Too much or too little? A study of the impact of career complexity on executive adaptability

Guorong Zhu

Management Department, Salem State University, Salem, Massachusetts, USA

Steve B. Wolff

GEI Partners, Waltham, Massachusetts, USA

Douglas T. (Tim) Hall

Organizational Behaviour Department, School of Management, Boston University, Boston, Massachusetts, USA

Mireia Las Heras

IESE Business School, Barcelona, Spain

Betzaluz Gutierrez

Hay Group, Caracus, Venezuela, and

Kathy Kram

Organizational Behaviour Department, School of Management, Boston University, Boston, Massachusetts, USA

Abstract

Purpose – In today's turbulent business environment leaders must be able to adapt to rapidly changing circumstances. For this research the authors aim to focus on the issue of adaptability defined as the ability to work effectively within a variety of changing situations, and with various individuals or groups. They also aimed to examine how variables of career complexity affect development of adaptability.

Design/methodology/approach – The authors draw on a unique database containing the career histories of 52 senior executives in a major global corporation. They use the term career complexity to represent the degree of variety in these individuals' career experiences, and they test the degree to which career complexity contributes to the development of adaptability later in their careers.

Findings – Findings from this study shed light on the relationship between specific career experiences and executive adaptability. Executives who had the experience to serve in an executive assistant role developed higher levels of adaptability. For executives without the executive assistant opportunity, job rotations through different types of roles provided a boost to their adaptability. Three role type changes (e.g. line, staff, or matrix) is optimal; 100 months is an optimal time to spend in each role type.

Originality/value – While the field of leadership development has generated substantial insight into the competencies required by executives, there are few models and empirical studies that describe the process of how specific competencies are developed. The authors' study highlighted the utility of the career complexity construct for both prospective understanding of career actions and processes and retrospective understanding of paths, patterns, and outcomes. The authors demonstrated the predictive value of the career complexity construct by presenting results of the statistical analyses of the hypothesized relationships between career complexity and career outcomes.

Keywords Adaptability, Careers, Career complexity

Paper type Research paper

In today's difficult business and financial environment, survival is not just a matter of getting through a down cycle and getting back to business as usual. Most organizations today are in what Heifetz (1994) called an adaptive crisis, as distinguished from a task crisis. Businesses need leaders, from CEOs to HR executives, who can demonstrate and help others to develop adaptability in several forms, such as the ability to face adversity with courage, learn, and manage uncertainty (Dotlich *et al.*, 2008). For this research we focus on adaptability, defined as the ability to work effectively within a variety of changing situations, and with various individuals or groups.

For organizations to become more adaptive, they need both leaders and members who are adaptable. Kantor *et al.* (2008) argue that, given the need for rapid change and flexibility, it will be executives who can best adapt to change who will deliver the most outstanding results. In other words, adaptability will become a critical competency for successful leaders.

If adaptability is a key to managing complexity in the organization, it is important to understand how managers develop it. While the field of leadership development has generated substantial insight into the competencies required by executives, there are few empirical studies that describe the process of how specific competencies are developed (Pless *et al.*, 2011). We propose that the answer lies in turning the relationship between adaptability and complexity on its head: "The complexity of the individual's passage through different roles in his or her career creates adaptability". In other words, adaptability is best learned through experience (Arthur and Rousseau, 1996; Karaevli and Hall, 2004, 2006) by facing difficulty and change. The best kind of experience for this learning is handling a variety of unusual and unexpected experiences and actions.

In this paper, we test the notion that particular types of variety in a manager's experience help to develop adaptability. We draw on a unique database containing the career histories of 52 senior executives in a major global corporation. We use the term career complexity to represent the degree of variety in these individuals' career experiences, and we test the degree to which career complexity contributes to the development of adaptability later in their careers.

The link between career complexity and adaptability
Career complexity
The breakdown of social institutions that have defined, structured, and organized individuals' careers and changing career norms and expectations has received a considerable amount of attention in the careers literature (e.g. Arthur and Rousseau, 1996; Hall, 2002). There is general agreement that these changes have increased the variety and complexity of individuals' careers (e.g. Strunk *et al.*, 2003). Yet, while the variability and complexity of contemporary careers stands in contrast to the orderly and predictable organizational careers of the industrial era, the nature and consequences of variety and complexity in careers is not well understood.

Although all types of careers have been affected by changing career practices and norms, we focus specifically on managerial careers. In recent years, globalization, rapid technology changes, and increasingly competitive organizational environments have placed growing demands on managers and leaders. As these roles become more complex, effective job performance and career

success require managers to develop "complicated understanding" of the business environment by seeking out and learning from many diverse experiences (Weick, 1979; Bartunek *et al.*, 1983). Variety in career experiences and job assignments is an important mechanism through which managers develop this complex understanding (Karaevli and Hall, 2004; McCall, 1998).

As careers have become more varied and less predictable, researchers in the field have sought out more complex theories and frameworks through which to understand individual career paths and outcomes. A number of scholars have considered careers through the lens of chaos theory and new science, both of which include complexity as a fundamental concept (Bloch, 2005; Bird *et al.*, 2002). Karaevli and Hall (2006) proposed a theoretical model showing how career variety over the span of the person's career might lead to greater managerial adaptability. Based on previous work on executive socialization (Smith and White, 1987; Tyre and Von Hippel, 1997), Karaevli and Hall (2006, p. 360) define career variety as "the diversity in an individual's functional area and institutional context experiences accumulated over time". Thus, the two elements in Karaevli and Hall's (2006) definition of career variety are functional area diversity and institutional context variety.

We would add a third dimension to career variety, which is the timing of these varied functional and institutional experiences. It makes a difference whether a person is exposed to highly varied experiences in the first few years of the career, compared to later in the career. In many careers the person starts off in one function or institutional context and works his or her way up in that environment; then more cross-functional or cross-institutional experiences come later. It is more unusual for the varied experience to come early in the career. But we would argue that when cross-functional or cross-institutional experiences come early in the career, this represents more career complexity than when it comes later, as the younger person has a greater cognitive processing task when the task variety is coming before he or she is feeling settled and established in the career.

Thus, we argue that complexity is an overarching construct, of which variety is one element. We believe that a focus on the complexity of the career itself offers a potentially useful and powerful concept for understanding careers. Mathematically, we might think of it this way: Career complexity = career variety + career sequencing. We would expect both complexity and variety to be related to adaptability, although complexity might have stronger effects.

Thus, career complexity offers a dynamic perspective on the content and contexts of an individual's career path and experiences. We contribute to this emerging literature on complexity in contemporary careers by offering career complexity as a concept with significant descriptive and explanatory power. We define career complexity as follows:

> Career complexity represents the degree of variety in an individual's functional area experiences, institutional context experiences, and temporal experiences over the span of his or her career.

This definition derives from the understanding of career complexity proposed by Craig *et al.* (2006). Their model of career complexity reflects the straightforward idea that career complexity can stimulate the development of new competencies. In this paper we focus on the competency of adaptability (see below); thus, based on the model of Craig *et al.* (2006), the specific model we use for this research is shown in Figure 1.

Our model of career complexity expands on these definitions by adding temporal variety, in addition to functional and institutional variety. By temporal variety we mean departures from general norms for the individual's comparison or reference group in the timing, sequencing, or duration of career experiences. For example, in a large company, managing a whole enterprise at age 30 would be more unusual and more complex than doing so at age 50. The 50 year old has had a greater number of experiences relevant to managing an enterprise (e.g. managing an array of relatively independent business units) that could create a learning foundation for enterprise-level accountability.

Adaptability
Adaptability has often been described in terms of concepts such as flexibility (Murphy and Jackson, 1999), adaptive performance (Pulakos *et al.*, 2000), meeting adaptive challenges (Heifetz, 1994), and learning agility (Lombardo and Eichinger, 2000; London and Mone, 1999; Savickas, 2005). However, regardless of the definition, there is consensus that adaptability is a key quality that enables a person to learn and cope with novel tasks over the span of a career. Hall (2002) refers to adaptability (along with self-awareness) as a career "meta-competency," as it is a competency that enables the person to acquire other competencies. Hall describes the career as a series of short (e.g. three to five year) learning cycles or "mini-cycles" that require adapting to new situations through exploration, trial activity, and mastery. There can also be much longer cycles of career or life stages, as described in the work of Super (1957) or Levinson (1978). Savickas (2005) describes career adaptability through these cycles as successfully adjusting to developmental tasks, job transitions, and complex and unfamiliar problems (Savickas, 2005).

There are several components or facets of adaptability. One is behavioral, which gets at the person's capacity to respond effectively to novel situations. Pulakos *et al.* (2000) have developed a taxonomy of new behaviors (e.g. handling emergencies, demonstrating interpersonal and cultural adaptability, managing work stress) and a job adaptability inventory that measures adaptive performance. Kantor *et al.* (2008) argue that one of two critical elements of adaptability is acting with courage, e.g. behaving constantly with their espoused values even when doing so is unpopular (Kantor *et al.*, 2008).There is also a cognitive aspect of adaptability. This includes the two types of cognitive learning from career experience that Hall (1986, 2002) identified: task-related learning and personal learning (learning about the self or one's identity). An important aspect of task learning is the ability to generalize and transfer it to subsequent tasks. The most powerful learning is "meta-learning," or learning how to learn. Following Argyris' (1982) theory of organizational learning, this meta-competency has been identified as "triple loop learning" (Romme and Witteloostuijn, 1999). Triple loop learning leads to increasing the fullness and depth of learning about the diversity of issues and dilemmas faced. Learning as a

Figure 1.
A model linking career complexity to career outcomes
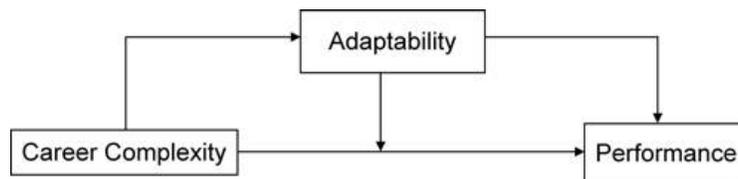
meta-competency is greatly facilitated by the second aspect of cognitive adaptability: personal learning. If the person is able to reflect on herself and modify her self-perceptions based on learning from a complex and novel task situation, her identity grows in the adaptive process. This is where the second career meta-competency identified by Hall (2002) comes in: self-awareness. The more self-aware the person is, the more open she is to experiencing personal learning in an adaptive episode. This cognitive aspect of adaptability is what Kantor *et al.* (2008) call curiosity. Curious leaders adapt to change through asking questions, requesting personal feedback, looking for root causes, and being passionate about new experiences and opportunities to learn.

For the purposes of this research we define adaptability as the ability to work effectively within a variety of changing situations and with various individuals or groups. Adaptability entails understanding and appreciating different and opposing perspectives on an issue, adapting one's approach as the requirements of a situation change, and changing or accepting changes in one's own organization or job requirements.

The relationship between career complexity and adaptability

In this study we empirically assess the path between career complexity and the development of adaptability that was hypothesized to exist by Craig *et al.* (2006). In particular, we operationalize career complexity as various kinds of boundary crossings and test their impact on adaptability. Boundary crossings refer to changes in functional area (e.g. from marketing to finance) and/or levels of responsibility (e.g. from low-level management of operations to more strategic management roles). Boundary crossings are thus measurable aspects of career complexity that may influence adaptability (Karaevli and Hall, 2006; McCall, 1998).

As we have seen in the work of Arthur and Rousseau (1996) in what they call the boundaryless career, contemporary careers are characterized by frequent movement across boundaries of various types. While they describe this phenomenon as simply a characteristic of a new model of careers, it is important to point out that this movement across boundaries does create complexity that in turn might lead to growth. Frequent cross-boundary mobility can be stimulating to some people, while being experienced as overwhelming to others. This is one example of how modern organizational life can lead many managers and professionals to feel that they are, to use the words in the title of one of Kegan's (1994) books, *In Over Our Heads*.

So, even though high complexity may be stressful to many people, there is some evidence that career complexity has positive effects on adaptability. Research on adult development emphasizes the importance of facing adversity, experiencing the new or unknown, and struggling with the unfamiliar to develop a complex understanding of reality (Kegan, 1982, 1994). Moving into a new job or adding new responsibilities to one's job, for example, presents such an experience (Gabarro, 1987). In contrast, repeated exposure to similar tasks reduces the opportunity for learning and has been shown to contribute to relatively narrow capabilities in managers (McCall, 2004).

At the same time, however, there may well be levels of complexity that are too great to allow individuals to integrate lessons from their experiences. For example, the temporal aspect of career complexity can mitigate the positive effects of variation in jobs (Karaevli and Hall, 2006). When the person rotates jobs too quickly, the individual

might not be able to acquire and practice knowledge and skills, and develop relationships associated with those roles. In those cases, boundary crossings might not contribute to adaptability (Bunker *et al.*, 2002). At the same time, assignment transitions must be frequent enough to require the individual to learn how to change – the essence of adaptability (Karaevli and Hall, 2006, p. 368). The average amount of time individuals spend in each role type is therefore expected to influence the development of adaptability. Gabarro's (1987) research on new managers taking charge suggests that too many role type changes in too short a period of time may be less than optimal. Our above arguments also suggest that too few changes could be problematic as well. Thus, a nonlinear (i.e. inverse U-shaped) relationship between the number of role types and adaptability is likely. In this research we focus on role type boundary crossings; thus the following research question:

RQ1. What is the relationship (linear and quadratic) between the frequency of a person's role type boundary crossing job changes and his or her level of adaptability?

Timing of key experiences and developmental readiness for change
Timing of experience also matters. For example, using a sample of college graduates hired into a management training role, Berlew and Hall (1966) found that there is a critical period for learning in the first year or so of a manager's career. In this early stage an individual is most open to learning and is looking for role models and standards of good performance. In Kantor *et al.*'s (2008) terms, this would presumably be a period when the person might be highly curious about how to succeed. Indeed, Karaevli and Hall (2006, p. 368) argued that:

Managers who have a greater number of career transitions in their early career have a greater adaptability than those who experience transitions in their mid- or late-career stages

In a similar vein, Higgins (2005) finds that the environment of an organization, through its socialization processes, can create "career imprints" on young managers, which show up in those managers' capabilities, connections, confidence, and cognitions.

In particular, the first profit and loss (P&L) job experienced by a manager has been identified as a critical transition in executive development (McCall *et al.*, 1988). The P&L job requires a certain level of skill, e.g. the ability to motivate, persuade, think strategically, etc., and at the same time the first P&L is an important developmental experience for a manager. Thus, the first P&L must be timed such that the manager has the necessary competency to do the job but not so late in his or her career that the opportunity for learning is diminished. Accordingly, we raise the following research question:

RQ2. How does the timing of the first profit and loss position affect the development of adaptability in managers?

Development of a broad and complex perspective on organizations
Finally, there are potentially key roles that contribute to the development of a manager's adaptability. A high level of complexity in one's career experiences creates in the individual a cognitive demand to create an overarching institution-wide framework within which to integrate and make sense of information from an array of sources (Jaques, 1989). Developing that framework oneself, as one experiences

different departments and roles in the organization, might be slow and inefficient. By contrast, early experiences with senior executives who are role models who have and use such a framework in their decision making might enable the apprentice to sensemaking of increasingly disparate information. Thus, early exposure to executive role models might contribute to the development of adaptability.

Managers whose career paths include roles that provide early access to top management expose them to the workings of the upper echelons of the organization. This experience provides the manager with a more cognitively complex understanding of a managerial role, which contributes to an increased repertoire of behaviors (Day and Lance, 2004). Finally, managers with early access to top management are more likely to form relationships with executives who can help them develop skills, and may also serve as role models or mentors. This logic leads to the following research question:

RQ3. What is the impact of early access to top management on the development of adaptability?

Method
Sample
We began with the complete career histories within a *Fortune* 100 company of 52 high-level general managers. The company is one of the industry leaders in a technically oriented business, where major reinvention and survival are recurrent organizational challenges. The tenure of these executives within the organization ranged from approximately ten years to 42 years, and the average was approximately 26.5 years (s.d. = 6.8 years).

These 52 high-level executives reported to the most senior level of management. This means they were two or three levels away from the CEO. Each general manager had bottom line responsibility for a business unit of approximately $1B annually in sales. Thus, each of these executives was accountable for an operation equivalent to many mid-sized independent companies. All individuals included in the sample held similar positions within this company. Thus, we were able to hold constant the current role (at the time of data collection) while still ensuring that we had a sufficiently large sample to test our research questions.

In our sample we only included participants for whom we had data about all of their assignments (their entire career history in the company) and all had held a minimum of six different roles within the company. We eliminated five cases in which data on early career moves were not available. This left a sample of 47 managers for whom we had information on their entire career; of those 35 had started their career in the company. Gender was not indicated in the career history data; however, based on an assessment of names we judged that there were ten females. There were 27 executives with bachelor's degrees, ten with master's degrees, and 15 with other credentials (1 doctorate) or unknown.

Measures
For each participant in this study the company provided us with a career history that contained:

- a list of jobs previously held;
- the titles of each of the jobs held by the person;

- starting and ending dates of the jobs; and
- the name of the supervisor of the person in each of those jobs.

A small team comprised of experts in job classification, including the practice leader in this area, and two experienced Human Resources experts from this Fortune 100 company who understood the nature of jobs in the organization and historic changes in job titles, went through all of the career histories and classified each job in each manager's career history. This led to classifying more than 1,000 job positions overall.

Each job in the career history of the participant was classified according to the matrix presented in Figure 2. This matrix consists of three role types (line, matrix, or staff) along one dimension and organizational level (tactical or strategic) on the other. The specific definitions of each role type and organizational level were based on standard job classification techniques originally developed by the organizational psychologist Hay[1] (Hay, 1958; Hay and Purves, 1951, 1954). The job classification method is based on the interaction and factors:

- know-how;
- problem solving; and
- accountability.

The matrix consisting of three role types (line, matrix, or staff) measures the balance in the job in terms of the relative proportions of problem solving to accountability (Hay, 1958). Is the job about thinking/planning or about delivery and accountability for results? Thus different executive roles can be thought of as a continuum, with proximity to the business bottom line increasing from staff to matrix to line (Garonzik *et al.*, 2006).

Identifying manager's jobs. A manager's job consists of a role type and an organizational level. The classification of jobs in the career histories was done in multiple phases by three researchers trained in job classification methodology who maintained a minimum of 75 percent inter-rater reliability, working along with the two HR executives from the organization. This classification was done in multiple meetings between the researchers and the HR executives. At these meetings the researchers interviewed the HR executives to understand the nature of the work for the various job titles. The researchers then independently classified the roles that became clear from the discussion. At a subsequent meeting the interpretation of the jobs would be spot-checked with the HR executives, and jobs that could not be confidently classified were discussed until they were classifiable. This process was repeated until all jobs in the job histories were classified.

Role types. Role type refers to the degree of accountability that the person has for profitability, i.e. whether it is a line, matrix, or staff role (changes in column in Figure 2). Line jobs are management roles where managers are held directly accountable for bottom-line results and have decision-making authority over the human and capital resources that directly impact financial results. Line roles are ones in which incumbents can act directly to reduce or increase production, invest in more efficient means of production, raise or lower prices, etc. It is important to note that not all line roles are full profit and loss positions because, in many line roles, the person can only influence a few aspects of either profit or loss, not both together. In contrast, staff (or advisory) roles have only an indirect impact on bottom-line results. The main

Classification of Jobs

		ROLE TYPES		
		Staff Roles	**Matrix Roles**	**Line Roles**
ORGANIZATIONAL LEVEL — Strategic	**Enterprise Leadership**	NA	NA	Leads all aspects of business to generate results. Typically the highest level leadership role in a diverse enterprise with multiple business units, lines, and markets.
	Strategy Formation	Focuses on the alignment and integration of strategies for a function that is a critical driver of business success. Partners in determining business strategy and provides strategic advice that supports the achievement of critical business objectives.	Develops and delivers strategically important programs critical to the organization's mission through coordination and direction of diverse resources over whom direct control is not exercised.	Focused on the achievement of bottom-line results where global and/or business-critical objectives must be achieved. Typically more complex general manager or sales roles.
	Strategic Alignment	Focuses on the alignment and integration of policy in a strategically important and diverse area. Provides advice and guidance that support the achievement of major business objectives. Seen as thought leader internally.	Defines and delivers specific and measurable long-term programs and results through a complex network of resources and partners over whom direct control is not exercised.	Focuses on the achievement of bottom-line results where product and market developments demand significant change to current business capabilities. Typically general manager or sales roles.
Tactical	**Strategic Implementation**	Focuses on the translation and application of policy in diverse although usually related areas.	Delivers specific, measurable results across a broad, complex area through a network of diverse resources and partners over whom direct control is not exercised.	Integrates and balances operational or sales resources to extend current business capabilities, ensuring that market demands are met in the short and medium term. Manages a large, complex operating unit to predetermined requirements.
	Tactical Implementation	Focuses on the translation and application of policy in a specific functional area.	Delivers specific, measurable results in a discrete, defined area through a network of internal and external resources and partners over whom direct control is not exercised.	Manages defined resources to ensure achievement of clearly specified objectives such as volume, cost, quality, and service to meet schedule and customer requirements.

Increasingly Organizational Level

Figure 2.
Classification of jobs

accountabilities of managers in staff roles are to provide advice, counsel, and execution of functions that support line responsibilities, e.g. HR, legal, and in some cases IT. In these advisory or staff roles the manager rarely, if ever, has the opportunity to have a direct impact on profitability. In between are the increasingly prevalent matrix or collaborative roles (e.g. Ford and Randolph, 1992), where the executive is held accountable for financial results, usually jointly with other managers, but does not directly control many (or in some cases, any) of the necessary resources to accomplish those results. These roles require coordination with other executives to accomplish the shared accountability.

Boundary crossing job moves. Not every change in job title involves a substantive change in tasks, responsibilities, or relationships that would be likely to affect the person's development of adaptability. We defined boundary crossing job changes as those that involved significant change either in the type of role (e.g. from staff to line) or organizational level (e.g. from front-line manager to middle management). Essentially, boundary crossing job moves are those in which a person moves from one cell in the matrix in Figure 2 to another cell in that matrix.

Variables
Career complexity. Earlier we defined career complexity as being a function of career variety (different roles across functional and institutional boundaries) and career sequencing (timing.) Thus, our model of career complexity has a temporal dimension, and includes the sequencing and timing of jobs, in addition to functional variety.

To operationalize this construct, we examined independently seven distinct elements of career complexity:

(1) The number of times that a person crossed boundaries between one role type and another before reaching his or her current role.

(2) Total number of jobs held before the current job (these could include non-boundary crossing moves between different positions of the same role type and organizational level). Regarding the temporal dimension, we considered.

(3) Speed of change, i.e. the average number of months between boundary crossing changes in role type.

(4) Duration of job tenure, i.e. the average number of months spent in any particular job.

(5) The number of years before a person's first profit and loss (P&L) position (in this company a P&L position is typically a line role at a certain organizational level, and the most common titles for those first positions were branch manager or product manager).

(6) The number of jobs before the first P&L job.

(7) The ratio of the number of months before the first P&L role to the manager's total tenure at the company.

To further expand the operationalization of career complexity, we also considered whether or not the person had had access to top management. Each executive in the study either had been placed in a support role to a member of the top team early in the individual's career – or not. The support role was a position created for the development of managers and was typically after the fourth or fifth position held by the manager and occurred on average 11 years into their career. This aspect of their career history was recorded and coded as a binary variable.

Adaptability. The definition of adaptability used by the coders was:

> The ability to adapt to and work effectively within a variety of situations, and with various individuals or groups. Adaptability entails understanding and appreciating different and opposing perspectives on an issue, adapting one's approach as the requirements of a situation change, and changing or easily accepting changes in one's own organization or job requirements.

To assess the level of adaptability of each participant we used the data from a behavioral event interview (BEI) (McClelland, 1998) that was conducted by an expert certified in the technique. The interviews were conducted as part of the assessment process for selecting the managers into executive roles. All participants in this study went through the same assessment process; some were later selected for executive roles, some were not. The BEI is a specific form of the critical incident interview technique (Flanagan, 1954), which has been shown to be a reliable and valid method for obtaining accurate descriptions of work behavior (Motowidlo *et al.*, 1992; Ronan and Latham, 1974). The BEI involves asking interviewees to describe:

- incidents or events on the job in which they felt effective in the job; and
- those in which they felt ineffective in the job.

Interviewees are asked to think of a variety of events that represent a range of typical job situations.

The interviewers are blind to the performance level of the interviewees (i.e. in this study, their nomination as top performers in their organizations). The role of the interviewer is to obtain detailed descriptions of events while remaining as unobtrusive as possible in order to avoid leading the interviewees. Interview questions are limited to the following: "What led up to the event?" "Who did and said what to whom?" "What happened next?" "What were you thinking or feeling at that moment?" and "What was the outcome?" Because the interviewer probes for thought processes that occurred while interviewees were engaging in specific behaviors, the BEI uncovers information about cognitive competencies that may not be directly observable. Because a competency is only coded if it is clear that the person being interviewed exhibited the behavior, interviewers are also trained to ask for clarification if the interviewee uses the term "we." If the interviewee uses the term "we," the interviewer will ask questions such as, "Who specifically did that?" and "What did *you* do?"

Interviewers who collected the data first completed an intensive three-day interview training program, and submitted a completed interview for evaluation before being allowed to conduct interviews. BEIs lasted three to four hours on average, and three events, as defined above, were discussed in each interview, thereby providing a range of contexts for assessing the individual's skills and many instances of behavior that could be coded. Despite the retrospective nature of interviewee accounts of events, both the validity and the reliability levels of data from these interviews have been shown to be strong (Motowidlo *et al.*, 1992; Ronan and Latham, 1974). BEIs provide valid and reliable data because described events all have occurred within the past year of the interview, and a very high level of descriptive detail is demanded by the interview protocol (McClelland, 1998; Spencer and Spencer, 1993).

The BEI provides a conservative measure of specific competencies demonstrated by the interviewee because only those behaviors and thoughts that are explicitly described as having occurred during the particular events are defined as usable data; behaviors and thoughts that are not described fully and explicitly (i.e. they are described in general or vague terms or are mentioned for past events), are not coded by interview coders (McClelland, 1998).

Managers' interviews in this study were transcribed and coded using codes based on a set of generic leadership competencies developed from a meta-analysis of more than 20 years of research, conducted with managers in 200 different job categories

(McClelland, 1998; Spencer and Spencer, 1993). Each competency was defined using specific behaviors and thoughts, and these are ordered by levels of complexity or scope (see Spencer and Spencer, 1993). Adaptability, as defined in Table I, is one of these competencies.

The coders of transcripts followed specific rules. Coders were taught to code only behavior that is clearly described as:

- Having been explicitly done (said, thought, or felt) by the interviewee (i.e. they may not code a statement that uses the term "we" did something or where the action itself is general: "I influenced him.").

- As having taken place in the course of this specific recent event (i.e. nothing that the person plans to do or "usually does" or thinks they should do or might do or did in previous cases).

- With adequate detail as to how it was accomplished (i.e. "I presented a business case to Joe. I showed him the costs and benefits of purchasing the new machine" rather than "I convinced Joe to buy the machine").

In addition to identifying usable statements, coders also identified the specific competency and level being demonstrated. Codebooks for each competency include behavioral descriptions and examples of each level of each competency and additional coding rules as required to maintain inter-rater reliability. Coders were rigorously trained and accredited to maintain at least 75 percent inter-rater reliability in identifying the set of competencies used by the interviewee in the incidents discussed.

For each participant in this study, individual competencies were recorded by highest level shown. If a competency was not coded in the transcript of a manager's interview, it was assigned a level zero. It is important to note that all executives had a fair opportunity to display any and all of the competencies in the model during their three to four hour interview. Adaptability was coded for four levels; the definitions of each level are shown in Table I.

Analytic strategy
To explore research question 1 concerning the relationship between the frequency of a person's boundary crossing job changes and their adaptability, we examined a possible linear and quadratic relationship. We used the following four independent variables to represent aspects of career complexity and examined each independently in separate ANCOVA analyses:

(1) the number of boundary crossing changes from one role type (line, matrix, staff) to another;

(2) the total number of jobs, whether or not there was a change in role type;

(3) the average number of years before transitioning to another role type; and

(4) the average number of years in a job, regardless of role type.

To explore research question 2, concerning the relationship of temporal aspects of career complexity and adaptability, we've examined the timing of the first profit and loss position on adaptability. We specifically look at the relationships between career complexity and the following independent variables in separate ANCOVA analyses:

Level	Definition	Example
0	*Not shown*. This competency is not shown	
1	*Accepts need for adaptability*. Demonstrates willingness to change ideas or perceptions based on new information or contrary evidence. Understands other people's points of view	So there was a bit of anger from my side, but at the same time of course I recognized the shortcomings in our program that we'd tackled with them, that we really were restricted, that I couldn't forget. I tried to put myself in their shoes. I would have done the same thing
2	*Applies rules flexibly*. Alters normal procedures to fit a specific situation to get a job done and/or meet company goals	I mean I was approached the day before. And I knew that I couldn't just start an entirely new lesson. So I pulled the non-standard measurement from the curriculum and basically just went with it when I saw her walk in the door. Because she had scheduled a time to come when I was starting a fresh class
3	*Adapts tactics*. Decides how to do something based on the situation. While maintaining the same overall plan or strategy, changes how to accomplish the plan. Acts to fit the situation or the person	It was an absolute let down on my part from "I'm here to sell something." And I realized that that business was basically gone from a training perspective. So I sort of put down all of my, all of the materials that I'd brought with me. I think I even put down the pencil and paper, as I recall, on the side of the chair, on the chair next to me. And I said, "Gee, I'm sorry that you've had this experience. But since I'm here, can you just tell me what's going on at your company?"...There's no sale here. There's no sale here. But I came all this way; I drove an hour and a half. So I'm going to at least make a contact. I'm at least going to build some sort of a relationship. But there was no – at that point sales was way out of my mind
4	*Adapts own strategy*. Changes the overall plan, goal, or project (i.e. what you're trying to accomplish) to fit the situation. Makes small or temporary organizational changes to meet the needs of a specific situation	But the Wilmington people will not relocate because they do not want to. So what I have agreed to do is – recognizing that we have got a very difficult year next year in 1997 and that if I force the issue of making them relocate, I will lose probably two thirds of them and those that I retain I am not going to have their undivided attention because it's going to be very disruptive to their personal lives plus they really do not want to move so I am not going to be getting the best of them. What I have agreed to do is – we will allow the Wilmington based businesses to remain in Wilmington throughout 1997 but as normal attrition occurs, we will replace those people with Memphis based replacements and we have told them that by the end of the first quarter of 1998 all operations will be located in Memphis

Note: Coders are trained to maintain a minimum of 75 percent inter-rater reliability

- the number of roles held before the first profit and loss job;
- the number of jobs held before the first profit and loss job; and
- the ratio of the number of months before the first profit and loss job to the manager's tenure at the company.

To explore research question 3, concerning the effect of early access to top management, for each of the above ANCOVA analyses we looked for an interaction effect with whether or not the person had experienced the executive assistant role.

Adaptability scores of level 0 indicate that the competency was not displayed by the executive in the BEI. There are two possible reasons that a competency may not be displayed. First, the person does not possess the particular competency at all (an unlikely but possible situation for a manager). Second, and more plausible, the person did not explain an event in which the competency was reflected. As a result, we concluded that adaptability scores of level 0 are not interpretable. To avoid introducing noise into the adaptability variable, which would increase the likelihood of a false negative finding (type II error), we excluded executives coded level 0 in adaptability from the analyses. This left 30 managers in the analysis.

Results

We first checked whether there were any significant differences in adaptability based on the level of the educational degree. We excluded those with unknown degrees and lumped the one person with a doctorate degree into the group with a master's degree. Using a t-test we found that there were no significant education-related differences in adaptability between those with a bachelor's degree and those with a master's degree or higher ($t = -0.319$, $p = 0.752$). We also checked for differences in adaptability based on gender; again, there were no significant differences for males and females ($t = 1.02$, $p = 0.32$).

Table II shows correlations with descriptive statistics along the diagonal.

Career complexity
Number of role-type changes. Table III shows the results of the analysis examining the relationships between serving in the executive assistant role and the number of role changes, on the one hand, and adaptability, on the other. First of all, for executives who served in the executive assistant role, the higher the level of adaptability that the executive developed. Thus, having had experience with the executive assistant role was associated with greater adaptability.

Next, we examined the interaction of serving in the executive assistant role and the number of role-type changes. Figure 3 graphs the relationship. This model shows a significant interaction of early access to top management with the number of role-type changes (F = 8.005, $p = 0.002$, $r^2 = 0.326$). The linear regression for only those managers who had not been executive assistants is also significant ($\beta = 0.492[2]$, $p = 0.002$, $r^2 = 0.455$) as shown in Figure 3. For executives who had no access to the assistant role, the greater the number of changes in role types, and the lower the level of adaptability that the executive developed.

Table IV shows the results of a quadratic regression of adaptability on the number of role-type changes experienced in the manager's career. For those managers who had been executive assistants, there are no significant relationships. This is due to the fact

	1	2	3	4	5	6	7	8
1. Adaptability	(3.03, 0.71)							
2. Number of role type changes	−0.41*	(4.68, 2.86)						
3. Total number of roles	−0.26	0.74**	(12.68, 4.45)					
4. Avg. months before role type change	0.37*	−0.84**	−0.53	(67.52, 30.04)				
5. Average months in role	0.14	−0.32	−0.63**	0.32	(26.17, 6.65)			
6. Number of role type changes before PL	−0.29	0.62**	0.57**	−0.50*	−0.32	(2.48, 1.64)		
7. Number of roles before PL	0.05	0.25	0.34	−0.19	−0.25	0.68**	(5.9, 2.76)	
8. Ratio of total number of roles to number of roles before PL	0.25	−0.22	−0.38*	0.09	0.29	0.22	0.68**	(0.49, 0.23)

Notes: * $p < 0.05$; ** $p < 0.01$; (mean, sd) along diagonal

Table II.
Correlations and
descriptive statistics

that almost all these managers have developed adaptability at or near level 3 (adapting tactics). For those managers who did not experience an executive assistant role, Table IV shows that there is both a significant linear ($\beta = -.218$, $p = 0.002$,

Dependent variable: adaptability Source	Type III sum of squares	df	Mean square	F	Sig.
Corrected model	5.211[a]	2	2.606	8.005	0.002
Intercept	100.617	1	100.617	309.112	0.000
Assistant role * number of role type changes	5.211	2	2.606	8.005	0.002
Error	8.789	27	0.326		
Total	284.000	30			
Corrected total	14.000	29			

Notes: [a] R squared $= 0.372$ (Adjusted R squared $= 0.326$)

Table III.
Number of role type changes
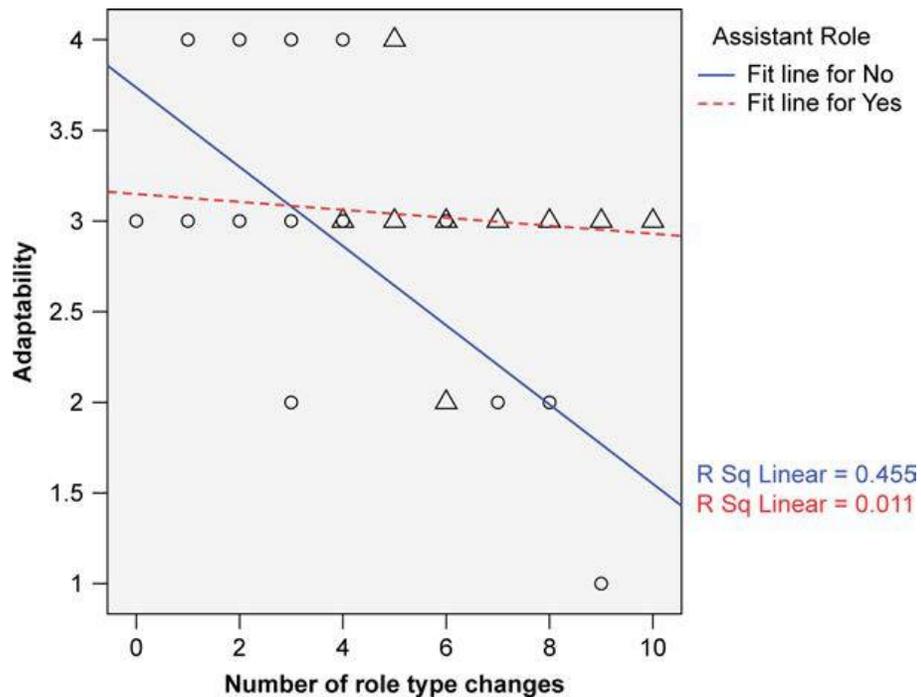
Figure 3.
Adaptability vs number of role type changes

Dependent variable: adaptability Assistant role	Equation	R square	Model summary F	df1	df2	Sig.	Parameter estimates Constant	b1	b2
No	Linear	0.455	14.204	1	17	0.002	3.736	− 0.218	
	Quadratic	0.563	10.317	2	16	0.001	3.210	0.154	− 0.042
Yes	Linear	0.011	0.100	1	9	0.759	3.149	− 0.022	
	Quadratic	0.063	0.271	2	8	0.769	4.617	− 0.466	0.031

Note: The independent variable is Number of role type changes

Table IV.
Quadratic regression of adaptability on number of role types

$r^2 = 0.455$) and quadratic ($\beta_1 = 0.154$, $\beta_2 = -0.042$, $p = 0.001$, $r^2 = 0.563$) component to the relationship between adaptability and the number of role-type changes. The quadratic relationship is shown in Figure 4. The optimal number of role-type changes appears to be approximately three for those managers not experiencing the executive assistant role.

In our sample, 9 of 11 cases (82 percent) of those who had an executive assistant role exhibit adaptability at level 3, one is at level 2, and one is at level 4. Thus, it appears that a career path that includes early access to top management is associated with adaptability at a high level, i.e. the ability to adapt one's tactics to the situation, and that for those who had early access to the assistant role subsequent role changes have little impact on the level of adaptability.

Average time in each role type. The average time spent in each role type was calculated as the total tenure with the organization divided by ($1 +$ the total number of role-type changes). Table V shows the results of this analysis and the graph of the
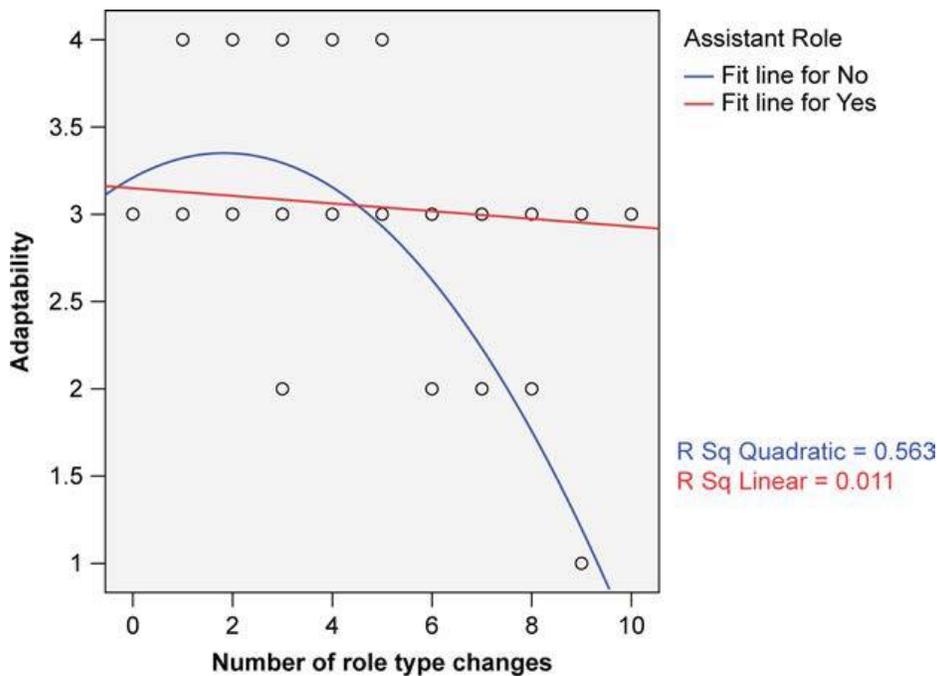

Figure 4.
Quadratic regression of adaptability on number of role types

Dependent variable: adaptability Source	Type III sum of squares	df	Mean square	F	Sig.
Corrected model	3.214[a]	2	1.607	4.024	0.030
Intercept	11.712	1	11.712	29.319	0.000
Assistant role * average months in role type	3.214	2	1.607	4.024	0.030
Error	10.786	27	0.399		
Total	284.000	30			
Corrected total	14.000	29			

Notes: [a] R squared $= 0.230$ (Adjusted R squared $= 0.173$)

Table V.
Average months in role type

results is shown in Figure 5. The results are similar to those for the number of role-type changes except that they are a bit weaker, i.e. the r^2 is smaller (F = 4.024, p = 0.03, r^2 = 0.23). For those managers not experiencing the executive assistant role, the greater the average number of months before changing role types, the higher was the level of adaptability developed.

We also examined the quadratic relationship as we did for the number of role-type changes. The results are shown in Table VI and Figure 6. Similar to the number of role-type changes, the average months per role type shows a strong quadratic relationship. It appears to be optimal to have approximately 100 months total experience (possibly including several jobs of increasing responsibility) in a given role type (line, staff, or matrix).

Number of jobs and average time per job. The direction of the relationships for the number of jobs was similar to those for changes in role type; however, none was
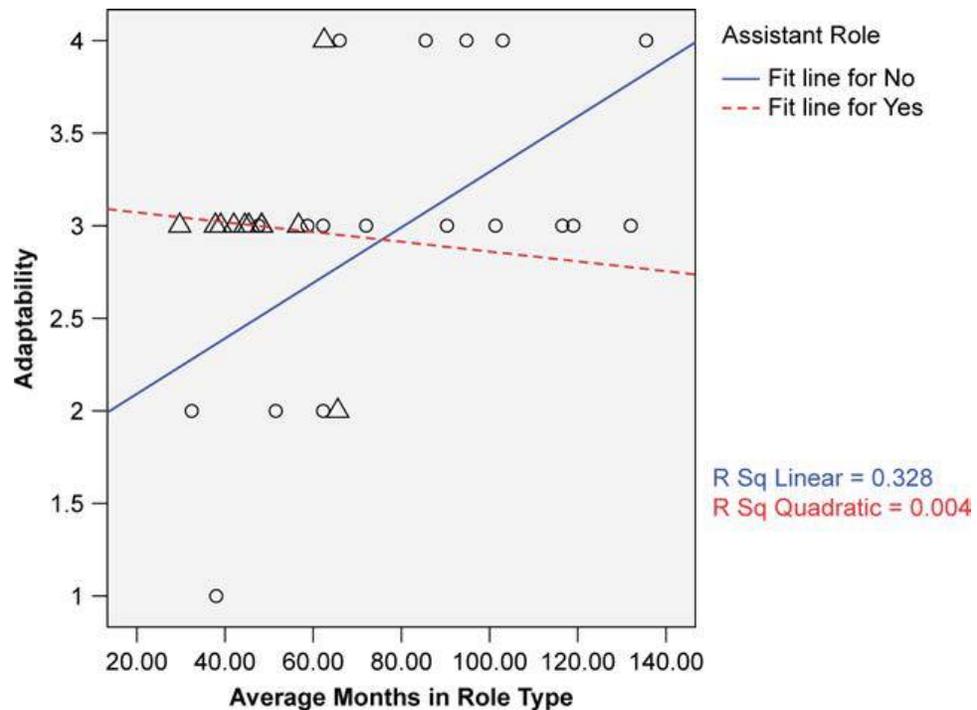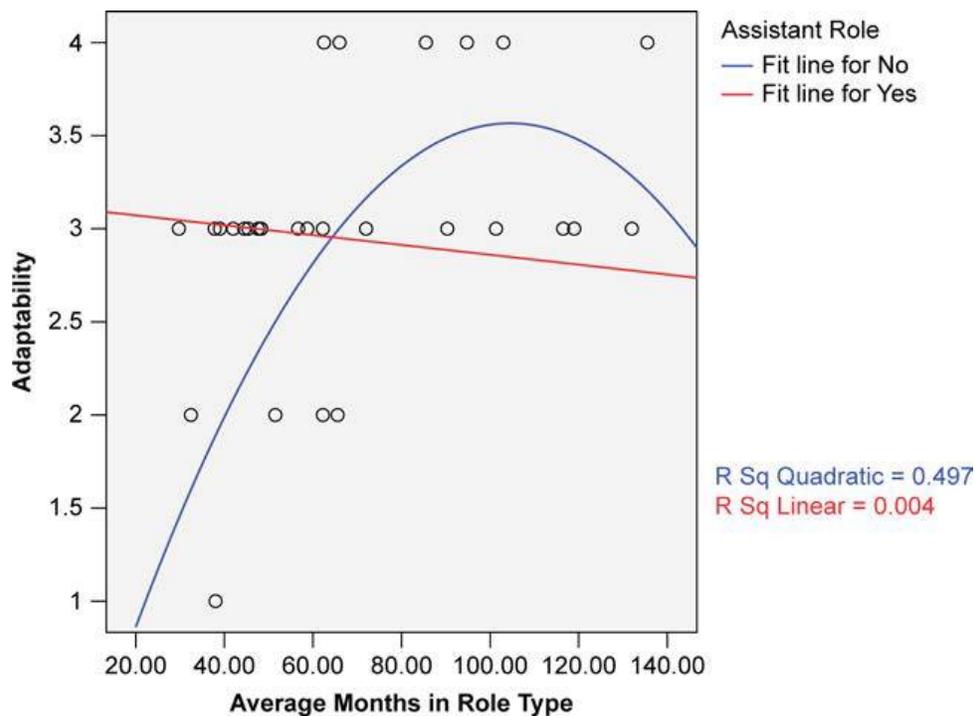

Figure 5.
Adaptability vs average months in role type

Dependent variable: adaptability									
Assistant role	Equation	R square	Model summary				Parameter estimates		
			F	df1	df2	Sig.	Constant	b1	b2
No	Linear	0.328	8.296	1	17	0.010	1.792	0.015	
	Quadratic	0.497	7.910	2	16	0.004	−0.569	0.079	0.000
Yes	Linear	0.004	0.037	1	9	0.852	3.125	−0.003	
	Quadratic	0.034	0.139	2	8	0.872	1.692	0.059	−0.001

Note: The independent variable is Average months in role type

Table VI.
Quadratic regression of adaptability on average number of months per role type

Figure 6.
Quadratic regression of
adaptability on average
months in role type

statistically significant. This finding implies that the complexity of boundary crossing affects the development of adaptability; that is, changing role types has a greater effect than simply changing jobs within the same role type.

Timing
We tested for relationships between adaptability and our three timing variables with respect to P&L. None of these variables showed any significant relationship with adaptability.

Discussion
This study contributes to our understanding of the relationship between the complexity in a career and the development of adaptability. Specifically, we investigated the effect of career complexity, measured as variety in role types as well as the tenure in the different role types, on the development of adaptability. As our third research question suggested, an early executive assistant role played a major part in developing adaptability. Moreover, it was a critical variable that influenced the effects of the number of role-type changes on the development of adaptability.

For those executives who had an executive assistant role, the number of role-type changes did not have an impact on their level of adaptability. Indeed, for individuals with early access to senior-level decision making, their adaptability tended to be quite high across the board, on average falling at level 3 (ability to adapt tactics) or higher. However, for those who had not had early access to senior management, there is both a linear and a quadratic relationship between the number of role-type boundary crossings, the tenure in those roles, and the manager's adaptability. This pattern implies that there may be an optimal number of role-type boundary crossings in a

managerial career, as well as an optimal duration of experience in each role type. Too few boundary crossings from one role to another or too much time in a given role type may inhibit learning and adaptability because there is not enough career complexity to demand additional learning. On the other hand, too many boundary crossings from one role type to another or too little time in each role type may inhibit learning and adaptability because there is too much career complexity to assimilate lessons into one's behavioral repertoire.

Early access to senior management
A role that provides early access to senior management (executive assistant) proves to be an important moderator of the relation between career complexity and the development of adaptability. Those managers whose career path did not include an executive assistant role displayed higher variability in levels of adaptability than those who did. Those managers whose career path included an executive assistant role almost exclusively (82 percent) show adaptability at the high level of 3 (adapts tactics). In the executive assistant role, the individual has an opportunity to see a senior executive exercise his or her own adaptability, to participate in the boss's executive decisions, to have a vicarious experience (Bandura, 1997), and to benefit from coaching and counseling that is available from that executive. All of these things create an experience of immersion into the executive role, which stretches the person's cognitive capacity (Jaques, 1989). It is also likely that in such a role, the developing manager has more frequent and ready access to other senior executives who they can enlist into their developmental networks to enhance ongoing learning and development (Higgins and Kram, 2001).

Further, individuals who work as executive assistants learn about the organization in a way that puts any individual item of knowledge into a context in which it is profoundly connected to the conditions in which it is learned (Brown and Duguid, 1991). Thus, they are likely to learn in a direct way the real connection between decisions and results. Knowledge of results may enhance their willingness to adapt in their own managerial choices when a course of action is not leading to expected outcomes. In the assistant role, the manager is also exposed early to other managers' concerns, needs, and restrictions. This breadth of perspective can serve in the future to enhance openness to information about those needs or restrictions in other departments.

Finally, an executive assistant supports an executive officer, witnessing and contributing to his decision making in crucial matters that affect the direction of the organization, but without sharing in the burden of the responsibility and risk that such decisions imply. By not sharing in that responsibility, an executive assistant has a certain level of psychological safety, which can add to psychological engagement (Kahn, 1990) while letting the person escape the biases that hinder learning, especially in the aftermath of both failures and successes. The relative safety of the role may facilitate learning from both successes and failures, thus helping the manager build cognitive complexity and become more adaptable (Day and Lance, 2004).

An alternate explanation for those managers who had an executive assistant role showing adaptability at level 3 is that those chosen to this role were higher in adaptability to start with. It is important to note that the company did not have any assessment of adaptability at the time managers were appointed to the role. This would

imply that, although there was no objective measure of adaptability at the time of their selection, the outward manifestation of adaptability at level 3 was so strong it became the predominant factor affecting their selection. Although this is a possibility, it is not consistent with the organization's procedures for selecting the managers for the executive assistant role and is less likely than the explanation that the role aids development of adaptability. Additional research is needed to definitively rule out this explanation.

Number of role type changes
The second most salient result of this research is that having a higher number of role-type changes does not always compensate for not having a position as executive assistant. This is a crucial finding. An excessive number of role types, or a short tenure in each role type, may be detrimental to developing high levels of adaptability. This pattern might be due to the fact that a high number of positions implies there is a shorter tenure in each position. Although managers might depart from the problem-solving approaches, operational tactics, and strategies that their predecessors had established, their short tenures might prevent them from experiencing the need for adapting, re-evaluating, and changing their own approaches and strategies. Moreover, a short time in each position might hamper experiencing the consequences of their own decisions, with their positive and negative effects. As a result, they might develop a tendency to think that their decisions are correct no matter the actual results, thus exacerbating their overconfidence and biasing their judgments. Such a situation is likely to hinder, rather than promote, adaptability (Bunker *et al.*, 2002).

Timing in role types
The third key finding is that for those who have not been executive assistants there is an optimum time in each of the role types. The quadratic relationship between length of time in a role type and adaptability shows that the optimum time is around eight years (100 months). This finding can be broken down into two observations. On the one hand, people need a minimum time in each role type. On the other hand, too much time in the same role type might hamper adaptability.

The need for a minimum time in each role type might be related to the fact that it takes time for people to learn from their experiences and develop the complex understanding needed to develop adaptability. Human development involves an ability to hold one's own perspective as objects to be examined, rather than as objective and undeniable truths (Kegan, 1982). Thus, a person at a high developmental level is able to examine his own assumptions, beliefs, and decisions and to change them when he finds them to be flawed or discovers other more potentially beneficial ones. The development of complex understanding is likely to lead to adaptability (Day and Lance, 2004). According to Kegan (1994), for people to develop such complex understanding they need challenge coupled with support. To develop relationships that lead to support, people need a minimum time in any position to create a developmental network (Higgins and Kram, 2001) that provides the necessary challenge and support to reflect on and learn from experiences. At the same time, challenge also calls for a minimum time in a specific role type, so that circumstances might unfold, problems get complex, individuals can experiment with different courses of action, and learn from failures (Hurley, 2002). These elements take time.

On the other hand, being in the same position for too long a time might also inhibit adaptability. People need challenge and support to develop a complex understanding and to make appropriate links between decisions and consequences. Being in the same role type for too long might result in a lack of challenge, variety, and novelty. Once that happens, an individual is likely to no longer further develop his complex understanding but rather to apply previous knowledge and heuristics.

Timing
We chose to examine timing relationships by examining various measures of timing related to the first profit and loss (P&L) position. Although we were unable to find significant relationships between timing of the first P&L position and the development of adaptability, this does not imply that timing is not important; for example, the executive support role invariably happened early in these managers' careers. It is plausible that executive assistant experience or other kinds of key roles are less helpful later in individuals' careers than they are early in their experience because of the role they play in helping the individual to organize subsequently-gained knowledge.

Limitations
One of the unique strengths of our data was the thoroughness of the information we were able to gather on the whole careers of the executives we studied. However, there were limitations to our data as well. First, the final sample size of 30 managers is somewhat small. The threat of a small sample size is twofold:

(1) Certain types of analyses, typically structural equation modeling, can be unstable.

(2) There is a possibility of type II errors, i.e. a relationship that exists in reality is rejected.

When a relationship is found, the small sample size has no material effect on the interpretation of the results. As a result, care should be used in interpreting negative findings. The positive findings, on the other hand, can be considered relatively robust, especially because the stability of the analyses used is relatively good.

Second, we had access to measure these executives' competencies only at one point in time rather than test at multiple points the impact of particular experiences on their developmental trajectory. Although it seems unlikely, the finding that managers who had early access to senior management typically develop adaptability at level 3 (adapts tactics) is subject to the alternate interpretation that managers who demonstrate adaptability at level 3 at an unusually young age are selected for a role with access to top management. Nevertheless, even if that were the case, the findings for the executives who had not experienced the executive assistant role would still hold.

The fact that data were collected in only one organization is both an advantage and disadvantage. On one hand, we did not have to control organization-level variables such as industry, company performance, organizational culture, etc. as potential confounds to our results. Our sample was homogenous with respect to the manager's current role; thus, to the extent that the role represents a common point in a career, the executives were all at the same place in their career, i.e. they were in the same cell of Figure 2. On the other hand, the results may not generalize across organizations. Managers who spend most of their careers within one company are relatively rare in

modern days. However, it is a corporation that has changed dramatically, in terms of products, clients, and organization in the past four decades, i.e. the time that spans the careers of the managers in the sample. It may be that the role of career complexity in the development of adaptability is influenced by organizational contexts that we were unable to study, as well as changes in organizational contexts over time.

We found that there is an optimal number of role types and tenure in the roles that contribute to the development of adaptability. Clarifying the optimal number of role transitions and the timing of executive assistant roles help us understand how to promote adaptability, a characteristic that will become more and more important now that the retirement of Baby Boomers is predicted to leave a gap in senior leadership competencies (Wolff *et al.*, 2009).

As a starting point, this study used straightforward measures of career complexity. It would be helpful to examine more complex methods for examining careers, e.g. sequence analysis or optimal matching techniques (Abbott and Tsay, 2000) since such methods could illuminate categories of career paths that lead to the development of adaptability. Such an understanding would allow for a more sophisticated approach to the career development of senior managers.

Future research
The model in Figure 1 suggests there are two paths between career complexity and performance. One path has adaptability playing a mediating role such that increased career complexity will lead to greater adaptability, which is consistent with Karaevli and Hall's (2006, p. 365) proposition that, "Career variety is associated positively with a manager's adaptive performance". Increased adaptability, in turn, leads to greater performance. This would be an interesting path to explore. In this case performance could be defined in a number of ways: first, it could be career performance, understood as organizational level or salary level. Career performance could be defined as psychological career success as well, defined as the feeling of pride and fulfillment that emerges from meaningful work experiences, and not only to the perception of attaining objective success (Hall, 2002; Hall and Chandler, 2005; Hall and Mirvis, 1996). The first avenue could be taken as a proxy of objective performance, given the assumption that the person is promoted and earns a higher salary the more she or he contributes to the company. The second could be regarded as a proxy of personal success and happiness, that is, as a subjective measure of performance.

The second path in Figure 1 shows a direct relationship between career complexity and performance, which represents other mechanisms by which career complexity affects performance, e.g. by building networks and accommodating to new environments by building enriching relationships. Adaptability moderates this relationship as people with higher levels of adaptability will be best able to learn from career complexity, thus resulting in higher performance.

In the model presented by Craig *et al.* (2006) in Figure 1, competencies mediate the relationship between complexity and performance. They also proposed a moderating effect of competencies, in which a career history with a variety of assignments could lead directly to stronger performance if the person possessed the appropriate competencies to allow her to learn the necessary lessons from that variety. Future research should investigate these propositions.

In the meantime, this research offers clear guidelines to career counselors, leadership development practitioners, and senior managers who are concerned with developing a cadre of executives who are highly adaptive to persistent change and complexity. We have learned that career variety and the right kind of career sequencing can be very beneficial in developing a person's adaptability. It is clear that moving young high performers too quickly can undermine opportunities to develop this critical competence, and that the timing of particular assignments (i.e. executive assistant roles, which provide exposure to top executives) along the way is critical.

Acknowledgements

Notes

1. Hay Group's Guide Chart-Profile Method is the most widely used and recognized proprietary job evaluation method in the world (Gilbert, 2005).

2. All beta weights shown are standardized.

References

Abbott, A. and Tsay, A. (2000), "Sequence analysis and optimal matching methods in sociology: review and prospect", *Sociological Methods & Research*, Vol. 29 No. 1, pp. 3-33.

Argyris, C. (1982), *Reasoning, Learning and Action: Individual and Organizational*, Jossey-Bass, San Francisco, CA.

Arthur, M.B. and Rousseau, D.M. (Eds) (1996), *The Boundaryless Career: A New Employment Principle for a New Organizational Era*, Oxford University Press, New York, NY.

Bandura, A. (1997), *Self-efficacy: The Exercise of Control*, Macmillan, New York, NY.

Bartunek, J.M., Gordon, J.R. and Weathersby, R.P. (1983), "Developing 'complicated' understanding in administrators", *Academy of Management Review*, Vol. 8 No. 2, pp. 273-284.

Berlew, D.E. and Hall, D.T. (1966), "The socialization of managers: effects of expectations on performance", *Administrative Science Quarterly*, Vol. 11 No. 2, p. 207.

Bird, A., Gunz, H. and Arthur, M.B. (2002), "Careers in a complex world: the search for new perspectives from 'new science'", *Management*, Vol. 5 No. 1, pp. 1-14.

Bloch, D.P. (2005), "Complexity, chaos, and nonlinear dynamics: a new perspective on career development theory", *The Career Development Quarterly*, Vol. 53 No. 3, pp. 194-207.

Brown, J.S. and Duguid, P. (1991), "Organizational learning and communities of practice: toward a unified view of working, learning, and innovating", *Organization Science: A Journal of the Institute of Management Sciences*, Vol. 2 No. 1, pp. 40-57, (now INFORMS: Institute for Operations Research).

Bunker, K.A., Kram, K.E. and Ting, S. (2002), "The young and the clueless", *Harvard Business Review*, Vol. 80 No. 12, pp. 80-87.

Craig, E., Las Heras, M., Hall, D.T., Zhu, G. and Kram, K.E. (2006), "Career complexity as a lens for understanding careers. Within the showcase symposium 'Learning from career

histories: knowledge, action and research concerns'", paper presented at the Academy of Management annual meeting, Atlanta, GA.

Day, D.V. and Lance, C.E. (2004), "Understanding the development of leadership complexity through latent growth modeling", in Day, D.V., Zaccaro, S.J. and Halpin, S.M. (Eds), *Leader Development for Transforming Organizations: Growing Leaders for Tomorrow*, Lawrence Erlbaum Associates, Mahwah, NJ, pp. 41-69.

Dotlich, D., Cairo, P. and Rhinesmith, S. (2008), "Complexity, diversity, and uncertainty – the shaky new ground for CEOs", *People & Strategy*, Vol. 31 No. 2, pp. 44-51.

Flanagan, J.C. (1954), "The critical incident technique", *Psychology Bulletin*, Vol. 51 No. 4, pp. 327-358.

Ford, R.C. and Randolph, W.A. (1992), "Cross-functional structures: a review and integration of matrix organization and project management", *Journal of Management*, Vol. 18 No. 2, pp. 267-294.

Gabarro, J.J. (1987), *The Dynamics of Taking Charge*, Harvard Business School Press, Boston, MA.

Garonzik, R., Nethersell, G. and Spreier, S. (2006), "Navigating through the new leadership landscape", *Leader to Leader*, No. 39, pp. 30-39.

Gilbert, K. (2005), "The role of job evaluation in determining equal value in tribunals – tool, weapon or cloaking device?", *Employee Relations*, Vol. 27 No. 1, pp. 7-19.

Hall, D.T. (1986), *Career Development in Organizations*, Jossey-Bass, San Francisco, CA.

Hall, D.T. (2002), *Careers In and Out of Organizations*, Sage, London.

Hall, D.T. and Chandler, D.E. (2005), "Psychological success: when the career is a calling", *Journal of Organizational Behavior*, Vol. 26 No. 2, pp. 155-178.

Hall, T. and Mirvis, P. (1996), *The New Protean Career: Psychological Success and the Path with a Heart, The Career is Dead: Long Life to the Career*, Jossey-Bass, San Francisco, CA, pp. 15-46.

Hay, E.N. (1958), "Any job can be measured by its 'know, think, do' elements", *Personnel Journal*, Vol. 36 No. 11, pp. 403-406.

Hay, E.N. and Purves, D. (1951), "The profile method of high level job evaluation", *Personnel*, September, pp. 162-169.

Hay, E.N. and Purves, D. (1954), "A new method of job evaluation: the guide chart-profile method", *Personnel*, July, pp. 72-80.

Heifetz, R.A. (1994), *Leadership Without Easy Answers*, Belknap Press, Cambridge, MA.

Higgins, M.C. (2005), *Career Imprints: Creating Leaders Across An Industry*, Jossey-Bass, San Francisco, CA.

Higgins, M.C. and Kram, K.E. (2001), "Reconceptualizing mentoring at work: a developmental network perspective", *Academy of Management Review*, Vol. 26 No. 2, pp. 264-288.

Hurley, R.F. (2002), "Putting people back into organizational learning", *The Journal of Business & Industrial Marketing*, Vol. 17 No. 4, pp. 270-281.

Jaques, E. (1989), *Requisite Organization: The CEO's Guide to Creative Structure and Leadership*, Cason Hall, Arlington, VA.

Kahn, W.A. (1990), "Psychological conditions of personal engagement and disengagement at work", *Academy of Management Journal*, Vol. 33 No. 4, pp. 692-724.

Kantor, S., Kram, K.E. and Sala, F. (2008), "Change factor: making the case for executive adaptability", *Leadership in Action*, Vol. 27 No. 6, pp. 8-12.

Karaevli, A. and Hall, D.T. (2004), "Career variety and executive adaptability in turbulent environments", in Burke, R.J. and Cooper, C.L. (Eds), *Leading in Turbulent Times: Managing in the New World of Work*, Blackwell Publishing, Malden, MA, pp. 54-74.

Karaevli, A. and Hall, D.T. (2006), "How career variety promotes the adaptability of managers: a theoretical model", *Journal of Vocational Behavior*, Vol. 69 No. 3, pp. 359-373.

Kegan, R. (Ed.) (1982), *The Evolving Self: Problem and Process in Human Development*, Harvard University Press, Cambridge, MA.

Kegan, R. (Ed.) (1994), *In and Over Our Heads: The Mental Demands of Modern Life*, Harvard University Press, Cambridge, MA.

Levinson, D.J. (1978), *The Seasons of a Man's Life*, Ballantine Books, New York, NY.

Lombardo, M.M. and Eichinger, R.W. (2000), "High potentials as high learners", *Human Resource Management*, Vol. 39 No. 4, pp. 321-329.

London, M. and Mone, E.M. (1999), "Continuous learning", in Ilgen, D.R. and Pulakos, E.D. (Eds), *The Changing Nature of Performance: Implications for Staffing, Motivation, and Development*, Jossey-Bass, San Francisco, CA, pp. 119-153.

McCall, M.W. Jr (1998), *High Flyers: Developing the Next Generation of Leaders*, Harvard Business School Press, Cambridge, MA.

McCall, M.W. Jr (2004), "Leadership development through experience", *Academy of Management Executive*, Vol. 18 No. 3, pp. 127-130.

McCall, M.W. Jr, Lombardo, M.M. and Morrison, A. (1988), *The Lessons of Experience*, Lexington Books, Lexington, MA.

McClelland, D.C. (1998), "Identifying competencies with behavioral-event interviews", *Psychological Science*, Vol. 9 No. 5, pp. 331-339.

Motowidlo, S.J., Carter, G.W., Dunnette, M.D., Tippins, N., Werner, S., Burnett, J.R. and Vaughan, M.J. (1992), "Studies of the structured behavioral interview", *Journal of Applied Psychology*, Vol. 77 No. 5, pp. 571-587.

Murphy, P.R. and Jackson, S.E. (1999), "Managing work role performance: challenges for twenty-first-century organizations and their employees", in Ilgen, D.R. and Pulakos, E.D. (Eds), *The Changing Nature of Performance: Implications for Staffing Motivation and Development*, Jossey-Bass, San Francisco, CA.

Pless, N.M., Maak, T. and Stahl, G.K. (2011), "Developing responsible global leaders through international service-learning programs: the Ulysses experience", *Academy of Management Learning & Education*, Vol. 10 No. 2, pp. 237-260.

Pulakos, E.D., Arad, S., Donovan, M.A. and Plamondon, K.E. (2000), "Adaptability in the workplace: development of a taxonomy of adaptive performance", *Journal of Applied Psychology*, Vol. 85 No. 4, pp. 612-624.

Romme, A.G.L. and Witteloostuijn, A.V. (1999), "Circular organizing and triple loop learning", *Journal of Organizational Change Management*, Vol. 12 No. 5, pp. 439-454.

Ronan, W.W. and Latham, G.P. (1974), "The reliability and validity of the critical incident technique: a closer look", *Studies in Personnel Psychology*, Vol. 6 No. 1, pp. 53-64.

Savickas, M.L. (2005), "The theory and practice of career construction", in Brown, S.D. and Lent, R.W. (Eds), *Career Development and Counseling: Putting Theory and Research to Work*, John Wiley & Sons, New York, NY, pp. 42-70.

Smith, M. and White, M.C. (1987), "Strategy, CEO specialization, and succession", *Administrative Science Quarterly*, Vol. 32 No. 2, pp. 263-280.

Spencer, L.M. and Spencer, S.M. (1993), *Competence at Work: Models for Superior Performance*, John Wiley & Sons, New York, NY.

Strunk, G., Schiffinger, M. and Mayrhofer, W. (2003), "Careers, chaos, and complexity", *Academy of Management Proceedings*, Academy of Management, Briarcliff, NY.

Super, D.E. (1957), *The Psychology of Careers: An Introduction to Vocational Development*, Harper & Row, New York, NY.

Tyre, M.J. and Von Hippel, E. (1997), "The situated nature of adaptive learning in organizations", *Organization Science*, Vol. 8 No. 1, pp. 71-83.

Weick, K. (1979), *The Social Psychology of Organizing*, 2nd ed., Addison-Wesley, Reading, MA.

Wolff, S.B., Wageman, R. and Fontaine, M. (2009), "The coming leadership gap: an exploration of the competencies that will be in short supply", *International Journal of Human Resource Development and Management*, Vol. 9 Nos 2/3, pp. 250-274.

Corresponding author
Guorong Zhu can be contacted at: gzhu@salemstate.edu