Competencies Measured in Assessment Centers: Predictors of Transformational Leadership and Leader's Effectiveness

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Abstract: The objective of this study is to explore which competencies predict leader effectiveness. Based on theory and job analysis, we observed the effects of five leaders' competencies (achievement orientation, problem analysis and problem solving, social sensitivity, influence, and integrity) on three indicators of effectiveness (perceived leader's effectiveness, leadership emergence, and team performance). Furthermore, we examined whether transformational leadership mediates these effects. We collected the data during an interuniversity student team competition. A total of 57 team leaders and 364 team members participated in the study. At the beginning of the competition, we measured the leaders' competencies through assessment centers. Each leader was assessed by 4 trained assessors in a one day long assessment center consisting of multiple individual and group model situations. After 6 months of teamwork, we measured the perceived leaders' effectiveness, leadership emergence and transformational leadership using questionnaires, and we estimated the teams' performance based on the ranking of the teams in the competition. The results show that leader achievement orientation is a significant predictor of perceived leader effectiveness, leadership emergence and team performance. The other four competencies do not predict leader effectiveness. There is no relation between competencies and transformational leadership; therefore, transformational leadership does not mediate the relation between competencies and effectiveness. The advantages of this study were that we obtained the data regarding the competencies and effectiveness from three different sources and that we measured competencies before the teamwork began. An average of more than 6 subordinates per leader ensures highly reliable evaluations of leaders' transformational leadership, perceived effectiveness and leadership emergence. The results can be applied to leader selection for short-term team projects.

Keywords: competencies, achievement orientation, perceived leaders' effectiveness, leadership emergence, group performance, transformational leadership, assessment center

1. Introduction

Competencies and transformational leadership are frequently noted as the factors that influence leaders' success. These factors are usually examined independently of each other as separate predictors of leaders' effectiveness. In this study, we examine competencies and transformational leadership together. We examine competencies as possible antecedents of transformational leadership and transformational leadership as a mediator in the relation between competencies and leaders' effectiveness. The fundamental assumptions underlying this research can be summarized as follows: competencies as underlying characteristics that lead to a superior performance (Cardy and Selvarajna 2006) are manifested in a leader's behaviour.

1.1 Competencies as predictors of leaders' effectiveness
Competencies include a set of characteristics necessary for successful performance (Abraham et al. 2001). They can be framed as abilities related to motive and personality constructs that influence the intrinsic, affective value associated with the execution of specific behaviours. Competencies provide insight into what a person can and will do, meaning that they manifest in one's behaviour, which is important for an effective prediction of job performance (Ryan, Emmerling & Spencer 2009). Research showed that competencies contribute to leaders' effectiveness (e.g., Russel 2001; Caligiurz & Tarique 2012). However, different competencies are being used in different models and studies, which means that there is no united system regarding how to categorize competencies (Chong 2013; Riggio & Lee 2007; Cardy & Selverajna 2006).

We focus on generic competencies that can be utilized across various jobs, tasks and situations. We adopt a Chemers, Watson and May's (2000) categorization of competencies into three areas as follows: problem-solving, interpersonal and self-management competencies. Specifically, in our study, we examine three problem-solving competencies (achievement orientation, problem solving and problem analysis), two interpersonal competencies (influence, social sensitivity) and one self-management competency (integrity). According to this competency model, effective leaders should continue attempting to overcome problems and obstacles and clearly define steps regarding how to achieve desired goals (achievement orientation). Leaders should also be able to work with information, which means they should be able to identify relevant information and think within a given context (problem solving and problem analysis). Furthermore, leaders should be able to communicate clearly and emphatically, garner the attention of others and thus acquire status and respect and influence others in a desired direction (influence). Additionally, effective leaders should successfully develop relationships with others and care about their feelings and needs. Leaders should actively listen to others and create a pleasant atmosphere (social sensitivity). Finally, effective leaders should be capable of self-reflection and should communicate with others openly, honestly and fairly; they should retain their values and beliefs and act accordingly (integrity).

There is much evidence regarding the relation between generic competencies and leaders' effectiveness. Vaculik, Prochazka and Smutny (2014) found that task-related competencies (including achievement orientation and problem solving) strongly predict leadership emergence and perceived leaders' effectiveness; these are moderately strong predictors of group performance. The interpersonal competencies and self-management competencies (i.e., leader's integrity, fairness, maturity, honesty, and trustworthiness) weakly predict leadership emergence. Dulewitcz and Herbert (2002) found that elements of achievement orientation, including a need to achieve really demanding targets, a strong competitive streak and a willingness to take risks, as well as an exceptional ability to manage and motivate staff (the element of influence), predict managerial success 7 years later. According to Hogan and Kaiser (2005), effective leaders are not only skilled at developing relationships and acquiring status but also have credibility that depends on a leader's perceived integrity. Further support for the influence of competencies on leaders' effectiveness can be found in many studies published in the past 15 years (e.g., Abraham et al. 2001; Connelly et al. 2000; Dulewitz & Higgs 2005; Müller & Turner 2010; Smutny, Prochazka & Vaculik 2016).

> *H1: Competencies' achievement orientation, problem solving and problem analysis, influence, social sensitivity and integrity predict leaders' effectiveness.*

1.2 Competencies and transformational leadership

We presume that generic competencies could be important for one to become a transformational leader. Transformational leadership consists of four elements as follows: idealized influence, intellectual stimulation, individualized consideration and inspirational motivation (Bass 1997). Transformational leadership appeals to followers' upper level needs, such as self-actualization, and causes them to have higher job satisfaction, better performance and stronger organizational commitment (Shin & Zhou 2003). Idealized influence corresponds to the degree to which the leader behaves admirably, which causes followers to identify with the leader (Judge & Piccolo 2004). Such leaders are persistent and determined, which can be observed in the competency achievement orientation. Leaders also need to emphasize the importance of purpose and the ethical consequences of decisions (Bass 1997), which is part of the competency of integrity. Inspirational motivation is related to how leaders articulate an appealing vision of the future, challenge followers with high standards, communicate optimism regarding future goal attainment, and provide encouragement and meaning regarding what needs to be done (Ismail et al. 2010; Bass 1997). To share their vision, leaders should be able to influence their followers to accept a vision and work towards its fulfilment. Additionally, according to Kotter (1996), nothing undermines vision more than the behaviour of a leader that is inconsistent with verbal communication. Stability and open and fair communication, in other words, integrity, is therefore important for inspirational motivation, as well. According to Küpers and Wiebler (2005), inspirational motivation also requires an achievement drive and initiative, which we can consider to be part of our achievement orientation competency. Intellectually stimulating leaders encourage followers to question their own method of doing things and support the expression of new perspectives and ideas (Ismail et al. 2010). In addition to the abovementioned indirect support for a relation between competencies and leaders' effectiveness, there is slight direct empirical evidence regarding this relation (Limsida & Ogunlama 2002). We want to provide further

evidence in this study and examine task-related, interpersonal and self-management competencies as the predictors of transformational leadership.

H2: Competencies' achievement orientation, problem solving and problem analysis, influence, social sensitivity and integrity predict transformational leadership.

According to the above hypothesis, the competencies are manifested in transformational leadership behaviour. Transformational leadership is a predictor of leaders' effectiveness indicators, such as team performance (Ling et al. 2008), perceived leaders' effectiveness evaluated by superiors (Lim & Ployhart 2004) or perceived leaders' effectiveness evaluated by subordinates (Judge & Piccolo 2004). Therefore, we assume that transformational leadership mediates the above-described relation between competencies and leaders' effectiveness.

H3: Transformational leadership is a mediator of the relation between competencies and leaders' effectiveness.

Leaders' effectiveness may be assessed through various indicators. Objective indicators, such as group performance, are based on measurable outcomes (Hogan & Kaiser 2005), and their largest advantage is that they are not influenced by subjective impressions of individual evaluators. Objective indicators' main limitation is that the outcomes can be influenced by other factors different from the leader's personality and behaviour (Eagly, Kahaou & Makhijani 1995). Subjective indicators are derived from subjective evaluations of the leader by other people. These indicators allow us to include such leadership outcomes that do not influence short-term team performance but are important for the long term effectiveness of the team (Prochazka, Vaculik & Smutny 2013). The limitation of subjective indicators is that the subjective evaluation can be influenced by biases and phenomena, such as central tendency or halo effects (Bass & Avolio 1989). Both types of indicators have advantages and limitations, and combining them enhances the validity of the research (Feng Jin & Avery 2008). Therefore, we employ one objective indicator (group performance) and two subjective indicators (perceived leaders' effectiveness and leadership emergence) in this study. The leadership emergence is based on an evaluation of a leader's personality and/or role; it refers to whether a person is perceived to have leadership qualities (Hogan, Curphy & Hogan 1994). In contrast to leadership emergence, the perceived leader's effectiveness does not include the perception of the personality of the leader, but rather, an assessment of her impact on team performance and results.

2. Method

2.1 The research procedure
We collected the data during a 6-month interuniversity project competition. Sixty teams of students attempted to find and present the best solution of real problems provided by the representatives of the city of Brno and the regional Chamber of Commerce of the South Moravian Region, Czech Republic. Each three teams solved the same problem and competed against one another. At the beginning of the competition, team leaders were chosen on the basis of their performance in the assessment centers (AC). Each leader was assigned to one project topic and was allowed to choose 6-8 members for her team. After six months of cooperation, shortly before the end of the competition, we requested that all team members complete the research questionnaires. The results of the competition were announced after we collected all of the data.

2.2 Participants
A total of 60 team leaders and 488 regular team members (subordinates) participated in the competition. The research sample consisted of 57 leaders who began and completed the competition in the leadership role, and 364 subordinates (74.59 % response rate). Each leader was evaluated by a minimum of 4 and maximum of 7 subordinates (M = 6; SD = 1.2). The ages of the leaders ranged from 19 to 26 (M = 22.28, SD = 1.41); the ages of participants ranged from 19 to 29 (M = 22.58, SD = 1.63). All participants were bachelor and master students at one of the three universities in Brno, Czech Republic.

2.3 Assessment centers and competencies
We used standardized ACs to select leaders and to measure competencies, which were the independent variables of this study. The ACs fully complied with the standards of the Task Force on Assessment Centre Guidelines (2009) and were composed of five exercises, including two leaderless group discussions and a negotiation role-play, a supervisory role-play, and a structured interview. A maximum of 9 participants participated in each AC as did 6-8 trained (12 hour long frame-of-reference training according to Schleicher et al. 2002) assessors. Each applicant was assessed by all assessors in five competencies as follows: achievement

orientation, social sensitivity, problem analysis and problem solving, influence, and integrity. A within-exercise dimension rating was conducted for each participant. Assessors used the ORCE model (Ballantyne & Povah 2004). First, the assessors reviewed the observable behaviour of the participant in an exercise; then, they identified the behaviour concerning the assessed competency. Finally, they rated the participant on a 5-point scale ranging from 0 (poor performance) to 4 (excellent performance). A final within-exercise dimension rating was the result of a group discussion among all assessors. We averaged the within-exercise dimension rating of each competency to obtain the competency score for the statistical analysis.

2.4 Leaders' effectiveness

We obtained group performance scores from the results of the competition and obtained the perceived leaders' effectiveness and leadership emergence scores from the questionnaires completed by the subordinates. Group performance was measured as the final ranking of the project team. After the completion of the studies, an independent judge panel rated teams in every topic from 1st to 3rd place.

We measured perceived leaders' effectiveness using three items with a 7-point rating scale concerning the impact of the leader on team effectiveness based on the following: 1. the perceived positive influence of the leader on the team result, 2. on the the teamwork process and 3. the perceived personal effectiveness of the leader. We measured leadership emergence using five items with a 7-point rating scale that allowed us to determine whether the leader was perceived by her followers as a good and suitable leader. Leadership emergence was measured from five perspectives: 1. how the team leader acted as a leader in her leadership role, 2. whether the team leader was perceived to be a true leader during the competition, 3. whether the team leader was perceived as someone who could be a leader elsewhere and under other circumstances, 4. whether the team leader evoked respect and 5. whether working with the leader imparted a sense of pride (these items were used previously in Prochazka, Vaculik & Smutny 2014 and in Vaculik, Prochazka & Smutny 2014).

We counted the variable scores of perceived leaders' effectiveness and leadership emergence as ten times that of the average rating in all items by team members. The variables may range from 10 to 70.

2.5 Transformational leadership

The MLQ questionnaire (Avolio & Bass 2004), which is most commonly used to assess the level of transformational leadership, does not have a validated Czech translation (Prochazka & Vaculik 2014). Therefore, we used the validated Czech Leadership Questionnaire based on the theory of Transformational Leadership (Prochazka, Vaculik & Smutny 2016). The questionnaire has eight subscales, which represent four elements of transformational leadership (idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration), three elements of transactional leadership (management by exception-passive, management by exception-active and contingent rewards), and the absence of leadership (laissez faire leadership). Every subscale consists of four items with a 7-point rating scale that describes the possible behaviour of the evaluated leader. The four scales of transformational leadership can be combined into one internally consistent scale of transformational leadership that correlates highly with the transformational leadership scale of MLQ (Prochazka, Vaculik & Smutny 2016). We obtained leaders' scores of transformational leadership by aggregating and averaging the evaluations of their team members.

3. Results

Table 1 presents the descriptive statistics and intercorrelations of all study variables. Cronbach's alpha appears on the diagonal. Group performance is an ordinal variable with median = 2. Spearman's rho was used to compute the correlation between the group performance and other variables. It is worth noting that there are moderate correlations between influence and achievement orientation and integrity and social sensitivity. The other competencies are independent. There is a strong correlation between perceived leaders' effectiveness and leadership emergence and a moderate correlation between perceived leaders' effectiveness and group performance. The correlation between group performance and leadership emergence is insignificant. Transformational leadership correlates with all indicators of leaders' effectiveness.

Table 1: Means, standard deviations, and intercorrelations of all study variables

Variable	Mean	SD	1	2	3	4	5	6	7	8	9
1. Achievement orientation	2.51	0.45									
2. Problem solving and problem analysis	2.17	0.52	0.22								
3. Integrity	2.18	0.45	0.10	0.03							
4. Social sensitivity	2.12	0.53	-0.23	0.14	0.00						
5. Influence	2.14	0.47	0.44**	-0.09	0.34*	-0.28*					
6. Perceived leaders' effectiveness	56.34	8.63	0.30*	0.09	-0.05	0.09	-0.01	(0.92)			
7. Leadership emergence	53.78	9.89	0.27*	0.11	-0.10	0.05	-0.01	0.97**	(0.96)		
8. Group performance			0.37**	-0.01	0.12	-0.20	0.26*	.28*	.25		
9. Transformational leadership	79.37	16.73	0.12	0.06	-0.21	0.07	0.00	0.50**	0.52**	0.37**	(0.76)

Notes: $*p < 0.05$; $**p < 0.01$.

3.1 Competencies as predictors of group performance

Among the five competencies, achievement orientation and influence solely correlate significantly with group performance. The sample was too small to run the ordinal regression analysis with five independent variables with a sufficient test power. However, we conducted the one way ANOVA with contrast tests to examine the influence of competencies on group performance more thoroughly. As shown in Table 2, problem solving, integrity, social sensitivity and influence do not predict group performance. Achievement orientation is the sole significant predictor of group performance. When comparing differences in achievement orientation for various levels of group performance, the contrast tests show that there is a significant difference in achievement orientation between the leaders who ranked 3rd with their teams and the leaders who ranked 2nd or 1st (contrast = 0.64, $t(54) = 2.64$, $p = .11$) and between leaders who ranked 1st with their teams and leaders who ranked 2nd or 3rd (contrast = 0.52, $t(54) = 2.17$, $p = .04$). A higher achievement orientation of the leader results in better group performance. This result provides partial support for H1.

Table 2: One-way ANOVA: Competencies and group performance

	Group performance				
	$M_1 (SD_1)$	$M_2 (SD_2)$	$M_3 (SD_3)$	$F(2, 54)$	η^2
Achievement orientation	2.68 (0.36)	2.55 (0.49)	2.30 (0.42)	3.91*	0.12
Problem solving	2.21 (0.43)	2.11 (0.69)	2.20 (0.40)	0.22	0.01
Integrity	2.33 (0.46)	2.00 (0.46)	2.22 (0.40)	2.91	0.09
Social sensitivity	2.03 (0.53)	2.07 (0.58)	2.28 (0.46)	1.22	0.04
Influence	2.33 (0.34)	2.08 (0.49)	2.01 (0.51)	2.56	0.08
Notes: $*p < 0.05$; Numbers 1-3 specify ranking of the team led by the leader (1 = 1st place); $N_1 = 18$; $N_2 = 20$; $N_3 = 19$.					

3.2 Competencies as predictors of perceived leaders' effectiveness and leadership emergence

To consider the mutual variance of variables, we included all competencies and transformational leadership in the three steps of the regression analysis as predictors of perceived leaders' effectiveness and leadership emergence. In the first step of the regression analysis, we regressed perceived leaders' effectiveness and respective leadership emergence on achievement orientation, which is the sole competence that correlates with these indicators of leaders' effectiveness. In the second step, we added other competencies to control their influence. In the third step, we added transformational leadership. As shown in Table 3, the results indicate that an achievement orientation is a significant predictor of both perceived leaders' effectiveness and leadership emergence while controlling the effect of other competencies. Problem solving, integrity, social sensitivity and influence do not predict either perceived leaders' effectiveness or leadership emergence. An achievement orientation explains a significant quantity of the variance in perceived leaders' effectiveness (9 %) and in leadership emergence (7.3 %). Adding the other four competencies into the model does significantly increase the quantity of explained variance neither in perceived leaders' effectiveness ($\Delta R2 = .05$, $p = .62$) nor in leadership emergence ($\Delta R2 = .04$, $p = .72$). The results provide partial support for H1 because one of five competencies predicts perceived leaders' effectiveness and leadership emergence.

Table 3: Regression of perceived leaders' effectiveness and leadership emergence on competencies and TL

		Perceived leaders' effectiveness			Leadership emergence		
		B	*S.E.*	β	*B*	*S.E.*	β
1. step	(Constant)	41.87	6.29		38.84	7.28	
	Achievement orientation	5.76*	2.47	0.30	5.94*	2.85	0.27
	(R^2)	(0.09*)			(0.07*)		
2. step	(Constant)	39.66	10.68		39.62	12.42	
	Achievement orientation	7.73*	2.95	0.40	7.58*	3.43	0.35
	Problem solving	-0.58	2.31	-0.04	0.22	2.68	0.01
	Integrity	-0.89	2.65	-0.05	-2.06	3.08	-0.09
	Social sensitivity	2.55	2.27	0.16	1.81	2.64	0.10
	Influence	-2.31	2.97	-0.12	-2.21	3.45	-0.10
	(ΔR^2)	(0.05)			(0.04)		
3. step	(Constant)	22.17	10.42		19.02	12.06	
	Achievement orientation	6.41*	2.62	0.34	6.03†	3.04	0.28
	Problem solving	-0.75	2.03	-0.05	0.02	2.35	0.00
	Integrity	1.22	2.40	0.06	0.43	2.77	0.02
	Social sensitivity	1.70	2.01	.10	0.81	2.33	0.04
	Influence	-2.73	2.62	-0.15	-2.70	3.04	-0.13
	Transformational leadership	0.24**	0.06	0.47	0.29**	0.07	0.48
	(ΔR^2)	(0.21**)			(0.22**)		

Notes: *$p < 0.05$; **$p < 0.01$; †$p = 0.053$.

3.3 Transformational leadership as a mediator between competencies and leaders' effectiveness

None of the five competencies correlates with transformational leadership. In addition, in the regression analysis in which transformational leadership is regressed on all five competencies together, none of the competencies appear to be a predictor of transformational leadership (see Table 4). These results do not provide support for H2. Because competencies are not predictors of transformational leadership, we cannot assume that transformational leadership mediates their relation with leaders' effectiveness (see, e.g., Shorout 2002). Transformational leadership and achievement orientation are independent predictors of the indicators of leaders' effectiveness. Competencies do not influence leaders' effectiveness through transformational leadership. We did not find support for H3.

Table 4: Regression of transformational leadership on competencies

	Transformational leadership		
	B	*S.E.*	β
(Constant)	72.06	21.42	
Achievement orientation	5.43	5.92	.15
Problem solving	0.70	5.62	.02
Integrity	-8.71	5.31	-.24
Social sensitivity	3.50	4.55	.11
Influence	1.73	5.96	.05

Notes: $R^2 = .08$; all predictors are insignificant.

4. Discussion and conclusions

The results showed that a competency achievement orientation measured in assessment centers before the teamwork began was a significant predictor of group performance, leadership emergence and perceived leaders' effectiveness. Leaders who had shown competitive, motivated and enthusiastic behaviour during the selection process later led more successful groups and were perceived by their subordinates as good and effective leaders. Our findings are complementary to Dulewicz and Herbert (1999) and Vaculik et al. (2014) who highlighted characteristics similar to an achievement orientation as the most important predictors of leaders' effectiveness. Our study differs from these studies because, in both noted studies, competencies were measured on the basis of a questionnaire that was completed either by the leaders and their supervisors (Dulewicz & Herbert 1999) or by leaders' subordinates. In our study, we measured competencies through an assessment centers.

Sona Docekalova, Martin Vaculik and Jakub Prochazka

We did not find support for our assumption that the competencies, social sensitivity, influencing others, integrity or problem solving and problem analysis are related to leaders' effectiveness. One of the possible reasons why we did not find these competencies as significant predictors may be the nature of the entire project. First, the teams worked on their projects only for six months, and team meetings were less frequent than in regular jobs. Of the respondents, 57.1 % (including both team members and leaders) indicated that they met 5 to 16 times during the project, and 28.2 % of the respondents said they met 16 to 30 times. Competencies such as integrity or social sensitivity may not have significant influence on effectiveness in the short-term and under less intensive leader-follower cooperation. The subordinates in such project teams may not have sufficient opportunities to experience a leader's integrity because of a lack of crisis and broader situations during the short-term project.

The results did not support our hypothesis that transformational leadership mediates the relation between competencies and leaders' effectiveness. None of the competencies predicted transformational leadership; therefore, we cannot assume a mediation effect. This result may be due to a time lag between the measurement of competencies and transformational leadership. Young, inexperienced people became leaders, and they likely learned much during their first months in their new role. It is possible that the level of the young leaders' competencies and transformational leadership gradually changed during the six months of the competition and that the two separate measurements of variables were not able to capture the changing relationship. The other explanation of a non-existent relation between competencies and transformational leadership is the different nature of both constructs. It is possible that competencies and leadership behaviour are really separate predictors of leaders' effectiveness.

The most important advantage of our study is that it was conducted during a real project. Competencies were measured at assessment centers by trained assessors who were not influenced by the prior knowledge of the assessed leaders. Various leaders' effectiveness indicators were measured six months after the competencies were measured, and the data originated from 3 different sources. Therefore, the study has high ecological validity. The design provides evidence regarding causality, and the observed relation between competencies and effectiveness is not influenced by common-method bias, as is usually the case.

This study provides evidence regarding the predictive validity of assessment centers and notes that various competencies have different influences on future leadership outcomes. An achievement orientation is the most important competence that should be measured during the selection of leaders for future project teams. Further research is needed on the relation between competencies and transformational leadership. Different studies on different samples with different designs should support or refute our conclusion that competencies and transformational leadership independently relate to leaders' effectiveness.

Acknowledgements

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