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RESEARCH NOTE

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Learning to self-lead: Examining self-leadership strategies, personality traits and learning attainment

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Abstract

This study examined self-leadership, an integrative concept in organisational behaviour and psychology, that represents a person's ability to manage themselves and improve their own performance through a combination of behavioural, cognitive and motivational strategies, in the context of learning and development outcomes. Change in three aspects of self-leadership (termed the *Doing-self, Thinking-self and Energising-self*) following a short development intervention was examined in a sample of management school students in a pre-intervention and postintervention design. The study also expanded upon the role of personality traits in moderating self-leadership change. The data additionally provide evidence of the association of self-leadership with learning attainment. The findings of this study underline the potential benefits of self-leadership learning and development. Implications for theory and practice in organisations are discussed.

KEYWORDS

learning and development, learning outcomes, personality traits, positive psychological resources, self-leadership

INTRODUCTION

Self-leadership can be broadly defined as an individual's capacity for influencing oneself (Manz, 1983) and improving their own performance through self-regulatory processes comprising cognitive, motivational and behavioural strategies (Manz, 1986, 2015). These mechanisms concern how people lead themselves to perform naturally motivating tasks as well as those that are less motivating to them (Stewart et al., 2019). Focusing on self-leadership in the context of learning and development, in the present study, we examine the extent to which self-leadership strategies are both developable (i.e. changeable over time) and impactful for attainment beyond personality traits.

SELF-LEADERSHIP STRATEGIES

Self-leadership is an integrative concept (Stewart et al., 2019) that draws on multiple self-processes (e.g. self-regulation and self-talk; Neck & Houghton, 2006) relevant for personal and work effectiveness. In a simple form, self-leadership represents self-management (Manz, 1986), whereby situational perceptions are compared with internal standards and discrepancies resolved through cognitive processes and behaviours. However, this general conception has expanded, with self-leadership reflecting a broad concept that represents behavioural, cognitive and motivational (e.g. positive psychological) strategies for self-regulating and managing performance (Napiersky & Woods, 2018; see Stewart et al., 2011, 2019).

Behavioural strategies for self-leadership direct and regulate individual performance and behaviour (Marques-Quinteiro & Curral, 2012), helping completion of necessary but unpleasant or unrewarding tasks. These strategies composed of, for example, self-goal setting, self-reward, self-cueing and self-observation of performance towards those goals and regulation of behaviour (Neck & Houghton, 2006).

Cognitive strategies contribute to constructive thought patterns about performance (Prussia et al., 1998), emphasising positive self-talk or internal dialogue (i.e. covertly coaching or encouraging oneself out loud or in one's mind; Neck & Manz, 1992). These strategies also encompass mental imagery and visualising successful performance prior to undertaking an activity (Neck & Manz, 1992).

The motivational component of self-leadership represents awareness of how to design one's work to be intrinsically motivating (Stewart et al., 2019). However, there is concordance between aspects of self-leadership and self-efficacy (Prussia et al., 1998), suggesting some conceptual overlap of self-leadership strategies and psychological resources related to confidence and positivity (Manz, 2015). Recognising this link explicitly, Napiersky and Woods (2018) drew comparison with the literature on psychological capital (Luthans & Youssef, 2004; Luthans & Youssef-Morgan, 2017), comprising positive psychological resources of self-efficacy, optimism, resilience and hope. In their learning and development focused approach to conceptualising self-leadership, Napiersky and Woods (2018) describe such resources as ‘energising’ and important for successful maintenance of self-leadership strategies.

Self-leadership is associated with a range of positive outcomes in organisational settings. These are reviewed by Stewart et al. (2011) and include job performance (e.g. Prussia et al., 1998) and job satisfaction (Neck & Manz, 1996). Self-leadership is also related to performance in teams (Hauschildt & Konradt, 2012). The accumulated literature indicates positive effects of self-leadership on performance and other work outcomes.

SELF-LEADERSHIP IN LEARNING, DEVELOPMENT AND EDUCATIONAL CONTEXTS

In the present study, we seek to contribute most centrally to the literature on the concept and outcomes of self-leadership, by examining the potential for self-leadership to develop over time following a short intervention and the effects of self-leadership on learning performance alongside individual differences (personality traits). Our study therefore extends understanding of self-leadership and its potential benefits in attainment, possible ways that it may be promoted, and its interactions with traits in these respects. However, based on the impact of related constructs on educational performance reported in the literature (Napiersky & Woods, 2018), our findings also enrich literatures on, for example, self-regulation (Sitzmann & Johnson, 2012), self-evaluation and self-efficacy (Schunk & Ertmer, 1999) and goal setting (Payne et al., 2007).

Self-leadership strategies have the potential to build understanding of concepts in underlying processes related to behavioural, cognitive and motivational influences on performance. For example, in the case of goal setting, behaviours of self-leadership explain how behaviour may be directed and maintained towards achievement of self-goals (Neck & Houghton, 2006). Combined with enhanced self-regulation, such behaviours may help to better understand differences in independent performance and personal goal setting (Vancouver et al., 2001). Moreover, self-leadership strategies may help to integrate concepts of goal-directed effort and behaviour with those focused on positive psychological resources. For example, resources such as greater self-efficacy, optimism and resilience may work in combination (e.g. Hobfoll, 2002)to encourage people to approach learning and development with greater positivity and expectation of success, motivating them to apply greater independent effort towards attainment of outcomes (Stajkovic & Luthans, 1998).

A guiding theoretical proposition in our study, drawing on the literature on self-leadership, is that *strategies of self-leadership influence performance because of their influence on autonomous effortful activity*. That is, they are most salient in the maintenance of individual performance when a person is responsible for their own standard of attainment. In such situations, based on these independent learning demands, and the individually focused nature of self-leadership (e.g. in elements such as self-goal setting, self-regulation, self-talk, visualisation and alongside positive psychological resources), we propose that effective self-leading strategies will result in improved learning outcomes. In the next sections, we elaborate this guiding proposition in the context of our study design to set hypotheses.

Development of self-leadership

The conceptual nature of self-leadership as comprising malleable behavioural strategies such as self-goal setting and self-regulation (Manz, 1986) and 'state-like' psychological resources (Luthans & Youssef-Morgan, 2017) underlies our proposition that it should be possible to develop self-leadership through intervention. Moreover, studies have previously reported development of related behaviours and positive psychological resources (Luthans et al., 2008; Stewart et al., 1996; Unsworth & Mason, 2016). We therefore hypothesise the following:

> **H1.** Self-leadership (measured through self-reports) improves following a training intervention focused on building self-leading strategies and positive psychological resources.

Self-leadership and personality traits

There has long been a recognised association between personality traits and self-leadership (Neck & Houghton, 2006), with studies concluding that personality and self-leadership are related but distinct concepts (Bailey et al., 2018). In the present study, we examine traits conceptualised around the Big Five model (Extraversion, Agreeableness, Conscientiousness, Emotional Stability and Openness; Goldberg, 1990) in two respects in relation to self-leadership and attainment.

Firstly, we consider the effect of traits on the impact of the training interventions with management students. Theoretical explanations of the effects of the Big Five on training and learning outcomes highlight that the effects of traits are unlikely to be straightforward and may rather depend on so-called attribute-treatment interactions (Gully & Chen, 2010; Jones et al., 2021), which recognise that the specific impact of traits in development depends on what is being trained and the methods used. Drawing on these concepts, we focus our hypotheses on two of the Big Five: Conscientiousness and Extraversion. Bailey et al. (2018) report these traits among the Big Five as being associated with self-leadership.

Stewart et al. (1996) found that training in self-leadership was most beneficial for those low on Conscientiousness. We propose that given the association of self-leadership and Conscientiousness (Bailey et al., 2018), those low on this trait have the most to gain from the intervention (i.e. their pretraining self-leadership is likely to be lower). Moreover, the focus on developing self-leadership strategies to assist in learning activities (e.g. through self-goal setting, maintaining goal-directed behaviour and effort) is likely to directly address some of the associated characteristics of low Conscientiousness that otherwise impede effective outcomes of training and transfer of learning (Colquitt & Simmering, 1998). This provides further conceptual support for our proposition of increased benefit of the intervention for those low on Conscientiousness.

> **H2a.** Conscientiousness moderates the improvement of self-leadership following intervention (people lower on Conscientiousness improve most following the intervention).

The interventions used to assist development of self-leadership in our study are independent, self-focused activities to learn and practice strategies and build psychological resources. The association of Extraversion with training outcomes is often theorised to reflect the social interactive approach typically adopted in training delivery, representing situations that are more comfortable and conducive for those high on Extraversion (Major et al., 2006). Based on these points, we reason that self-leadership training will benefit students low on Extraversion most, because their pretraining self-leadership is likely to be lower and the individual-focused nature of the development of self-leadership is likely to appeal to their traits and learning preferences.

> **H2b.** Extraversion moderates the improvement of self-leadership following intervention (people lower on Extraversion improve most following the intervention).

To test whether the effects of self-leadership on outcomes reflect more than underlying associations with personality, we further incorporate traits into our study by examining the incremental prediction of performance by self-leadership after controlling their effects. Evidence

indicates that traits predict educational achievement (Chamorro-Premuzic & Furnham, 2014). Following past studies, we propose that self-leadership strategies (including positive psychological resources) are distinct from personality and are important factors in educational performance. Accordingly, we expect self-leadership to predict incremental variance in educational performance beyond the Big Five traits.

> **H3.** Self-leadership predicts unique variance in educational performance after controlling for the effects of personality traits of the Big Five model.

METHOD

Participants and procedure

Students enrolled on postgraduate (i.e. Masters-level) business programmes at a business school in the UK were recruited to participate in this study. Our sample comprises $N = 157$ participants (57 men and 100 women; mean age 23.48; SD = 2.86). Reflecting the international profile of management school cohorts, participants were drawn from a variety of nationalities and ethnic groups, and 77% indicated that English was not their first language.

A short programme on self-leadership was incorporated into a wider student personal development planning (PDP) module curriculum (completion of the programme contributed towards preparation of a credit-bearing assignment). This programme involved completing a self-leadership survey, receiving feedback on the results and undertaking learning activities related to improved self-leadership strategies.

An initial group of $N = 442$ participants completed the Time 1 (T1) survey, comprising measures of self-leadership and personality traits. Participants then attended the intervention (i.e. the programme), in the form of four short sessions conducted over a period of 4–5 months. Within 2 months of completing the intervention, participants voluntarily completed the Time 2 (T2) survey which included a repeated measure of self-leadership.

To ensure that drop out from the study did not affect our results, we examined differences in demographics and focal variables between those participants who completed T2 measures and those who did not by conducting a series of *t*-tests with data at T1. We found significant differences only for gender in regard to attrition, used as a control variable in all analyses. All research procedures were concluded around 4 months prior to students submitting their final dissertations, for which grades were accessed postconclusion of their programmes.

Measures

Self-leadership

Self-leadership was measured using the scale developed by Napiersky and Woods (2018). Each item was rated on a 5-point scale (1 = Almost Never to 5 = Always). The Doing-self dimension was measured with 16 items (t1: $\alpha = .93$; t2: $\alpha = .92$; e.g. I *set myself specific goals for development and learning*). The Thinking-self dimension reflects cognitive aspects of self-leadership and was measured with nine items (t1: $\alpha = .89$; t2: $\alpha = .89$; e.g. I *visualise myself doing activities successfully before starting them*. Finally, the Energising-self dimension was

measured with 15 items (t1: $\alpha = .93$; t2: $\alpha = .94$; e.g. I *know how to formulate my goals in ways that motivate me*).

Personality traits

The Big Five personality traits were measured using the 44-item version of the Big Five Inventory (BFI; John et al., 1991). The BFI comprises scales measuring Extraversion (eight items; $\alpha = 75$), Agreeableness (eight items; $\alpha = .74$), Conscientiousness (nine items; $\alpha = .73$; Neuroticism (eight items; $\alpha = .74$) and Openness (10 items; $\alpha = .75$). All items were rated on a 5-point scale (e.g. I see myself as someone who *is talkative*; 1 = Strongly Disagree, 5 = Strongly Agree).

Attainment: Dissertation grades

Dissertations were each graded on a 100-point scale (ranging from 0 to 100) by two different independent assessors in the business school, who resolved discrepancies through discussion and agreement to arrive at a final mark. Marks were confirmed by the institution's examination board to ensure fairness and compliance.

Control variables

We controlled for students' age, gender and English as a first language as these three variables may potentially influence training outcomes as well as dissertation marks.

Intervention

As part of a Professional Development Programme (PDP), students participated in a series of short sessions on self-leadership. The intervention took the form of a training programme targeted at students' educational environment and upcoming career decisions, including entering the workforce. The intervention was specifically designed to help students develop their self-leadership strategies and therefore drew upon frameworks for learning design that reflect the objective of changing behaviour (e.g. see Wang et al., 2018). This involved enabling development of self-awareness and reflection about current self-leadership, establishing understanding and motivation for improvement and enabling development of strategies to facilitate learning and improvement. The programme's conceptual basis reflected the Napiersky and Woods (2018) self-leadership model, exploring students' ability to influence their own cognitive (the Thinking-self), behavioural (the Doing-self) and motivational approaches (the Energising-self) to learning and performance.

The training consisted of lectures, experiential and action learning, theory input, individual, pair and triads exercises, guided group discussions, interactive market forum style presentations and a workbook and feedback from a questionnaire on self-leadership. Students participated in four training units, totalling 9 (2 + 2 + 2 + 3) hours of learning contact. Each unit is was delivered to classes of around 40 students, facilitated by a lecturer and career adviser knowledgeable in the concepts of self-leadership. A full description of the intervention, including each unit, is provided in the supporting information of this article.

Data analytical procedure

Analyses of the construct validity of our measures using structural equation modelling supported our proposed measurement structures and are reported in full in the supporting information. The effects of our self-leadership intervention over time and the proposed interaction effects of the intervention involving Conscientiousness and Extraversion were investigated using multilevel modelling with random intercepts and random slopes because the repeated measurements (level 1) were nested within the individuals (level 2), and this procedure takes the interdependence of both levels into account (Hox, 2002). All parameter specifications and estimations were conducted with Mplus 8.2 using maximum likelihood estimation with robust standard errors. To test the proposed training effect in the within-person part of our model, we specified the relations between the three self-leadership dimensions (e.g. energising, doing and thinking) and time (i.e. intervention) as random slopes. In the between-person part of our model, all three self-leadership dimensions as well as the aforementioned random slopes were predicted by all Big Five personality traits. When the relations were estimated, all Big Five personality traits were centred around the grand mean. Furthermore, we controlled for age, gender and native English language in the between-part of our model when predicting all three self-leadership dimensions. Moreover, we included the remaining Big Five personality dimensions as controls when examining the proposed interactions effects of Conscientiousness and Extraversion on self-leadership.

We tested the impact of self-leadership on academic performance by using three-step hierarchical linear regression analyses with the dissertation mark as the outcome. In Step 1, we entered the control variables age, gender and native English speaker. In Step 2, we introduced the Big Five personality traits. In Step 3, the three self-leadership dimensions measured at t2 were added to the model. We used t2 self-leadership ratings in these analyses on the basis that these provided representation of the self-leadership strategies used by students at the time they were working on their dissertations.

RESULTS

Table 1 displays the descriptive statistics, internal consistencies and correlations among all study variables.

Hypothesis 1 proposed that self-leadership improves following the intervention (Energising-self; Doing-self; Thinking-self). Our multilevel path model supports H1 for two of the self-leadership dimensions as the time of measurement was significantly related to the Energising- ($\gamma = 0.16$, $p < .01$) and Doing-self ($\gamma = 0.11$, $p = .03$) dimensions. However, there was only a marginally significant effect on the Thinking-self dimension ($\gamma = 0.10$, $p = .08$; Table 3).

Hypothesis 2 proposed interaction effects of the self-leadership intervention with Conscientiousness and Extraversion. More specifically, both Conscientiousness (H2a) and Extraversion (H2b) were suggested to buffer improvement following the intervention. Cross-level interaction effects of time of measurement with Conscientiousness (H2a) were not supported for all three dimensions of self-leadership as there were no significant effects of Conscientiousness on the random slopes linking time of measurement to each dimension of self-leadership (Table 2). Our data provide partial support for H2b as Extraversion did moderate two of the three dimensions of self-leadership. More specifically, Extraversion moderated the effect of the self-leadership

TABLE 1 Means, standard deviations, internal consistencies (Cronbach's alpha) and intercorrelations

Variable		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	Age	-														
2.	Gender[a]	0.05	-													
3.	English native speaker[b]	0.16	0.07	-												
4.	Openess to experience	0.10	0.02	−0.15	*(0.77)*											
5.	Conscientiousness	**0.21**	−0.14	−0.14	**0.40**	*(0.74)*										
6.	Extraversion	0.02	0.00	−0.05	**0.33**	**0.39**	*(0.75)*									
7.	Agreeableness	**0.26**	−0.12	−0.16	**0.31**	**0.43**	**0.27**	*(0.76)*								
8.	Neuroticism	−0.05	−0.05	0.06	**−0.25**	**−0.29**	**−0.31**	**−0.31**	*(0.76)*							
9.	Self-leadership: energising-self - t1	0.07	−0.03	−0.04	**0.45**	**0.56**	**0.34**	**0.28**	**−0.38**	*(0.93)*						
10.	Self-leadership: energising-self - t2	−0.03	0.04	**−0.21**	**0.28**	**0.42**	0.15	0.13	**−0.31**	**0.55**	*(0.94)*					
11.	Self-leadership: doing-self - t1	0.05	−0.02	−0.07	**0.41**	**0.54**	**0.35**	**0.33**	**−0.29**	**0.88**	**0.47**	*(0.93)*				
12.	Self-leadership: doing-self - t2	0.01	0.05	−0.15	**0.28**	**0.44**	**0.19**	**0.23**	**−0.25**	**0.57**	**0.89**	**0.58**	*(0.93)*			
13.	Self-leadership: thinking self - t1	−0.03	−0.02	−0.16	**0.41**	**0.38**	**0.24**	**0.19**	**−0.26**	**0.65**	**0.40**	**0.66**	**0.43**	*(0.89)*		
14.	Self-leadership: thinking self - t2	−0.09	0.05	**−0.17**	**0.21**	**0.28**	0.09	0.09	**−0.24**	**0.50**	**0.76**	**0.44**	**0.75**	**0.54**	*(0.89)*	
15.	Dissertation marks	0.01	0.03	**−0.18**	0.11	**0.22**	0.08	0.04	0.02	0.13	**0.17**	0.08	0.10	−0.04	0.01	-
	M	23.48	1.36	1.77	3.57	3.69	3.39	3.85	2.71	3.43	3.62	3.36	3.48	3.54	3.65	64.48
	SD	2.86	0.48	0.42	0.56	0.56	0.64	0.59	0.65	0.66	0.68	0.69	0.66	0.77	0.73	11.79

[a]Gender (1 = male, 2 = female).

[b]English native speaker (1 = nonnative speaker, 2 = native speaker). Internal consistency estimates (Cronbach's alpha) are represented in italics the diagonal. Numbers in bold $p < .05$. $N = 157$.

TABLE 2 Unstandardized coefficients from MSEM model

	Self-leadership—energizing self			Self-leadership—doing self			Self-leadership—thinking self		
	Estimate	**SE**	**z**	**Estimate**	**SE**	**z**	**Estimate**	**SE**	**z**
Between-level									
Intercept	3.988	0.407	9.793**	3.920	0.339	11.568**	4.621	0.470	9.838**
Age	−0.021	0.018	−1.122	−0.025	0.015	−1.705+	−0.035	0.019	−1.847+
Gender	0.045	0.073	0.606	0.080	0.073	1.091	0.042	0.090	0.461
English native language	−0.064	0.092	−0.691	−0.035	0.094	−0.369	−0.163	0.109	−1.491
Openness to experience	0.293	0.082	3.572**	0.249	0.088	2.848**	0.399	0.114	3.513**
Agreeableness	−0.018	0.081	−0.227	0.104	0.085	1.221	−0.024	0.108	−0.223
Neuroticism	−0.162	0.068	−2.389*	−0.039	0.074	−0.525	−0.115	0.103	−1.112
Conscientiousness	0.489	0.085	5.763**	0.489	0.089	5.463**	0.347	0.118	2.939**
Extraversion	0.067	0.073	0.915	0.121	0.073	1.660+	0.046	0.091	0.510
Time × openness to experience[a]	−0.138	0.117	−1.186	−0.118	0.106	−1.107	−0.249	0.123	−2.013*
Time × agreeableness[a]	−0.110	0.091	−1.208	−0.062	0.093	−0.671	−0.060	0.110	−0.548
Time × neuroticism[a]	−0.083	0.086	−0.959	−0.068	0.080	−0.845	−0.068	0.097	−0.703
Time × conscientiousness[a]	0.007	0.095	0.070	−0.002	0.089	−0.018	0.008	0.117	0.071
Time × extraversion[a]	−0.199	0.092	−2.154*	−0.181	0.083	−2.180*	−0.129	0.099	−1.307
Residual variance RS[b]	0.002	0.018	0.131	0.001	0.019	0.046	0.002	0.050	0.034
Residual variance	0.100	0.026	3.818**	0.116	0.029	4.030**	0.179	0.041	4.381**
Within-level									
Time	0.158	0.051	3.118**	0.106	0.050	2.150*	0.099	0.056	1.756+
Residual variance	0.201	0.031	6.454**	0.192	0.024	7.876**	0.248	0.032	7.702**

Note. Estimates are unstandardized, resulting from one overall analysis including the prediction of all outcomes and random slopes in one model. Removing the control variables from our model did not affect the results. The results remained consistent when tested with a repeated measures ANOVA.

[a]Interactions refer to between-person personality traits predicting the corresponding random slopes linking time to the each self-leadership dimension.

[b]Random slope refers to the relationship of time and each outcome.

$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$.

intervention on the Energising-self ($\gamma = -0.20$, $p = .03$) and the Doing-self dimensions ($\gamma = -0.18$, $p = .03$) but not the Thinking-self ($\gamma = -0.13$, $p = .19$).

To facilitate the interpretation of the interaction effects, we performed simple slope tests (Preacher et al., 2006). Interactions were consistent with our Hypothesis 2b. Individuals with low levels of Extraversion reported an increase in self-leadership Energising-self and Doing-self, following the intervention, whereas for the individuals with high Extraversion, the change in self-leadership across time was not significant.

Hypothesis 3 stated that self-leadership predicts unique amounts of variance in dissertation marks over and above demographic characteristics and Big Five personality traits. The results of our hierarchical multiple regression analyses (Table 3) indicate that, after controlling for demographic variables and Big Five personality traits, Energising-self at t2 was positively related to dissertation marks ($B = 9.75$; $p = .01$), a marginally significant effect of Thinking-self ($B = -4.67$; $p = .05$) but no significant effect for Doing-self ($B = -5.03$; $p = .21$). Taken together, Hypothesis 3 was also only partially supported.

DISCUSSION

Based on evidence of the potential impact of self-leadership for learning and ultimately effectiveness in organisations, in the present study, we examined whether self-leadership developed following a short intervention, the ways personality traits moderate this improvement and the extent to which self-leadership predicted learning attainment, beyond personality effects. Overall, we found mixed support for our hypotheses. Specifically, our data indicated that self-leadership improved following the intervention with students and that Extraversion moderated this effect. Our results also showed that the motivational aspect of self-leadership related to positive psychological resources (termed the Energisin-self in this study) predicted educational performance beyond the Big Five traits.

Developing self-leadership

We tested whether three elements of self-leadership (the Doing-self, Thinking-self and Energising-self) were improved following an intervention programme. We acknowledge at the outset of this discussion that the absence of a control group in our design means that we cannot attribute the improvement in self-leadership to the introduced intervention, and our findings must be viewed in this context. In our data, Hypothesis 1 was supported for two of the three self-leadership dimensions (Energising- and Doing-self), and a marginally significant development effect was observed for the third (Thinking-self). That is, we observed increases in self-reported self-leadership across all three aspects of self-leadership following the intervention. Our findings therefore suggest that behaviours and strategies to self-lead can develop over time. Although our design does not enable us to examine the causal role of the intervention (a point we return to in the limitations section), our observation of change in self-leadership nevertheless provides a basis for practitioners to further explore the benefits of improving, for example, self-regulatory and self-motivational strategies to enhance performance. Our findings add to the literatures on the development of self-related processes in organisational behaviour and management, for example, self-management (Unsworth & Mason, 2016).

In respect of moderation by traits, only Extraversion moderated the effects of the intervention (for the Doing-self and Energising-self). Applying perspectives on attribute-treatment

TABLE 3 Regression results predicting dissertation marks

	Model 1				Model 2				Model 3			
Variable	***B***	***SE B***	***β***	**t**	***B***	***SE B***	***β***	**t**	***B***	***SE B***	***β***	***t***
Intercept	65.18	9.97	0.00	6.54**	49.37	16.28	0.00	3.03 **	42.75	18.14	0.00	2.36*
Age	0.27	0.39	0.06	0.70	0.13	0.41	0.03	0.32	0.08	0.41	0.02	0.19
Sex	2.87	2.28	0.10	1.26	3.48	2.31	0.12	1.51	3.62	2.29	0.13	1.58
English native	−6.68	2.67	−0.20	−2.50*	−6.15	2.74	−0.18	−2.25*	−5.46	2.75	−0.16	−1.99^{+}
Conscientiousness					6.08	2.40	0.00	2.53*	5.38	2.55	0.22	2.11*
Extraversion					0.05	1.96	−0.10	0.02	0.63	1.95	0.03	0.32
Openness to experience					0.26	2.21	0.25	0.12	0.18	2.19	0.01	0.08*
Agreeableness					−2.38	2.22	0.05	−1.08	−1.26	2.27	−0.05	−0.56
Neuroticism					1.10	1.88	0.01	0.58	2.08	1.94	0.10	1.07
Self-leadership: energising-self—t2									9.75	3.91	0.48	2.50*
Self-leadership: doing-self—t2									−5.04	4.03	−0.24	−1.25
Self-leadership: thinking self—t2									−4.67	2.40	−0.24	−1.95^{+}
R^2	0.05				0.09				0.14			
Δ in R^2					0.05				0.05			
F for Δ in R^2					1.54				2.66^{+}			

Note: $N = 157$.

$^{+}p < .10$. *$p < .05$. **p < .01.

interactions in learning (e.g. Jones et al., 2021) to our interventions, for example, highlights that students undertook substantial individual reflection and discussion only in pair and small-group settings. Therefore, students lower on Extraversion may have benefitted most from this format, which did not require more intensive social participative learning, reflecting their greater comfort with this individual-focused form of development.

Theoretical implications

Self-leadership is positioned in the work psychology/organisational behaviour literatures as an integrative concept (Stewart et al., 2019), bringing together goal-directed effort, self-regulatory and motivational processes deployed in the self-management of performance. Our study therefore contributes to literatures on the theoretical processes of self-leadership and these related concepts. Practising self-leadership strategies improves outcomes such as job performance and learning attainment (Napiersky & Woods, 2018) and is therefore impactful for work and developmental outcomes. Our theoretical proposition, based on the literature on self-leadership, was that *strategies of self-leadership influence performance because of their influence on independent effortful activity*. We expected that self-leadership would predict attainment (measured through grades) through the core mechanisms of goal setting behaviour, self-regulatory processes and positive psychological appraisals of learning challenges. Our findings support this proposition to some extent, in that the Energising-self predicted better outcomes from learning, beyond the Big Five (Hypothesis 3).

Against the context of these findings, it is important to recognise that neither the Doing-self nor Thinking-self predicted attainment. The nature of the effortful activity might influence the ways self-leadership predicts learning outcomes. There may be some element of the dissertation attainment that draws more strongly, for example, on resilience in the face of setbacks compared with setting goals for a learning standard. On the other hand, our findings also indicate substantive potential gains for learning and development outcomes. The magnitude of the effect of the energising-self was such that a one standard deviation increase in self-leadership was associated with on average 9.8% points on students' grades.

Practical implications for learning and development

The results we report provide further evidence of the association of self-leadership learning strategies with learning attainment. It therefore appears that self-leadership behaviours, thinking styles and motivational and psychological states as captured in our study could represent helpful approaches for people to learn and apply. In this respect, our descriptions of the interventions provide practitioners some direction on how to introduce the concepts and approaches of self-leadership, adding to growing evidence of the benefits of training for self-related behavioural strategies for performance (e.g. self-management, Unsworth & Mason, 2016). One of the key elements of the interventions was a diagnostic report for each participant based upon their responses to the self-leadership survey. The main benefit of this element was to raise self-awareness of their current approaches, providing a basis for them to decide on the developmental activities that would be most impactful personally. The group discussion of the profile of self-leadership scores also enabled peer support, to benchmark and compare with others, and be encouraged to commit to learning activities.

Limitations and strengths

The main limitation of our study was that although we were able to measure self-leadership pre-intervention and postintervention, we did not have a control group as part of our design. This is particularly difficult to obtain in studies of attainment-enhancing interventions in management degree programmes because one might argue that the students in the control group are unfairly disadvantaged in their studies, missing out on a learning opportunity afforded to peers. This issue may be overcome by employing a design in which the intervention is offered to the control group after a first outcome measurement, followed by a final outcome measurement for both groups (i.e. a waiting-list control group design). However, because we were especially interested in attainment in the capstone dissertation element of the programme, which comes at the end of the course, it would not be possible to employ such a design.

The impact of the limitation is that we could not firmly attribute the increases in self-leadership across time with the intervention. There is a possibility that self-leadership improves as a result of undertaking learning at graduate level. Notwithstanding this possibility, we also do feel that the strategies and styles captured in the self-leadership concepts are rather specific and probably not enhanced or encouraged explicitly in conventional academic learning and development. Yet, it is important to emphasise that this remains to be examined in empirical data.

CONFLICT OF INTEREST

All authors declare that they have no conflicts of interest.

ETHICS STATEMENT

We have complied with the APA ethical principles regarding research with human participants in the present research.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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