

Critical thinking, developmental learning, and adaptive flexibility in organizational leaders.

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Abstract: Organizational leaders in today's global marketplace must continually make decisions, solve problems, and chart effective courses of action to ensure that their companies survive and flourish. The ability to think critically is essential for today's leaders, yet leaders are often unable to do so. This study examined how developmental learning and adaptive flexibility relate to the level of critical thinking in a sample of organizational leaders. Results showed years of education to be the only significant predictor of critical thinking in the leaders studied. Adaptive flexibility scores indicate minimal levels of reflective observation suggesting automatization of decision-making. The factor analysis of developmental learning experiences identified several factors that characterize the developmental learning of the leaders studied. The theoretical and practical significance of the findings is discussed.

INTRODUCTION

CRITICAL THINKING

Critical thinking is reasonable, reflective thinking that is focused on what to think or do. It requires an ability to recognize problems, gather pertinent information, interpret data, appraise evidence, and to evaluate lines of thinking, points of view, and personal insights that might contribute to the framing of logical, effective, reality-based action (Pierce, 1990). Research on critical thinking describes how individuals think about and solve complex problems. Critical thinking cuts to the heart of effective managerial work. A leader with critical thinking abilities will make better decisions and effect action of enlarged scope and heightened quality (Neumann, 1989).

WORKPLACE DEVELOPMENTAL LEARNING EVENTS

John Dewey's (1916) early work on cognitive development suggests that challenging and/or disorienting experiences stimulate the development of thinking ability. In numerous studies of

successful leaders researchers at the Center for Creative Leadership (CCL) in Greensboro, NC, have determined that developmental learning occurs primarily through work experiences, not in formal training programs, and that successful corporations emphasize job challenge for developing managers (McCall et al., 1988; McCauley, Ruderman, Ohlott, & Morrow, 1994). In fact, the "developmental potential of a work experience is driven by the challenges it presents" (McCall et al., 1988, p. 8). Successful leaders' careers are marked by a variety of specific challenging work assignments and disorienting experiences, like starting an operation from scratch, making a huge leap in scope of responsibility, or turning around a business in deep trouble. This study hypothesized that challenging workplace learning events would stimulate the development of critical thinking skills.

ADAPTIVE FLEXIBILITY

The "high-tech" arena of the global marketplace requires that organizations be able to respond flexibly to rapid changes in conditions and circumstances. For this reason, contemporary organizations need leaders who can adapt to and learn from the challenges encountered when confronting change. In his theory of integrative development, Kolb (1984) states that the ability to respond flexibly to change has a strong influence on a person's adaptation and growth over the life span. This trait is called "adaptive flexibility." People with high degrees of adaptive flexibility are readily able to adapt their style of learning to the demands of the learning situation. An adaptively flexible leader can more successfully manage in the global marketplace than a leader who is not adaptively flexible (Payne, Bettman, & Johnson, 1993).

Based upon research conducted to date, variables associated with the development of critical thinking ability in leaders are intelligence, age, years of education, and years of experience, as depicted in the unshaded portions of the "Individual Characteristics" component of the diagram in Figure 1. This research study proposes the addition of an additional individual characteristic, adaptive flexibility (Kolb, 1984).

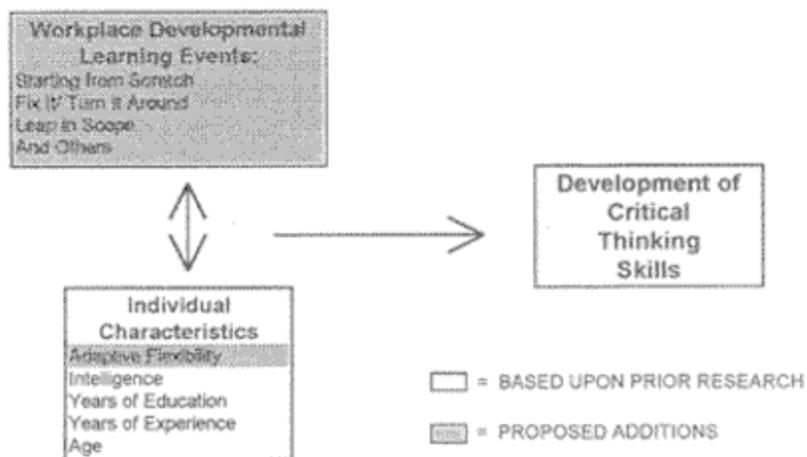


Figure 1. Framework of factors associated with critical thinking skills development.

HYPOTHESES

HYPOTHESES H01. There will be no significant combination of independent variables: number of workplace developmental learning events, average perceived significance of workplace developmental learning events, and individual characteristics (adaptive flexibility, years of experience as a leader, years of education beyond high school, and age), that predict the level of critical thinking. H02. There will be no combination of factors that describe the workplace developmental learning events of the leaders studied.

H03. There will be no combination of workplace developmental learning factors that predict the average perceived significance of learning of the leaders studied.

METHODOLOGY

Three instruments were used to measure the study's variables. Critical thinking was measured by the Watson-Glaser Critical Thinking Appraisal (WGCTA) which consists of 80 items divided into five scales: inference, recognition of assumptions, deduction, interpretation, and evaluation of arguments (Watson & Glaser, 1980). Workplace developmental learning events were measured by an adaptation of "Section V: Your Background" of the Job Challenge Profile (McCauley, 1991) called the Experiences Checklist which measured the level of significance on a five point Likert scale of up to 43 workplace learning experiences. Adaptive Flexibility was measured using Kolb's (1980) Adaptive Style Inventory, a 48 item, forced-choice, self-report instrument consisting of four scales: concrete experience adaptive flexibility (CEAF), reflective observation adaptive flexibility (ROAF), abstract conceptualization adaptive flexibility (ACAF), and active experimentation adaptive flexibility (AEAF). A one page sheet that appeared as the cover to the Experiences Checklist assessed demographic variables. Instrument packets were distributed to 341 leaders who had attended CCL's five day Leadership Development Program during 1993; 119 leaders (35%) chose to participate in the study.

RESULTS

The research sample of 119 people consisted of 88 males (74%) and 31 females (26%). The mean age of study participants was 42.9 years ($SD=7.2$); average number of years of education beyond high school was 5.5 years ($SD=1.9$); mean number of years of direct supervisory experience was 12.3 years ($SD=7.1$). With respect to organizational level, 25 (21%) were executive-level managers and 93 (78%) were mid-level managers. The mean critical thinking score of 67 out of 80 ($SD=7.3$) placed this sample at the 85th percentile compared to a national sample of sales representatives. The average participant had experienced 22 of the 43 workplace developmental learning events assessed and considered the learning from these events highly significant. The average subject was moderately adaptively flexible, yet during learning or problem solving tended to engage in less than average reflective observation.

H01. Hierarchical multiple regression was used to determine the independent variables that predict critical thinking skills in the leaders studied. The analysis showed that the only significant predictor of critical thinking score was years of education beyond high school ($r=.31$, $p<.001$). The regression analysis indicated that years of education accounted for 10% of the variance in critical thinking score ($p<.001$), a small effect size.. H01 was rejected.

H02. A factor analysis procedure with oblique rotation was used to determine the combination of factors that describe the workplace developmental learning events reported by the leaders studied. The factor analysis identified six factors that describe the reported workplace developmental learning events of the leaders studied: 1) Career Crisis, 2) High Stakes, 3) Management Development Opportunities, 4) Reduction Decisions, 5) Mentor or Role Model, and 6) Discrimination. H02 was rejected.

H03. The correlation matrix of the six factor scale scores and average perceived significance of learning showed significant correlations between High Stakes and average perceived significance ($r=.27$, $p<.01$) and between Management Development Opportunities and average perceived significance ($r=.56$, $p<.001$). A stepwise multiple regression revealed that Management Development Opportunities accounted for 31% of the variance in average perceived significance rating, a large effect size. H03 was rejected.

DISCUSSION

The results of this study support the results of previous studies of learning in leaders that concluded that the most important lessons are learned from on-the-job experiences (Baldwin & Padgett, 1993). The results of this study indicate that formal education was the only variable significantly related to critical thinking. This result supports previous research studies that found critical thinking correlated with education (Pearson, 1991). Both challenging workplace experiences and adaptive flexibility were not related to critical thinking.

The factor analysis identified six factors that describe the reported workplace developmental learning events of the leaders studied: 1) Career Crisis, 2) High Stakes, 3) Management Development Opportunities, 4) Reduction Decisions, 5) Mentor or Role Model, and 6) Discrimination. Factors 1, 2, 4, and 5 resemble factors identified in several CCL studies (Eichinger & Lombardo, 1990; McCall et al., 1988; McCauley et al., 1994). Management Development Opportunities and Discrimination are new results.

With the lowered levels of reflection (i.e., low ROAF scores) responses to situations and dilemmas at hand may have been "automatic," reinforcing previous learning when the potential for new learning and development existed.

The Watson-Glaser concept of critical thinking is narrowly focused and restricted. Results of this study show that WGCTA critical thinking is logic-based, single-loop (Schon 1987), instrumental and weak sense (Paul, 1984) critical thinking. Schon (1987) describes critical thinking as a process whereby the individual reflects on actions and thought processes, calling into question underlying assumptions. A closer analysis of the items on the WGCTA show that correct answers can be determined by the rules of logic. No reflectivity is needed.

Reflective judgment is a structurally based cognitive ability based upon levels of cognitive schema (King & Kitchener, 1994). Reflective judgment ability is necessary for solving ill-structured problems, e.g., the kind of real-life problems encountered in the workplace, particularly by challenging or disorienting experiences (King & Kitchener, 1994). Measuring

reflective judgment rather than critical thinking may have been more appropriate to the purposes of this study.

Piaget (1972) uses the term schema or schemata to describe the framework onto which incoming sensory data can and must fit. Schema are mental maps that enable individuals to orient themselves within their experiential terrain. As an individual has new experiences the schematic framework constantly changes through activation of the assimilative/accommodative process. In this study there was no way of testing or measuring whether the 43 workplace learning events measured on the Experiences Checklist were truly developmental. To what degree the Experiences Checklist actually measured developmental learning is uncertain.

CONCLUSIONS

The results of this study provided only partial support to the model for developing critical thinking in organizational leaders proposed in Figure 1. Results of this study suggest that the development of critical thinking is a more complex process than that illustrated in Figure 1.

Based upon the results of this study and upon a follow-up review of the literature relative the study's outcomes, a revised model was developed that more accurately depicts the developmental learning process of leaders through workplace learning experiences. The framework encompasses the development of both critical thinking and reflective judgment.

Figure 2 illustrates the revised model for critical thinking and reflective judgment development in organizational leaders. The model consists of two paths or tracks: 1) a confirmatory relearning path corroborating an existing model of meaning, and 2) a developmental learning path resulting in a revised model of meaning.

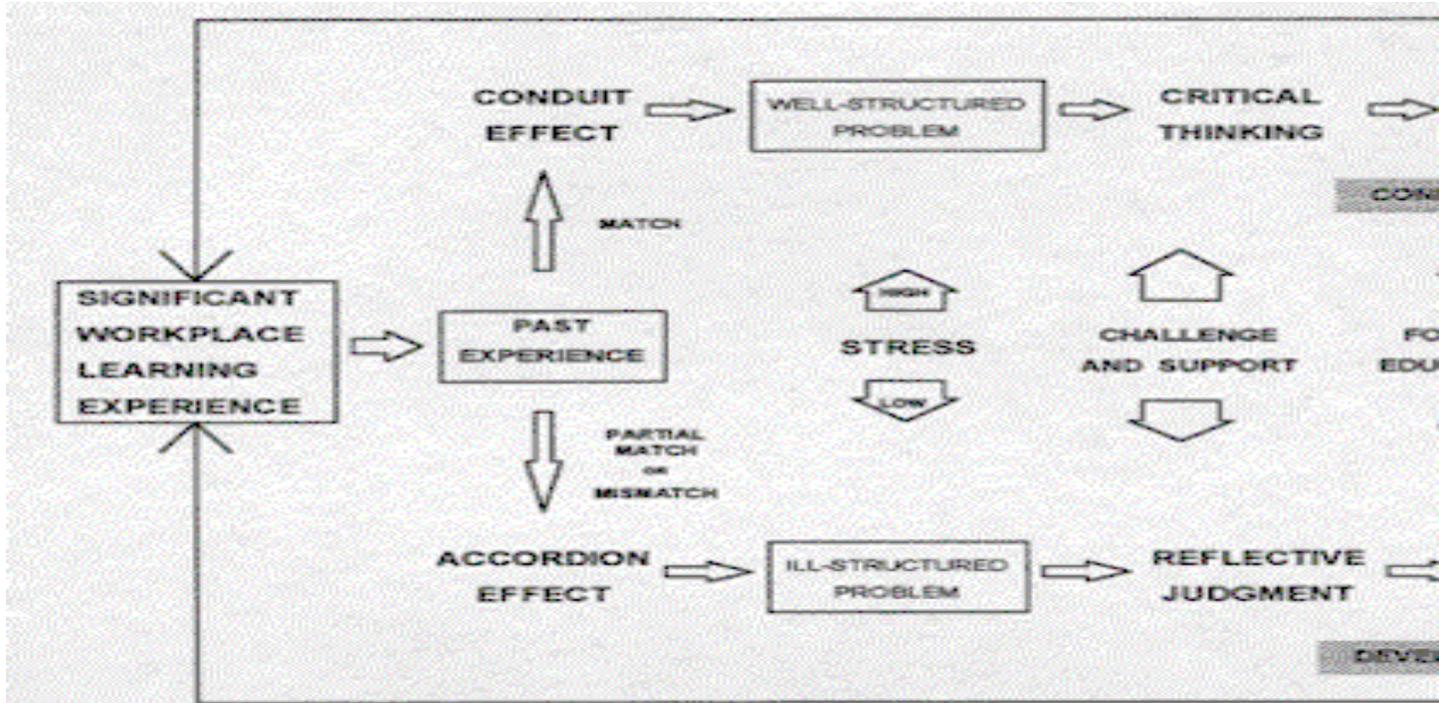


Figure 2. Revised model for critical thinking and reflective judgment organizational leaders.

CONFIRMATORY RELEARNING

The confirmatory relearning process is triggered when the leader perceives a match between the current situation and past experience. The individual responds automatically and no "new learning" takes place. This is called the conduit effect (Sheckley & Keeton, in press). The experience is constructed as a well-structured problem. Well-structured problems can be solved using critical thinking skills (King & Kitchener, 1994) and under stressful conditions (Fiedler & Link, 1994). The confirmatory relearning process results in corroborating the existing model of meaning.

DEVELOPMENTAL LEARNING

The developmental learning process is activated when the individual perceives either a partial match or a mismatch between the current situation and past experience. The hierarchical structure of the individual's "world view" or "model of meaning" is abandoned or altered in some way. The reflective system is activated and new learning takes place. This is called the accordion effect (Sheckley & Keeton, in press). If the current problem or circumstance is viewed as novel, the leader will construct the experience as an ill-structured problem with its attendant ambiguity and uncertainty. Ill-structured problems are best solved using reflective judgment

(King & Kitchener, 1994) and under conditions of low stress (Fiedler & Link, 1994). The developmental learning process results in the creation of a revised model of meaning.

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