employee growth) MV: Environmental dynamism (industry revenues, number of industry establishments, number of industry employees, and research and development intensity), and top management team heterogeneity (functional specialty, educational specialty, educational level, and skill level)
CV: Firms’ age, revenue, and top management team size

Peterson, Walumbwa, Byron & Myrowitz (2009) 49 startups and 56 established firms from Southwestern U.S. states. All startups are currently in the product development phase, achieve an annual sales of less than $1’000’000 and employ less than 100 workers. IV: Positive psychological traits (hope, optimism, and resiliency) DV: Firm performance (performance-to-plan, achieved targeted net income goals for the year) MV: Transformational leadership, firm performance time 2 and 3 CV: Firms’ size, age, and sales

Hmieleski, Cole & Baron (2012) 179 firms from the USA, which operate in 97 different industries, and, on average, are being found on average 2 years ago and employ 51 workers. IV: Shared authentic leadership, and positive team affective tone DV: Positive team affective tone, and firm performance (revenue growth, and employment growth)
CV: Firms’ age, size, prior growth, and environmental uncertainty, team size, team interdependence, team conflict, negative team affective tone

IV = independent variables, DV = dependent variables, MV = moderator variables, CV = control variables

Querschnittsanalyse mit Kontrollgruppenvergleich

IV = independent variables, DV = dependent variables, MV = moderator variables, CV = control variables
Due to differences in operationalization approaches, research designs and sample compositions, it is difficult to summarize and compare the results of prior research. As an example, leadership behavior has been conceptualized differently, and consequently various questionnaires have been applied. Jensen und Luthans (2006) researched authentic leadership, using the Multi-Leadership-Questionnaire (MLQ) Form 5X (Bass & Avolio, 1997), the future orientation by Knight (1997) and the Ethical Climate Questionnaire by Victor and Cullen (1988). Moreover, the individual research designs show variations and several leadership models have been implemented. The majority of the studies focused unilaterally on transformational leadership, not considering transactional and laissez-faire leadership. For instance, Gumusluoglu und Ilsev (2007) analyzed transformational leadership only, neglecting transactional and laissez-faire leadership. Similar, Ensley et al. (2006b) explored transformational leadership, neglecting passive-avoiding and transactional leadership. These differences have to be kept in mind when conclusions are drawn.

**Hypothesis development**

The few studies, which have examined leadership in startups, have produced an inconsistent amount of results on the organizational level. Nevertheless, analyzing prior research on transformational or charismatic leadership, a positive effect of transformational leadership on the organizational level was demonstrated (Baum, Locke, & Kirkpatrick, 1998; Ardichvili, 2001; Gumusluoglu & Ilsev, 2007; Peterson, Walumbwa, Byron, & Myrowitz, 2009). Only the study of Ensley et al. (2006a) finds a significantly negative effect of transformational leadership on sales- and employee growth. So in general, empirical support is given for the assumption that transformational leadership has a positive effect on startup firm performance in most of the studies.

According to theoretical support, the context of startups supports the effectiveness of transformational leadership (Bass, 1995; Shamir & Howell, 1999). Following the FRL-model, a founder-CEO must create a vision for the startup and influence others to follow their dreams in order to attract employees and acquire necessary resources for developing their new ventures (Baum et al., 1998). The vision presents an orientation guide for the employees which can be modified conjointly. Furthermore, startups operate in an open context, which can be characterized by rarely developed structures, occasional processes and a flexible, external-oriented culture (Cameron & Quinn, 2005). This leads to the first hypothesis concerning the relationship between transformational leadership and startup performance, which reads:

_Hypothesis 1: Founder-CEOs’ transformational leadership behavior will be positively related to startup performance._
In contrast to transformational leadership, which is sought to have a high positive effect on startup performance, transactional leadership and laissez-faire leadership are supposed to have a negative impact on startup performance. The passive or even totally absent leadership can have a number of negative consequences for corporate success of startups. A startup that lacks a CEO who creates and transmits a vision, inspires and coaches the employees, and intervenes in processes and business procedures when necessary operates aimlessly in the market. Due to its size and age, developed structures or processes cannot substitute leadership behavior in startups (Ensley et al., 2006; Kerr & Jermier, 1978). The development of structures and culture is time-intensive and requires the constant interaction of the founder-CEO with both the firm and its employees. The founder-CEO needs to show a forward-thinking and proactive leadership behavior. A “watch and wait” strategy is not expedient and can hamper the firms’ performance or even the firms’ survival. For small and young enterprises, one mistake which is disclosed and fixed (too) late, can threaten their survival. They need every resource they can get and joining forces can be of crucial importance for their performance. Therefore, we hypothesize:

Hypothesis 2: Founder-CEOs’ transactional and laissez-faire leadership behavior will be negatively related to startup performance.

In many leadership studies, company size has been incorporated as descriptive variable of the sample (e.g. Jung, Chow, & Wu, 2003; Tosi et al., 2004; Tuan, 2010). However, there are also indications that company size can have a moderating effect. In this vein, Bass and Bass (2008) suggest that company size itself does not make a difference. What makes a difference are the diverse aspects, which are related to company size, e.g. a low degree of specialization, resource limitation, and an uncertain business environment. Company size thus influences the organization of a firm, its processes and culture (Koene et al., 2002).

The explanation for this reasoning follows the pure substitution of leadership argument as put forward by Kerr and Jermier (1978), later refined by Howell et al. (1990) as well as Podsakoff, MacKenzie, and Fetter (1993). Formalization and standardization, which can be associated with the startups’ development, can have a substituting or neutralizing effect on the impact of transformational leadership behavior. By contrast, the development of structures and processes can have a supporting effect on leadership behaviors which are characterized by a medium or deeper activity of the leaders. According to Melcher (1976), smaller organizations represent a simpler and more integrated social system, with fewer people, fewer levels in the organizational hierarchy, and less subdivision of work. To offset some of the problems of the increasing size, larger organizations seem to organize differently, showing more specialization, more formalization, and less centralization (Osborn, Hunt, & Jauch, 1980). Thus, the amount of requisite organization (Jaques, 1989) seems to increase with organizational size. These considerations may have implications for the effectiveness of leadership styles in organizations of different size, as larger startups may make more use of formal structures, systems, and procedures, creating a different internal context for leadership, than smaller startups do.
The moderating effect of company size on firm performance is supported by several prior studies (e.g. Koene et al., 2002; Ling et al., 2008; Peterson et al., 2009). For instance, Peterson et al. (2009) showed a higher impact of transformational leadership on firm performance in small enterprises than in larger ones. Ling et al. (2008) confirmed partly the moderating role of company size as a statistically significant moderating effect of firm size could be reported for objective firm performance but not for perceived firm performance. Furthermore, Koene et al. (2002) substantiated that charismatic leadership and consideration have a substantial effect on climate and financial performance in small supermarket stores, whereas the effect was smaller or even completely disappeared for big supermarkets. This reasoning leads us to put forward the following two hypotheses:

**Hypothesis 3:** Startup size will negatively moderate the relationship between transformational leadership and startup performance.

**Hypothesis 4:** Startup size will positively moderate the relationship between transactional leadership as well as laissez-faire leadership and startup performance.

Figure 1 presents the hypotheses of this study. As can be seen, direct relationships between leadership behaviors and startup performance were included in this model. Thus, the following hypotheses is in accordance with prior theoretical and empirical research (Ardichvili, 2001; Baum et al., 1998; Peterson et al., 2009).

![Figure 1. The effect of leadership behavior on startup performance and the moderation effect of startup size](image)

In summary, we expect the main effects of transformational leadership to be positive (+H1), whereas transactional leadership and laissez-faire leadership will have a negative effect (-H2). For the moderation effect of startup size, we anticipate that transformational leadership will be less effective in big size startups than small size startups (-H3) and that transactional leadership as well as laissez-faire leadership will be more effective in big size startups than in small size startups (+H4). The direct effect of the leadership behavior on the startup performance as well as the moderating effect of the startup size on the relationship between leadership behavior and startup performance is depicted in Figure 1, and represents the model that is tested in the current study.
Method

Procedure

To address participating startups and to increase their willingness to be part of our study, a multistage approach was compiled. In a first step, startup centers were contacted. In collaboration with these centers, potential units of investigation, startups, were identified and contacted. In a second step, these startups were asked to participate in the study. In case of commitment, the startups’ relevant information such as the date of foundation, the number of employees and their industry was collected through browsing their homepages or by short telephone interviews. To guarantee the accuracy of the data, this information was collected again in the online survey. Additionally, the founder-CEOs received an E-mail containing instructions on the process of the study. This E-mail included an information letter, a leaflet with guidelines for the founder-CEOs, the link for the online survey and a pre-composed E-mail for the distribution of the survey to the employees. To warrant the anonymity of the employees and to enable the correct allocation to the respective leader, every leader was assigned an individual tracking-number. This tracking-number was passed on to the employees and allowed the exact identification of the followers and the leaders.

Sample

In total, 516 startups were approached to participate in the study and in the end, 124 firms were willing to take part in the project. Out of these 124 firms, 22 had to be eliminated due to the fact that they either had already passed the startup phase (6 firms), or they had not yet hired any employees (8 firms), or the questionnaires were not answered completely or flawless. This resulted in a total sample of 102 startups, implying a response rate of 24 percent. As the survey was passed on to the employees by the founder-CEO within the startup, 372 completed questionnaires could be incorporated in the data analysis.

The geographical area of analysis was restricted to Switzerland, Liechtenstein, Southern Germany and Western Austria. Within the revised sample of 102 startups, 56 firms (54.9%) have their headquarter in Switzerland, 18 firms (17.6%) in Liechtenstein, 18 firms (17.6%) in Southern Germany and 10 firms (9.8%) in Western Austria. At the time of the survey, on average, the age of the consulted startups was 8.03 years (SD = 2.57) and the number of employees was 32 (SD = 75.75). The questionnaire enabled the participating firms to indicate their industry on a wide scale. For analytical purposes and due to the small sample size of 102 firms, this industry classification was summarized in two main categories, (1) manufacturing firms and (2) service firms. Based on this categorization, 62.3% (n=64) firms were service firms while 38.7% (n=38) were manufacturing firms.

Concerning the employee sample, we found that per startup 3.65 employees (SD = 1.22) participated in the survey. On average, these employees were 42.71 years old (SD = 8.75) and 32.00% were female (n=119) while 68% (n=253) were male. The employees were hired on average for 4.42 years at the time of the survey (SD = 5.00) and cooperated with their leader for 3.53 years (SD = 3.98).
Variables

Two online surveys were compiled, one version for the founder-CEO and another version for the employees. The survey for the founder-CEOs covered questions on the performance of the startup, the firm in general and some personal questions. The survey for the employees captured information on the leadership behavior of the founder-CEO and personal data. In the following, the variables used for the underlying study are explained.

Independent variable: Leadership Behavior. To operationalize the leadership behavior of the founder-CEO as well as of the employees, we utilized the MLQ type 5X-Short. The MLQ is the most applied instrument to measure transformational leadership (Tejeda, 2001; Kirkbride, 2006) and encompasses 36 items, which have to be assessed by the participant on a likert-scale of 1 (never) to 5 (almost always). This MLQ type 5X-Short Leadership scale is composed of five components for measuring transformational leadership, contingent reward, management by exception, which can be divided into management by exception active and management by exception passive, and laissez-faire leadership. The MLQ type 5X-Short was used in a series of other studies in which its validity was verified. Avolio et al. (1999) and later Antonakis, Avolio and Sivasubramaniam (2003) reported good values for its convergent as well as the discriminant validity. In the context of young enterprises, parts of the questionnaire were used and indicate good, psychometric validity (Ardichvili, 2001; Ensley et al., 2006; Peterson et al., 2009).

Dependent variable: Startup Performance. The founder-CEOs had to evaluate the success of the startup. In this vein, within entrepreneurship research, sales growth is often used as performance indicator (Gilbert, McDougall, & Audretsch, 2006). Therefore, sales growth was included in the survey, supplemented by the sales growth in comparison with the pre-established goals and the sales growth in comparison with the industry leader. The comparison of sales growth with the pre-established goals has already been incorporated by Peterson, Walumbwa, Byron and Myrowitz (2009) and Ling et al. (2008). This question had to be assessed on a scale of 1 (much lower as expected) to 5 (much higher as expected). The comparison with the industry leader is also a widely applied method to operationalize performance (e.g. Murray & Kotabe, 1999; Choi, Poon & Davis, 2008; Garcia-Morales et al., 2012). The five-scale anchors ranged from 1 (much lower as industry leader) to 5 (much higher as industry leader).

Moderator variable: Startup Size. The company size was collected as moderator variable and was defined as the number of employees at the time of the survey.

Analytic approach

In this study, regression analysis was applied as the primary statistical procedure for answering hypothesis 1 and 2. For testing the interaction effects of hypothesis 3 and 4, moderated regression analysis was used. Furthermore, all interactions were graphed using a procedure proposed by Cohen, Cohen, West and Aiken (2003), and then the slopes of the graphs were tested using a procedure developed by Dawson (2014). The significance of each graphed interaction slope was tested. Further, Aiken
and West (1991) recommend a test for the simple slopes of the graphed interactions to identify whether they are significantly different from zero. As Aiken and West (1991) argue, it is not enough to simply assume that the interaction graph demonstrates that the change in performance is significantly different than zero without testing for the significance of the slope. These tests allow us to expand on both, the importance and the significance of the interaction.

Results

In a first step of the data analysis, the scales of the MLQ were tested for internal consistency. For the five scales of transformational leadership, we can report satisfying and good Cronbach Alpha values: individual consideration (α = .913), intellectual stimulation (α = .938), inspirational motivation (α = .802) and idealized influence – behavior (α = .802). In line with past research (e.g., Antonakis et al., 2003; Ensley et al., 2006), we treated the five dimensions of transformational leadership as indicators of transformational leadership, with a Cronbach Alpha from .918. Moreover, contingent reward was released from the scale of transactional leadership as no high correlation between contingent reward and management by exception was found (r = .101, p < .05). In a further step, as proposed by several authors (e.g. Bycio, Hackett, & Allen, 1995; Densten & Gray, 1999; Barling, Slater, & Kelloway, 2000), the active and passive management by exception scales are treated as an indicator of management by exception. For contingent reward, a Cronbach Alpha of .802 can be reported, while the one for the scale of management by exception was .843. For laissez-faire leadership, the calculation of the Cronbach Alpha for the four related items resulted in a value of .823. In summary, all scale reliabilities exceeded the .70 value recommended by Nunnally (1978).

In a next step, the indicators of the dependent variable were tested. Based on these results, we composed the factor startup performance. This factor includes four items, which constitute a Cronbach Alpha of .770. This value exceeded the recommendation of .70 by Nunnally (1978). To get a normal distribution, startup size was measured as the natural log of the number of employees.

Table 2 presents the mean, standard deviation and Cronbach Alpha of both the leadership behavior and the startup performance. Additionally, scale reliability estimates are provided along the diagonal within Table 2.

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<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Startup age</td>
<td>8.19</td>
<td>2.48</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2</td>
<td>Startup size log</td>
<td>1.07</td>
<td>.52</td>
<td>.389***</td>
<td>-</td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td>Laissez-faire leadership</td>
<td>1.99</td>
<td>.63</td>
<td>.166***</td>
<td>.072</td>
<td>(.823)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Management by exception</td>
<td>2.80</td>
<td>.39</td>
<td>.164***</td>
<td>.044</td>
<td>.346***</td>
<td>(.843)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Contingent reward</td>
<td>3.93</td>
<td>.61</td>
<td>-.074</td>
<td>-.061</td>
<td>-311***</td>
<td>.101*</td>
<td>(.802)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Transformational leadership</td>
<td>3.98</td>
<td>.51</td>
<td>-.058</td>
<td>-.004</td>
<td>-.376***</td>
<td>-.050</td>
<td>.657***</td>
<td>(.918)</td>
</tr>
<tr>
<td>7</td>
<td>Startup performance</td>
<td>3.43</td>
<td>.90</td>
<td>.059</td>
<td>.390***</td>
<td>.030</td>
<td>.032</td>
<td>.136**</td>
<td>.176**</td>
</tr>
</tbody>
</table>

*p< 0.05, **p< 0.01, ***p< 0.001, two-tailed.
Table 2 provides the outcomes of the moderated regression analysis. Hypothesis 1 stated that transformational leadership behavior would be positively related to startup performance. Our results support this hypothesis as transformational leadership was positively related to startup performance ($\beta = 0.152, t < 0.05$). Hypothesis 2 specified that founder-CEOs’ transactional and laissez-faire leadership behavior would be negatively related to startup performance. No significant effects for both leadership behavior were found (contingent reward: $\beta = 0.087, t < 0.05$; management by exception: $\beta = 0.006, t > 0.05$; laissez-faire leadership: $\beta = 0.103, t > 0.05$), which is why hypothesis 2 could not be supported.

Hypothesis 3 stated that startup size would negatively moderate the relationship between transformational leadership and startup performance. Although the main effect of transformational leadership was supported, no significant interaction effect was found ($\beta = -0.027, t > 0.05$). Thus, hypothesis 3 is not supported by our results. Hypothesis 4 postulated a positive moderation effect of startup size on the relationship between transactional leadership as well as laissez-faire leadership and startup performance. Support was found for a negative interaction between management by exception and startup size ($\beta = -0.111, t < 0.05$), as well as laissez-faire leadership and startup size ($\beta = 0.193, t < 0.001$). However, no support was found for an interaction effect of contingent reward and startup size ($\beta = 0.020, t > 0.05$). Therefore, Hypotheses 4 is partly supported.

Table 3
Results of hierarchical moderated regression analyses for startup performance

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Startup performance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Startup age</td>
<td>-.110*</td>
<td>-.121*</td>
</tr>
<tr>
<td>Startup size log</td>
<td>.432***</td>
<td>.429***</td>
</tr>
<tr>
<td>Leadership behavior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laissez-faire leadership</td>
<td>.103</td>
<td>.075</td>
</tr>
<tr>
<td>Management by exception</td>
<td>-.006</td>
<td>.019</td>
</tr>
<tr>
<td>Contingent reward</td>
<td>.087</td>
<td>.101</td>
</tr>
<tr>
<td>Transformational leadership</td>
<td>.152*</td>
<td>.152*</td>
</tr>
<tr>
<td>Interactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laissez-faire leadership x startup size</td>
<td>.193***</td>
<td></td>
</tr>
<tr>
<td>Management by exception x startup size</td>
<td>.111*</td>
<td></td>
</tr>
<tr>
<td>Contingent reward x startup size</td>
<td>.020</td>
<td></td>
</tr>
<tr>
<td>Transformational leadership x startup size</td>
<td>-0.027</td>
<td></td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>.040**</td>
<td></td>
</tr>
<tr>
<td>Explained variance ($R^2$)</td>
<td>.203***</td>
<td>.243***</td>
</tr>
</tbody>
</table>

*p < 0.05. **p < 0.01. ***p < 0.001, Standardized regression coefficients are shown. N = 102 Startups

Overall, the data supported the positive effect of transformational on startup performance, whereas for the other leadership behavior no significant direct effect on startup performance were found. Furthermore, some support for the moderation effects of startup size on the relationship between leadership behavior and startup performance were supported.
To better illustrate the moderating effect of the startup size on the efficacy of leadership behavior, we graphed the interaction effects, following the procedures proposed by Dawson (2014). The interaction graphs for management by exception and laissez-faire leadership are presented in figure 2 and 3 respectively. Figure 2 shows that high levels of laissez-faire leadership in large startups were associated with higher startup performance, rather than low laissez-faire leadership under similar conditions of startup size. In figure 3 the graphs indicate, that high levels of management by exception in large startups were associated with higher startup performance, rather than low perceptions of management by exception under similar conditions of startup size. Furthermore, tests to identify if the simple slopes of the graphed interactions are significantly different from zero were run. Significance of the interaction graphs was found for both leadership behaviors.

Discussion

This study examined the effects of founder-CEOs’ leadership behavior on startup performance. In doing so, the Full-Range-Leadership model (e.g., Bass, 1985; Bass, 1995) guided this research. Based on the findings of a systematic literature review, four hypotheses were developed describing the potential relationship between leadership behavior and firm performance in the context of startups. As expected based on prior literature, the main effect for transformational leadership on startup performance
was positive, which is in line with earlier research of e.g. Baum et al. (1998) and Peterson et al. (2009) who substantiated that transformational leadership has a positive effect on the organizational level in startups. Additionally, some studies found CEOs transformational leadership behavior to have no significant influence on firm performance in large firms (e.g. Tosi et al., 2004; Agle et al., 2006; Obiwuru, Okwu, Victoria, & Nwankwere, 2011). This is why we believe that the open context in which startups are operating reinforces the effects of transformational leadership. Through transformational leadership, the founder-CEO can transmit and communicate the inspiring vision, which motivates the employees and provides them with a deeper meaning of their work. Acting like this, team-thinking is stimulated and optimism is spread. Employees feel guided and their confidence in both the founder-CEO as person as well as in the company and its chance of survival increases. A transformational leader, however, does not only create and communicate a vision, he also represents his belief that the vision can be achieved through common engagement with great conviction (Bass & Riggio, 2006). At this point, it is worth noting that for the other leadership behaviors no significant effects have been found in our study.

The finding that founder-CEOs' transformational leadership behavior directly affects startup performance has also implications for the nascent field of entrepreneurship. As startups develop, additional employees are hired, which implies that the task to lead becomes an essential duty of the founder-CEO. Nevertheless, leadership in the context of startups has only been explored by a small number of empirical studies (table 1).

Furthermore, as expected, the positive moderating effects of startup size on the relationship between laissez-faire leadership and startup performance, as well as the relationship between management by exception and startup performance can be supported. In large startups, we found a significant effect of laissez-faire leadership and management by exception on startup performance. The bigger impact of the two leadership behaviors in large startups could have implications on the changing context of startups. The open context of startups is limited by the development and integration of processes, structures and routines, which substitute or complement the founder-CEOs leadership behavior (Kerr & Jermier, 1978; Podsakoff et al., 1993). Documented processes, structures and routines allow the leader to successfully adapt a more passive leadership behavior and the founder-CEO does not always have to intervene in work flows. Processes, structures and routines provide employees guidance and enable them to act accordingly. The results support existing findings of prior studies (Koene et al., 2002; Ling et al., 2008; Peterson et al., 2009) on the moderating effect of company size on the relationship between leadership behavior and firm performance.

In summary, our findings suggest that founder-CEOs need to adapt their leadership behavior to the environmental conditions surrounding startups. While transformational leadership was found to be an important predictor of startup performance, the effects for the other leadership behaviors are more complex. For management by exception and laissez-faire leadership no direct effects on startup performance were found, meanwhile a significant interaction with startup size was found. Management by exception and laissez-faire leadership appears more efficacious in bigger startups, than in smaller
startups. Taking these results into consideration with the fact that the context can vary among the startups, the leadership behavior of the founder-CEO can significantly influence the performance and the associated survival of startups.

**Limitations and future research needs**

The reported findings should be viewed in light of some limitations of the investigation which suggest directions for future research. First, founder-CEOs’ leadership behavior was evaluated only by their employees which might have led to biased ratings. Future studies are advised to incorporate also self-assessments of the founder-CEOs in order to decrease this bias.

Second, although we based our research model on the FRL-model, other conceptual models and related leadership dimensions should be considered in future research. Another possibility could be the inclusion of shared leadership in the research design. Shared leadership is based on the concept of vertical leadership (Pearce & Sims, 2002; Pearce, Conger, & Locke, 2007) and implies that the leadership task is not focused on one particular leader, but shared among a group of individuals (Pearce & Conger, 2003). Since in startups the founder-CEO is primarily the only existing management level (Melcher, 1976), shared leadership could be a possible remedy to this problem. Moreover, shared leadership could increase the identification of the employees with the startup which has a positive effect on firm performance.

Third, future research should stronger include the followers’ perspective. For instance the FLR-model could be enlarged by the concept of superleadership in order to add the self-leadership perspective of the follower (e.g. Manz, 1986; Manz & Sims, 1990). This way, the effects of the founder-CEOs on the followers can be explored and possible relationships on the individual, like their self-leadership behavior on the organizational level (startup performance) can be captured. Furthermore, self-leadership of the founder-CEO can have an impact of the effectiveness of the leadership behavior. Empirical support is given for the fact that effectively leading oneself is associated with effectively leading others (Furtner, Baldegger, & Rauthmann, 2013).

Fourth, this research does not include further individual characteristics or processes such as group composition, cohesiveness, and homogeneity, which might have prevented capturing the complexity of the relationship between founder-CEOs and followers. In team research, for instance, it has been found that homogenous groups work together more efficiently due to their similar character traits, leading to a higher level of team cohesiveness (Turner, Pratkanis, Probasco, & Leve 1992; Horwitz, & Horwitz 2007) and a higher degree of sympathy (Montoya, Horton, & Kirchner, 2008). This, in turn, can have a positive effect on startup performance.

Finally, researchers should examine additional outcome measures on the individual or team level. On the individual level, variables such as subordinates’ work effort or management team performance-
should be considered. Future research that examines similar relationships with lower-level managers might consider other outcomes, such as team-level outcomes or business-unit performance.

The mentioned limitations and research needs reveal that the intersection point between leadership and entrepreneurship research has great potential and many open research questions. Future results can support the successful development of startups and provide benefit for the new economy.

References


