

## **Predicting Leadership Activities: The Role of Flexibility**

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**ABSTRACT** - This paper investigated the role of flexibility in predicting adolescent leadership activities among 186 undergraduate students. Two measures of flexibility, behavioral flexibility and cognitive flexibility, were developed and entered in a regression equation, after social skills and academic ability. The results suggest that behavioral and cognitive flexibility are distinct constructs and that both contribute uniquely to the prediction of leadership above and beyond social skills and academic ability.

**Key Words:** Leadership, Cognitive Flexibility, Behavioral Flexibility

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Psychologists have long sought to identify those traits and characteristics that make individuals effective leaders. Much of the early research in the area of leadership has focused on the identification of traits that would predict leadership effectiveness and leadership behaviors (Bass, 1990; Mann, 1959; Stogdill, 1948). However, reviews of the literature by Mann (1959) and Stogdill (1948) led researchers to conclude that traits are not useful in the prediction of leadership and that leadership is situationally based. While there is much support for the role situations play in leader emergence and behavior (Bass, 1990), a review of the literature of the situational approach is beyond the scope of this paper.

There has been a resurgence of research on leadership traits in the last decade due, in part, to several advances in leadership theories and methodologies (Bass, 1990). First, many studies have taken a multivariate instead of a bivariate approach. More recent studies employing a variety of trait measures have reported higher correlations than those found in the original reviews by Mann and Stogdill. For example, Mumford, O'Connor, Clifton, Connelly, and Zaccaro (1993) have used 29 different life history scales to measure traits such as social skills, self esteem

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and independence and found multiple correlations between these traits and leadership ranging from .67 to .82. Second, results from longitudinal studies investigating leadership suggest that skills, abilities, and personality characteristics are predictive of leadership effectiveness and advancement over a long period of time (Bray, Campbell, & Grant, 1974; Howard & Bray, 1988). Specifically, Bray and his colleagues identified variables such as decision making, oral communication, planning and organizing, creativity, human relations skills, resistance to stress, tolerance for ambiguity, energy, and high work standards as predictive of managerial effectiveness and advancement. Third, the development of statistical techniques, such as meta-analysis, that allow for the correction of various methodological errors such as range restriction and measurement reliability, prompted re-analysis of previous studies with much more encouraging results. Studies that have used meta-analytic procedures have suggested that traits may be more strongly correlated with leadership than previous reviews would suggest (Judge, Bono, Ilies, & Gerhardt, 2002; Lord, Devader, & Alliger, 1986). In a meta-analysis focusing on the relationship between the Big 5 personality factors and leadership, four of the Big 5 personality variables (Neuroticism, Extraversion, Openness, and Conscientiousness) correlated significantly with leader emergence and leader effectiveness. Finally, another reason for reconsideration of the trait approach stems from the use of rotational designs (Kenny & Zaccaro, 1983). Rotational designs vary both the task and group composition at the same time. This method allows partitioning the effects of the task, group composition, and the individual. These designs have been used to assess the relative contribution of individual difference variables and situational variables. Kenny and Zaccaro (1983) found that 49% to 82% of the variance in leader emergence could be attributed to the characteristics of the individual.

Taken as a whole, the literature suggests that certain individual characteristics may be important in the study and understanding of leadership. It is therefore important to identify variables that have been found to consistently influence leadership effectiveness and behaviors. Several key variables emerge in the literature describing the relationship between leadership and individual differences: (a) variables related to ability such as, intelligence, knowledge, expertise, or reasoning; (b) variables related to social skills such as sociability, social activity, or cooperation; and (c) personality and motivational variables such as resistance to stress, tolerance for ambiguity, adaptability, energy, emotional stability, or responsibility (Bass, 1990; Hogan, Curphy, & Hogan, 1994; Judge et al., 2002). While a full literature review on all variables in these three categories is beyond the scope of this paper, representative empirical studies are reviewed for each category.

General intelligence has been one of the individual characteristics most often and consistently associated with leadership in previous research (Bass, 1990). Early literature reviews by Mann (1959) and Stogdill (1948) identified a positive relationship between leadership and intelligence for the majority of the studies reviewed. Recent meta-analytic studies indicate that intelligence and leadership show a mean correlation of .50 after correcting for attenuation and range restriction (Lord, Devader, & Alliger, 1986). In a longitudinal study of AT&T managers,

Howard and Bray (1988) found that intelligence played an important role in managerial success. O'Reilly and Chatman (1994) found that GMAT scores were predictive of early career success, such as job offers and promotions, in a sample of MBA graduates. Dunnette (1971) reviewed assessment center studies and identified several commonalities in leader characteristics related to later managerial success including cognitive ability and organizing and planning skills. In a recent longitudinal study of leadership emergence and development of cadets. Atwater, Dione, Avolio, Camobreco, and Lau (1999) found that cognitive abilities measured in the first year were predictive of leadership emergence measured four years later. Finally, studies have shown that knowledge and expertise, typically related to ability, are also predictive of leadership (Connelly, Gilbert, Zaccaro, Threlfall, Marks, & Mumford, 2000; Vincent, Decker, & Mumford, 2002).

It is important to note, however, that intelligence or ability alone may not be enough for success. Other factors may contribute to the successful application of the cognitive resources, such as situational variables (Fiedler & Garcia, 1987), or motivation (O'Reilly & Chatman, 1994). This, in turn, suggests that better understanding and prediction of leadership will result from including non-cognitive characteristics. Because leadership involves a social component, it is not surprising that social skills have been researched extensively as a predictor of leadership. Effective leaders have a degree of social competence which is vital to their success (Boyatzis, 1982). Leaders have been found to be more sociable, more popular, and have better interpersonal skills (Bass, 1990). Dunnette (1971), in his review of findings of assessment centers, found that interpersonal skills were important for predicting managerial success. Mumford, O'Connor, et al. (1993) found that background data measures of social skills, social adjustment and dominance were among some of the strongest and most stable predictors of several different criteria of leadership including high school leadership activities and college leadership activities. Extraversion, one of the Big 5 personality variables related to social skills, was found in a meta-analysis to be the strongest predictor of leadership (Judge et al., 2002). Finally, self-monitoring has also been linked to leader emergence (Ellis & Cronshaw, 1992; Kenny & Zaccaro, 1983; Zaccaro, Foti, & Kenny, 1991), possibly because individuals high in self-monitoring are able to interpret the needs of group members and respond to them (Zaccaro, Gilbert, Thor, & Mumford, 1991).

Personality and motivational variables are also important predictors of leadership (Bass, 1990; Hogan, Curphy, & Hogan, 1994). However, the research investigating the role that personality plays in leader emergence and effectiveness has utilized a variety of measures from different categories of personality variables. Recent theoretical developments have called attention to one possible class of variables within the personality domain, those related to flexibility and adaptability (Conway, 2000; Zaccaro, 2002). Zaccaro (2002) suggests that effective leaders possess social intelligence, which includes two components: the ability to perceive and interpret social cues in social situations and behavioral flexibility or adaptability. Research on the relationship between self-monitoring and leadership provides support for this notion. High self-monitors, who are capable of adapting to situational demands

emerge more often as leaders and are seen as more effective (Ellis & Cronshaw, 1992; Kenny & Zaccaro, 1983; Zaccaro, Foti, & Kenny, 1991). Connelly et al. (2000), using a military sample, found that a social judgement measure, designed to reflect aspects of social intelligence, was predictive of leader achievement.

Other research has suggested that cognitive aspects of flexibility may be important for leadership. Mumford and Connelly (1991) suggested that creative thinking is critical for effective leadership and that includes the ability to think in flexible ways. Several studies link creativity and effective leadership. Vincent, Decker, and Mumford (2002), in a study of military leadership, found that divergent thinking skill, idea generation and idea implementation all predicted leadership effectiveness. Judge et al. (2002) found that openness to experience was one of the strongest predictors from the Big 5 in predicting both leader emergence and leader effectiveness in a meta-analysis. Scratchley and Hakstian (2001), in a study of 221 managers from various organizations, found that divergent thinking (typically considered a measure of creative thought and flexibility of thought) was predictive of performance evaluation by that manager's supervisor. Finally, in a research project of high school leaders, Schneider, Paul, White, and Holcombe (1999) found that student leaders were higher on the creating orientation measured by the Campbell Interest and Skills Survey.

Given the discussion presented above, it is of interest to determine whether flexibility would predict leadership. More specifically, because the literature on flexibility and leadership seems to include two different aspects of flexibility, behavioral flexibility and cognitive flexibility, it was of interest to determine if these two variables could be measured separately and whether either one or both can predict leadership above and beyond what is predicted by ability and social skills, which are well documented predictors of leadership.

## Method

### *Participants*

Participants in this study consisted of 186 undergraduates attending a large southeastern university in the United States. The 111 females and 74 males (one participant failed to indicate gender) participated in the study for extra credit or as a requirement for psychology classes. Most were in their freshmen year. Students' age ranged from 18 to 45 with a mean age of 21.9 ( $SD = 5.75$ ).

### *Measures and Procedures*

Data for this study were gathered as part of a larger study. As part of the study participants were asked to answer several life history measures. Life history items present people with questions about their behaviors and experiences in relatively discrete situations (Owens, 1976). People are asked to recall past behaviors and select the response option that best describes their typical behavior and experience in the reference situation. Life history measures have been used extensively in the past by Industrial/Organizational psychologists, particularly in personnel selection. However, life history measures are gaining acceptance as an alternative

measure for individual difference characteristics such as skills, abilities and personality traits and show good convergent validity with more traditional measures of the same construct (Kilcullen, White & Mumford, 1991; Mumford, Snell, & Reiter-Palmon, 1994; Mumford & Stokes, 1992; Schmitt, Jennings, & Toney, 1996).

*Criterion Measure* - The leadership scale was a modified version of the leadership scale used in Mumford, O'Connor, et al. (1993). Some of the items from the original version used by Mumford, O'Connor, et al. were not available in this study. To replace items that were not available in this questionnaire, additional items were assigned using a rational scaling approach (Mumford & Owens, 1987). Two psychologists were asked to review each item and determine whether it would fit the definition of the construct in question or is a good indicator of the construct. The two psychologists made independent item assignments, and reached consensus regarding any discrepancy in assignments. Items in this scale reflect both direct and more observable measures of leadership as well as indirect behaviors (for example, (a) how often have you attempted to influence others? or (b) how many of the following leadership position have you held?). Mumford, O'Connor, et al. (1993) have also demonstrated that the life history leadership scale is related to both self report measure of college leadership and an objective measure of leadership activities in college (number of offices held). Internal consistency for the 8 item leadership activities scale used in this study was .78.

*Predictor measures* - Life history items were used to create the four predictor scales used in this study (academic ability-as a measure of cognitive ability, social skills, cognitive flexibility and behavioral flexibility). Items were assigned to the scale using a rational scaling approach (Mumford & Owens, 1987). Two psychologists were asked to review each item and determine whether it would fit the definition of the construct in question or is a good indicator of the construct. The two psychologists made independent item assignments, and reached consensus regarding any discrepancy in assignments. In addition, since these items were used in several past studies for similar constructs and achieved good reliability as well convergent and discriminant validity, the two psychologists were instructed to look at these items assignments as well when making their decisions (see Mumford, Costanza, Connelly, & Johnson, 1996; Mumford, Costanza, Threlfall, Baughman, & Reiter-Palmon, 1993; Mumford, O'Connor, Clifton, Connelly, & Zaccaro, 1993; and Reiter-Palmon & Connelly, 2000, for additional evidence on scale reliabilities and validities). Scales were then analyzed for internal consistency and any items that were not contributing to the reliability of the scale were dropped. Definitions, sample items and reliability information for the life history scales are presented in Table 1. Reliabilities were adequate and typical of life history scales, with internal consistency estimated ranging from .61 to .88. Although life history scales typically show lower internal consistency than other personality measures, they tend to show high test-retest reliability, typically above .90 (Mumford & Owens, 1987; Shaffer, Saunders, & Owens, 1986).

**Table 1**  
**Construct Definitions, Sample Items and Reliability**

Construct	Definition	N <sup>a</sup>	r <sub>c</sub> <sup>b</sup>	Sample Items
Leadership	Involvement in leadership activities and influence on others	8	.78	Directed others in group activities Held a variety of leadership positions in high school Participated in student or school politics
Academic Ability	School success and success in academic pursuits	15	.88	Made honor roll often High grade in English
Social Skills	Sociability, popularity, ability to deal with people appropriately	12	.74	Have many friends Discuss important issues with friends
Cognitive Flexibility	The ability to think about issues from multiple perspectives	11	.69	Enjoyed talking to people who disagree Enjoy learning new things
Behavioral Flexibility	The ability to change behavior based on the situation, adaptability	16	.61	Like to try new approaches to problems Changes in routine are difficult (reversed)

<sup>a</sup> Number of items in the scale

<sup>b</sup> reliability - Cronbach Alpha

While the reliabilities of the two flexibility scales was somewhat low, they fall within the bounds of acceptable reliabilities for research purpose and they have shown evidence of convergent and discriminant validity of these two flexibility scales (Nunnally & Bernstein, 1994). Table 2 presents the correlations between all measures in this study. The two flexibility measures were significantly correlated with each other ( $r=.27, p<.01$ ), but this low to moderate correlation suggests that these two constructs may be independent. In addition, supporting the construct validity of these scales, behavioral flexibility was significantly correlated with social skills ( $r=.33, p<.01$ ), while cognitive flexibility was not ( $r=.13, p>.05$ ).

### **Analysis**

The first step in this study was to determine the extent to which academic ability and social skills would predict leadership activities. For that purpose, a multiple regression analysis was conducted and both variables were entered. In the next step the two flexibility scales (cognitive and behavioral) were added to the equation to determine to what extent they would add to the prediction of leadership activities above and beyond ability and social skills. The increment in  $R^2$  was examined to determine whether the flexibility measures provided additional predictive information above and beyond ability and social skills. In addition, the beta weights of all variables was examined.

## **Results**

Means, standard deviations and correlations among all variables are presented in Table 2. The results of the regression analysis are presented in Table 3. As can be seen, both academic ability and social skills together were predictive of leadership activities ( $R^2=.21, F(2,180)=24.13, p<.001$ ). The regression weights suggest that both academic ability and social skills significantly contribute to the prediction of leadership ( $\beta_{\text{social skills}} = .365, \beta_{\text{ability}} = .250$ ). Not surprisingly, social skills contributes more to the prediction of leadership in adolescence, as indicated by the higher standardized regression weight for this variable. The second step involved the entry of the two flexibility variables into the regression equation. As can be seen from Table 3, the addition of behavioral flexibility and cognitive flexibility accounted for a significant portion of additional variance in leadership activities ( $R^2=.30, F(4,178)=19.45, p<.001; R^2_{\text{change}}=.093, F \text{ change}(2,178)=11.87, p<.001$ ). The regression weights indicated that both behavioral flexibility and cognitive flexibility contributed significantly and uniquely to the prediction of leadership ( $\beta_{\text{cognitive}} = .153; \beta_{\text{behavioral}} = .244$ ).

The finding that both cognitive and behavioral flexibility add significantly to the variance accounted for is meaningful because these variables were entered after academic ability and social skills have both been taken into account. Academic ability and social skills have been shown in past research to be predictive of leadership, and tend to be the most common variables investigated in the past (Bass, 1990). While common method variance may be of concern, since all measures

**Table 2**  
*Means, Standard Deviation, and Correlations*

Variable	Mean	SD	AA	SOC	BFL	CFL
Leadership (LD)	23.17	5.30	.28**	.39**	.37**	.28**
Academic Ability (AA)	47.99	9.76	1.0	.09	-.00	.11
Social Skills (SOC)	41.30	6.57		1.0	.33**	.13
Behavioral Flexibility (BFL)	54.09	6.03			1.0	.27**
Cognitive Flexibility (CFL)	35.48	5.26				1.0

\*\*  $p < .01$

**Table 3**  
*Results of the Regression analysis Predicting Leadership Activities*

Predictor	Beta	R <sup>2</sup>	Change in R <sup>2</sup>
Step 1:		.21**	
Academic Ability	.250**		
Social Skills	.365**		
Step 2:		.30**	
Academic Ability	.264**		
Social Skills	.243**		
Beh. Flexibility	.244**		.09**
Cog. Flexibility	.153*		

\* $p < .05$

\*\*  $p < .001$

are self-report using life history items, this is less so in the case of the two flexibility measures. Because all variables were measured using the same method, most if not all the common method should be attributed to the two variables entered in the first step: academic ability and social skills. Most of the variance (if not all) accounted for by the two flexibility measures, which were entered at the second step should be relatively free of the common method variance, making this finding even more meaningful. In addition, the fact that both variables had significant beta weights provides evidence that the use of two separate flexibility measures, one for cognitive flexibility and one for behavioral flexibility, is appropriate.

## Discussion

The present study sought to add to our knowledge about the variables that may contribute to the understanding and prediction of leadership. Two different streams of research and theory have suggested the need for more attention to the role flexibility plays in leadership behaviors. One stream, focusing on social intelligence, suggests that behavioral flexibility is important for leadership emergence and

effectiveness (Zaccaro, 2002). Another stream, focusing on the role creativity plays in leadership, suggests that cognitive flexibility is of importance (Mumford & Connelly, 1991). The current study adds to this literature in several ways. First, this study provides empirical support that flexibility does indeed add to our understanding of leadership. The addition of the flexibility measures in the regression equation added 9% to the variance accounted for, after two important variables, social skills and academic ability were taken into account. Second, this study examined both cognitive and behavioral flexibility. The results of this study suggest that these two variables, while related, are distinct, and both provide a unique aspect to the prediction of leadership.

Behavioral flexibility may aid leaders in dealing with a variety of people and the variety of demands presented to them. In addition, behavioral flexibility may allow leaders to be more attentive and respond better to the emotional needs of others, an issue that has recently received much attention as it relates to emotional intelligence (Davies, Stankov, & Roberts, 1998; Mayer & Salovey, 1997). The research on self monitoring and leadership provides additional support for the role adaptability may play in leadership. Previous studies of self-monitoring and leadership have found that leaders tend to score higher on self-monitoring than individuals that do not emerge as leaders (Ellis, 1988; Ellis, Adamson, Deszca, & Cawsey, 1988; Zaccaro, Foti & Kenny, 1991). These studies have postulated that this relationship between self-monitoring and leadership emergence may be due to the fact that high self-monitors are able to perceive the needs of group members and react accordingly (behavioral flexibility or adaptability). This study provides some direct evidence that behavioral flexibility is of importance to the prediction of leadership activities, even after social skills have been taken into account, indicating that behavioral flexibility measures something more than just social skills.

Cognitive flexibility may be of particular importance to leaders as they are called upon to solve a variety of problems which may require novel or creative solutions (Mumford & Connelly, 1991). The ability to generate many solutions to problems can be seen as a measure of cognitive flexibility and has been measured often using divergent thinking. Measures of divergent thinking have shown moderate relationship with leadership effectiveness (Howard & Bray, 1990; Vincent et al., 2002). This study provides additional evidence that cognitive flexibility adds to the prediction of leadership activities even after academic ability has been taken into account, indicating that cognitive flexibility is not redundant with academic ability.

While this study provides some intriguing results, there are several drawbacks which have to be considered. First, the study conducted here focused on leadership activities of college students. As such, these leadership activities may not represent leadership activities in older populations. Only a few studies have investigated the relationship between adolescent leadership and adult leadership, finding a moderate relationship between the two (Bass, 1990; Mumford, O'Connor, et al., 1993). However, others suggest that important differences may exist between adolescent leadership and adult leadership. One such possible difference is that

many adolescent leaders are not assigned but rather emerge in natural groups such as school, youth groups, or sports, whereas many studies investigating adult leadership focus on assigned leadership positions such as management (Roach, Wyman, Brookes, Chavez, Heath & Valdes, 1999). There has been a call for the study of adolescent leader behavior and understanding adolescent leadership in terms of the theories and models used for later leadership, focusing on the premise that early behaviors do indeed predict later behaviors. (Schnieder, Paul, White & Holcombe, 1999). Future research should try to replicate these findings with an adult population. Another avenue for future research is to determine whether changes occur in the importance of individual difference characteristics that emerge as predictive for adolescent and adult leaders. In this study, behavioral flexibility emerged as the more important factor (as determined by the regression weight). It is possible that cognitive flexibility may be more important than behavioral flexibility in adult leadership, or that the importance varies according to job demands (Connelly et al. 2000).

Another limitation of the study was that the data in this study were collected using life history measures. Although not traditionally used to measure these constructs, Shaffer et al. (1986) showed that responses to life history items are consistent with the evaluations of external observers. In addition, life history scales have been shown to have good convergent validity with known measures of the construct they are designed to measure, and are gaining recognition as an alternative methodology for the measurement of individual differences (Kilcullen, White, & Mumford, 1991; Mumford & Whetzel, 1997). Finally, the possibility exists that the results might be partially a result of shared method variance, as all measures were collected using the same methodology. However, even if that is the case, the fact that behavioral and cognitive flexibility still emerged as significant predictors (adding 9% to variance accounted for in leadership activities) even after social skills and academic ability have been taken into account, and thus partialing out shared method variance, is meaningful and important. Future studies should replicate these findings using different methods and measures and not just paper and pencil self-report measures.

Finally, another issue in this study are the two flexibility scales. First, the lower reliabilities are of concern. However, these reliabilities are considered appropriate for research purposes (Nunnally & Bernstein, 1994). In addition, research using life history measures suggests that these types of scales tend to have somewhat lower internal consistency due to the heterogeneity of these scales, however, test-retest coefficients tend to be very high (above .90), indicating that these measures exhibit a good level of reliability (Mumford & Owens, 1987). In addition, since reliability provides the ceiling for any other relationship with other variables, the lower reliability exhibited here may actually reduce the size of the relationship found, providing a conservative estimate to the relationship between cognitive and behavioral flexibility and leadership. In addition, whether flexibility should be measured and investigated as two separate measures needs to be further evaluated. While the results of this study provide an intriguing suggestion that indeed we

do need to evaluate two constructs of flexibility, the results need to be corroborated by additional studies and further development in the measurement of these two constructs.

Notwithstanding these caveats, this study has some important implications. First, it suggests that flexibility may be of importance when investigating leadership. Second, it suggests that behavioral and cognitive flexibility can add to our understanding above and beyond our understanding based on academic ability and social skills alone. Finally, it calls attention to the need to separate and investigate both these constructs, as they provide different aspects of flexibility and each can contribute uniquely to our understanding of leadership. Future research should try to provide a better understanding of these two constructs, and determine whether they are distinct, as suggested by this study.

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