Am I a Leader? Examining Leader Identity Development Over Time

The Leadership Quarterly 28 (2017) 605–620

Contents lists available at ScienceDirect

The Leadership Quarterly

journal homepage: www.elsevier.com/locate/leaqua

Am I a leader? Examining leader identity development over time

Darja Miscenko [a,b,*], Hannes Guenter [b], David V. Day [c]

[a] Management and Organisations, Business School, The University of Western Australia, Australia
[b] Department of Organisation & Strategy, Maastricht University, The Netherlands
[c] Kravis Leadership Institute, Claremont McKenna College, United States

ARTICLE INFO

Article history:
Received 1 September 2015
Received in revised form 16 January 2017
Accepted 17 January 2017
Available online 24 January 2017

Keywords:
Leader development
Leader identity
Leadership skills
Latent growth curve modeling
Latent change score analysis

ABSTRACT

The extent to which someone thinks of him- or herself as a leader (i.e., leader identity) is subject to change in a dynamic manner because of experience and structured intervention, but is rarely studied as such. In this study, we map the trajectories of leader identity development over a course of a seven-week leader development program. Drawing upon identity theory (Kegan, 1983) and self-perception theory (Bem, 1972), we propose that changes in self-perceived leadership skills are associated with changes in leader identity. Using latent growth curve modeling and latent change score analyses as our primary analytical approaches, we analyzed longitudinal data across seven measurement points ($N = 98$). We find leader identity to develop in a J-shaped pattern. As hypothesized, we find that these changes in leader identity are associated with, and potentially shaped by, changes in leadership skills across time.

Leader development is inherently longitudinal (Day, 2011b) involving a process by which leaders acquire relevant experiences, skills, behaviors, and knowledge over time (Lord & Hall, 2005). Robust research evidence demonstrates the value and benefits of interventions in developing leaders (for review see Avolio, Reichard, Hannah, Walumbwa, & Chan, 2009), but offers little insight into the longitudinal processes of leader development (Day & Dragoni, 2015). In addressing this oversight, leader identity has been proposed as a critical component of the leader development process (Day & Harrison, 2007). In proposing an integrative approach to leader development, Day, Harrison, and Halpin (2009) hypothesized that the observable, behavioral level of leadership skills is supported by deeper level mental structures, such as self-perception as a leader (i.e., leader identity). Nonetheless, the development of leader identity over time and its association with leadership skills have not been addressed in any detail in the empirical literature. We address these issues by focusing on intraindividual trajectories of leader identity over time (i.e., leader identity change). We use longitudinal modeling across seven measurement points to investigate leader identity change and its association with self-perceived leadership skills as a function of participation in a structured leader development program.

Identity can be conceptualized in various ways using a myriad of theoretical and methodological frameworks (see Miscenko & Day, 2016, for a comprehensive review of this literature). In the present study, identity refers to an individual's self-definition based on a relatively stable set of meanings associated with a particular role (Stryker & Burke, 2000), as compared with other conceptualizations of identity such as those grounded in social categories such as gender or race (e.g., Hogg, 2001) or those that view identity as part of an ongoing personal narrative striving for coherence (McAdams, 2006). Relatedly, it has been

* Corresponding author at: Management and Organisations, Business School, The University of Western Australia, (M261), 35 Stirling Highway, Crawley WA6009, Australia.
E-mail address: dmiscenko@gmail.com (D. Miscenko).

http://dx.doi.org/10.1016/j.leaqua.2017.01.004
1048-9843/

proposed that leader identity develops along four dimensions: (a) meaning, (b) strength, (c) integration, and (d) level (Hammond, Clapp-Smith, & Palanski, in press). In the present study, we focus on the dimensions of meaning and strength, as they are central to how we operationalize and measure leader identity. Meaning refers to the definition of leadership held by an individual (Burke, 2006) whereas strength refers to the extent to which an individual identifies as a leader. In this manner, leader identity incorporates connotations an individual assigns to a leadership role (i.e., meaning) and the degree of self-definition as a leader (i.e., strength).

Identity is important in the leader development process because it is thought to motivate individuals to seek out developmental experiences and opportunities to practice relevant leadership behaviors (Day et al., 2009). Recent theorizing has positioned leader identity as a proximal outcome of leader development, as leader identity links individual capabilities with more distal outcomes related to deep-level changes associated with adult development such as more complex meaning-making structures (Day & Dragoni, 2015; Lord & Hall, 2005). Correspondingly, we believe that the content of the focal leader development program prompts participants to engage in identity work (Alvesson & Willmott, 2002), which motivates leader identity change. Specifically, we propose that a leader development program presents a new set of identity meanings, which motivates participants to re-construct their currently held meaning of leader identity, and this will manifest in changing strength of leader identity (i.e., identity change). In addition, opportunities to practice leadership skills will strengthen an individual's self-perception as a leader and therefore motivate leader identity change.

Although research has greatly advanced our understanding of how individuals acquire and accumulate leadership skills over time (e.g., Dragoni, Oh, Vankatwyk, & Tesluk, 2011), we argue that skills-based approaches alone cannot capture the complex nature of leader development. Thus, here, we follow recent theoretical work that conceptualizes leader development as changes in both leadership skills and leader identity (Day et al., 2009; Lord & Hall, 2005). We investigate how self-perceived changes in leadership skills (i.e., initiating structure and consideration) relate to leader identity change (operationalized as changes in the strength of self-perception as a leader) among participants in a leader development program. We propose that leadership skills are inherently related to observed changes in leader identity and one of the primary aims of this research is to better understand that relationship. This is consistent with self-perception theory (Bem, 1972) whereby individuals draw inferences about their identity from perceptions of their own behavior. This theoretical framework is especially relevant to studying leader identity development because, we cannot know who we are until we see what we do (Ashforth & Schinoff, 2016). We use sophisticated longitudinal modeling techniques in the form of latent growth curve modeling (LGM) and latent change score (LCS) analyses to study the dynamic (and potentially reciprocal) relationships between leadership skills and leader identity change as a function of participation in a seven-week leader development program.

Overall, the present study contributes to the existing literature in several important ways. First, we track the development of leader identity over a period of two months by empirically mapping the underlying change trajectory across participants. Although leader identity has generated much interest among leadership researchers (e.g., Day & Dragoni, 2015; Van Knippenberg, 2011), few studies have investigated the longitudinal development of identity in the context of leader development programs, and most existing studies tend to be qualitative in nature (Andersson, 2012; Nicholson & Carroll, 2013). An exception is Day and Sin (2011) who assessed changes in leadership effectiveness over time and how those changes covary with leader identity (i.e., identity conceptualized as a time-varying covariate of effectiveness as a leader). The present study focuses on leader identity development as a proximal developmental outcome (Day & Dragoni, 2015), and hypothesizes and tests antecedents that are thought to predict leader identity change (e.g., leadership skills).

Second, we incorporate behavioral and information-processing theories of leadership by investigating how leadership skills relate to changes in leader identity over time. In doing so, we address criticism suggesting that different streams of leadership research have not been sufficiently integrated (DeRue, Nahrgang, Wellman, & Humphrey, 2011). This also allows us to more fully describe the process of leader development and complement the current literature that tends to focus on single dimensions of leader development.

Third, we respond to calls to more fully account for the role of time in leadership and the longitudinal nature of leader development (Day, 2011a; Riggio & Mumford, 2011). Because leader development represents a dynamic phenomenon, within-person research based on repeated measures offers the potential to greatly advance our understanding of the processes that underlie leader development (Shipp & Cole, 2015). Relatedly, we demonstrate the flexibility and usefulness of applying a novel analytical framework (Latent Change Score analysis; McArdle, 2009) in studying change-related issues in leader development research.

Conceptual background and hypotheses development

Leader identity change

Leader identity refers to the “sub-component of one's identity that relates to being a leader or how one thinks of oneself as a leader” (Day & Harrison, 2007, p. 365). As a type of cognitive schema, leader identity serves as a repository for information and knowledge attached to a leadership role (Lord & Hall, 2005), and directs an individual's behavior and interactions in leadership roles and processes (Day et al., 2009). For example, leader identities were found to relate uniquely to the frequency of transformational and abusive leader behaviors (Johnson, Venus, Lanaj, Mao, & Chang, 2012), self- or group-serving behaviors (Giessner, Van Knippenberg, & Sleebos, 2009; Rus, Van Knippenberg, & Wisse, 2010), and others' perceptions of someone's leadership effectiveness (Day & Sin, 2011).

As noted previously, identity theory conceptualizes identity as a relatively stable and enduring entity, yet driven by an underlying dynamic homeostasis operating continuously in a self-adjusting feedback loop (Burke, 1991). Thus, more long-term identity changes are thought to be unusual, difficult, and externally initiated (Ashforth & Schinoff, 2016; Miscenko & Day, 2016). Examples of such external events affecting a particular social role are work role transitions and participation in professional development activities. External events expose an individual to a new set of identity meanings, which could conflict with the meaning ascribed to the specific role-related identity. This conflict prompts an individual to re-construct the meaning of his or her currently held identity (Hall, 2004; Ibarra, 1999; Sveningsson & Alvesson, 2003), which manifests itself in changing identity strength (i.e., identity change). In general, this process is conceptualized as identity work, defined as "forming, repairing, maintaining, strengthening or revising the constructions that are productive of a precarious sense of coherence and distinctiveness" (Alvesson & Willmott, 2002, p. 626). For example, Ibarra (1999) found that young professionals transitioning into more senior managerial work roles engaged in identity work by constructing provisional professional identities that helped in exploring various meanings of the new role (also see Pratt, Rockmann, & Kaufmann, 2006).

In leader development programs, participants are often confronted with an idealized description of a leadership role (e.g., examples of prominent leaders), which may motivate a re-construction of the meaning of one's identity as a leader (Gagnon & Collinson, 2014), while also changing the strength of that identity. For example, comparing oneself to other influential leaders or more general representations of leaders is positively associated with individual motivation to lead (Guillén, Mayo, & Korotov, 2015), which is related, but not identical, to leader identity. Similarly, students exposed to transformational leadership examples reported a significant increase in transformational leader role identity compared to a control group (Waldman, Galvin, & Walumbwa, 2013). Self-reflection that is often induced by leader development interventions also facilitates such leader identity re-construction (Day et al., 2009). Andersson (2012) reported that identity construction undertaken by managers participating in a personal development program was partly because the program prescribed self-awareness as a normative identity process.

Based on the available theoretical and empirical evidence, we propose that participants in a leader development program experience leader identity changes. Specifically, the program promotes leader identity changes by offering participants various new descriptions of the leadership role through presentation of different leadership theories and examples of prominent leaders. Participants also engage in discussions that expose them to leadership views and meanings held by others. In addition, such a program encourages participants to engage in guided self-reflection that also encourages leader identity change.

Despite the general expectation of leader identity change during a leadership development program, there is little available theoretical guidance to hypothesize the underlying form of such identity change. In some of the only previous empirical research on longitudinal changes in leader identity, Day and Sin (2011) successfully modeled leader identity as a time-varying covariate of curvilinear changes in leadership effectiveness. Specifically, the overall form of that change was shown to be generally negative across time with a positive trend in the last measurement period; however, having a stronger self-rated leader identity was associated with higher other-rated leadership effectiveness across four measurement points. Conversely, other empirical evidence suggests that leader identity tends to become stronger as an outcome of leader development interventions (Waldman et al., 2013). Extending these previous findings, we propose that the structural form of leader identity change is likely to be curvilinear and becoming stronger over time. As noted by researchers in the field of life-span development (e.g., Baltes, 1987; Baltes, Reese, & Lipsitt, 1980), development involves an underlying dynamic between gains and losses, which renders perfectly linear forms of development as unlikely. We believe that this gain/loss dynamic also applies to leader identity change.

There are other theoretical reasons to expect curvilinear forms of development. Prominent adult development theorists propose that identity is unlikely to develop linearly toward more positive self-perception (Kegan, 1983; Levinson, 1978). For example, evolutionary views on identity construction suggest that adaptation to a new role involves generating variations of identity to select or discard different possibilities as a preliminary step in constructing a new and consistent identity (Yost, Strube, & Bailey, 1992). In line with this perspective, Ibarra (1999) found that professionals generate various possible selves following career transitions and retain or discard some of these provisional identities based on internal evaluation of compatibility and external feedback. During a transition, movement toward a specific new identity is accompanied by a growing commitment to this identity (Ibarra & Petriglieri, 2010).

Despite this positive movement, the uncertainty about new identity in light of multiple possible selves also creates negative dynamics of identity construction. In other words, there are presses both toward and away from a new identity. More specific to this research is the identity construction process associated with the context of leader development initiatives. For example, initial qualitative evidence suggests that participants in a longitudinal leader development program struggled to redefine their leader identity and went through a considerable period of uncertainty as to the meaning of leadership (Nicholson & Carroll, 2013). Similarly, Lemler (2013) conceptualized negative changes in leader identity as temporary disengagement from leadership. Thus, participants in a leader development program confronted with new meanings of a leadership role are likely to construct several provisional leader identities (i.e., ongoing revisions of one's identity as a leader) to then retain, discard, or revise, which will ultimately strengthen their self-perception as a leader. However, after a period of initial doubt, individuals are thought to be able to construct a coherent sense of self in a leadership role. This is all part of ongoing identity work.

Hypothesis 1. The trajectory of leader identity change among the participants in a leader development program will be curvilinear with identity becoming stronger over time.

Leader identity and leadership skill

Historically, leader development has been closely linked to leadership skill acquisition (Day & Dragoni, 2015; Day et al., 2009) and several typologies of leadership skills have been introduced differentiating skill requirements by organization level (e.g., Mumford, Campion, & Morgeson, 2007). Across all organizational levels, interpersonal behavior skills (e.g., consideration and initiating structure) are important for leaders and their development (Lord & Hall, 2005; Mumford et al., 2007). Meta-analytical results further suggest that interpersonal skills predict important leadership outcomes such as follower job satisfaction and leader effectiveness (DeRue et al., 2011; Judge, Piccolo, & Ilies, 2004). In addition, changes in behavioral skills are considered to be antecedents of changes in leader performance and potentially shape other proximal outcomes of leader development such as leader identity (Day & Dragoni, 2015; Van Iddekinge, Ferris, & Heffner, 2009).

We propose that participants' engagement with the development of interpersonal leadership skills in a leader development program will strengthen their self-perception (i.e., identity) as leaders. This is consistent with self-perception theory (Bem, 1972), which postulates that individuals derive information about their attributes and beliefs from observing their own behavior. For example, Tice (1992) demonstrated that presenting oneself as having a certain quality (i.e., extraversion) in public, increased self-perceptions of possessing that quality (i.e., "I am extraverted"). Because identity is closely aligned with a social role and particular role-related behaviors, we propose that experience of a particular behavior will affect the related identity (Rise, Sheeran, & Hukkelberg, 2010). In other words, individuals thinking and acting as leaders will perceive themselves as more leader-like.

The notion of identity-development spirals (Day et al., 2009) suggests that leader identity change could be either positive or negative. In case of a positive identity development spiral, individuals will exercise their leadership skills, receive confirmation for their leadership claims, further align leadership behaviors with a leadership role, which will lead to stronger self-perceptions as a leader. Stronger leader identity then motivates an individual to further develop leadership skills through engagement with leadership. In case of a negative developmental spiral, at some point in time an individual fails to assert effective leadership, which prevents the alignment between the leadership role and identity. This further diminishes the motivation to exercise leadership skills, which will ultimately weaken leader identity (DeRue, Ashford, & Cotton, 2009; Ely, Ibarra, & Kolb, 2011). We expect that leader development programs designed to improve leadership skills do so by engaging participants in skill-enhancing experiences. We further argue that these experiences will manifest in leader identity change. As noted previously, self-perception theory postulates that identity is inferred and reinforced through observing the self as acting like a leader.

Hypothesis 2. Changes in self-perceived leadership skills (initiating structure and consideration) are related to changes in leader identity.

Method

Participants and procedure

Participants were postgraduate students ($N = 98$) engaged in a seven-week leadership course at a Dutch business school. The course was designed to provide students with academic knowledge on leadership and motivate them to reflect on their own leadership capabilities. Students met in small groups (12–15 participants) twice a week for 2 h. Each session included an interactive presentation on selected leadership topics by two students, including videos, role plays, and group discussions. A pre-reading was required before attending each session. All students (including those absent in the session) were required to submit several pages of reflection on the session's topic, including how it relates to their own leadership practice. In addition, roughly half of the students ($N = 48$) took part in a short (two hour) leader development workshop in the second week of the course, whereas the other half completed the same workshop in the sixth week of the course. The workshop was designed using a behavior modeling training approach (Taylor, Russ-Eft, & Chan, 2005) to give participants a better understanding of leadership behaviors (e.g., initiating structure, consideration) and was intended to supplement the content of the seven-week development course. Subsequent evaluation indicated that the workshop had no statistically significant effects on self-reported skills or identity changes.

Despite the many calls to more fully incorporate time in leadership theory and empirical research (e.g., Day, 2011a; Shamir, 2011) little guidance is available to determine the optimal length of an intervention. The length of the leader development program in the present study is comparable to other studies on leader emergence in higher education populations, such as work from Sorrentino and Field (1986) who measured changes in student leadership ratings over the course of five weeks. Other studies used substantially shorter time frames (i.e., 3–6 h) but still found significant effects (see Avolio et al., 2009), which supports our confidence in the seven-week timescale.

For the majority of students (80%), the course formed a mandatory part of their curriculum. All students enrolled in the course were approached with an offer to participate in the research study; 92% volunteered and completed the first questionnaire. Only students that completed the first questionnaire were retained in the sample. In exchange for participation, students had the possibility to request a personalized leadership profile that outlined their self-ratings on personality and leader identity including suggestions for future leader development. These profiles were distributed to participants several weeks after completion of the course. 45% of the respondents were female and the average age was 23.4 years. Respondents had 12.6 months full-time work experience, on average, prior to enrolling in the current study program. 40% of respondents were currently employed for an average of 12 h per week, and 16 (16%) participants reported having a supervisory position at their current place of employment.

Questionnaires were distributed to participants once a week by tutors at the end of the class. In addition, an e-mail reminder was sent at the end of the day to all students to allow those who were absent from class to fill-in the questionnaire online. The total duration of the study was eight calendar weeks (one week was excluded due to public holidays). Participants received the first questionnaire in week 1 (T0), the second questionnaire in week 3 (T1), the third questionnaire in week 4 (T2), and so on for a total of seven measurement points. On average, respondents completed 6.5 surveys; the response rate varied between 88.8% and 100% (93.4% on average).

Measures

Leadership skills were conceptualized according to the Ohio State two-factor leader behavior model of initiating structure and consideration (Fleishman, 1973). Initiating structure refers to clarifying task responsibilities, providing direction, and letting subordinates know what is expected of them. Consideration refers to showing concern for employees' well-being, expression of support, and display of warmth and approachability (Fleishman, 1973; Lambert, Tepper, Carr, Holt, & Barelka, 2012). To measure initiating structure and consideration we adopted the scale developed by Lambert et al. (2012). The items were modified, as participants rated themselves and not their leader. To reduce potential self-report bias, the referent for the scale was changed so that the respondents were asked to describe how others would assess their behavior, instead of providing an explicit self-assessment (e.g., Schat & Frone, 2011). We did so based on empirical findings indicating that by asking employees to change their perspective, socially desirable responding tendencies are reduced, yielding more accurate ratings of one's performance (Schoorman & Mayer, 2008).

Both leadership skill dimensions were measured at each time period using three items. A sample item from the consideration scale was "Acting concerned for others personal welfare." A sample item for initiating structure was "Encouraging others to use uniform procedures." Participants were asked to rate the items on a five-point scale (1 = *definitely not* to 5 = *definitely yes*). Leadership skills were measured every week. In all questionnaires, except for the first one, we instructed respondents to rate their behavior of the last seven days. This was necessary to identify possible changes in skills over time. Across seven measurement periods the consideration scale ($\alpha = 0.71$–0.84) demonstrated acceptable reliability. The initiating structure scale ($\alpha = 0.63$–0.83) demonstrated acceptable reliability at all measurement points, except T3 (see Table 2).

Leader identity was measured using the descriptive sub-scale items from the leader self-identity scale developed by Hiller (2005). The sub-scale was developed to measure the extent to which respondents considered leader identity as descriptive of themselves. The sub-scale was used in previous longitudinal research demonstrating acceptable reliability ($\alpha = 0.80$–0.86; Day & Sin, 2011). Participants were asked to rate on a five-point scale (1 = *not at all descriptive* to 5 = *extremely descriptive*) how self-descriptive each statement was. Sample items are 'I am a leader' and 'I prefer being seen by others as a leader'. This leader identity measure was included in all weekly questionnaires. Similar to leadership skill measurement, participants were asked to rate the items with the previous seven days in mind (this applied for all weekly surveys except the first one). This was done to better capture the weekly development of leader identity. Across the seven measurement points the scale exhibited acceptable reliability ($\alpha = 0.79$–0.90).

Control variables. We controlled for a number of demographic characteristics, work and leadership experiences, as well as Big Five personality traits (total of 11 control variables). First, prior empirical evidence suggests that there might be a difference in leader self-perceptions between males and females (Day & Sin, 2011). Second, meta-analytical evidence suggests that some personality traits are related to leadership (Judge, Bono, Ilies, & Gerhardt, 2002). Finally, leadership experience—and, relatedly, age—contributes to the development of leadership skills (McCall, 2010).

Analytical strategy

Latent growth curve modeling (LGM) (Duncan, Duncan, & Strycker, 2006; Wang & Wang, 2012) and Latent Change Score (LCS) analyses (Ferrer & McArdle, 2010; McArdle, 2009) were used to test the hypotheses. Both of these modeling approaches allow estimating leader identity change as well as leadership skills changes as separate and distinct latent constructs. LGM is a type of structural equation modeling technique used to model the outcome growth trajectory, including the initial levels of the outcome, the form of the growth trajectory, and the rate of change (Wang & Wang, 2012). LGM models describe data by estimating latent intercept and slope growth factors that have a mean and variance parameter, so that both the overall growth trajectory and individual variation in trajectories can be estimated.

LCS extends LGM as it allows modeling dynamic relations between several constructs as these develop over time (Ferrer & McArdle, 2010). Specifically, LCS is used to examine dynamic (i.e., lead-lag) reciprocal relationships related to individual differences in change. In a bivariate LCS model, latent intercepts and slopes are modeled as typically done in LGM. However, the unique feature of LCS is that it explicitly models a latent change variable for each individual that represents the change (i.e., gains or losses) in the true score between two adjacent time points. The traditional bivariate change model posits that changes in one variable (e.g., change in leader identity from time $t - 1$ to time t) are dependent on a constant change component that differs across individuals (e.g., leader identity slope, μ_s), the previous true state of the same variable (within-construct; e.g., leader identity at time t, β), and the previous true state of another variable (cross-construct; e.g., leadership skill at time t, γ, also referred to as a coupling parameter). This traditional model is useful for examining how the previous *level* of one variable influences the subsequent *changes* in another variable.

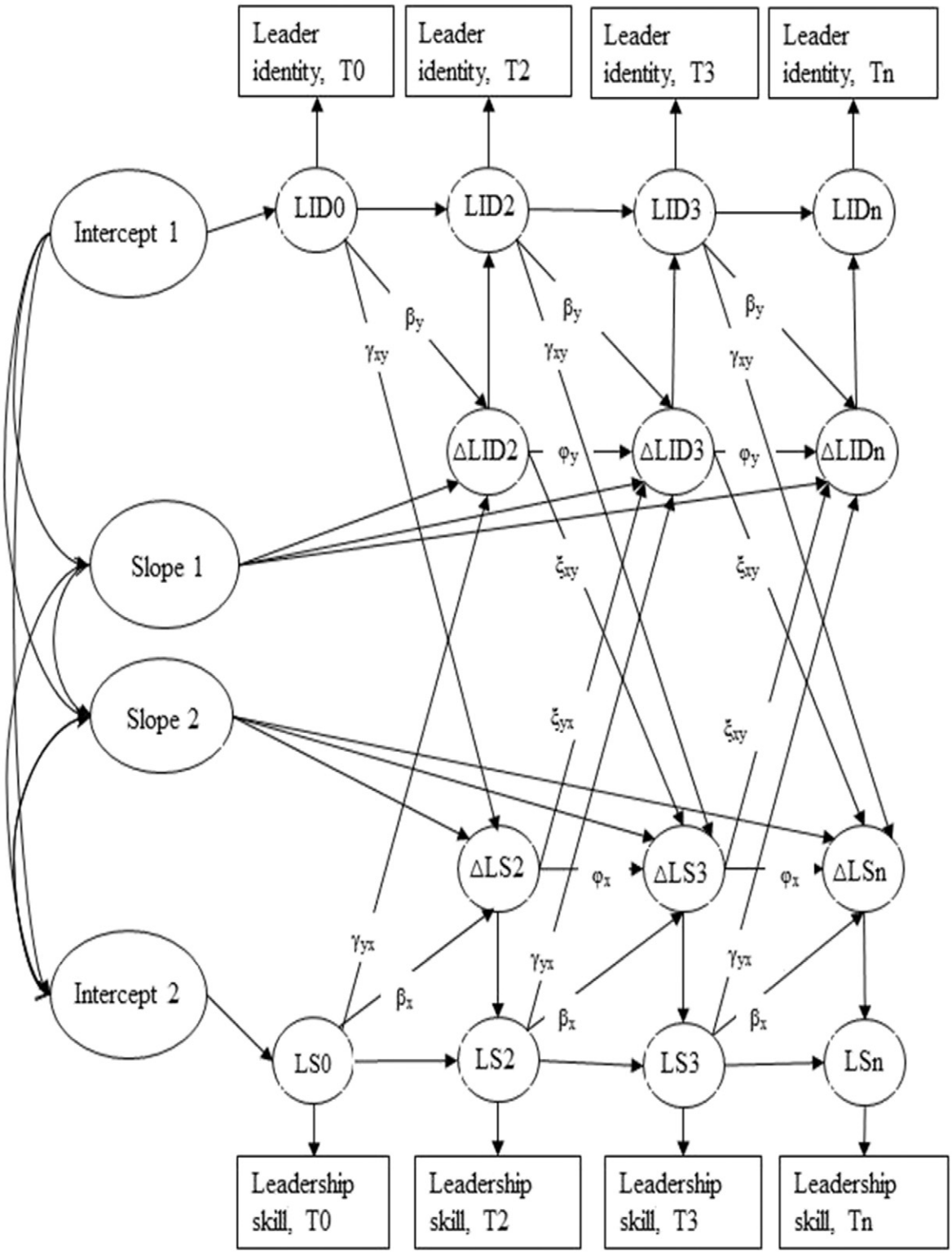

Fig. 1. Bivariate latent change score model with changes to changes extension for leader identity and leadership skills. Adapted from Grimm et al. (2012). This is a simplified representation of a bivariate latent change score model.

In the present study, however, we were interested to examine whether previous changes in one variable (i.e., changes in leadership skills) influence the subsequent changes in another variable (i.e., changes in leader identity). Therefore, we adopted the changes-to-changes extension of bivariate LCS developed by Grimm, An, McArdle, Zonderman, and Resnick (2012) that allows examining how prior changes relate to subsequent changes by modeling these changes as distinct latent constructs. In addition to estimating the parameters described above, the changes-to-changes extension of bivariate LCS allows researchers to assess whether subsequent changes in one variable (i.e., changes in leader identity from time $t-1$ to time t) are dependent on the previous within-construct changes (i.e., changes in leader identity from time $t-2$ to time $t-1$,φ) and the previous cross-construct changes (i.e., changes in leadership skills from time $t-2$ to time $t-1$,ξ). Thus, the changes-to-changes extension of bivariate LCS model provides a more complex dynamic system framework to account for the influence of recent changes on subsequent changes. In the present study, this allows us to examine whether changes in leader identity from $t-1$ to t are impacted by changes in leadership skill from $t-2$ to $t-1$. Fig. 1 presents a simplified path diagram of a bivariate LCS model and changes-to-changes extension with two factors: leader identity and leadership skills.

Analytical technique

Traditional bivariate LCS models as well as changes-to-changes extensions were fit to repeated measures of leader identity and leadership skills (initiating structure and consideration) in an exploratory nature (i.e., all models were fitted and compared). Following Grimm et al. (2012), nested models were compared using likelihood ratio tests (change in −2 log-likelihood with respect to the change in the number of estimated parameters) and information criteria (Akaike's Information Criterion (AIC) and Bayesian Information Criterion (BIC).

We evaluated goodness-of-fit by using the chi-square value (Wang & Wang, 2012) and a number of fit indices, such as comparative fit index (CFI), Tucker-Lewis index (TLI), and root mean square error of approximation (RMSEA). Acceptable model fit was indicated by the following values: CFI and TLI above 0.90, RMSEA below 0.08 with a 90% confidence interval between 0 and 0.08 (Hu & Bentler, 1999; Wang & Wang, 2012). In accordance with recommendations on longitudinal organization research using LCS analysis (e.g., Li, Fay, Frese, Harms, & Gao, 2014), we did not use standardized root mean square residual (SRMR) to assess model fit.

All analyses in this study were performed using the Mplus statistical software (version 7.1; Muthén & Muthén, 1998-2012). The model parameters were estimated using maximum-likelihood estimation with robust standard errors. In LGM analyses, the residual variances of leader identity were estimated as equal over time in all models (Byrne & Crombie, 2003). To fulfill measurement invariance criteria for LCS, within-construct errors were constrained to equality across measurement occasions.

Models

Bivariate models were fit in two steps. First, we fitted the following four traditional bivariate LCS models: a model with no coupling parameters (i.e., no relationships between skills and identity; Model 1a); level of identity leading to changes in leadership skill (initiating structure or consideration; Model 2a); level of leadership skill leading to changes in leader identity (Model

Table 1
Results of confirmatory factor analyses.

		χ^2 (df)	CFI	RMSEA
Time 0	3-Factor model	51.42* (32)	0.930	0.079
	2-Factor model	120.66*** (34)	0.687	0.161
	1-Factor model	149.91*** (35)	0.585	0.183
Time 2	3-Factor model	52.21* (32)	0.932	0.085
	2-Factor model	127.88*** (34)	0.685	0.177
	1-Factor model	175.89*** (35)	0.528	0.214
Time 3	3-Factor model	44.16 (32)	0.967	0.064
	2-Factor model	71.25*** (34)	0.899	0.108
	1-Factor model	169.48*** (35)	0.634	0.202
Time 4	3-Factor model	64.62*** (32)	0.914	0.106
	2-Factor model	131.19*** (34)	0.745	0.177
	1-Factor model	221.14*** (35)	0.511	0.242
Time 5	3-Factor model	52.56* (32)	0.950	0.085
	2-Factor model	114.02*** (34)	0.804	0.164
	1-Factor model	190.25*** (35)	0.620	0.225
Time 6	3-Factor model	44.49 (32)	0.969	0.064
	2-Factor model	95.85*** (34)	0.847	0.138
	1-Factor model	184.69*** (35)	0.629	0.212
Time 7	3-Factor model	36.71 (32)	0.990	0.041
	2-Factor model	150.90***(34)	0.752	0.200
	1-Factor model	209.03***(35)	0.630	0.240

Note:
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

Table 2
Means, standard deviations, reliabilities and correlations of study variables.

		Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Consideration																								
1	Time 0	4.23	0.55	(0.71)																				
2	Time 2	4.16	0.60	0.54	(0.79)																			
3	Time 3	4.13	0.68	0.28	0.34	(0.80)																		
4	Time 4	4.12	0.71	0.47	0.48	0.60	(0.83)																	
5	Time 5	4.15	0.57	0.50	0.51	0.35	0.45	(0.76)																
6	Time 6	4.11	0.65	0.25	0.31	0.37	0.43	0.40	(0.81)															
7	Time 7	4.11	0.72	0.48	0.47	0.39	0.55	0.40	0.45	(0.84)														
Initiating structure																								
8	Time 0	3.57	0.74	0.08	0.08	0.24	0.11	0.08	0.15	−0.05	(0.71)													
9	Time 2	3.48	0.70	0.07	0.05	0.07	0.07	0.08	0.04	0.06	0.30	(0.75)												
10	Time 3	3.46	0.66	0.17	0.08	0.34	0.26	0.06	0.22	0.17	0.27	0.45	(0.63)											
11	Time 4	3.43	0.75	0.03	−0.13	0.08	0.19	−0.16	0.03	0.08	0.18	0.39	0.43	(0.75)										
12	Time 5	3.44	0.76	0.16	0.17	0.08	0.11	0.31	0.20	0.14	0.26	0.50	0.40	0.33	(0.79)									
13	Time 6	3.56	0.70	0.19	0.13	0.36	0.28	0.26	0.30	0.33	0.24	0.40	0.59	0.38	0.48	(0.73)								
14	Time 7	3.60	0.84	−0.02	−0.05	0.22	−0.02	0.19	0.19	0.15	0.38	0.42	0.45	0.36	0.53	0.57	(0.83)							
Leader identity																								
15	Time 0	3.25	0.75	0.10	−0.07	0.00	0.08	0.03	0.10	−06	0.36	0.17	0.12	0.22	0.27	0.16	0.23	(0.80)						
16	Time 2	3.11	0.80	0.27	0.19	0.18	0.23	0.15	0.07	0.07	0.17	0.38	0.28	0.23	0.29	0.27	0.17	0.58	(0.81)					
17	Time 3	3.08	0.95	0.10	0.12	0.30	0.15	0.06	0.04	−0.01	0.14	0.19	0.26	0.20	0.28	0.30	0.26	0.50	0.57	(0.88)				
18	Time 4	3.07	0.90	0.15	0.05	0.30	0.22	0.08	0.05	−0.02	0.22	0.24	0.12	0.34	0.22	0.18	0.19	0.58	0.60	0.72	(0.83)			
19	Time 5	3.14	0.96	0.32	0.12	0.15	0.14	0.27	0.12	0.14	0.18	0.24	0.10	0.18	0.37	0.30	0.18	0.57	0.58	0.50	0.66	(0.88)		
20	Time 6	3.20	0.91	0.23	0.09	0.20	0.20	0.11	0.28	0.23	0.19	0.06	0.10	0.20	0.32	0.32	0.24	0.50	0.45	0.53	0.55	0.71	(0.89)	
21	Time 7	3.38	0.96	0.24	0.01	0.20	0.03	0.14	0.14	0.11	0.33	0.21	0.19	0.17	0.28	0.41	0.49	0.26	0.44	0.51	0.63	0.69	0.68	(0.90)

Note: All coefficients in bold significant at $p < 0.05$. Reliabilities in parentheses.

3a); and bidirectional coupling model that includes both coupling parameters (Model 4a). The best fitting model was retained for second step estimations. Second, models included parameters examining how prior changes related to subsequent changes. The first model (Model 1b) added the within-construct changes to changes parameters. Next, two models were estimated to include one cross-construct changes-to-changes parameter: changes in leader identity as a predictor of changes in leadership skill (Model 2b) or changes in leadership skill as a predictor of changes in leader identity (Model 3b). Finally, Model 4b included the estimation of both cross-construct changes-to-changes parameters.

Results

Dimensionality of study variables

Confirmatory factor analyses were conducted to demonstrate the distinctiveness of study variables at each of the measurement occasions. Results show that a three-factor model (leader identity, initiating structure, and consideration) yielded an acceptable fit to the T0 data: χ^2 (32) = 51.42, $p < 0.01$, CFI = 0.93, RMSEA = 0.079. This model fit the data better than an alternative two-factor model combining the two leadership skills variables: χ^2 (34) = 120.66, $p < 0.001$, CFI = 0.687, RMSEA = 0.161; and a one-factor model combining all the three variables: $\chi^2(35)$ = 149.90, $p < 0.001$, CFI = 0.585, RMSEA = 0.183. Similar results were obtained for data collected at the other six waves with three-factor model yielding adequate fit to the data and alternative models resulting in poorer model fit (see Table 1). These results suggest our measures were distinct from each other for all seven occasions. Table 2 presents descriptive statistics and intercorrelations for all study variables.

Effect of leadership workshop

As noted previously, workshop participation was unrelated to other study variables. Bootstrapped independent samples *t*-tests indicated that participants in the earlier workshop were not significantly different from participants in the later workshop in terms of the demographic variables, leader identity, or leadership skills (i.e., initiating structure and consideration) for any of the measurement points. Workshop participation did not have any significant effects on self-rated leadership skills or leader identity.[1]

Sample homogeneity

Before testing our hypotheses we calculated an intraclass correlation coefficient (ICC1 = 0.57), indicating that approximately 57% of the variance in individual-level leader identity scores is attributable to between-individual differences, whereas the remainder is a function of within-individual differences over time. We conducted some exploratory analyses to ensure sample homogeneity. We used growth mixture modeling (GMM), which allows researchers to identify any unobserved subpopulations in longitudinal data and to predict differences in intercepts and slopes among two or more latent classes (Wang & Bodner, 2007). The fit indices suggested that the 2-class solution did not provide a better fit than a 1-class (initial model) solution (BIC = 1339.39, entropy = 0.78, Adjusted LRT = 6.41, ns), therefore, we concluded that the sample was fairly homogenous in terms of developmental trajectories.

Hypothesis 1: leader identity trajectory

Hypothesis 1 predicted that overall leader identity trajectory would be positive and curvilinear. To estimate the most appropriate overall functional form of the leader identity developmental trajectory, we followed modeling procedures outlined by Duncan et al. (2006). Time was included in the model with intercept and slope loadings fixed at 0, 2, 3, 4, 5, 6, and 7, to accurately represent the measurement points in the data (week 1 missing due to public holiday). The fit indices of the identified models are presented in Table 3.

First, we estimated a null (fixed intercept-only model) and then subsequently freed model parameters (i.e., random-intercept model, random intercept fixed slope, random intercept random slope models). A model with linear slope resulted in an adequate fit to the data: χ^2 (29) = 58.1, $p < 0.01$, CFI = 0.917, TLI = 0.940, RMSEA = 0.101. Finally, we modeled a nonlinear slope of leader identity by including the quadratic change latent factor. This model exhibited a better fit: $\Delta\chi^2$ (4) = 24.17, $p < 0.001$, CFI = 0.974, TLI = 0.979, RMSEA = 0.060. The model with a cubic latent slope factor was non-identifiable. The trajectory parameters for the model with quadratic change latent factor were all significant (intercept $\beta = 3.25$, $p < 0.001$; linear slope $\beta = -0.11$, $p < 0.001$; quadratic slope $\beta = 0.02$, $p < 0.001$). Overall, these analyses suggest that leader identity develops in a curvilinear fashion (i.e., J-shape, see Fig. 2). Thus, Hypothesis 1 is supported.

We further assessed whether any of the control variables had an effect on the intercepts and slopes of leader identity trajectory (see Appendix 1). A quadratic trajectory model with 11 control variables exhibited adequate fit: χ^2 (69) = 93.13, $p < 0.05$, CFI = 0.940, RMSEA = 0.063. Results suggest that one of the Big 5 personality traits (extraversion) had a significant effect on the

[1] The workshop could be considered as a leadership intervention in itself. However, it was intended to supplement the 7-week development program, and as such is nested within the larger intervention. The nonsignificant results suggest that the effects of the longer and more comprehensive 7-week intervention overshadowed any effects of the workshop.

Table 3
Latent growth curve modeling to establish the developmental trajectory of leader identity over time (Hypothesis 1).

	Intercept-only model (null)	Random-intercept model	Random intercept, fixed slope model	Random intercept, random slope model	Random intercept, random slope model with quadratic term
χ^2 (df)	389.44*** (33)	75.48*** (32)	73.60*** (31)	58.10** (29)	33.93 (5)
$\Delta\chi^2$ (df)		313.96*** (1)	1.88 (1)	15.5*** (2)	24.17*** (4)
CFI	0.000	0.876	0.878	0.917	0.974
TLI	0.351	0.918	0.917	0.940	0.979
RMSEA	0.332	0.118	0.118	0.101	0.060
RMSEA: 90% CI	0.303–0.362	0.084–0.152	0.084–0.154	0.063–0.139	0.001–0.107
Residual variance	0.795***	0.345***	0.344***	0.315***	0.291***

Note:
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

initial level (i.e., intercept) of leader identity. Therefore, we control for extraversion in the subsequent analyses. All other tested relations were insignificant and thus were not included in tests of our hypotheses to preserve maximum statistical power.

Hypothesis 2: lagged effects of leadership skills

Hypothesis 2 predicted that leadership skills are related to change in leader identity. To examine the relationships between leader identity and leadership skills over time, we first examined the growth trajectories of leadership skills using LGM. We proceeded by fitting several LCS models, starting with traditional LCS models: correlated growth model only (Model 1a); a leader identity to leadership skill coupling only model (Model 2a); a leadership skill to leader identity coupling only model (Model 3a); and a full, bidirectional-coupling model (Model 4a). Retaining the best fitting model from the previous step, we further fitted models with changes-to-changes extension: within-construct changes to changes parameters only model (Model 1b); changes in leader identity as a predictor of changes in leadership skill only model (Model 2b); changes in leadership skill as a predictor of changes in leader identity only model (Model 3b); and full model with both cross-construct changes-to-changes parameters (Model 4b).

Initiating structure

Following the same procedure that we used when testing for the most appropriate functional form of the leader identity trajectory, we found a random intercept random slope model with a quadratic change latent factor to yield the best fit to the data: χ^2 (25) = 17.43, ns, CFI = 0.998, TLI = 0.999, RMSEA = 0.001. The trajectory parameters were significant (intercept $\beta = 3.58$, $p < 0.001$; linear slope $\beta = -0.08$, $p < 0.05$; quadratic slope $\beta = 0.01$, $p < 0.05$). This suggests that the developmental trajectory of changes in initiating structure skill is similar to that of leader identity changes.

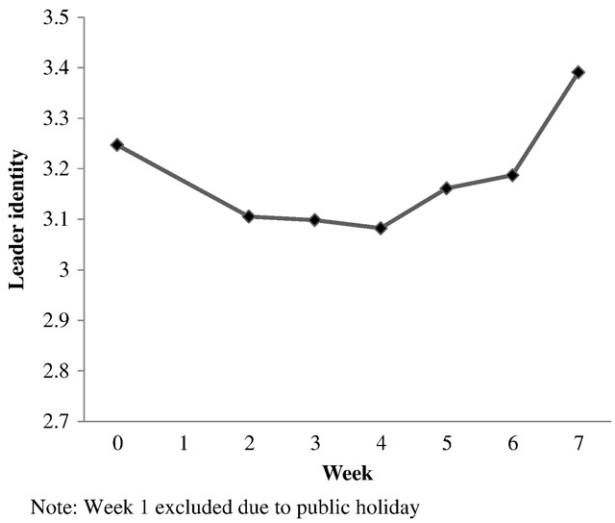

Fig. 2. Leader identity developmental trajectory among study participants (Hypotheses 1). Note: week 1 excluded due to public holiday.

Table 4
Fit statistics for traditional bivariate latent change score models and changes to changes extension (initiating structure).

Traditional bivariate latent change score models				
	Model1a No coupling	Model2a LID [t − 1] → ΔIS[*t*]	Model3a[#] IS [t − 1] → ΔLID[*t*]	Model4a Bidirectional coupling
−2LL (parameters)	2254 (21)	2242 (22)	2237 (22)	2241 (23)
AIC	2296	2286	2281	2287
BIC	2348	2341	2336	2345
ABIC	2282	2271	2266	2272

Changes to changes extension				
	Model1b[^] No changes to changes coupling	Model2b[^] ΔLID [t − 1] → ΔIS[*t*]	Model3b ΔIS [t − 1] → ΔLID[*t*]	Model4b[^] Bidirectional coupling
−2LL (parameters)	–	–	2232 (25)	–
AIC	–	–	2282	–
BIC	–	–	2344	–
ABIC	–	–	2265	–

Note: LID = Leader identity; IS = Initiating structure; −2LL = −2 log-likelihood; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; ABIC = sample size adjusted Bayesian Information Criterion.
The effect of extraversion on the intercept of leader identity and initiating structure was controlled for in all analyses.
[^] Model could not be identified (iterations = 100,000, convergence = 0.0001, coverage = 0.0001).
[#] Selected model.

Fit statistics for the four bivariate LCS models and four models with changes-to-changes extension for leader identity and initiating structure skill are contained in Table 4. First, we focus on traditional LCS bivariate Models 1a to 4a. Based on the likelihood fit statistics, Model 3a estimating level of initiating structure leading to changes in leader identity was considered the best representation of the dynamics between leader identity and initiating structure (−2LL = 2237, parameters = 22). This model fit significantly better than the no coupling Model 1a (Δ − 2LL = 17, Δparameters = 1, $p < 0.001$) or the full bidirectional Model 4a (Δ − 2LL = 4, Δparameters = 1, $p < 0.05$). The model fit indices cannot be directly compared between Model 2a (estimating level of leader identity leading to changes in initiating structure) and Model 3a, because these are not nested. Therefore, we relied on information criteria to compare these models. Model 3a had lower values on all three information criteria, thus it was selected as the best fitting model. Finally, Model 3a yielded an adequate fit to the data: CFI = 0.947, TLI = 0.950, RMSEA = 0.057. This model was retained for the next stage of analysis.

The second series of bivariate Models 1b to 4b that included prior changes as predictors of subsequent changes were fit. Models 1b, 2b, and 4b were non-identifiable. Model 3b was estimated with initiating skill to leader identity coupling parameter and the parameter from prior changes in initiating structure to subsequent changes in leader identity. However, this model was not significantly better than Model 3a (Δ − 2LL = 5, Δparameters = 3, ns). Therefore, we selected Model 3a as the best representation of the dynamics between leader identity and initiating structure.

Parameter estimates along with standard errors from Model 3a are presented in Table 5. As evident from the dynamic parameters (β and γ), which describe the interplay between initiating structure and leader identity, prior level of initiating structure but not leader identity positively predicted subsequent changes in leader identity. Thus, based on Model 3a, it appears that when an individual self-perceived a lower level of initiating structure skill in the previous week, the more rapid the decrease in subsequent leader identity. We did not find any evidence that previous changes in initiating structure predicted subsequent changes in leader identity.

Table 5
Parameter estimates for chosen bivariate latent change score model (M3a) fit to leader identity and initiating structure data.

	Leader identity		Initiating structure	
	Parameter estimate	SE	Parameter estimate	SE
Intercept μ_{y0}	1.32	0.369	3.33	0.231
Slope μ_s	−5.19[a]	2.91	−0.822[a]	1.26
Level of same variable on changes β	−0.334[a]	0.181	0.243[a]	0.361
Level of another variable on changes γ	1.80	0.775	–	
Changes in same variable on changes φ	–		–	
Changes in another variable on changes ξ	–		–	

Note: The effect of extraversion on the intercept of leader identity and initiating structure was controlled for in all analyses.
– Indicates parameter was not estimated.
[a] Non-significant parameter.

Table 6
Fit statistics for traditional bivariate latent change score models and changes to changes extension (consideration).

Traditional bivariate latent change score models				
	Model1a No coupling	Model2a LID [t − 1] → ΔCON[*t*]	Model3a^ CON [t − 1] → ΔLID[*t*]	Model4a^ Bidirectional coupling
−2LL (parameters)	2106 (21)	2106 (22)	–	–
AIC	2148	2150	–	–
BIC	2201	2205	–	–
ABIC	2134	2136	–	–

Changes to changes extension				
	Model1b No changes to changes coupling	Model2b ΔLID [t − 1] → ΔCON[*t*]	Model3b^ ΔCON [t − 1] → ΔLID[*t*]	Model4b# Bidirectional coupling
−2LL (parameters)	2106 (23)	2103 (24)	–	2094 (25)
AIC	2152	2151	–	2144
BIC	2209	2211	–	2207
ABIC	2137	2136	–	2128

Note. LID = Leader identity; CON = Consideration; −2LL = −2 log-likelihood; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; ABIC = sample size adjusted Bayesian Information Criterion.
^ Model could not be identified (iterations = 100.000, convergence = 0.0001, coverage = 0.0001).
# Selected model.

Consideration

When estimating the most appropriate form of consideration trajectory, a random intercept random slope model yielded the best fit to the data: χ^2 (29) = 42.70, $p < 0.05$, CFI = 0.930, TLI = 0.949, RMSEA = 0.069. The trajectory parameters were significant (intercept $\beta = 4.21$, $p < 0.001$; linear slope $\beta = -0.02$, $p < 0.05$) which suggests a linear and negative change trajectory in consideration skills.

In the following, we report the results associated with traditional LCS bivariate models (Model 1a to 4a). Based on the likelihood fit statistics, the model that included no coupling parameters, that is, Model 1a (−2LL = 2106, parameters = 21) was considered the best representation of the dynamics between leader identity and initiating structure (Table 6). When adding the coupling parameter linking previous level of leader identity to change in consideration skill (Model 2a) the model fit did not significantly improve (Δ − 2LL = 0, Δparameters = 1, ns). Models 3a and 4a were non-identifiable. Model 1a yielded an adequate fit to the data: CFI = 0.902, TLI = 0.908, RMSEA = 0.078), and was thus retained for the next stage of analysis.

The second series of bivariate models (Models 1b to 4b) that were fit included prior changes as predictors of subsequent changes. Of these models, Model 4b that included all changes-to-changes parameters (but not level-to-changes parameters) yielded the best fit to the data (−2LL = 2094, parameters = 25). This model fit significantly better than the traditional bivariate model without any coupling parameters (M4b vs. M1a: Δ − 2LL = 12, Δparameters = 4, $p < 0.05$), a model with only within-construct changes-to-changes coupling parameters (M4b vs. M1b: Δ − 2LL = 12, Δparameters = 2, $p < 0.001$), or a model with prior changes in leader identity to subsequent changes in consideration (M4b vs. M2b: Δ − 2LL = 9, Δparameters = 1, $p < 0.001$). Model 3b was non-identifiable. Therefore, Model 4b was selected as the best representation of the dynamics between leader identity and initiating structure. This model yielded an adequate fit to the data: CFI = 0.914, TLI = 0.917, RMSEA = 0.074.

Parameter estimates along with standard errors from Model 4b are reported in Table 7. Focusing on the dynamic parameters (β, φ, and ξ), subsequent changes in leader identity were negatively impacted by the prior level of leader identity, the prior changes in leader identity, and the prior changes in consideration. Thus, based on Model 4b, it appears that weekly changes in leader identity increased at a slower pace when the participant reported a higher level of leader identity in the previous week. In addition, we found that when leader identity increased (decreased) in the previous week, subsequent leader identity decreased

Table 7
Parameter estimates for chosen bivariate latent change score model (M4b) fit to leader identity and consideration data.

	Leader identity		Consideration	
	Parameter estimate	SE	Parameter estimate	SE
Intercept μ_{y0}	1.19	0.321	4.01	0.219
Slope μ_s	0.653	0.268	−1.45[a]	1.63
Level of same variable on changes β	−0.201	0.086	0.339[a]	0.390
Level of another variable on changes γ	–		–	
Changes in same variable on changes φ	−1.17	0.193	−1.56	0.421
Changes in another variable on changes ξ	−1.10	0.539	−0.072[a]	0.048

Note: The effect of extraversion on the intercept of leader identity and consideration was controlled for in all analyses.
– Indicates parameter was not estimated.
[a] Non-significant parameter.

(increased). More interesting, when consideration skill increased (decreased), leader identity decreased (increased) in the subsequent week. In addition, our findings suggest that previous changes in consideration skill were negatively impacted by the prior changes in consideration skill, but not leader identity.

Overall, our findings offer partial support to Hypothesis 2.

Discussion

Leadership researchers increasingly recognize the important role that identity processes play in motivating and supporting leaders' personal growth (Day & Dragoni, 2015; Day & Harrison, 2007; Day et al., 2009; Van Knippenberg, Van Knippenberg, De Cremer, & Hogg, 2004). In response to recent calls for more longitudinal research on leader development (Day, 2011a; Riggio & Mumford, 2011), the present study examined the identity work in participants of a leader development program over a seven-week period by modeling changes in leader identities. Our results suggest that leader identity among the sampled participants changes in a curvilinear fashion (i.e., J-shaped). Using a sophisticated and innovative longitudinal modeling framework (Latent Change Score analysis; McArdle, 2009) to test a series of possible lead-lag relationships between leadership skills and identity we demonstrated that previous changes in leadership skill of consideration were significantly related to subsequent changes in leader identity. Finally, our findings suggest that the previous level, but not changes in, leadership skill of initiating structure were significantly related to the changes in leader identity.

Theoretical and practical implications

A comprehensive understanding of leadership and its development over time remains elusive (Bluedorn & Jaussi, 2008). By empirically tracking and testing the development of leader identity, specifically focusing on leader identity changes (i.e., intra-individual or within-person variation in leader identity), the present study contributes to addressing a noted gap in rigorous empirical research on longitudinal leader development processes (Day, 2000), particularly in the context of higher education (Dopson et al., 2016). Consistent with previous conceptual contributions (Day et al., 2009; DeRue & Ashford, 2010) and initial empirical evidence (Day & Sin, 2011), we find that leader identity develops in a curvilinear fashion. Specifically, identity changes were shown to follow a curvilinear J-shaped developmental trajectory. Similarly, Day and Sin (2011) found that over four measurement periods leader effectiveness had a negative (linear) developmental trend with a slight upturn (overall curvilinear) toward the end of the developmental experience and that leader identity was a time-varying covariate of these effectiveness trajectories.

Our finding of a curvilinear developmental trajectory is consistent with the proposition that adult development is a dynamic process of gains and losses (Baltes, 1987). Similarly, theorists in the field of adult development argue that identity does not develop in a solely linear manner toward more positive self-perception (Kegan, 1983). We find that our study participants had a relatively strong leader identity at the very beginning of the leader development program, but this identity substantially weakened during the first week, perhaps due to the realization that being a leader is more challenging than originally conceived. Leader identity stagnated subsequently for several weeks, and finally strengthened over the last weeks of the course. In addition, the final level of leader identity is higher than the initial one, meaning that the overall change in leader identity during the leader development program is positive although the form of that change is curvilinear (see Fig. 2).

The initial decrease in identity that we observed seems consistent with recent qualitative work on negative dynamics in leader identity construction, or rather, de-construction. Leader identity de-construction, conceptualized as a temporary disengagement from leadership roles and processes, has been proposed as a stage in overall identity development (Lemler, 2013). Similarly, we proposed that identity change is influenced by the new meanings that participants learn to associate with their leadership role as they participate in a leader development program. For example, if one comes to a leader development program with a strong contention that leaders are born and not made (and thinks of oneself as a born leader), exposure to opposing role models (e.g., famous self-made leaders) will force one to reconsider the basis of one's leader identity. Similarly, Nicholson and Carroll (2013) found that participants of a longitudinal leader development program struggled to redefine their leader identity. Together these insights suggest that the de-construction is an important stage in the overall process of leader identity change. Leader development interventions trigger self-reflection and awareness of one's identity, which, in turn, may cause one to doubt one's leadership capacity – at least initially. Comparing oneself to a set of social expectations attached to the leadership role potentially deepens these insecurities. In an attempt to resolve such identity conflict, individuals engage in identity work and generate variations of identity to iteratively construct a modified identity that is more consistent with their leadership role (Yost et al., 1992). Eventually, this new identity becomes stronger, corresponding to the second part of the leader identity developmental trajectory that we identified (i.e., the upward quadratic slope). Overall, we believe that the curvilinear pattern of identity development identified in this research describes leader development somewhat more accurately than studies that suggest leader identity develops along a strictly linear trajectory.

Our findings support the view that leader development involves changes in leadership skills, behaviors, and identity in a mutually reinforcing manner (Day et al., 2009). Some have argued that leaders' self-views (including leader identity) in addition to skills are proximal indicators of leader development that can be used to infer whether more long-term development might occur (Day & Dragoni, 2015). We find that the level of leadership skill of initiating structure is positively related to changes in leader identity; that is, when participants perceived themselves to have a higher level of initiating structure skill in the previous week, their leader identity increased subsequently. This idea is consistent with self-perception theory (Bem, 1972), which suggests that individuals observe their own behaviors to infer about themselves, in particular their leader identity. However, we

do not find any evidence that previous changes in initiating structure are related to subsequent changes in leader identity. It is difficult to state with any certainty why this was the case, and replication of these findings is needed. Nonetheless, the results suggest the relationships between leadership skills and leader identity are not only dynamic, but complex, with different relationship forms associated with different types of leadership skills.

In this regard, we did find evidence that previous changes in consideration skills were significantly and negatively related to subsequent changes in leader identity. Specifically, when participants had experienced an increase in their consideration skill in the previous week, their leader identity decreased in the subsequent week. Although speculative, a potential explanation for these results could be that consideration is less closely tied to participants' implicit leadership theories (Offermann, Kennedy, & Wirtz, 1994). Traditional theories promote leadership as primarily a process of influencing, organizing, and directing. Observing oneself to be considerate might conflict with this dominant view of leadership, which could subsequently weaken one's leader identity. A potential practical implication of these results might be a stronger recognition to explicitly instruct participants in leader development programs on the role of implicit leadership theories in their development (Schyns, Kiefer, Kerschreiter, & Tymon, 2011).

Thus, better understanding the mental models that people hold with regard to leadership in the form of implicit leadership theories may add significant value to increasing the effectiveness of leader development interventions. Although the self-report and non-experimental nature of our research design precludes us from drawing any strong causal inferences, the present findings are consistent with previous conceptual work (Day & Harrison, 2007), and at minimum, suggest that leadership skills and leader identity contribute to leader development processes in an interdependent manner.

Overall, our findings suggest that leader development is a complex process that unfolds over time and involves interactions between an individual's traits, mental structures, and behaviors at different levels (see DeRue, 2011). Given that leader identity is one type of proximal indicator of ongoing leader development (Day & Dragoni, 2015), the present study provides researchers with useful insight into leader identity trajectories, which future conceptual and empirical research may seek to expand and further develop. We believe that the field of leader development would greatly benefit from the integration of different perspectives to create a more encompassing and rich understanding of processes that help leaders to progress and develop (Day, Fleenor, Atwater, Sturm, & McKee, 2014; DeRue et al., 2011).

Limitations and future directions

A potential limitation of the present study is that all data were self-reported. Self-reports of behavior can be problematic and upwardly biased (Podsakoff, MacKenzie, & Podsakoff, 2012). Nonetheless, our study was designed to assess changes in self-views (i.e., leader identity), which has been posited as a relevant and potentially diagnostic proximal indicator of longer-term leader development (Day & Dragoni, 2015). In addition, we were not interested in investigating changes in leadership skills per se, but rather in estimating the extent to which the observation of one's overt behavior would affect changes in one's leader identity strength, which is in line with self-perception theory. Given these research questions, collection of self-report data among participants in the leadership development program seems appropriate. Future research is needed to address whether participation in a similar leader development initiative affects how others rate an incumbent's leader identity, for example, when an emerging leader attempts to assert her identity as a leader and claim a leadership role (see DeRue & Ashford, 2010).

Another limitation of the present study is that it was conducted using a sample of university graduate students. Nonetheless, the majority of study participants reported having full-time work experience, making it likely that they had been exposed to leaders and leadership in work-related contexts. Some participants also indicated having experience in formal or informal leadership roles. Our findings suggest that these participants had already developed to some degree a self-perception of themselves as a leader (i.e., holding a nascent leader identity). According to identity theory (Stryker & Burke, 2000), identity is a fairly stable entity with changes usually induced by external shocks or events (Miscenko & Day, 2016). Therefore, we propose that identity changes influenced by a leader development program would be similar in a sample of more mature leaders. Still, this remains an empirical question to be tested in future research.

In summary, we adopted a true longitudinal design to investigate leader development in terms of self-perceived changes in leadership skills in the forms of consideration and initiating structure as well as leader identity. In doing so, we respond to recent calls in the literature to integrate existing leadership theories and create a more encompassing picture of leader development. Our findings suggest that over a period of two months and seven measurement periods, leader identity among participants in a higher education leadership course undergoes a substantial change taking the form of a J-shaped curve. In addition, we find that the previous level of initiating structure leadership skill is positively related to subsequent leader identity changes. We also find that previous changes in consideration leadership skill are negatively related to subsequent leader identity changes. The results offer additional and much-needed insights into leader development processes. Given the incorporation of explicit research objectives and sound methodological and theoretical framings, we believe that this is a step in the right direction toward overcoming the noted lack of high quality research in the field of leader development (Day, 2000; Day et al., 2009; Dopson et al., 2016).

Acknowledgements

This research was supported by funding from the Australian Government Research Training Program Scholarship and Maastricht University.

Appendix 1

Effect of control variables on the initial level (i.e., intercept) and changes (i.e., slopes) in leader identity

	Mean (SD)	Intercept	Linear slope	Quadratic slope
Gender	0.45 (0.50)	−0.209	0.005	−0.002
Age	23.4 (1.49)	−0.034	−0.021	0.002
Weekly work hours	4.75 (7.04)	−0.011	0.007	−0.001
Supervisor status	0.16 (0.37)	−0.071	0.059	−0.003
Work experience	12.6 (15.5)	0.005	0.004	0.000
Extraversion	5.15 (1.05)	0.476***	−0.066	0.006
Agreeableness	5.74 (0.75)	−0.216	0.063	−0.003
Conscientiousness	5.42 (0.87)	0.142	−0.059	0.010
Emotional stability	4.47 (0.88)	0.058	0.052	−0.007
Openness to experience	5.57 (0.84)	−0.093	−0.047	0.005
Workshop participation	0.49 (0.50)	0.006	0.011	0.000

Note: Gender (0 male, 1 female). Supervisor status indicates whether a person holds a supervisory position at the current job. Workshop participation indicates whether a person took part in the first leadership workshop.
Model fit: χ^2 (69) = 93.13, $p < 0.05$, CFI = 0.940, RMSEA = 0.063.

References

Alvesson, M., & Willmott, H. (2002). Identity regulation as organizational control: Producing the appropriate individual. *Journal of Management Studies*, *39*, 619–644.
Andersson, T. (2012). Normative identity processes in managers' personal development training. *Personnel Review*, *41*, 572–589.
Ashforth, B. E., & Schinoff, B. S. (2016). Identity under construction: How individuals come to define themselves in organizations. *Annual Review of Organizational Psychology and Organizational Behavior*, *3*, 111–137.
Avolio, B. J., Reichard, R. J., Hannah, S. T., Walumbwa, F. O., & Chan, A. (2009). A meta-analytic review of leadership impact research: Experimental and quasi-experimental studies. *The Leadership Quarterly*, *20*, 764–784.
Baltes, P. B. (1987). Theoretical propositions of life-span developmental psychology: On the dynamics between growth and decline. *Developmental Psychology*, *23*, 611–626.
Baltes, P. B., Reese, H. W., & Lipsitt, L. P. (1980). Life-span developmental psychology. *Annual Review of Psychology*, *31*, 65–110.
Bem, D. J. (1972). Self-perception theory. *Advances in Experimental Social Psychology*, *6*, 1–62.
Bluedorn, A. C., & Jaussi, K. S. (2008). Leaders, followers, and time. *The Leadership Quarterly*, *19*, 654–668.
Burke, P. J. (1991). Identity processes and social stress. *American Sociological Review*, *56*, 836–849.
Burke, P. J. (2006). Identity change. *Social Psychology Quarterly*, *69*, 81–96.
Byrne, B. M., & Crombie, G. (2003). Modeling and testing change: An introduction to the latent growth curve model. *Understanding Statistics*, *2*, 177–203.
Day, D. V. (2000). Leadership development: A review in context. *The Leadership Quarterly*, *11*, 581–613.
Day, D. V. (2011a). Integrative perspectives on longitudinal investigations of leader development: From childhood through adulthood. *The Leadership Quarterly*, *22*, 561–571.
Day, D. V. (2011b). The nature of leadership development. In D. V. Day, & J. Antonakis (Eds.), *The nature of leadership* (pp. 108–140) (2 ed.). Thousand Oaks, CA: SAGE Publications.
Day, D. V., & Dragoni, L. (2015). Leadership development: An outcome-oriented review based on time and levels of analyses. *Annual Review of Organizational Psychology and Organizational Behavior*, *2*, 133–156.
Day, D. V., & Harrison, M. M. (2007). A multilevel, identity-based approach to leadership development. *Human Resource Management Review*, *17*, 360–373.
Day, D. V., & Sin, H. -P. (2011). Longitudinal tests of an integrative model of leader development: Charting and understanding developmental trajectories. *The Leadership Quarterly*, *22*, 545–560.
Day, D. V., Fleenor, J. W., Atwater, L. E., Sturm, R. E., & McKee, R. A. (2014). Advances in leader and leadership development: A review of 25 years of research and theory. *The Leadership Quaterly*, *25*, 63–82.
Day, D. V., Harrison, M. M., & Halpin, S. M. (2009). *An integrative approach to leader development: Connecting adult development, identity, and expertise*. New York: Psychology Press.
DeRue, D. S. (2011). Adaptive leadership theory: Leading and following as a complex adaptive process. *Research in Organizational Behavior*, *31*, 125–150.
DeRue, D. S., & Ashford, S. J. (2010). Who will lead and who will follow? A social process of leadership identity construction in organizations. *Academy of Management Review*, *35*, 627–647.
DeRue, D. S., Ashford, S. J., & Cotton, N. C. (2009). Assuming the mantle: Unpacking the process by which individuals internalize a leader identity. In L. M. Roberts, & J. E. Dutton (Eds.), *Exploring positive identities and organizations: Building a theoretical and research foundation* (pp. 213–232). New York: Taylor & Francis.
DeRue, D. S., Nahrgang, J. D., Wellman, N., & Humphrey, S. E. (2011). Trait and behavioral theories of leadership: An integration and meta-analytic test of their relative validity. *Personnel Psychology*, *64*, 7–52.
Dopson, S., Ferlie, E., McGivern, G., Fischer, M. D., Ledger, J., Behrens, S., & Wilson, S. (2016, April). *The impact of leadership and leadership development in higher education: A review of the literature and evidence*. London: Leadership Foundation for Higher Education.
Dragoni, L., Oh, I. -S., Vankatwyk, P., & Tesluk, P. E. (2011). Developing executive leaders: The relative contribution of cognitive ability, personality, and the accumulation of work experience in predicting strategic thinking competency. *Personnel Psychology*, *64*, 829–864.
Duncan, T. E., Duncan, S. C., & Strycker, L. A. (2006). *An introduction to latent variable growth curve modeling: Concepts, issues, and application* (2 ed.). Mahwah, NJ: Lawrence Erlbaum.
Ely, R. J., Ibarra, H., & Kolb, D. M. (2011). Taking gender into account: Theory and design for women's leadership development programs. *Academy of Management Learning & Education*, *10*(3), 474–493.
Ferrer, E., & McArdle, J. J. (2010). Longitudinal modeling of developmental changes in psychological research. *Current Directions in Psychological Science*, *19*, 149–154.
Fleishman, E. A. (1973). Twenty years of consideration and structure. In E. A. Fleishman, & J. G. Hunt (Eds.), *Current developments in the study of leadership* (pp. 1–40). Carbondale, IL: Southern Illinois University Press.
Gagnon, S., & Collinson, D. (2014). Rethinking global leadership development programmes: The interrelated significance of power, context and identity. *Organization Studies*, *35*, 645–670.
Giessner, S. R., Van Knippenberg, D., & Sleebos, E. (2009). License to fail? How leader group prototypicality moderates the effects of leader performance on perceptions of leadership effectiveness. *The Leadership Quarterly*, *20*, 434–451.

Grimm, K. J., An, Y., McArdle, J. J., Zonderman, A. B., & Resnick, S. M. (2012). Recent changes leading to subsequent changes: Extensions of multivariate latent difference score models. *Structural Equation Modeling: A Multidisciplinary Journal*, *19*(2), 268–292.
Guillén, L., Mayo, M., & Korotov, K. (2015). Is leadership a part of me? A leader identity approach to understanding the motivation to lead. *The Leadership Quarterly*, *26*(5), 802–820.
Hall, D. T. (2004). Self-awareness, identity, and leader development. In D. V. Day, S. J. Zaccaro, & S. M. Halpin (Eds.), *Leader development for transforming organizations: Growing leaders for tomorrow* (pp. 153–176). Mahwah, NJ: Erlbaum.
Hammond, M., Clapp-Smith, R., & Palanski, M. (2016). Beyond (just) the workplace: A theory of leader development across multiple domains. *Academy of Management Review*. http://dx.doi.org/10.5465/amr.2014.0431 (in press).
Hiller, N. J. (2005). *Understanding leadership beliefs and leadership self-identity: Constructs, correlates, and outcomes.* (Unpublished Unpublished doctoral dissertation) University Park, PA: Pennsylvania State University.
Hogg, M. A. (2001). A social identity theory of leadership. *Personality and Social Psychology Review*, *5*, 184–200.
Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*, 1–55.
Ibarra, H. (1999). Provisional selves: Experimenting with image and identity in professional adaptation. *Administrative Science Quarterly*, *44*, 764–791.
Ibarra, H., & Petriglieri, J. L. (2010). Identity work and play. *Journal of Organizational Change Management*, *23*, 10–25.
Johnson, R. E., Venus, M., Lanaj, K., Mao, C., & Chang, C. -H. (2012). Leader identity as an antecedent of the frequency and consistency of transformational, consideration, and abusive leadership behaviors. *Journal of Applied Psychology*, *97*, 1262–1272.
Judge, T. A., Bono, J. E., Ilies, R., & Gerhardt, M. W. (2002). Personality and leadership: A qualitative and quantitative review. *Journal of Applied Psychology*, *87*, 765–780.
Judge, T. A., Piccolo, R. F., & Ilies, R. (2004). The forgotten ones? The validity of consideration and initiating structure in leadership research. *Journal of Applied Psychology*, *89*, 36–51.
Kegan, R. (1983). *The evolving self: Problem and process in human development. In.* Boston: Harvard University Press.
Lambert, L. S., Tepper, B. J., Carr, J. C., Holt, D. T., & Barelka, A. J. (2012). Forgotten but not gone: An examination of fit between leader consideration and initiating structure needed and received. *Journal of Applied Psychology*, *97*, 913–930.
Lemler, R. P. (2013). *Rethinking organizational leader identity development: A social network and ethnographic approach.* (Unpublished doctoral dissertation) New York: Columbia University.
Levinson, D. J. (1978). *The seasons of a man's life.* New York: Knopf.
Li, W. -D., Fay, D., Frese, M., Harms, P. D., & Gao, X. Y. (2014). Reciprocal relationship between proactive personality and work characteristics: A latent change score approach. *Journal of Applied Psychology*, *99*, 948–965.
Lord, R. G., & Hall, R. J. (2005). Identity, deep structure and the development of leadership skill. *The Leadership Quarterly*, *16*, 591–615.
McAdams, D. (2006). The problem of narrative coherence. *Journal of Constructivist Psychology*, *19*, 109–125.
McArdle, J. J. (2009). Latent variable modeling of differences and changes with longitudinal data. *Annual Review of Psychology*, *60*, 577–605.
McCall, M. W. (2010). Recasting leadership development. *Industrial and Organizational Psychology*, *3*, 3–19.
Miscenko, D., & Day, D. V. (2016). Identity and identification at work. *Organizational Psychology Review*, *6*(3), 215–247.
Mumford, T. V., Campion, M. A., & Morgeson, F. P. (2007). The leadership skills strataplex: Leadership skill requirements across organizational levels. *The Leadership Quarterly*, *18*, 154–166.
Muthén, L. K., & Muthén, B. O. (1998-2012). *Mplus User's Guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.
Nicholson, H., & Carroll, B. (2013). Identity undoing and power relations in leadership development. *Human Relations*, *66*, 1225–1248.
Offermann, L. R., Kennedy, J. K., & Wirtz, P. W. (1994). Implicit leadership theories: Content, structure, and generalizability. *The Leadership Quarterly*, *5*, 43–58.
Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, *63*, 539–569.
Pratt, M. G., Rockmann, K. W., & Kaufmann, J. B. (2006). Constructing professional identity: The role of work and identity learning cycles in the customization of identity among medical residents. *Academy of Management Journal*, *49*, 235–262.
Riggio, R. E., & Mumford, M. D. (2011). Introduction to the special issue: Longitudinal studies of leadership development. *The Leadership Quarterly*, *22*, 453–456.
Rise, J., Sheeran, P., & Hukkelberg, S. (2010). The role of self-identity in the theory of planned behavior: A meta-analysis. *Journal of Applied Social Psychology*, *40*, 1085–1105.
Rus, D., Van Knippenberg, D., & Wisse, B. (2010). Leader self-definition and leader self-serving behavior. *The Leadership Quarterly*, *21*, 509–529.
Schat, A. C., & Frone, M. R. (2011). Exposure to psychological aggression at work and job performance: The mediating role of job attitudes and personal health. *Work and Stress*, *25*(1), 23–40.
Schoorman, F. D., & Mayer, R. C. (2008). The value of common perspectives in self-reported appraisals: You get what you ask for. *Organizational Research Methods*, *11*(1), 148–159.
Schyns, B., Kiefer, T., Kerschreiter, R., & Tymon, A. (2011). Teaching implicit leadership theories to develop leaders and leadership: How and why it can make a difference. *Academy of Management Learning & Education*, *10*, 397–408.
Shamir, B. (2011). Leadership takes time: Some implications of (not) taking time seriously in leadership research. *The Leadership Quarterly*, *22*, 307–315.
Shipp, A. J., & Cole, M. S. (2015). Time in individual-level organizational studies: What is it, how is it used, and why isn't it exploited more often? *Annual Review of Organizational Psychology and Organizational Behavior*, *2*, 237–260.
Sorrentino, R. M., & Field, N. (1986). Emergent leadership over time: The functional value of positive motivation. *Journal of Personality and Social Psychology*, *50*, 1091.
Stryker, S., & Burke, P. J. (2000). The past, present, and future of an identity theory. *Social Psychology Quarterly*, *63*, 284–297.
Sveningsson, S., & Alvesson, M. (2003). Managing managerial identities: Organizational fragmentation, discourse and identity struggle. *Human Relations*, *56*, 1163–1193.
Taylor, P. J., Russ-Eft, D. F., & Chan, D. W. (2005). A meta-analytic review of behavior modeling training. *Journal of Applied Psychology*, *90*, 692–709.
Tice, D. M. (1992). Self-concept change and self-presentation: The looking glass self is also a magnifying glass. *Journal of Personality and Social Psychology*, *63*, 435–451.
Van Iddekinge, C. H., Ferris, G. R., & Heffner, T. S. (2009). Test of a multistage model of distal and proximal antecedents of leader performance. *Personnel Psychology*, *62*, 463–495.
Van Knippenberg, D. (2011). Leadership and identity. In D. V. Day, & J. Antonakis (Eds.), *The nature of leadership* (pp. 477–507) (2 ed.). Thousand Oaks, CA: SAGE Publications.
Van Knippenberg, D., Van Knippenberg, B., De Cremer, D., & Hogg, M. A. (2004). Leadership, self, and identity: A review and research agenda. *The Leadership Quarterly*, *15*, 825–856.
Waldman, D. A., Galvin, B. M., & Walumbwa, F. O. (2013). The development of motivation to lead and leader role identity. *Journal of Leadership and Organizational Studies*, *20*, 156–168.
Wang, M., & Bodner, T. E. (2007). Growth mixture modeling: Identifying and predicting unobserved subpopulations with longitudinal data. *Organizational Research Methods*, *10*, 635–656.
Wang, J., & Wang, X. (2012). *Structural equation modeling: Applications using Mplus.* Chicester, UK: John Wiley & Sons.
Yost, J. H., Strube, M. J., & Bailey, J. R. (1992). The construction of the self: An evolutionary view. *Current Psychology*, *11*, 110–121.