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Unique self-leadership: A bifactor model approach

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Abstract
A crucial point of debate around the construct of self-leadership is its supposed lack of distinctiveness from other theoretically related constructs. We empirically investigate in professionals with leadership experience ($N = 374$) with a bifactor structural equation modeling approach to what extent self-leadership (a) is distinct from related classic motivation constructs (need for achievement, self-regulation, self-efficacy) and (b) harbors incremental predictive validity over and above these motivation constructs in predicting individual job performance and leadership behavior styles (transformational leadership, transactional leadership, laissez-faire leadership). Findings yielded that self-leadership (a) generally showed only moderate associations with constructs of classic motivation literature and was sufficiently distinct from them and (b) could incrementally predict outcomes above and beyond related classic motivation constructs, alluding to its uniqueness. We discuss self-leadership as a unique and useful construct worthy of own systematic research.

Keywords
Self-leadership, need for achievement, self-regulation, self-efficacy, job performance, transformational leadership, transactional leadership, laissez-faire leadership

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Introduction

Self-leadership, introduced by Manz (1986) and Manz and Sims (1980) as the regulation of one's thoughts and behaviors, has now been studied for over 30 years (Stewart et al., 2011). Although it has been theoretically and practically acknowledged, "the majority of self-leadership research has been conceptual with relatively few empirical studies examining self-leadership" (Neck and Houghton, 2006: 274; see also Andressen et al., 2012). However, self-leadership has been garnering more and more empirical attention lately (e.g., Furtner and Rauthmann, 2010; Furtner et al., 2013; Hauschildt and Konradt, 2012a, 2012b; Stewart et al., 2011). Nonetheless, a crucial problem of the self-leadership construct prevails (see Neck and Houghton, 2006): its indistinctiveness to constructs from "classic" motivation theories (e.g., need for achievement (nAch), self-regulation, self-efficacy). If self-leadership were indeed indistinctive from such constructs, then it would be rendered redundant (Andressen et al., 2012; Markham and Markham, 1995). Guzzo (1998) raised doubts whether self-leadership can be treated as a construct distinct from other personality and motivation constructs. However, proponents of self-leadership replied that it is a normative and distinct construct worthy of its own strands of research. Neck and Houghton (2006) have thus proposed that "future self-leadership research should also empirically investigate the way of which self-leadership processes operate within the larger theoretical contexts of self-regulation, social cognitive, intrinsic motivation, and self-control theories" (287).

In this work, we empirically investigate for the first time associations among self-leadership, related motivation constructs (nAch, self-regulation, self-efficacy), and important outcome variables (job performance, leadership styles) in a sample of professionally experienced workers. We explore (a) to what extent self-leadership is empirically distinct from other constructs and (b) whether self-leadership can incrementally predict outcome variables over and above motivation constructs. Examining discriminant and incremental predictive validity of the self-leadership construct yields answers to the important question: Can we regard self-leadership as a separate, unique construct worthy of own systematic research?

Theoretical background

Self-leadership

Self-leadership was introduced by Manz and Sims (1980) as an extension of self-management theory (see Manz, 1986) and is defined as "the process of influencing oneself" (Neck and Manz, 2010: 4). It comprises three grand strategy domains with subfacets (Neck and Houghton, 2006): behavior-focused strategies (self-goal setting, self-reward, self-punishment, self-observation, self-cueing); natural reward strategies; and constructive thought pattern strategies (visualizing successful performance, self-talk, evaluating beliefs and assumptions). We make use of this tri-partite model because it comprises up to date the most comprehensive and inclusive account of self-leadership strategies. Some authors have suggested that self-punishment be discarded from the nine-factorial compendium of self-leadership strategies (e.g., Houghton et al., 2012). Nonetheless, we included all original dimensions because we wanted to test the most inclusive self-leadership and not restrict our analyses a priori to a narrowed down set of dimensions.[1] Furthermore, Andressen et al. (2012) provided empirical evidence of the nine-factorial model of self-leadership (see also Andressen and Konradt, 2007; Houghton and Neck, 2002).

Behavior-focused strategies can be used to focus one's attention on own behaviors to diminish discrepancies between current and desired states by self-regulatory strategies (see Carver and Scheier, 1998). They are used to foster productive and eliminate unfavorable behaviors (Neck and Houghton, 2006). In a first step, it is evaluated whether there is undesirable behavior (status quo). In a second step, a behavior-modifying goal is set (desired condition) by self-goal setting. Self-observation, then, serves the constant monitoring of discrepancies between the present and desired condition during goal pursuit. Self-reward and self-punishment is used for targeted and systematic behavioral change. Self-cueing is any kind of memory aid serving the facilitation of goal pursuit (e.g., post-its, notes, etc.).

The central component of self-leadership is *natural reward strategies* (Furtner et al., 2013; Manz, 1986; Neck and Houghton, 2006) with which people can directly influence their task-related intrinsic motivation. By utilizing natural reward strategies, pleasant aspects of a task are focused on (and negative aspects defocused) or actively implemented (Neck and Manz, 2010) so that stronger intrinsic motivation, joy, and self-determination may ensue. The task is then "naturally" rewarding because there is an intrinsic positive element to it. On a conceptual level, natural reward strategies are thus strongly tied to emotional regulation (see, e.g., Gross, 1998; Gross and John, 2003) as different regulatory strategies may be subsumed in this dimension, such as situation selection (selecting an intrinsically rewarding task), situation modification (generating and implementing pleasant aspects into a task), attentional deployment (focusing on pleasant and defocusing from unpleasant aspects in a task), and cognitive reappraisal (cognitively restructuring unpleasant aspects of a task into pleasant ones). Emotion regulation and self-regulation are strongly tied (e.g., Furtner and Hiller, 2013), and as self-regulation is an integral part to self-leadership, self-leadership may be crucially driven by underlying emotion regulation mechanisms, thus positioning natural reward strategies at the heart of self-leadership (Furtner et al., 2013).

Constructive thought pattern strategies refer to the positive and explicit control of habitual thinking patterns (Neck and Manz, 1992). Mental imagery or visualization is used for anticipating successful performance in the future with the goal to enhance actual performance (Driskell et al., 1994; Neck and Manz, 2010). Pessimistic self-talk can be eliminated via (self-) reflexive analyses and replaced by optimistic self-talk (see Seligman, 1991). Further, irrational or dysfunctional thought patterns can be identified and modulated by assessing and evaluating one's own beliefs and assumptions.

Related constructs from classical motivation literature

As evident from the description of self-leadership strategies above, there is a wide range of themes that self-leadership covers. Self-leadership is rooted in three central theories (Neck and Houghton, 2006): self-regulation and control theory (Carver and Scheier, 1998), social-cognitive theory (Bandura, 1986, 1991), and self-determination theory (Deci and Ryan, 1987). As such, self-leadership can be brought into nomological relation particularly with the prominent and conceptually similar constructs of nAch, self-regulation, and self-efficacy.

Need for achievement. nAch is considered a basic and fundamental motive (McClelland et al., 1953; Murray, 1938). People scoring highly on nAch are motivated to show high performance and fulfill high internal standards and goals (Spangler, 1992). According to Manz and Sims (1980), nAch can be seen as an individual predisposition to self-management. Based on Atkinson's (1957) risk preference model of choice and risk taking behavior, nAch is

composed of two main motivational tendencies: an approach/promotion and avoidance/prevention focus (Elliot and Church, 1997; Higgins, 1997; Lang and Fries, 2006). Furtner and Rauthmann (2011) showed that natural reward and constructive thought pattern strategies exhibit moderate positive relations to hope for success.

Self-regulation. Self-regulation theory (Carver and Scheier, 1998) concerns the discrepancy gauging and reduction between a standard (goal) and a current state (perceived input). There are two psychological processes associated with discrepancy reduction: assessment and locomotion (see Kruglanski et al., 2000; Lord et al., 2010). *Assessment* refers to the comparative part of self-regulation in which a current state is critically compared to different (prospective) alternatives regarding advantages and disadvantages of goal options. *Locomotion* refers to actually behaviorally reducing the discrepancy between the current and desired state (Kruglanski et al., 2010). Goals and self-observation are crucial elements of self-regulation (Baumeister and Vohs, 2007; Carver and Scheier, 1998), which can also lead to a more effective performance. Self-regulation thus shows close conceptual reference to behavior-focused strategies of self-leadership (particularly self-goal setting and self-observation).

Self-efficacy. Self-efficacy refers to beliefs in one's own abilities, capabilities, and exercise of control which impact self-regulatory processes (Bandura, 1991). Self-efficacy beliefs are fundamental because they (a) determine whether or not we pursue certain goals and tasks in the first place, (b) if and how we cope with different situations, (c) how much effort we invest into goal pursuit and how perseverant we are, and (d) how we deal with setbacks (e.g., by activating constructive or dysfunctional cognitions in the aftermath). Many domains that are touched by self-efficacy (e.g., goal-setting, goal-pursuit processes, constructive thought patterns, etc.) are also touched by self-leadership (Neck and Houghton, 2006).

There are two caveats to the way self-efficacy is conceptualized in this work. First, self-efficacy may pertain to different domains and thus be context-specific (e.g., self-efficacy in being a good baseball player, parent, or employer). However, people can also have a global sense of self-efficacy, that is, how well they think they can "manage (all kinds of) things" in their everyday lives (Luszczynska et al., 2005). The empirical part of this work refers to the so-called *general self-efficacy* (GSE), which will henceforward merely be labeled "self-efficacy." Second, much extant research on the links between self-leadership and self-efficacy has focused on self-efficacy as a momentary state tailored to a specific task (e.g., Konradt et al., 2009; Prussia et al., 1998). As such, it makes sense to propose that self-leadership drives increased levels of self-efficacy, while both add favorably to the completion of a task. Such reasoning corresponds to a meditational model where self-efficacy mediates the relationship between self-leadership and certain outcomes (e.g., task performance). In such circumstances, self-leadership is an antecedent of later state self-efficacy. In our case, however, we focus on general or global self-efficacy as a trait (not state): namely, people's abstract self-concept about their GSE. This trait is decontextualized and deeply ingrained into the self-concept; as such, it may function as an antecedent of self-leadership.

Distinctions between self-leadership and related constructs

Self-leadership, nAch, self-regulation, and self-efficacy are tied together by their relations to effectiveness and performance (Bandura, 1991; Brunstein and Heckhausen, 2008; Carver and

Scheier, 1998; Neck and Houghton, 2006): they all seek to enhance these. However, there are marked differences between self-leadership and the other constructs. First, in contrast to related classic motivational constructs, self-leadership subsumes a unique and wide array of self-influencing strategies (Furtner and Rauthmann, 2011; Manz, 1986; Neck and Houghton, 2006), whereas the other constructs are more narrowly defined. Second, Manz and Sims (1980) described nAch as a (temporal) antecedent of self-leadership. Compared to self-leadership, nAch is a relatively stable disposition (McClelland et al., 1989), while self-leadership refers to acquired, habitual strategies of self-influence. Third, self-leadership strategies are often carried out on a conscious and voluntary level, whereas most self-regulation processes are usually automatic and unconscious (Heiss et al., 2010; Kuhl, 2008; Manz, 1986). Fourth, both self-leadership and self-efficacy exert a positive influence on self-regulatory processes, but self-leadership may affect (perceptions of) self-efficacy (Neck and Houghton, 2006) and thus both constructs should not be equated.

In summary, the crucial difference between self-leadership, nAch, self-regulation, and self-efficacy is that self-leadership, on a theoretical level, positively moderates the effectiveness of nAch, self-regulation, and self-efficacy concerning critical outcomes (e.g., job performance) (Neck and Houghton, 2006; Neck et al., 1999; Prussia et al., 1998). The latter motivation constructs would all be temporally antecedent to self-leadership strategies which are molded in individual ontogenesis due to recurring demands of person-environment transactions (e.g., performing well in the work place). In this line of argumentation, nAch, self-regulation, and self-efficacy are enduring, dispositional dimensions, whereas self-leadership is a competence or acquirable skill set: it represents a strategy array as an adaption to recurring environmental affordances (Furtner and Rauthmann, 2011). Hence, self-leadership abilities may be developed by training (Furtner et al., 2012). Moreover, self-leadership—unlike nAch, self-regulation, and self-efficacy—can provide practical advice for *how* exactly people can actively influence their patterns of habitual thought and behavior to more effectively pursue their goals (e.g., by using reminders, focusing on pleasant aspects of otherwise unpleasant tasks, carefully monitoring one's progress, imagining success; see Neck and Houghton, 2006; Neck and Manz, 2010).

Outcomes of self-leadership

Self-leadership, nAch, self-regulation, and self-efficacy share a positive relation to job performance (Kruglanski et al., 2000; Manz, 1986; Neck and Manz, 2010; Phillips and Gully, 1997; Pierro et al., 2006; Spangler, 1992; Stajkovic and Luthans, 1998) and leadership (Bass and Bass, 2008; Furtner et al., 2013; Hall and Donnell, 1979; Kruglanski et al., 2007; McClelland and Boyatzis, 1982; McCormick, 2001; Murphy, 2002; Savard and Rogers, 1992). Thus, on a theoretical level, both should be predicted as outcomes by self-leadership, nAch, self-regulation, and self-efficacy. To estimate whether self-leadership is a unique construct, not only distinctions to other theoretically similar constructs need to be shown but also in which (different) ways it may predict common outcome variables.

Self-leadership and job performance. The relation between self-leadership and job performance has been extensively covered both theoretically (Neck and Houghton, 2006; Neck and Manz, 1992; Neck et al., 1999) and empirically (Prussia et al., 1998): Individual performance covaries positively with self-leadership strategies (e.g., Godwin et al., 1999; Neck and Manz, 1992; Neck et al., 2003; Stewart and Barrick, 2000).

Self-leadership and leadership. In the first of seven stages from the superleadership process model by Manz and Sims (1991), people have to acquire self-leadership abilities before being able to lead others (see Pearce, 2007). Reichard and Johnson (2011) describe within the leader self-development model self-leadership as a fundamental ability which leaders can use to improve their leadership abilities. Furtner et al. (2013) investigated relations between self-leadership and the full-range leadership model of Bass and Avolio (1995), which comprises active and effective (i.e., transformational and transactional) and passive/ineffective leadership (i.e., laissez-faire), and could show that self-leadership is positively associated with active dimensions of leadership and negatively with passive dimensions.

The current work

Aims and scope

According to Neck and Houghton (2006), "the most common criticism of self-leadership is that it is conceptually indistinct from and redundant with classic theories of motivation such as self-regulation" (274; see also Guzzo, 1998; Markham and Markham, 1995). Thus, discriminant and incremental predictive validity of the self-leadership construct should be ascertained. Examining these issues is important because they can help highlight the unique conceptual status of self-leadership. Specifically, *discriminant validity* addresses whether self-leadership is discriminant (enough) from other, theoretically similar constructs, and *incremental validity* whether self-leadership is able to capture unique variance over and above control variables (nAch, self-regulation, self-efficacy) in predicting relevant outcome variables (job performance, leadership). These two issues culminate in the basic question: Is there something *unique* to self-leadership? According to our questions, we have derived two hypotheses.

Hypotheses

Hypothesis 1 (discriminant validity): The self-leadership facets behavior-focused strategies, natural reward strategies, and constructive thought pattern strategies are distinct from theoretically related constructs (nAch: hope for success, fear of failure; self-regulation: assessment, locomotion; self-efficacy).

Recent findings already support the notion that self-leadership is at least distinct from broad personality traits (Furtner and Rauthmann, 2010; Furtner et al., 2011), socio-emotional intelligence (Furtner et al., 2010), nAch (Furtner and Rauthmann, 2011), and volition (Heiss et al., 2010). Moreover, Neck and Houghton (2006) assume that "self-leadership is a unique constellation of strategies that are founded upon, related to, and yet distinct from these various [classic motivation] theories" (275). Thus, self-leadership should be discriminant from other, theoretically and conceptually related constructs from the classical motivational literature.

Hypothesis 2 (incremental validity): Self-leadership predicts leadership styles (transformational, transactional, and laissez-faire leadership) and job performance over and above theoretically related constructs (nAch: hope for success, fear of failure; self-regulation: assessment, locomotion; self-efficacy).

Even if self-leadership strategies capture something different from other conceptually related constructs, the question remains whether it is a useful construct in the sense that it offers us other and/or additional information in the prediction of important

work-related outcomes. Because self-leadership has been theoretically and empirically linked to job performance (Neck and Manz, 1992; Prussia et al., 1998) and leadership (Furtner et al., 2013), we expected that it would be able to predict unique portions of variance.

General methodology

The current work investigates discriminant and incremental validity with a structural equation modeling approach. So-called bifactor models (Holzinger and Swineford, 1937) can be used to examine multidimensional or multifaceted constructs (Chen et al., 2006) as they "simultaneously assess the general effect shared by the facets and the specific effects associated with the facets" (Chen et al., 2012: 220). They model a common g-factor to items, but certain items are also allowed to load on a second latent variable, a facet. The bifactor model (for an illustration, see Figure 1) essentially posits that "(a) there is a general factor that accounts for the commonality shared by the facets, and (b) there are multiple specific factors, each of which accounts for the unique influence of the specific component over and above the general factor" (Chen et al., 2012: 223).

The g-factor and the facets are orthogonal (i.e., uncorrelated) to each other, which is often referred to as a "restricted" or "canonical" bifactor model (see also Chen et al., 2006). This fact can be used to examine whether it is feasible to expect facets above and beyond the g-factor because "only bifactor models can identify whether a facet still exists after partialling

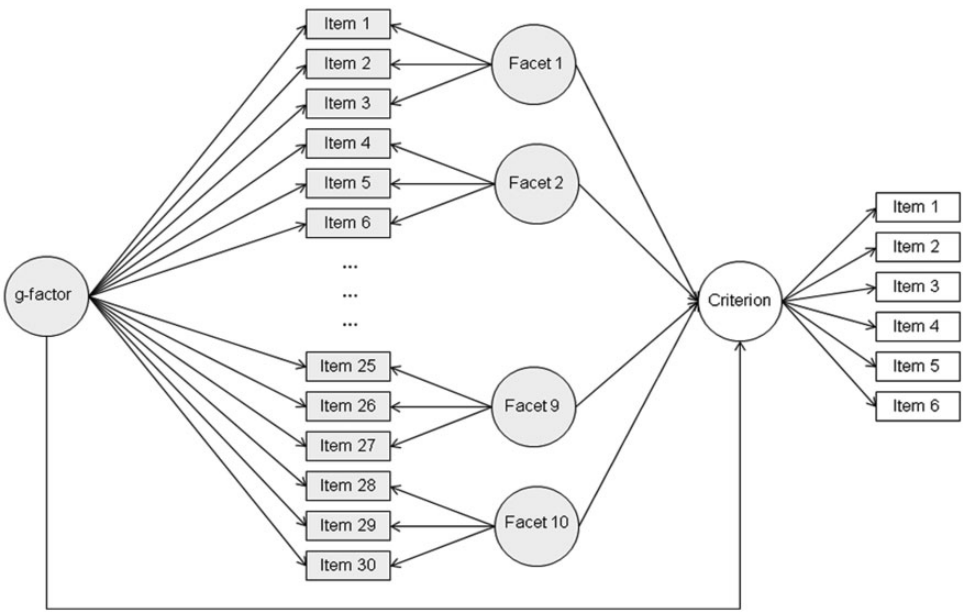

Figure 1. Fictitious example of a canonical bifactor model with estimation of criterion associations. Note: 30 items reflect 10 scales (four scales are depicted for brevity reasons), Facets 1–10. Three items per facet load onto the common g-factor as well as their assigned facet. The g-factor and all 10 facets are associated with a criterion, which is also a latent variable estimated by six items. The bifactor model is shaded gray. This model is only a prototypical example to exemplify the general procedure we have used.

out the general factor'' (Chen et al., 2012: 225). Moreover, the g-factor and the facets can then be associated with outcome variables to test incremental predictions (because each facet predictor is controlled for all others). Bifactor models have thus many advantages over other methods such as ordinary least squares (OLS) regressions with manifest variables (see Chen et al., 2012 for a detailed discussion and exemplification).

Applied to our specific research questions of discriminant and incremental validity of the self-leadership construct this means: We can model from all items a common g-factor (e.g., general self-regulatory capacity) as well as specific facets (e.g., hope for success, fear of failure; assessment, locomotion; self-efficacy; behavior-focused strategies, natural reward strategies, constructive thought pattern strategies) to obtain our restricted/canonical bifactor model. First, we can test whether this bifactor model—positing different scales/facets but still with a g-factor—fits better than other models lumping the facets together. Should this be the case, then we have evidence for discriminant validity because the model distinguishing the facets (while nonetheless taking into account a general factor underlying all responses) fits better. Second, we can associate both the g-factor and all facets as predictors with leadership styles and performance, respectively, as outcomes to investigate predictive abilities. Should self-leadership strategies be able to predict outcomes, then this would be above and beyond the g-factor and all other facets (because they are controlled for) and thus strong evidence for incremental validity. This bifactor model approach is graphically illustrated in Figure 1.

Methods

Participants and procedure

Three hundred and seventy-four professionals (182 women, 192 men; $M = 40.91$ years, $SD = 11.91$, range 19–66) provided paper and pencil self-ratings on self-leadership, nAch, self-regulation, self-efficacy, job performance, and leadership styles, amongst others. Participants had sufficient leadership (1–3 years: 37.5%; 3–5 years: 13.3%; 5–10 years: 17.7%; more than 10 years: 31.5%) and work experience (1–3 years: 8.1%; 3–5 years: 13.2%; 5–10 years: 11.6%; more than 10 years: 67.1%). Numbers of organizational members (size) were: 1–5 = 14.3%, 6–15 = 14.6%, 15–200 = 35.8%, 201–1999 = 23.5%, > 2000 = 11.9%. Branches were finance (16%), services (29%), health (12%), education (21%), industry (19%), and gastronomy (3%) in Germany (75%), Austria (12%), Switzerland (9%), and Liechtenstein (4%). As an incentive for participation we offered extensive feedback for all participants.

Measures

Measures used can be found in Table 1, listing all inventories, references, scales, response formats, and example items. Additionally, we constructed work-related criteria in the domain of job performance. We asked for *work acknowledgment* (''Thinking back the last year, how often have you been directly or indirectly appraised or acknowledged for your work?''), *contextual performance* (''Thinking back the last year, how much have you voluntarily worked more than you need to?''), and *performance perceived by others* (''Thinking back the last year, how much have your achievements accredited by others?''), all to be answered on a seven-point Likert-type scale (from1 to 7). We aggregated them into one variable which we labeled ''job performance.''

Table 1. Overview of scales used.

Construct inventory	Reference	Scales (including example items)	Response format	Number of items
Self-leadership Revised self-leadership questionnaire (RSLQ-D)	Original: Houghton and Neck (2002) (RSLQ) German: Andressen and Konradt (2007) (RSLQ-D)	*Behavior-focused strategies* Self-goal setting ("I establish specific goals for my own performance") Self-reward ("When I have successfully completed a task, I often reward myself with something I like") Self-punishment ("I tend to get down on myself in my mind when I have performed poorly") Self-observation ("I usually am aware of how well I'm doing as I perform an activity") Self-cueing ("I use written notes to remind myself of what I need to accomplish") *Natural reward strategies* ("I focus my thinking on the pleasant rather than the unpleasant aspects of my job activities") *Constructive thought pattern strategies* Visualizing successful performance ("I visualize myself successfully performing a task before I do it") Self-talk ("Sometimes I talk to myself out loud or in my head to work through difficult situations") Evaluating beliefs and assumptions ("I think about my own beliefs and assumptions whenever I encounter a difficult situation")	1–5	27
Need for achievement Achievement	Original: Gjesme and Nygard (1970)	Hope for success (HS) ("I'm excited by situations in which I can test my skills")	1–4	10

(continued)

Table 1. Continued

Construct inventory	Reference	Scales (including example items)	Response format	Number of items
motive scale (AMS-R)	German: Lang and Fries (2006)	Fear of failure (FF) ("I fear tasks that I'm not able to complete—even if no one recognized my failure")		
Self-regulation Locomotion-assessment inventory (LA-I)	Original: Kruglanski et al. (2000) German: Sellin et al. (2003)	Locomotion ("I enjoy actively doing things, more than just watching and observing") Assessment ("I spend a great deal of time taking inventory of my positive and negative characteristics")	1–6	22
General self-efficacy General self-efficacy scale (GSES)	Schwarzer and Jerusalem (1995)	General self-efficacy (GSE) ("It is easy for me to stick to my aims and accomplish my goals")	1–6	10
Leadership Multifactor leadership questionnaire (MLQ Leader Form 5x-Short)	Original: Bass and Avolio (1995) German: Felfe (2006)	Transformational leadership ("I express confidence that goals will be achieved") Transactional leadership ("I make clear what one can expect to receive when performance goals are achieved") Laissez-faire leadership ("I avoid making decisions")	1–5	36

Note: All response formats were Likert-type scales, ranging from "not at all" to "totally." All scales were computed by unweighted means.
ρ: estimated true score correlation.

Data-analytical strategy

This work has two broad goals: (1) Showing that self-leadership is empirically distinct from other, conceptually closely related constructs (discriminant validity) and (2) that self-leadership shows unique associations with external criterion variables above and beyond conceptually related variables (incremental validity). Both issues will be empirically addressed with bifactor models in a stringent structural equation modeling approach.

Discriminant validity. If a bifactor model fits our data better than a unidimensional g-factor model as well as uncorrelated and correlated facets-only models, then this can be taken as an indicator for discriminant validity. A bifactor model may not only be empirically superior (Chen et al., 2012) but also conceptually in many cases: The constructs we examine in this

Table 2. Bivariate correlations among self-leadership, related motivation constructs, and outcomes.

Scales	*M*	*SD*	α	1	1a	1b	2	2a	2b	3	4	5	6	7
Self-leadership (global)	3.49	0.53	.91	.33	.41	.06	.53	.34	.44	.18	.22	.49	.40	−.27
Behavior-focused strategies	3.36	0.64	.88	.36	.33	.15	.54	.31	.49	.06	.19	.39	.38	−.24
Self-goal setting	3.52	0.74	.68	.22	.35	−.01	.48	.41	.31	.16	.23	.44	.37	−.28
Self-reward	2.95	1.12	.93	.21	.14	.13	.30	.11	.32	−.03	.08	.16	.14	−04
Self-punishment	3.45	0.84	.79	.39	.21	.28	.44	.18	.46	−.06	.07	.19	.29	−.19
Self-observation	3.62	0.78	.77	.33	.44	.05	.48	.30	.40	.17	.21	.41	.37	−.29
Self-cueing	3.26	1.07	.85	.16	.13	.09	.29	.16	.26	.02	.12	.25	.23	−.11
Natural reward strategies	3.75	0.68	.57	.16	.31	−.05	.30	.23	.22	.24	.14	.34	.19	−.21
Constructive thought pattern strategies	3.37	0.67	.83	.27	.34	.05	.44	.29	.35	.13	.21	.42	.37	−.19
Visualizing successful performance	3.25	0.92	.72	.19	.25	.02	.34	.23	.26	.20	.18	.33	.31	−.14
Self-talk	3.41	0.82	.74	.30	.32	.10	.37	.25	.30	.03	.17	.29	.30	−.12
Evaluating beliefs and assumptions	3.43	0.73	.75	.17	.26	.00	.35	.21	.31	.08	.16	.39	.28	−.21
M	–	–	–	2.77	3.34	2.20	4.04	4.35	3.73	3.12	3.75	3.81	3.21	2.14
SD	–	–	–	0.38	0.49	0.68	0.49	0.62	0.72	0.41	1.03	0.48	0.44	0.53
A	–	–	–	.66	.81	.86	.74	.76	.73	.86	.59	.90	.68	.44

Note: $N = 374$.
1: need for achievement; 1a: hope for success; 1b: fear of failure; 2: self-regulation; 2a: locomotion; 2b: assessment, 3: self-efficacy; 4: job performance; 5: transformational leadership; 6: transactional leadership; 7: laissez-faire leadership.
Correlations larger than .17 are significant at $p < .001$.

study are indeed expected to share a positive manifold (see our literature review in the Introduction), but they should also (if they each have discriminant validity) be different from their common "core" and among each other (Furtner and Hiller, 2013). Suggesting that there is something common (the g-factor) and something unique (the facets) may be a more realistic assumption in many research contexts. It should be noted that a correlated facets-only and a hierarchical (or second-order) model (where the covariance among facets is used to model a super-ordinate, second-level g-factor at the apex) yields no different results. We expected a bifactor model to fit our data best, on item-level, when tested against (a) a unidimensional g-factor model (all items or scales load onto only one g-factor), (b) an uncorrelated facets-only model (items load onto facets that are uncorrelated with each other), and (c) a correlated facets-only model (items load onto facets that are correlated with each other), which is equal to a hierarchical model (correlated facets lead to a super-ordinate g-factor at the apex). An overview of these models can be found in Table 3. Should the bifactor model fit best, then we take this as evidence for discriminant validity because it shows that self-leadership would harbor unique facets despite the other facets and the common g-factor. This common g-factor might be a blend of (a) a very global and broad self-regulatory capacity (substantive interpretation) and (b) response biases such as social desirability (artifact interpretation) which cannot be easily teased apart. Nonetheless, self-leadership would be "unique" from this construct and all others which would provide strong evidence for discriminant validity.

Incremental validity. The full power of a bifactor model lies in the ability to examine truly unique associations because it is superior to total score, individual score, residual regression, and second-order model approaches: It is "more applicable when testing whether a subset of the specific factors predicts external variables over and above the general factor, as the specific factors are directly represented as independent factors rather than disturbances"

Table 3. Summary of fit indices of tested CFA models.

Model	Description	χ^2	*df*	$\Delta\ \chi^2$ (*df*)	χ^2/df	CFI	TLI	RMSEA
Related motivation constructs								
Model 1	One g-factor	9507.11*	2277	4207.48 (69)*	4.18	.31	.27	.092
Model 2	8 uncorrelated facets[a]	8420.89*	2277	3121.26 (69)*	3.70	.42	.38	.085
Model 3	8 correlated facets[a]	8411.12*	2276	3111.49 (68)*	5.36	.42	.38	.085
Model 4	One g-factor plus 8 facets[a] (all orthogonal)	5299.63*	2208		2.40	.71	.68	.061

Note: Maximum-likelihood. CFA: confirmatory factor analysis: CFI: comparative fit index; TLI: Tucker–Lewis index; RMSEA: root mean square error of approximation; Model 1: unidimensional g-factor model; Model 2: uncorrelated facets-only model; Model 3: correlated facets-only model; Model 4: restricted (canonical) bifactor model.

[a]assessment, locomotion, self-efficacy, hope for success, fear of failure, behavior-focused strategies, natural reward strategies, constructive thought pattern strategies

*$p < .001$.

(Chen et al., 2012: 226). Thus, the association between the g-factor and the specific facets with an outcome (e.g., leadership, performance) can be simultaneously tested in one model to estimate *all* associations. This also gives us the possibility to examine (a) whether the facets predict anything over, above, and beyond the g-factor and (b) which of the facets show unique relations (i.e., presence, magnitude, and direction of regression coefficient effect sizes) because the common variance among the facets has been taken into account already. We thus deem a bifactor model approach ideal for our aim to uncover *unique* relations of self-leadership with outcome criteria suggested in the literature.

Results

Descriptive statistics and correlational results of all variables can be found in Table 2. As can be seen, intercorrelations among self-leadership and other variables were generally low to moderate which stands in first support of Hypothesis 1 (discriminant validity). However, we set out to investigate discriminant validity more stringently with bifactor models (see below).

Discriminant validity

Fit indices of all models can be found in Table 3. As can be seen, Model 1 (g-factor), Model 2 (uncorrelated facets), and Model 3 (correlated facets/hierarchical) performed relatively poorly regarding conventional cut-off criteria (e.g., Tucker–Lewis indices (TLIs) around .30 and root mean square error of approximations (RMSEAs) $\geq .085$). Model 1 provided the worst fit. Model 4 outperformed all other models regarding fit indices (e.g., RMSEA = .06). Fit indices of Model 4 were favorable (see MacCallum et al., 1996). We take this as evidence for discriminant validity because the bifactor model with a global g-factor and eight specific facets (among them the self-leadership scales), which are orthogonal to each other (i.e., uncorrelated), fit the data the best. We thus conclude that self-leadership facets capture something distinct from the other, conceptually related constructs.

Table 4. Standardized regression coefficients of self-leadership scales in predicting leadership and job performance over and above control variables (assessment, locomotion, self-efficacy, hope for success, fear of failure).

Scales	Transformational leadership	Transactional leadership	Laissez-faire leadership	Job performance
Self-regulation				
Assessment	−.06	.01	.36	.08
Locomotion	.22*	.10	−.47†	.30*
Self-efficacy	.15**	.16**	−.42*	.13†
Need for achievement				
Hope for success	−.03	.08	−.16	−.02
Fear of failure	−.22***	−.06	.21†	−.12†
Self-leadership				
Behavior-focused strategies	−.04	.19*	−.29†	−.02
Natural reward strategies	.76***	−.79	−.17	.90
Constructive thought pattern strategies	.10	.09	.25†	.08
g-factor	.53	.53***	−.48*	.22**

Note: ***$p < .001$, **$p < .01$, *$p < .05$, †$p < .10$.

Incremental validity

Findings are summarized in Table 4. As can be seen, natural rewards strategies, the g-factor, locomotion, and assessment were positively associated with transformational leadership and fear of failure negatively with these constructs. Natural reward strategies were the strongest positive predictor ($\beta = .76$). The g-factor, behavior-focused strategies, and self-efficacy were positively associated with transactional leadership, and natural reward strategies negatively with these constructs. Natural reward strategies were the strongest negative predictor ($\beta = -.79$). Assessment, constructive thought pattern strategies, and fear of failure were positively associated with laissez-faire leadership, and the g-factor, locomotion, self-efficacy, and behavior-focused strategies negatively with these constructs. The g-factor was the strongest negative predictor ($\beta = -.48$). Natural reward strategies, locomotion, and the g-factor were positively associated with job performance. Again, natural reward strategies were the strongest positive predictor ($\beta = .90$). Together, we take this pattern of findings as evidence for the incremental ability of self-leadership as each facet was able to uniquely predict theoretically important outcomes. Moreover, the strong position of natural reward strategies in predicting outcomes could be uncovered.

Discussion

In the current study, we empirically investigated with a bifactor model approach in a sample of working professionals with leadership experience to what extent self-leadership (a) is distinct from conceptually related constructs (nAch, self-regulation, self-efficacy) and (b) harbors incremental predictive abilities over and above nAch, self-regulation, and self-efficacy in predicting job performance and leadership. Generally, our two hypotheses were confirmed. First, self-leadership scales showed discriminant validity to other scales and thus

captured something distinct. Second, self-leadership scales were able to incrementally predict job performance and leadership above and beyond nAch, self-regulation, and self-efficacy. Together, these findings stand in support that self-leadership represents a distinct and unique construct.

Self-leadership as a distinct construct

Evidence from correlational and the bifactor model approach supported our hypothesis that self-leadership is distinct from nAch, self-regulation, and self-efficacy. It would thus be a mistake to rashly conclude that self-leadership would be indistinguishable (Guzzo, 1998; Markham and Markham, 1995) when it is compared to constructs from classic motivation literature (Neck and Houghton, 2006). More importantly, self-leadership and the constructs we assessed differed not only empirically, as we could show, but also conceptually. Self-leadership is best viewed as an array of strategies that aim at enforcing self-regulatory processes (Neck and Houghton, 2006). Thus, it refers to *how* one could effectively use one's nAch, self-regulatory modes (assessment and locomotion), and self-efficacy. Self-leadership skills equip a person with specific strategies to cope with the manifold obstacles that may present themselves in the course of pursuing particular goals. They thus specifically tackle patterns of thought and behavior in order for nAch, self-regulation, and self-efficacy to optimally unfold. We thus contend that much of the confusion about the distinctiveness of self-leadership stems from the fact that the self-leadership construct is (a) rooted in classic motivation theories and thus often falsely equated with the respective constructs from motivation literature (Manz, 1986; Neck and Houghton, 2006) and (b) not well conceptualized because it is not clear what it exactly comprises, which strategies it represents, and how underlying processes and dynamics work (Furtner and Rauthmann, 2010, 2011; Furtner et al., 2013). We would see a fruitful future for self-leadership when its underlying self- and emotion regulatory mechanisms are conceptualized and empirically explored with process models in experimental longitudinal designs.

Self-leadership has incremental predictive abilities

We found that self-leadership scales were able to predict—over and above nAch, self-regulation, and self-efficacy scales—important practice-oriented outcomes such as leadership and job performance. Thus, self-leadership is not only distinct from but also captures unique variance beyond related classic motivation constructs, which again supports the notion that self-leadership should be distinguished from other constructs both on a conceptual (e.g., Manz, 1986; Neck and Houghton, 2006) and empirical level, as we have demonstrated here with a bifactor model approach for the first time.

Behavior-focused strategies. Behavior-focused strategies were uniquely associated with transactional leadership (positive) and laissez-faire leadership (negative). Furtner et al. (2013) showed strong associations between behavior-focused strategies and transactional leadership. This was particular driven by the behavior-focused strategies' subfacets of self-goal setting and self-observation. Transactional leaders may set themselves and others goals as well as observe themselves and others. Thus, the focus in self-leadership (i.e., self-goal setting and self-observation) is analogous to the transactional leadership style (i.e., setting goals for others and observing their progress in goal pursuit; Furtner et al., 2013).

In contrast, laissez-faire leadership is a very passive and ineffective style of leadership (Avolio, 2011; Bass and Avolio, 1995; Judge and Piccolo, 2004) so that it can be expected to be negatively related to more agentic constructs such as behavior-focused strategies (Furtner and Rauthmann, 2010). Indeed, this is what the current study and Furtner et al. (2013) found.

Natural reward strategies. Natural reward strategies showed the strongest associations to transformational leadership (positive), transactional leadership (negative), and job performance (positive). Our findings corroborate the central position of natural reward strategies in transformational leadership (see Furtner et al., 2013) as they may be seen as a prerequisite to forming plastic and engaging visions and inspiring followers (Barbuto, 2005; Furtner et al., 2013; Shamir et al., 1993). Transactional leadership, on the other hand, is a more rational form of leadership where leaders and followers mutually exchange expectations and consequences which are constantly monitored (Furtner et al., 2013). Such a leadership style does not necessarily require high levels of natural reward strategies. Indeed, natural reward strategies, holding all other things constant, may even be negatively related to endorsing and enacting a transactional leadership style. Natural reward strategies were positively related to job performance which makes sense as intrinsic motivation and enjoyment should be, on average, related to more and better performance (see Csikszentmihalyi and LeFevre, 1989; Deci and Ryan, 1987; Manz, 1986).

Constructive thought pattern strategies. Constructive thought pattern strategies showed the strongest (positive) association to laissez-faire leadership. This finding may hint that visualizing successful performance and positive self-talk need not be associated with active and effective styles of leading, especially not if no further action is a consequence of constructive thinking. Thus, constructive thought patterns may be powerful agents for those who are initiated and action-oriented but may not be particularly useful on their own without any further actions or consequences.

Merits and implications

Theoretical-conceptual

The strongest point of criticism against self-leadership was leveled at its discrimination from other constructs (e.g., Neck and Houghton, 2006). The current study showed in a sample of non-students that self-leadership is indeed distinct from prominent constructs of the classic motivation literature and even predicts theoretically and practically important outcomes above and beyond these other constructs. Thus, self-leadership has been demonstrated to be a distinct and unique construct. The construct may thus deserve own strands of systematic research. While we stress the distinctiveness of self-leadership from other, related constructs as well as the self-leadership strategies among themselves, holistically considering all self-leadership strategies in their *conjoint* functioning is a worthwhile undertaking.

Another merit of this work is that the central role of natural reward strategies has been demonstrated yet again (Furtner et al., 2013; Manz, 1986). Based on our findings, we propose that future research be dedicated to the structure (e.g., strategy domains and facets) and processes (e.g., emotion regulation) of self-leadership to strengthen its theoretical conceptualization and empirical research.

Methodological. The current study utilized an as of yet underused approach to demonstrating discriminant and incremental abilities of the self-leadership construct: a bifactor modeling approach. This approach is a methodological advance because it does not rely on simple OLS regression and also overcomes may other limitations (see Chen et al., 2012 for details). To demonstrate that self-leadership is indeed a unique construct, we think that rigorous methods (such as structural equation modeling approaches) should be used. The bifactor approach may prove useful for further self-leadership research, and we invite other researchers to also make use of this powerful model.

Practical. The findings of the current study are theoretically and practically relevant. First, we could demonstrate that self-leadership harbors discriminant and incremental predictive validity (see Andressen and Konradt, 2007; Houghton and Neck, 2002): It can thus be regarded as a unique construct, separate from the factors it facilitates (nAch, self-regulation, self-efficacy) and entailed or fostered outcomes (job performance, leadership). Thus, our findings stand in defense of the self-leadership construct against critical voices (e.g., Guzzo, 1998; Markham and Markham, 1995; see Neck and Houghton, 2006): Self-leadership deserves its own strands of systematic research (Furtner and Rauthmann, 2010, 2011; Neck and Houghton, 2006).

Second, our findings may harbor implications for the unique position of self-leadership for managers and leaders. The wide range of self-influencing strategies subsumed within the macro-construct of self-leadership could potentially be used to increase individual (task-related) intrinsic motivation (Neck and Houghton, 2006). This, in turn, should also influence individual job performance in a positive way. Moreover, self-leadership (“influencing oneself”) can be considered a fundamental precursor of leadership (“influencing others”) (Furtner et al., 2013; Manz and Sims, 1991; Pearce, 2007; Reichard and Johnson, 2011). Self-leadership strategies can be a useful tool for managers and leaders to (a) enjoy their work more, (b) show higher individual job performance, and (c) show proactive forms of leading others (see Manz and Sims, 1991) while being good role models (Barbuto, 2005; Furtner et al., 2013; Ilies et al., 2005; Shamir et al., 1993). As a consequence, leader development programs could also incorporate systematic training of self-leadership skills due to its beneficial outcomes (Furtner et al., 2013; Reichard and Johnson, 2011). Indeed, we could envision that our findings may make a contribution to (self-)leader/leadership programs in the long haul.

Limitations and prospects

Some limitations of the current study should be addressed by future research to replicate, corroborate, and extent our pattern of findings. First, we had no objective or third-party data available (e.g., peer-ratings, behavior observations, tests, etc.) but only self-reports on job performance and leadership. Thus, no relationships to real-life outcomes could be estimated. Future studies should check whether self-leadership can incrementally predict real-life criteria, providing further corroborating evidence of its viability.

Second, experimental longitudinal designs may further inform us of temporal and causal processes among self-leadership, other constructs, and relevant outcomes (see Furtner et al., 2013). We have employed a cross-sectional design that does not allow us to draw conclusions on temporal sequences or causal processes. Only on theoretical grounds could be distinguished between variables that should be temporally antecedent to others or denoted as

outcomes of other variables. Further, variations in within- and between-person structures and processes could be estimated with diary studies linking self-leadership to daily processes of goal pursuit.

Third, the scale of natural reward strategies had only low reliability, as was found and criticized also in other studies (Furtner and Rauthmann, 2010, 2011; Furtner et al., 2013; Konradt et al., 2009). Future studies should focus on an exact conceptualization of natural reward strategies by looking at which (emotion regulation) mechanisms underlie this dimension and employ more reliable scales of this dimension.

Fourth, the current study could only use one self-leadership scale, the revised self-leadership questionnaire (RSLQ-D), to evaluate discriminant and incremental validity. While this can be attributed to the fact that there is, up to now, only one widely acknowledged self-leadership scale (see Houghton and Neck, 2002) which has also been validated in a German version (see Andressen and Konradt, 2007), discriminant validity could be better addressed with multitrait-multimethod approaches (see, e.g., Campbell and Fiske, 1959) where multiple measures of self-leadership and theoretically similar constructs (e.g., self- and peer-ratings as well as behavioral observations) are used. For this to happen, however, more self-leadership scales need to be devised that are rooted in more stringent conceptualization and theory.

Lastly, we would like to emphasize that our findings do not represent *the* definitive solution and that further research is warranted. Such research may be directed specifically at micro- and macro-contextual variables as moderators of the relations we found. For example, Hauschildt and Konradt (2012a) found that psychological collectivism moderates the relation between self-leadership and team performance (Hauschildt and Konradt, 2012b). Moreover, Andressen et al. (2012) found that self-leadership has a higher influence on motivation in virtual work structures. As such, individual, team, and organizational context variables may be particularly potent to clarify boundary conditions of the pattern of findings we found.

Conclusion

Since the conception of self-leadership 30 years ago (Manz, 1986; Manz and Sims, 1980; Stewart et al., 2011), the current study is the first to empirically show in a large sample of participants with work and leadership experience that self-leadership is distinct from other, closely related constructs (nAch, self-regulation, self-efficacy) and also has incremental abilities concerning job performance and leadership. Thus, self-leadership can and should be seen as a *unique* dimension worthy of its own systematical in-depth research.

Notes

1. We also tested empirically whether including self-punishment into the self-leadership strategies is viable. In our data, a confirmatory factor analysis provided evidence for the nine-factorial model of self-leadership, which included self-punishment as a facet ($\chi^2 = 901.37$, degrees of freedom [*df*] = 313, $\chi^2/df = 2.88$, $p < .001$, comparative fit index [CFI] = .87, TLI = .85, RMSEA = .071). This model had a similar but slightly better fit compared to an eight-factor model without self-punishment as a facet ($\chi^2 = 756{,}87$, $df = 242$, $\chi^2/df = 3.13$, $p < .001$, CFI = .87, TLI = .84, RMSEA = .076). Thus, including self-punishment did not do any harm to model fit. Consequentially, we opted to retain self-punishment as facet based on theoretical and empirical grounds.

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