

Unlocking Women's Leadership Potential: A Curricular Example for Developing Female Leaders in Academia

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**Kristin Knipfer¹, Brooke Shaughnessy²,
Tanja Hentschel¹, and Ellen Schmid¹**

Abstract

Women in academia face unique challenges when it comes to advancing to professorship. Using latest research about gender and academic leadership, we present a training curriculum that is sensitive to the unique demands of women in and aspiring to leadership positions in academia. The context-specific and evidence-based approach and a focus on self-directed leadership development are unique characteristics of the training. It aims to enhance women's motivation to lead, increase their knowledge about academic leadership, and empower them to seek the support they need to proactively work toward appointment to a professorship. We also delineate an evaluation framework, which addresses these targeted outcomes. The findings from a pilot program in Germany confirmed that the curriculum is effective in developing women as academic leaders. The discussion highlights the significance of a context-specific and evidence-based approach to women's leadership development in academia.

Keywords

leadership, leadership training, women leadership development, academic leadership, Germany

¹Technische Universität München, Munich, Germany

²Ludwig-Maximilians-Universität München, Munich, Germany

Corresponding Author:

Kristin Knipfer, TUM School of Management, Technische Universität München, Arcisstrasse 21, Munich 80333, Germany.

Email: kristin.knipfer@tum.de

Introduction

This article answers the call for leadership development concepts to counteract the *leaky pipeline* in academia (van Anders, 2004). We present a curricular example for a leadership training that extrapolates previous approaches for women leadership development to the academic context. In the following, we describe the context, the target group, and the training approach. We then provide the theoretical rationale, the training contents, and the methods for each training module. Furthermore, we present findings from a pilot program in Germany. Finally, we discuss implications for women's leadership development in academia while drawing on our experiences from the pilot.

Setting the Context for the Curriculum: Academic Leadership and Gender Issues

Due to fundamental changes in the academic sector such as the increase of competition and output orientation (see literature on new public management and managerialism in higher education, e.g., Bolden et al., 2012; Deem, Hillyard, & Reed, 2007), the significance of leadership has increased and the requirements for academic leaders have changed in recent years (Braun, Peus, Frey, & Knipfer, 2016). Academic leaders such as (associate and full) professors, department chairs, and principal investigators of larger research projects are facing high pressure to foster knowledge production, creativity, and innovation under less-than-ideal conditions (e.g., Peus, Welpel, Weisweiler, & Frey, 2015) and in a competitive performance culture driven by global university rankings and intensification of academic labor (Blackmore, 2014). They are required to efficiently administer projects and resources; at the same time, academic leadership is imprinted with intellectual supervision and its impact on academic values and identities (Bolden et al., 2012). Blackmore and Sachs (2007) conclude that many potential leaders are deterred by ambivalent leadership requirements. This *leadership problematic* was recently described as being as much about the universities' movement to managerial structures as well as the shrinking pool of academic leaders (Blackmore, 2014). The attraction and retention of excellent researchers in academic leadership positions is therefore one of the key challenges for universities.

Against this background, the waste of female talent (Blackmore, 2014; see also Bell & Yates, 2014) and the resulting academic gender gap (Evers & Sieverding, 2015) is considered a major problem in higher education (David, 2015). Carnes et al. (2015, p. 221) highlighted that despite the progress that has been made in academia to achieve gender equality, "gender bias operates

in personal interactions, evaluative processes, and departmental cultures to subtly yet systematically impede women's career advancement." The obstacles described in the literature are perceived as being deeply embedded in the academic system (Fritsch, 2015), and women may conclude that being a professor is "undesirable," "unrealistic," and "unattractive" (Evers & Sieverding, 2015, p. 168). In fact, women are less confident than men that they will eventually be appointed to a professorship and that they can effectively lead a research department (Evers & Sieverding, 2015). Instead, they anticipate the manifold hindrances on their way to leadership positions (Hüttges & Fay, 2015). Although the experience of competitive disadvantages of women may be common in many professions, the nature of the academic setting is a unique context (Bagilhole & White, 2008; Deem, 2003; Ecklund, Lincoln, & Tansey, 2012; Schoening, 2009). A major reason for individual as well as structural barriers for women's advancement in academia is provided by role congruity theory, which implies a *lack of fit* (Heilman, 2001) for women and academic leadership positions based on gender stereotypes and images of the ideal academic leader (Deem, 2003; Eagly & Karau, 2002; Schein, 2001, 2007). Specifically, leadership in academia has been imprinted with masculine traits; as a consequence, the implicit expectation for men in academic leadership positions is still predominant (Blackmore, 2014). This results in various challenges to women's advancement to leadership positions as well as establishing credibility and reputation as a leader, which we describe in detail later in this article.

Leadership Development as a Means to Facilitate the Advancement of Female Academic Leaders

Bilimoria, Joy, and Liang (2008) highlighted leadership development to be integral in order to foster women's advancement to leadership positions. However, successful examples of leadership training for academic leaders are still scarce (Braun et al., 2009; Knipfer & Peus, 2015). The current article outlines a curricular example of a leadership development program that is tailored to women in or aspiring to academic leadership positions such as professorship. In the curriculum design, we focused on the *internal psychological determinants* of the underrepresentation of women in academic leadership rather than structural barriers described extensively elsewhere (for comprehensive reviews see, e.g., Bagilhole & White, 2013; Brouns, 2007; David, 2015; Probert, 2005). In our experience, these are factors where even small changes can make a difference. In line with that, others have argued before that leadership development should focus on the participant level (e.g., Grove, Kibel, & Haas, 2005). At the same time, as cautioned by Ely and

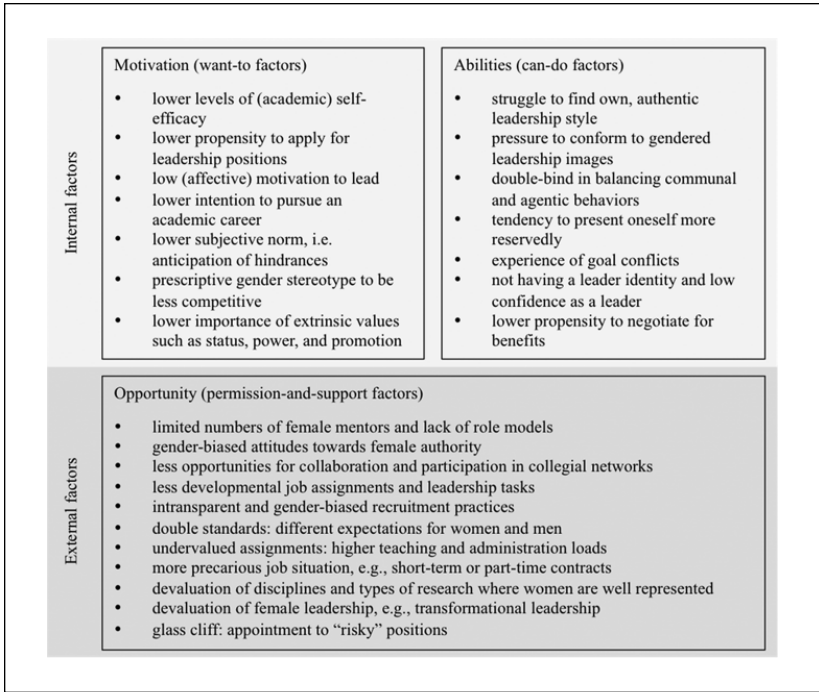


Figure 1. Summary of major challenges for women leaders in academia as evidential foundation of the women leadership development program.

Meyerson (2000), we designed the program with the intention to avoid the “fix-the-women” approach. We focus on women’s strengths as leaders while making known some of the pitfalls women befall in leadership positions.

Specifically, we applied Campbell’s (1990) framework to tackle the challenges women are facing when it comes to academic leadership (see Figure 1), namely with regard to (a) motivation (want-to factors), (b) abilities (can-do factors), and (c) opportunity (permission-and-support factors; Hüttges & Fay, 2015): The first module centers on raising self-awareness of one’s leadership foundations, developing a leader identity, and counteracting motivational barriers to lead. The second module focuses on academic leadership; participants receive feedback on their leadership style and work on a personal development plan to increase their confidence as a leader. The third module teaches proactive strategies to seek support in advancing to leadership positions such as techniques for networking, self-presentation, and negotiation. In the last module, developmental goals are revisited, progress toward becoming an

Table 1. Training Structure and Overview of Training Content.

Module	Content
<i>Module I</i>	<i>Want-to: Developing a leader identity</i> Implicit leadership theories Gender stereotypes and academic leadership Bases of power and leadership Personal values and authentic leadership
<i>Module II</i>	<i>Can-do: How to lead effectively?</i> The “full range of leadership model” Effective leadership in academia Personal leadership style and development plan
<i>Module III</i>	<i>Seeking support: Advancing to and in a leadership position</i> Counteracting gender stereotypes Self-presentation and networking Negotiation techniques
<i>Module IV</i>	<i>Wrap-up and reflections</i> Follow-up analysis of personal leadership profile Reflections on personal developmental progress Discussion of developmental challenges

effective leader is evaluated, and challenges in implementing leadership practices are discussed. Each module is designed for 1.5 days (see Table 1).

The Women Leadership Development Program: Evidence-Based Curriculum Design

Target Group

Our training program was designed in an effort to contribute to repairing the academic gender gap. Specifically, the training is targeted at women holding a postdoc position or a position equivalent to an assistant professor position (e.g., *Nachwuchsgruppenleitung*), who aspire to full professorship. It was developed in Germany, where a lack of female professors is readily recognized and discussed by both academic institutions and the media. We consider Germany a prototypical example for an academic system that is characterized by a huge academic gender gap: Although we can observe a slow increase of women in academic leadership positions, the expectations put forward by the German Research Association (DFG) have not been met so far. In fact, women hold only 23 % of full professorships in Germany (Statistisches Bundesamt, 2015).

Appointment to a full professorship follows a highly competitive recruitment practice by a faculty committee, and internal promotion of successful scientists to a professorship is only permitted in exceptional cases. This implies that well-known challenges for women applying for business leadership positions may be more pronounced in academia, where the “gatekeepers” are often men (van den Brink & Benschop, 2014). The training is specifically set in the academic context and tailored to these challenges. Since women-only training was considered to enable women to clarify their leadership ambitions and recognize their leadership strengths (Debede, 2011; Vinnicombe & Singh, 2002), participation is limited to female scientists (see also Coleman & Fitzgerald, 2008).

Training Approach

In line with recent discussions (Day, Fleenor, Atwater, Sturm, & McKee, 2014), we focus on both *leadership* and *development* in the design of our training program in that we facilitate experiential learning and reflexive leadership practice (Schön, 1991). Our own research experience in the academic context enabled us to tackle the specific challenges training participants might be facing in their daily lives as researchers *and* (future) leaders. Given the autonomous nature of academic leadership positions, we adhere to the notion of self-directed leadership development (Nesbit, 2012). We understand participants to be proactive learners, who initiate and guide their personal learning and influence the effectiveness of their learning from leadership experience themselves (Enos, Kehrhahn, & Bell, 2003; Gherardi, Nicolini, & Odella, 1998).

In line with DeRue, Ashford, and Myers (2012), we consider feedback and reflection as major catalysts for learning from experience. First, women are particularly likely to underevaluate themselves (Beyer, 1990). They also receive less feedback than men (Ely, Ibarra, & Kolb, 2011). Both factors hinder the valid assessment of their developmental needs and potentials. In our training, we integrated *feedback* as a means to gather information about other’s perception of own strengths and weaknesses. Second, reflection is the medium that allows people to generate meaning from an experience (Boud & Walker, 1990; Kolb, 1984; Schön, 1991). Systematic reflection was shown to promote leadership development (DeRue, Nahrgang, Hollenbeck, & Workman, 2012). In our training, we guide and facilitate the participants’ reflective activities to enhance their personal development in becoming a reflexive practitioner (Cunliffe, 2004; Hibbert, Coupland, & MacIntosh, 2010). Table 2 summarizes our training approach.

Table 2. Training Approach: Facilitating Self-Directed Leadership Development.

Target group	Female scientists in or aspiring to leadership positions such as postdocs and assistant professors
Objective	Facilitating women's self-directed leadership development
Training content	Evidence-based concepts and knowledge, specific to the academic context
Teaching approach	Facilitating reflection in and on action, gender-sensitive methods, facilitation of transfer of training
Teaching methods	Working on authentic problems, systematic feedback, guided reflection, reflective practice
Instructor's role	Tutoring based on own research expertise in the area of (academic) leadership and gender stereotypes and teaching/research experience in academia
Evaluation criteria and methods	Focus on individual-level outcomes: Leader identity, motivation to lead, confidence as a leader, assessment based on reliable and valid scientific methods

Training Contents and Methods

Module I: Developing as a Leader and Fostering the Motivation to Lead. In an interview study, decision makers in universities “were portraying women academics as not living up to the competencies and commitment needed to be successful as an academic” (Bleijenbergh, van Engen, & Vinkenburg, 2012, p. 23). This illustrates that women are not perceived as being prepared for the demanding role of being a professor (Benschop & Brouns, 2003; Smothers, Bing, White, Trocchia, & Absher, 2011; van den Brink & Benschop, 2012a) or selected only when conforming to the ideal image of highly competitive, self-sacrifice, independent, and unlimited availability (Deem, 2003; Fitzgerald, 2014). As a result, women feel as outsiders who “struggle to prove their fitness to play the game” (Gersick, Dutton, & Bartunek, 2000, p. 1040). The incongruence between images of the ideal academic leader and the typical woman has a major impact on women's motivation to advance to leadership positions, because women likely anticipate hindrances in climbing the career ladder (Godfroy-Genin, 2009). In fact, they show a lower affective motivation to lead (Elprana, Felfe, Stiehl, & Gatzka, 2015; Schuh et al., 2014), lower power motivation (Konrad, Ritchie, Lieb, & Corrigan, 2000), and a lower intention to pursue an academic career (Evers & Sieverding, 2015) compared with men. The first module focuses on raising women's motivation to lead by fostering the development of a strong and authentic leader identity.

Implicit academic leadership theories. Implicit leadership theories highly affect how capable women perceive themselves to be effective as leaders (Engle & Lord, 1997; Lord, Foti, & De Vader, 1984). In our training, we incorporate participants' implicit beliefs about academic leadership to raise awareness of biases they might have due to these implicit theories. In order to achieve this, we use a drawing exercise to assess women's implicit images of leaders in academia, which we adapted from Schyns, Tymon, Kiefer, and Kerschreiter (2011). One half of the participants is asked to draw the "typical" academic leader, that is, a leader one very often encounters in the academic context; the other half is instructed to draw the "ideal" academic leader, that is, a leader whom they regard as being very effective in the academic context (exemplary drawings are shown in Figure 2). Participants work on this task for 20 minutes. The drawings are then presented in the plenum. In contrasting and comparing them, we elicit commentaries of the participants to refine their images of leaders in academia.

Leader identity and power of academic leaders. In order to prepare for an academic leader role, it is important to recognize the complex identity development that coincides with academic career development. "[B]eing a scientist [...] may be a kind of master status identity that overrides other identities" (Ecklund et al., 2012, p. 695). As a result, academics typically interpret their leader responsibilities rather as a duty than as a relevant part of their own identity (Askling & Stensaker, 2002). However, Hall (2004) highlights the significance of a strong leader identity to adapt to changing roles and related expectations in the course of career development; it is considered a necessity for successful leadership in academia (Bozeman, Fay, & Gaughan, 2013). We concur with Bolden et al. (2012) who stated that, rather than balancing competing roles such as personal mentor versus administrator, academic leaders must find ways of "assimilating and integrating the apparently paradoxical demands of different identities" (p. 10). We aim to raise awareness of the various academic roles and at facilitating the development of (sub)identities in relation to those roles with a focus on the leader role.

We use the following exercise to start the discussion about academic roles: We "label" each corner of the seminar room (researcher, teacher, manager, leader) and ask the participants to choose the corner with the role that is most salient for themselves. We discuss the reasons for their choice and why they chose different roles despite the fact that they hold similar positions. Typically, the leader role is the role least salient in participants' identity. We discuss this in detail with guiding questions such as "In which parts of my job do I indeed exert influence on others?" and "In which parts would others say I am leading



Figure 2. Exemplary drawings (reproduced from original drawings) depicting the prototypical academic leader (above) and the ideal academic leader (below).

them (intellectually or formally)?” We also address any potential conflicts between the multiple roles.

The ability to effectively influence others (Ferris et al., 2007) is integral to navigating the shifting environment inherent in universities. However, female department chairs have less (perceived) power than male department chairs (Bozeman et al., 2013). In our training, we emphasize the difference between power that is inherent in a leadership position (i.e., legitimate power) and power that can be developed through understanding and supporting the

people around them (i.e., reward and referent power; French & Raven, 1959). In the training, we define the types of power and engage the group in a discussion to identify examples. We ask the participants about how they could enhance their authority themselves. We balance the discussion between ways to increase and maintain power as well as how to use that power effectively.

Value-based and authentic leadership. Female academics often experience high pressure to conform to the gendered images of the ideal academic leader and the “highly masculinist culture of higher education” (White, 2001, p. 69; Bekker, de Jong, Zijlstra, & van Landeghem, 2000). Rather than prescribing specific leadership techniques, our training program helps female leaders stay authentic in their leadership role; this includes high self-awareness and display of values, which can be developed through training (Avolio & Gardner, 2005). Specific to women, the development of authenticity as a leader provides the foundation for relational authenticity: Eagly (2005) highlights the relational component of authenticity whereby the followers identify and accept the leader’s values.

Using the iceberg perspective, we explain that the observable leader behaviors are based on values, attitudes, and assumptions: Leadership styles are “on the surface” and easily influenced by the situation. An individual’s internal values, beliefs, and attitudes are “below the surface” and tend to remain stable. In our training, we ask the participants to reflect on the characteristics that they admire in leaders and discuss the values that are behind these behaviors referring to the concepts of espoused (i.e., communicated) and enacted values. Finally, we discuss how participants can lead in a way that is congruent with their core values to further increase authenticity. In a concluding exercise, we ask participants to write down their personal leadership mission statement guided by the questions “What kind of leader do I want to be?” and “What do I want to stand for as a leader?”

Module II: Learning About Effective Leadership Behaviors and Increasing Self-Confidence as a Leader. Since academic leadership is (implicitly) construed as being male, gender biases discriminate women with regard to the evaluation of their leadership effectiveness and with regard to the perception of their leadership practices (Fitzgerald, 2014). Women experience a double bind in balancing agentic leader requirements (be assertive) and communal leader behaviors (be sensitive; Hannum, Muhly, Shockley-Zalabak, & White, 2015). Beyond the social penalties, which women incur from others when they engage in counterstereotypical behavior (Rudman, 1998), they often face an internal struggle to come to terms with the discrepancies between their self-image and that of a leader. At the same time, academia is a context where

women can show their strengths with regard to leadership (Vinkenbunrg, van Engen, Eagly, & Johannesen-Schmidt, 2011; Zenger & Folkman, 2012). Recent research also highlighted emotional empathy for academic leadership (Parrish, 2015), which would be congruent with female gender stereotypes. Therefore, we focus on developing women's leadership strengths and increasing their self-confidence as a leader in the second module.

The full range of leadership model. To date, the most researched leadership theory is arguably the "full range of leadership" that describes transactional and transformational leadership behaviors (Bass & Avolio, 1990, 1994). Transactional leadership focuses on the exchanges between leaders and their employees (performance as a result of rewards). Transformational leaders recognize and respond to individual follower's abilities and needs. They have a clear vision and inspire the followers to strive toward joint goals thereby supporting them in achieving these goals. Smothers et al. (2011) found that the ideal leader focuses on the facilitation of faculty development, which could be conveyed as an aspect of transformational leadership. In fact, transformational leadership behaviors are effective in academia and relate to job satisfaction as well as publication output (Bolden et al., 2012; Braun, Peus, Weisweiler, & Frey, 2013; Smothers et al., 2011). Transformational leaders are also more likely to be recommended for tenure compared with autocratic leaders (Hentschel, Braun, Peus, & Frey, 2015). Still, due to the dynamic change in higher education toward more business-like approaches to leadership (Bolden et al., 2012), transactional leadership, specifically contingent reward, is also important. In our training, transformational leadership behaviors and contingent reward are presented as effective leadership behaviors (Eagly, Johannesen-Schmidt, & van Engen, 2003). We highlight the requirements and potential conflicts in balancing management and leadership and in combining transactional and transformational leadership.

In a group exercise, participants (in groups of three to four people) choose one dimension of transformational leadership and develop concrete ideas on how to implement this dimension in their daily leadership practice (see Figure 3; materials are available on request from the corresponding author). They present their ideas (5-10 minutes), and we encourage a discussion about chances and challenges in implementing transformational leadership.

Personal leadership profile: Individualized development plan. Before the start of Module II, participants rate their own leadership behaviors on the dimensions of transactional and transformational leadership and ask their team members to rate them, too. For this purpose, we use the Multifactor Leadership Questionnaire (Bass & Avolio, 1990) as online survey. In Module II,

Group Exercise

Please choose one dimension of transformational leadership.

Please discuss the following questions in your group and prepare a short (5 minutes) presentation on how you think they can be addressed in your organizational practice.

You are encouraged to use creative means of presenting (e.g., pictures, cartoons, flip-charts, poems, slides, etc. or any combinations of those).

1. How can we improve *your dimension* in our organization?

2. What barriers are we likely to face in attempting to improve it?

3. How can we overcome these barriers?

4. How do we know if we are being successful?

Figure 3. Group exercise: Transformational leadership in academia.

they receive their results contrasting their own view with that of their teams, providing them with a realistic status of where they currently stand as a leader (see Figure 4). This feedback shows strengths and development needs and also reveals any discrepancies between the leaders’ self-assessment and the evaluations of their followers. In this case, participants are encouraged to engage in joint sense-making of these discrepancies.

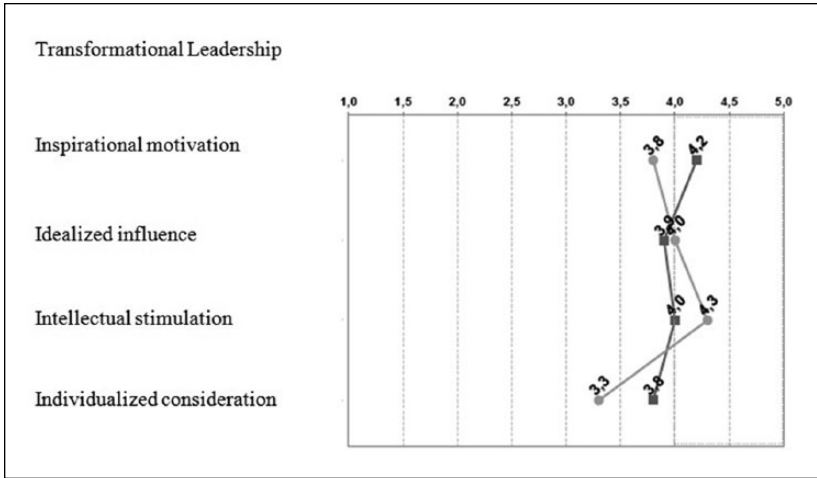


Figure 4. Exemplary feedback from the personal leadership profile (the dark line is the self-assessment, the bright line the other evaluation; scores given are means for the Multifactor Leadership Questionnaire–subscales).

To facilitate the further development of effective leadership behaviors, we introduce the “toolbox of effective leadership,” a collection of leadership tools such as giving feedback, SMART goal setting, creating a vision, and team reflection (see Table 3). These techniques can be implemented in participants’ routines as an academic leader easily. Based on this input, participants choose two dimensions of leadership (either because they were identified in the personal leadership profile as strengths or as areas for further development) and develop an action plan for their personal development (see Figure 5; materials are available on request from the corresponding author).

Quinlan (1999) advocated peer mentoring as vital to career success for women in academia (Driscoll, Parkes, Tilley-Lubbs, Brill, & Pitts Bannister, 2009; Jacelon, Zucker, Staccarini, & Henneman, 2003). In order to facilitate the successful transfer of the individual development plan into work life, the participants choose a learning partner among the group who acts as a peer mentor. Participants discuss their action plan with their peer mentor, work jointly to enhance each other’s plans, and set concrete dates to meet and discuss which aspects of the personal development plan they have implemented and what barriers they encountered (see Figure 6; materials are available on request from the corresponding author). The goal is to build a lasting mentoring relationship that will continue to provide support beyond the scope of the program.

Table 3. The Leadership Toolbox: A Selection of Techniques for Improvement.

Leadership style	Techniques for optimization
<i>Transactional leadership</i>	Clarification of expectations Process visualization Preparation and wrap-up of meetings and talks
<i>Transformational leadership</i>	
Intellectual stimulation	Brainstorming for creative idea generation Team reflection Lateral thinking
Individual consideration	Development of career plans for employees Regular and individual feedback Target agreement talks
Inspirational motivation	Benchmarking Development of a vision Goal setting
Idealized influence	Reflection on norms and expectations Self-reflection and feedback seeking of the leader Transparency of values

Module III: Advancing to and Succeeding in Academic Leadership Positions. Although the proportion of women applying for a professorate is overall reasonable, their proportion in final appointments is still very low (Blackmore, 2014). Many women report that they “were being blocked for promotion through both direct and indirect discrimination” (White, 2003, p. 49). In fact, (unconscious) biases due to gender stereotypes operate in the evaluation of female scientists in consideration for a leadership role, especially when gatekeepers are men (Heilman, 2012; van den Brink, 2015; van den Brink & Benschop, 2014). These biases are amplified when procedures are nontransparent and criteria are not formalized, which is often the case in academia (van den Brink & Benschop, 2012a, 2012b). Furthermore, double standards in performance evaluations discriminate women (Foschi, 2000): “[W]omen have to go farther, work harder, and accomplish more in order to be recognized” (Rosser, 2004, p. 58). The achievements of female academics are often attributed to their male collaborators and undervalued in general (*Matilda effect*; Rossiter, 1993). As a result, women receive less support from top management and have to negotiate harder for resources (Ecklund et al., 2012; Godfroy-Genin, 2009). Module III aims to enable women to proactively seek the support that they might not get otherwise.

Your Personal Action Plan

This is your personal action plan to help you further develop as a leader. Please take time to think about the following questions:

1. What are your two main strengths as a leader?

Dimension 1: _____

Because... _____

Dimension 2: _____

Because... _____

2. The leadership dimensions I want to improve:

Dimension 1: _____

Dimension 2: _____

What is a specific goal you want to achieve with regard to dimension 1?

My goal is ...

What barriers could prevent you from implementing your goal in your work routines? And what will you do in order to overcome the barriers preventing you from achieving your goal?

Now please think about the second leadership dimension you seek to improve.

What is a second specific goal you want to achieve with regard to dimension 2?

My goal is ...

Figure 5. Instructions to develop a personal action plan (excerpt).

Counteracting prescriptive gender stereotypes. We ask participants to share their personal experiences related to stereotypes and discuss solutions such as

Now, please discuss your action plan with your partner. Seek his/her feedback and also comment on his/her action plan. Do you think it is realistic? What barriers do you expect to occur? Do you have any additional ideas as to how your partner can overcome these?

Finally, please set two dates for a personal meeting/ a telephone conversation with your learning partner (2-4 weeks apart). In this meeting please discuss the following questions:

- What do I remember from the course „Leadership“?
- Did you try to further improve your leadership style since then, if so, what did you do?
- What worked well? Is there a particular challenge you would like to discuss?

Date 1 (about 2 weeks from now):
Date and Time: _____
Where will you meet/ who will call? _____

Date 2 (about 6 weeks from now):
Date and Time: _____
Where will you meet/ who will call? _____

Figure 6. Instructions for peer mentoring.

leading transformationally, which is consistent with the female gender stereotype. Given our reflective learning approach (Kolb, Boyatzis, & Mainemelis, 2011), we focus on an understanding of both self-stereotyping and of how people’s reactions confirm stereotyped beliefs. For example, women underperform on stereotypically male tasks (Bergeron, Block, & Echtenkamp, 2006) because of their negative expectations to succeed (Cadinu, Maass, Rosabianca, & Kiesner, 2005; Heilman, Lucas, & Kaplow, 1990). Furthermore, women are discriminated in application processes in academia based on gender-biased recommendation letters, which include more communal attributes, whereas men are described using agentic attributes (Madera, Hebl, & Martin, 2009).

In our training, we employ the *lemon exercise* (Croft, Crolla, & Mida-Briot, 2003). Participants are shown a basket of lemons and are told that they will be given one lemon each. Before being given time to study their lemon, participants are asked to estimate how many of them will find their lemon again after it will be returned to the basket. Typically, participants estimate that none or only very few will find their lemon again. In actuality, every participant is able to retrieve her original lemon eventually. With this exercise, participants learn from their own experience that all lemons turned out

to have different characteristics and are easily distinguishable from one another. The exercise builds on the idea that humans hold certain views about objects (“All lemons look the same”), which correspond to stereotypes about people. This idea is considered in a follow-up discussion.

Self-presentation and networking. Though female scientists engage in networking as much as men, they have fewer instrumental networks; for example, their networks include fewer male supporters (Spurk, Meinecke, Kauffeld, & Volmer, 2015). In general, women are underutilizing professional networks (Ibarra, 1992). As a consequence, they have fewer international research collaborations and rely on less diverse funding sources (Jung, 2015). They also report being excluded from male elite networks and feel as *the other* (Bleijenbergh et al., 2012). Due to this “lack of social capital, women scientists run the risk of under-citation” (Brouns, 2007, p. 36). However, instrumental networking can be learned (Ibarra & Hunter, 2007).

A positive self-presentation is highly important when it comes to networking with potential research collaborators. However, tactics such as self-promotion are socially risky for women because they are not congruent with gender stereotypes (Rudman, 1998). Women may also feel uncomfortable in showing the “aggression needed to survive in science” (Bleijenbergh et al., 2012, p. 28). Research has shown that it is helpful for women to include relational aspects in conversations, namely using small talk (Shaughnessy, Mislin, & Hentschel, 2015) or relational accounts (Bowles & Babcock, 2013). In our training, we focus on both verbal and nonverbal adjustments that participants can engage in to positively influence themselves and others. For nonverbal behavior, we ask them to try the so-called *power pose* (Carney, Cuddy, & Yap, 2010), a tool with which you feel yourself more self-confident and powerful. For verbal behavior, we practice giving a 60-second pitch to use as a networking tool. Participants are asked to prepare a precise statement about their research focus. We debrief the exercise following the suggestions of De Janasz and Forret (2007) and discuss how it felt for themselves and how others perceived the pitch. This exercise is a good opportunity to experiment with self-promotion tactics, to get feedback from others, and to learn from other women in order to find a confident and authentic way of presenting oneself.

Development of negotiation skills. Females are provided less developmental work assignments; this hinders their development as leaders as well as their chances for promotion (Ohlott, Ruderman, & McCauley, 1994). They also face pressure to successfully obtain additional funding from those higher in the university hierarchy (McTiernan & Flynn, 2011) and often find themselves

in part-time and/or short-term contracts with high teaching load, thereby limiting the opportunities to conduct research (Bilimoria et al., 2008; White, 2003). Thus, women are facing situations in which they need to and should negotiate. However, research shows that women often encounter backlash when engaging in negotiations, resulting in the conclusion that it is better *not* to ask (Bowles, Babcock, & Lai, 2007). In Module III, we sensitize women for situations in which they have the opportunity to negotiate about monetary as well as nonmonetary matters. Specifically, we point out the ways in which the participants negotiate every day in multiple contexts. After presenting the theory, we provide them with the opportunity to negotiate with each other in a context-relevant situation (e.g., over lab equipment). This methodology has been shown to be effective for developing one's negotiation style (Patton, 2009). Finally, we use the context of the negotiation and the interaction they just had with their fellow participant as a foundation with which to discuss the basic elements of negotiation.

Module IV: Wrap-Up and Reflection. In order to facilitate the participants' transfer of training, we encourage them to document their practical learning experiences after Module III and before Module IV. These "learning snapshots" complement the reflective learning discourse participants have with their learning partner assigned in Module II. Specifically, we ask them to write down a short summary of a developmental challenge, that is, a situation where they applied what they have learned in the training and where they have been facing any kind of challenge or barrier. By means of an online tool, we guide them through the process of reflective analysis of this situation and help them in specifying a "lesson learned" (see Figure 7; materials are available on request from the corresponding author). In Module IV, we work on these learning snapshots, encourage sharing of lessons learned, and reinterpret the theoretical input through the lens of participants' practical experiences in transfer of training.

Assessment of Learning

Target Learning Outcomes and Evaluation Criteria. The development of evaluation criteria followed a top-down logic, starting out with the refinement of targeted learning outcomes. We thereby focus on the personal gain participants' achieve through the training (Rosch & Schwartz, 2009) and on individual-level effects, where we expected the most significant and immediate results of the training (Black & Earnest, 2009). For an overview on evaluation criteria and methods, see Table 4. We applied Campbell's (1990) framework and included

In Module II, you identified areas for development and specified what you would like to try out to increase your leadership abilities. For sure, you had the chance to apply what you have learned – maybe some things worked out quite nicely and others did not.

In the following, we would like to ask you to write down one specific situation where you have experienced some challenges to transfer the knowledge from the training into your daily leadership practice.

Please take some time to describe this situation. Be as specific as possible.

What happened, who was involved, what did you do exactly, what was the reaction/outcome? What specifically was challenging for you?

Please think of alternative ways of dealing with this situation. What could you have done to deal with the situation more effectively?

Please list at least three alternative ways to deal with this situation.

For sure, you have gained insights or derived lessons learned from this challenge. What would you do different next time?

Please list as many concrete steps as possible!

Figure 7. Learning snapshots to document and critically analyze challenges in transfer of training.

a) want-to factors, b) can-do factors, and c) permission-and-support factors. Assessment of learning thus includes continuous and evidential monitoring of the key target outcomes *leader identity* and *motivation to lead* as well as *leadership efficacy beliefs*. We also assess behavioral intentions to apply newly gained knowledge after each module and transfer of training at the end of the training. To assess participants' leadership capabilities, the data gathered for the personal leadership profile can be further investigated. Open-ended questions and evocative inquiry (Black & Earnest, 2009) gather major takeaways, personal learning experiences, and barriers for transfer of training. We recommend conducting a follow-up several months after the fourth training module to measure learning outcomes when participants had the opportunity to implement what they learned (Rosch & Schwartz, 2009). Tackling the organizational level (Black & Earnest, 2009), open-ended questions elicited episodes of learning with regard to self-presentation, networking, and negotiation.

Table 4. Overview of Evaluation Criteria and Methods.

Evaluation criteria	Methods	Sample items
What are the expectations of participants and are these expectations met?	Feedback forms to gather subjective evaluations with regard to content and structure of the training and satisfaction with the instructors.	<i>The goals and structure were clear to me. The content of this training closely matches the requirements of my job.</i>
How did participants like the structure, methods, and the instructors? Were participants satisfied with the depth and breadth of the training contents?	Open-ended questions on positive aspects of the training as well as potential for improvement of the training.	<i>Positive aspects: I liked very much that ... Potential for improvement: I would suggest to ...</i>
What is the extent of advancement or change in beliefs and knowledge about leadership? Did participants develop a leader identity?	Questionnaires to gather subjective evaluations of learning outcomes.	<i>As a result of this module I have changed the way I look at myself. I see myself as a leader.</i>
Did participants gain more self-confidence as a leader? Are participants more motivated to lead other people as a result of the training?	Questionnaires to assess leader identity, leadership self-efficacy, and motivation to lead.	<i>I am confident that my ability fits the requirements for being in a leadership position. I am the type of person who likes to be in charge of others.</i>
What behavioral intentions were developed in the course of the training?	Subjective ratings of motivation and intentions to transfer the training contents. Open-ended questions to gather goal setting and behavioral intentions with regard to the transfer of training as well as barriers for transfer of training.	<i>I have the intention to use the content of this training back in my job. In what ways do you seek to develop your professional and/or leadership skills in the future?</i>
Did the learner put their learning into effect when back on the job?	Open-ended questions to collect major takeaways. Self-/other assessment using carefully designed criteria and measurements.	<i>What is your major takeaway from this training? Leadership style assessment, for example, Multifactor Leadership Questionnaire, see Module II</i>

Insights From the Pilot of the Program. The training program was piloted in cooperation with the equal opportunities officers of three German research organizations who joined forces to help women scientists develop their leadership skills. A total of 16 female participants registered for the training. They either held a postdoc position or a position equivalent to an assistant professor position. The trainer team included four female researchers external to the participants' research organizations who were trained as psychologists and had own research expertise in the fields of academic leadership, leadership development, and/or perception of female leaders. The four modules were instructed in trainer tandems to allow for individualized trainer–learner interactions. The training was conducted over the course of 8 months. To evaluate training effectiveness, we employed the proposed evaluation methods. Data were gathered at the beginning and at the end of each of the four modules. In addition, we conducted a follow-up assessment 2 months after the final module.¹

Results of the evaluation indicated that participants were highly satisfied with the training contents ($M = 4.63$, $SD = 0.52$) and their relevance for their daily work specifically ($M = 4.75$, $SD = 0.46$). Participants reported that they discovered faults in what they previously believed to be right as a result of the training ($M = 3.83$, $SD = 0.98$), which is a strong indicator for transformative change (Black & Earnest, 2009; see also Cunliffe, 2004; Hibbert et al., 2010). At the beginning of the training, participants did not have a very clear image of what being a leader meant to them, whereas at the end of the training, participants had a much clearer image of themselves as a leader (before: $M = 3.36$, $SD = 1.12$; follow-up: $M = 4.80$, $SD = 0.45$). Finally, the leader identity became more salient to the participants over the course of the training (before: $M = 3.92$, $SD = 0.79$; follow-up: $M = 4.17$, $SD = 0.41$) and was now similarly relevant to the researcher role. We also found a slight increase in intrinsic motivation to lead (before: $M = 3.75$, $SD = 0.87$; follow-up: $M = 4.00$, $SD = 1.00$). Participants felt confident in their ability to use leadership skills at work at the end of the training ($M = 4.00$, $SD = 0.63$).

In the follow-up survey, participants reported a gain in self-confidence as a leader and an increased awareness about the difference between a manager and a leader. Participants' personal takeaways illustrate emergence of training effectiveness at the organizational level (see Black & Earnest, 2009): "I now value the standpoint of the people I work with more" and "I am using my strengths to connect with people to improve cooperation." Participants also reported that they encountered some barriers in applying what they have learned: "I will need to adjust my time management to have room for self-reflection and feedback." The results of the follow-up survey 2 months after the fourth module confirmed our impression that participants were more self-confident as a leader and further developed their leadership abilities as a

major result of the training. These findings make us confident that the leadership training can potentially contribute to a sustainable change toward gender equality in nurturing leadership development to help women unlock their strengths as academic leaders.

Discussion

Within the extensive research of gender and leadership, theoretical and empirical work (albeit somewhat limited) has considered the elements necessary in leadership development to address challenges specific to women. For example, Cheung and Halpern (2010) presented a model of leadership development that incorporates work and family roles. Ely et al. (2011) suggested training as a helpful means in the development of leader identity of women. O'Neil, Hopkins, and Bilimoria (2015) presented their framework of women's leadership development integrating key challenges for women such as work-life integration. Still, these valuable frameworks do not address the specifics of the academic context; therefore, the direct transfer of these approaches might be inadequate. As such, we have two implications for management educators, namely (a) to have intricate knowledge of the academic context and (b) to be able to translate leadership best practices from management to the academic context. It follows, and our teaching case highlights, the practical need for management educators not only to have an intimate understanding of the university environment and its demands but also to be able to differentiate academic leadership from corporate management.

First, a practical implication for management educators is the need for intimate knowledge of the specific academic context (i.e., German universities, STEM fields) in addition to the broader understanding of leadership and management for effective training transfer. Female scientists are a population whose leader development needs are strongly shaped by the context. A lack of context specificity in leadership development would greatly limit its potential for the development of women's capacity to lead effectively in academia. In fact, there is only a limited number of leadership development programs that target female *academic* leaders (for instances, see Bilimoria et al., 2008). In our training, we provide a foundation and understanding of the female leadership role and effective behaviors for leading in academia in a series of four training modules. Our curriculum is based on the latest research about leadership in the academic context, for example, implicit theories about academic leadership, effective leadership in academia, and roles and identities of professors. Additional considerations in further refinement of our leadership development program may include the multiple marginalities (Turner, 2002) that afford female minorities working toward academic leadership

positions. Although the participants in the pilot program indeed had different nationalities, we did not address this explicitly in our training. Still, some of their challenges in establishing respect as a leader may be related to the fact that they are minority members with regard to both gender *and* nationality.

Second, a highly educated target group in the academic context calls for a well-founded, evidence-based training design with regard to the contents and the methods. Naturally, when individuals seek to develop themselves further as leaders, much of the evidence comes from the management education and business field. As such, leadership development needs for female scientists are often met by trainers or educators from the school of management. From our experience, the unique context of research leaders in universities calls for a careful consideration of state-of-the-art knowledge in management. We thus identified relevant concepts from the more general organizational and management context to substantiate our training. For example, we called on theories of values-based and transformational leadership, evidence on success factors in negotiations, and findings on the role of gender stereotypes, all of which are generalizable across contexts. In our view, a major success factor was explicit reference and involvement with latest research. From our experience, it was also paramount to draw connections between research findings and participants' daily work. Therefore, it is preferable that the trainer team is knowledgeable with regard to latest research about (academic) leadership and gender issues.

A key component of the dissemination of knowledge is also giving the participants time to reflect and think critically about their current work environment and how they can best prepare themselves for the next steps, both as scientists and as women. Our pilot program demonstrated the crucial need for female-only trainings to allow the participants to both voice their frustrations and seek advice regarding their specific role conflicts, experiences of stereotyping, and concerns about becoming a female academic leader. Additionally, delivering the curriculum as a trainer *team* enables individualized and intense trainer–learner interactions. In doing so, we allow the participants time to internalize the trainers' input and identify ways to unlock their strengths in order to develop further as an academic leader.

Although limited in their statistical interpretation, insights from the pilot of our leadership training imply that participants were more confident as a leader and showed progress toward becoming their ideal leader. Similar to others, we relied on self-report measures to measure development, which seemed appropriate because the program was targeted at the individual rather than the organization or community (see Black & Earnest, 2009). In our program pilot, we were reminded of Black and Earnest's (2009) statement on how difficult it is to measure the impact of training on leadership behavior.

Our assessment tackles this challenge in including evocative inquiry via open-ended questions in a follow-up survey to unmask learners' individual outcomes. The feedback from others they received in Module II acted as a baseline to which participants compared their development. Still, it would be highly advisable to reassess leadership behaviors including ratings by other persons later again. Future research should also provide evidence that participants show a more rapid advancement as a leader than comparable women *not* participating in the program.

To summarize, we are confident that our leadership training is successful in empowering women to take responsibility for their own career development by giving them the knowledge and strategies to proactively seek any support they would need to achieve their career goals. We hope to inspire future research to investigate academic leadership further as well as science institutions to address the leadership development needs of their female scientists.

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Note

1. Participation in the evaluation was voluntary. Results are therefore based on different sample sizes ranging from $n = 8$ to $n = 12$. Responses were given on Likert-type scales ranging from 1 = *I do not agree at all* to 5 = *I very much agree*.

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