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Cognitive Style and the Management of Small and Medium-Sized Enterprises

Eugene Sadler-Smith

Abstract

A long-standing dilemma in theories of management surrounds the question of whether effective managerial action is better served by ‘rational analysis’ or ‘creative intuition’. In the present article, analysis and intuition are conceived within a framework of cognitive style in which a distinction is drawn between the processing of information (rational and intuitive) and the organizing of information in memory (local and global). Such styles are thought to affect a range of management behaviours (including decision-making). The relationship between managers’ cognitive styles and firm performance was examined from a contingency perspective in which environmental instability was hypothesized as moderating the relationship between style and performance. The study was based upon data obtained from owner-managers and managing directors of small and medium-sized firms in two contrasting sectors. There was a positive relationship between intuitive decision style and contemporaneous financial and non-financial performance that did not appear to be moderated by environmental instability. Furthermore, a statistically significant relationship between intuitive decision style and subsequent financial performance was observed. The implications of these findings for theories of cognitive style, the management of small and medium-sized enterprises, and for the practice of management development in such firms are discussed.

Keywords: cognitive style, decision styles, entrepreneurship, information processing, intuition, small-firm management

Rationality and intuition are two contrasting cognitive styles that reflect distinctive ways of processing information. The question of whether effective managerial action is better served by ‘rational analysis’ or ‘creative intuition’ has occupied researchers for many years (Agor 1986). In parallel with this, scholars of entrepreneurship and small-firm management have sought to research the distinction between higher-growth firms (characterized as ‘gazelles’ by Birch 1979) and their lower-growth counterparts — sometimes described as ‘lifestyle’ firms (Carland et al. 1984; Busenitz and Barney 1996). This article attempts to explore the links between these two lines of enquiry by asking the question: are managers’ styles of thinking and decision-making (cognitive styles) related to the performance of small and medium-sized enterprises? The relationship between cognitive styles and small-firm management and performance is an important area of investigation for several.
reasons. First, the information demands placed upon managers in organizations of all sizes appear to be ever increasing and there is a need, therefore, to understand the ways in which such individuals process and organize information (Agor 1989). Second, in recent years, there has been heightened interest in the nature and significance of cognitive styles for better understanding and predicting individual differences in managers’ behaviour (see, for example, Hayes and Allinson 1994). Hodgkinson and Sparrow (2002: 219) see this as part of a pattern in which interest in intuition has ‘waxed and waned in relation to the level of discomfort felt with the more rational, deductive and analytic forms of knowing’. Third, the business environment in which many managers now operate is described increasingly as complex, unpredictable and unstable; a corollary of this is that alternatives to rational and analytical styles of thinking and decision-making may be needed. Fourth, from a contingency perspective, it can be hypothesized that managers’ perceptions of the stability of their operating environments may interact with the ways in which they organize and process information (Kaish and Gilad 1991) to moderate any relationship between managers’ thinking and decision styles, their actions and organizational outcomes (Khatri and Ng 2000). Lastly, researchers in the field of entrepreneurship have begun to draw upon cognition as a potentially fertile area for understanding the ways in which some individuals identify and exploit opportunities to create something of value. For example, in recent research, a number of authors have argued that there is a need to use cognition-based perspectives to describe and explain managerial and entrepreneurial behaviour (Krueger 2000), to explore relationships with organizational performance (Lee and Tsang 2001) and to employ contingency perspectives when considering the potential effect of cognitive styles on behaviour and performance (Khatri and Ng 2000). Some authors have attempted to explore the relationship between cognitive styles (for example, analytic-intuitive styles) and entrepreneurial behaviour (Allinson et al. 2000), while Khatri and Ng (2000: 78) examined the moderating effect of environment on intuitive synthesis in strategic decision-making. They noted, ‘in view of the general trend of increasing complexity and dynamism in business environments, intuition [a cognitive style] is likely to play an increasing role in strategic decision making’. This study sets out to replicate and extend the previous researches of Khatri and Ng and of Allinson et al.

**Background**

There are a number of interrelated premises upon which this article’s argument is built. First, theories from cognitive psychology suggest that it is very difficult for individuals to process large volumes of incoming information comprehensively. Second, theories of managerial cognition suggest that managers utilize habitual ways of organizing and processing information to adjust to these complex information-processing demands. Third, cognitive-style theory posits that the manner of these sense-making adjustments varies between individuals, as a result of which managers will
exhibit differences in their habitual approaches to organizing and processing information. A conceptual question derived from these three precepts is: what do theories of cognitive style tell us about how managers may vary with respect to the ways in which they process and organize information? Having arrived at a workable conceptualization of individual differences in cognitive styles, a further question may then be posed: do stylistic differences between those individuals who are key determinants in effecting organization-wide change (through their decision behaviours) relate in any way to differences in outcomes? The response to this question is made more complex if one accepts the notion that cognitive styles themselves may be a contingent phenomenon to the extent that certain styles may be more appropriate than others under particular sets of environmental conditions. In this sense, style differs from ability in that both ability and style affect performance of a given task; the effect of style will be positive or negative depending upon the nature of the task, whereas the effect of ability in general is likely to be positive across tasks (see Riding 2001). Hence, a further question that may be asked is: do particular styles interact with the perceived instability of the business environment to affect the relationship between managerial actions and organizational performance?

These questions are important for researchers in building models of managerial thinking and behaviour, and for practitioners in identifying the cognitive strategies and entrepreneurial skills that managers might need to be equipped with in order to function more effectively under particular sets of circumstances. The cognitive perspective adopted here should be framed within a tradition of entrepreneurial and small-business research that has, with mixed success, attempted to isolate those personality traits that relate in direct ways to business performance or growth. Given that there have been critiques of the trait-based approach (see below), the cognitive-style perspective is proposed here as one alternative way of describing and explaining managerial behaviour and action. Lastly, it is worthy of note that recent entrepreneurship research has begun to embrace emerging theories in which chaotic and complex interactions between a few highly influential variables give the appearance of randomness (Bouchikhi 1993; Briggs and Peat 1999). A precursor to any empirical elaboration of this new paradigm is the identification of those key variables that might act at the individual and environmental levels to affect performance (Peterson and Meckler 2001). One outcome of this research will be to offer a contribution to such debates.

**Perspectives on Entrepreneurship and Small-Business Management**

Over many years researchers have attempted to differentiate entrepreneurs from non-entrepreneurs (for example, from small-business owners) by identifying links between individual-level characteristics (personality traits) and organizational performance. Within the entrepreneurship literature one method of distinguishing entrepreneurs from non-entrepreneurs is in terms of firm performance, often measured from sales growth data (Birch 1979). More than a quarter of a century ago Shapero (1975: 187) argued that there
appears to be agreement among almost all definitions of entrepreneurship ‘in that we are talking about a kind of behaviour that includes: (a) initiative taking; (b) the organizing and re-organizing of social/economic mechanisms to turn resources and situations to practical account; (c) the acceptance of risk or failure’. For Hisrich and Peters (1992), the distinctive feature of entrepreneurship is the creating of something different with value. Chell et al. (1991) argued that as a distinctive section of the business community, entrepreneurs must share some common characteristic. According to Chell et al. (1991), trait-based approaches have attempted to isolate the distinctive features of the entrepreneur, but with only mixed success. Readers who wish to pursue the ensuing summary in more detail are referred to Chell et al (1991: 29–49).

**Entrepreneurial Traits**

Early research in the entrepreneurship field focused upon Rotter’s (1966) theory of locus of control that distinguished between individuals with an internal locus of control (those who believe themselves to be in control of their own destiny) from those with an external locus of control (who feel that fate, chance or forces beyond their control shape their lives). The evidence in support of the assertion that entrepreneurs will have a higher internal locus of control than non-entrepreneurs or business managers appears equivocal. According to Chell et al. (1991), criticisms may be levelled at the locus of control model when applied to entrepreneurship, in particular since the Rotter scale was not specifically designed for use with business owners and also due to the uni-dimensionality of the Rotter scale (Furnham 1986). With respect to risk-taking behaviour, Timmons (1989) argued that entrepreneurs take calculated risks, while Carland et al. (1984) found that risk-taking is a characteristic of business owners in general, rather than entrepreneurs. Miller and Friesen (1982) observed a relationship between locus of control and risk-taking behaviour (external locus of control was associated with conservatism in decision-making). McClelland’s work in the 1960s suggested that a high need for achievement (n Ach) will lead an individual to engage in entrepreneurial behaviour. This assertion was supported by a number of studies, in which owners of fast-growth companies scored higher on n Ach (see Chell et al. 1991) and entrepreneurs scored considerably higher than the norms for n Ach. However, Chell et al. (1991: 39) in their review expressed ‘lingering doubts as to the predictive power of the achievement motive’.

**Entrepreneurial Skills and Proactivity**

More recent research provides mixed support for the link between personality traits, entrepreneurship and small-firm performance. Lee and Tsang (2001) explored the relationship between entrepreneurial personality and business growth (sales and profits) among 168 Chinese entrepreneurs in small and medium-sized businesses in Singapore. Their results suggested that industrial and managerial experience had the greatest positive impact upon venture growth, that internal locus of control and need for achievement, in general, are not important factors affecting venture growth, and that ‘students of entrepreneurship need to shift their attention from entrepreneurial traits to
entrepreneurial skills’ (Lee and Tsang 2001: 597). Becherer and Maurer (1999) examined the relationship between a proactive personality disposition and entrepreneurial behaviour among small-company presidents (which they argued goes beyond the notion of a trait because of its ‘action’ dimension). They observed positive and statistically significant relationships between proactivity and number of businesses started (p < 0.05), ownership of business (started, purchased or inherited) (p < 0.01) and change in sales (p < 0.01), and took the latter as evidence that proactive senior managers were aggressively growing the firm as a strategic response to the marketplace. They acknowledged, however, that future research should attempt to overcome some of the limitations of their study by exploring the existence and potential effects of moderator variables, such as environmental hostility, from a field-theoretic perspective (that is, by positing that the relationship between entrepreneurial behaviour and performance is a function of both personal and environmental characteristics). Becherer and Maurer’s work is helpful in that it indicates an alternative to the trait-based approach and that it proposed a contingency perspective as a means of exploring the relationship between individual characteristics, strategy and performance (see, for example, Prescott 1986).

**Entrepreneurial ‘Alertness’**

An alternative or complementary approach to personality-trait-based approaches and one that is commensurate with the issue of information search and information processing is the cognitive perspective. A promising avenue of enquiry from the entrepreneurship and small-business management literature is the issue of information sensitivity and search, ‘alertness’ (for example, Busenitz 1996), and the notion that certain individuals may exercise particular cognitive processes in their search for business opportunities and conceptualize specific means for capitalizing upon them. A central precept of entrepreneurial theory is that successful business venturing (for example, in terms of numbers of start-ups and growth) requires a manager to ‘understand opportunity’ and capitalize upon the opportunity thus recognized (Timmons 1989). This assertion prompts a number of questions such as: how do such individuals understand opportunity and what cognitive processes distinguish entrepreneurs from their non-entrepreneurial counterparts? Although Busenitz (1996) argued that research in this field is in its infancy, there have been significant contributions.

Recent research suggests that entrepreneurs may process information differently from managers in large organizations (Busenitz and Barney 1996). Some empirical support for this view came from research by Kaish and Gilad (1991) and the subsequent replication and extension of their work by Busenitz (1996). These researchers drew a distinction between different types of information processing, namely, ‘alertness’ (such as information-seeking behaviours, exposure to new information, amount of time devoted to thinking about new business ventures, linking different pieces of information in new ways, and so on) and ‘information cues’ (types of information and data which may interest potential entrepreneurs when considering setting up a new
venture, for example potential markets, potential profits and availability of government support). From a contrasting theoretical and methodological perspective Jenkins and Johnson (1997) using causal mapping techniques argued that entrepreneurial success might be the result of intuitive systems thinking.

These findings raise the possibility that entrepreneurs (defined, for example, in terms of business growth) differ from the general population of managers in terms of their higher levels of alertness and a more intuitive cognitive style. Peterson and Meckler (2001: 33) noted that researchers are increasingly recognizing the less-rational aspects of entrepreneurs’ cognitions. In their case study of one particular Cuban-American entrepreneur, they identified intuition as an important element to the extent that: ‘as is typical of the respondents, Feldenkries [the entrepreneur] remembers being certain from the time that it was founded that his company would succeed. This does not define a rational cognitive process, but a less rational, tacit intuition which may have affected his evolving perceptions and attitudes’ (Peterson and Meckler 2001: 43). Their subsequent attempts to link intuitive thinking with the concepts of chance and chaos raises questions about the role that thinking styles might play in the cognitive and decision-making aspects of managing complexity.

Constructivism, Chance, Complexity and Chaos in Small-Firm Research

Some researchers have argued that much small-firm research is predicated upon two distinct perspectives (Bouchikhi 1993: 550–555): first, an endogenous explanation that examines the entrepreneur’s personality or strategy in explaining the outcome of the venturing process; second, an exogenous explanation that explores environmental factors. Bouchikhi argued that each on its own has crucial weaknesses (in that they exaggerate the entrepreneur’s role or place too much reliance upon environmental determinism) and this has led scholars to combine the endogenous and exogenous explanations. As a precursor to introducing the concepts of complexity and chaos, Bouchikhi related this combination of endogenous and exogenous perspectives to a constructivist framework in which outcome is determined neither by the entrepreneur nor the context, but emerges in the process of their interaction. Peterson and Meckler (2001) interpreted Bouchikhi’s model in a specific way and developed it theoretically and empirically in an examination of the role of chance, complexity and chaos in their study of the process of entrepreneurship among Cuban-American business owners. In Bouchikhi’s model, and its development by Peterson and Meckler, the manager’s personality, motives, abilities and behaviour are identified as key endogenous variables. One could add cognition to this list as another way of conceptualizing aspects of individual difference. Peterson and Meckler asserted that ‘explicitly including randomness, complexity and chaos adds real information to a model that predicts entrepreneurial outcomes’ (2001: 53) and that these outcomes might be understood better if a few highly influential variables were identified and included in future research (perhaps employing the complex mathematical algorithms that Cheng and Van de Ven (1996) used to model
the entrepreneurship process). An important precursor to these ambitious endeavours is the identification of the variables that are likely to be influential in the entrepreneurial process. The present research will discuss the potential of cognitive styles in this regard.

**Cognitive Styles**

Given that trait-based approaches appear to have yielded only equivocal findings, Chell et al. (1991: 44) suggested a number of possible alternative ways forward: (1) more radical or alternative ways of conceiving entrepreneurial traits; (2) the revision of the instruments used for measuring traits; (3) the measurement of situational variables so that the interaction of trait and environment may be researched; and (4) the development of models of the entrepreneurial process, including outcome and performance measures. Furthermore, the application of cognitive approaches to entrepreneurship is apposite, given that scholars are debating increasingly the relative contributions to managerial effectiveness of intuitive and rational thinking (see Agor 1986; Claxton 1998; Sparrow 2000). Some have argued that there has been an overemphasis on analysis and rationality in management (for example, Mintzberg 1994; Khatri and Ng 2000) and that intuition is potentially at least as important as a rationality in fast-moving and uncertain environments. Entrepreneurial alertness and the related notion of cognitive style are two aspects of an information-processing perspective that small-business researchers have begun to explore. In response to this, it is the purpose of this research to explore the role of cognition (and specifically cognitive styles) as an alternative means of conceptualizing the characteristics of entrepreneurs and to examine the relationship between managers’ cognitive styles and a variety of organizational performance measures along with the moderating effect of environmental instability upon any such relationship.

**Intuition and Rationality**

As noted at the outset, a long-standing dilemma in theories of management surrounds the question of whether effective managerial action is better served by ‘rational analysis’ or ‘creative intuition’ (Pondy 1983: 170) and whether ‘expert analytical judgements are better than intuitive ones, especially in situations of uncertainty’ (Hodgkinson and Sparrow 2002: 221, emphasis added). Rational analysis and intuition figure prominently in theories of cognitive styles (see, for example, Robey and Taggart 1981; Lord and Maher 1990). Rational or analytical processing encompasses thinking and decision-making that is variously described as objective, sequential, convergent, logical and detailed; for the purposes of this article, it will be referred to as a *rational style*. Intuitive processing, on the other hand, encompasses thinking and decision-making that is described as divergent, simultaneous, feeling and holistic; for the purposes of this article, it will be referred to as an *intuitive style*. A number of authors have conceptualized rationality and intuition as opposing poles of a single overarching dimension of cognitive style (Allinson and Hayes 1996) and some have gone even further and have argued that this
may be accounted for at some deeper level in terms of a ‘duality of human consciousness’ explicable by differential functioning in the two hemispheres of the brain (Taggart and Valenzi 1990). This latter assertion may be an oversimplification and researchers have presented physiological evidence against the notion of simple left-right hemispherical splits in the information-processing functions of the human brain (Glass and Riding 2000).

Styles have been used as a means to explicate managers’ behaviours and actions and organizational outcomes. Scott and Bruce (1994) used a multidimensional model that included leadership attributes, work-group attributes and individual attributes (intuitive problem-solving and systematic (rational) problem-solving styles) as predictors of innovative behaviour among engineers, scientists and technicians in a large, centralized R&D facility of a major US industrial corporation. They found that individuals do not need to be highly intuitive problem solvers to be innovative, but being systematic, rational problem solvers appeared to inhibit high levels of innovative behaviour (Scott and Bruce 1994: 600–601). Allinson et al. (2000) proposed that an individual’s cognitive style might be an alternative way of differentiating entrepreneurs from non-entrepreneurs. They employed a unitary style construct (that is, a single, bipolar dimension ranging from intuition to analysis) measured using the Cognitive Style Index (CSI) (Allinson and Hayes 1996). In a study of 156 successful (entrepreneurial) companies in the UK, their results suggested that: (1) the owners and managers of these businesses were more intuitive in their cognitive style than the general population of managers; (2) showed no difference in their style from the senior managers and executives in their samples; and (3) were more intuitive than junior and middle managers.

Modes of Processing and Organizing Information
Cognitive styles might, alternatively, be conceptualized within a framework in which there are two complementary modes of processing information (a rational mode and an intuitive mode) and two complementary modes of organizing information in memory (a local or detailed level and a global or holistic level). One might also acknowledge the existence of two contrasting representational modes based upon Paivio’s (1971) dual coding theory, that is, the verbal style and the visual (or imagery) style, as exemplified in the work of Childers et al. (1985) and Riding (2001). The verbal-imagery dimension will not be of concern in this research. The approach outlined above with respect to the processing and organizing of information is potentially less problematical than the unitary approaches suggested by some researchers in that it allows for the possibility of cognitive versatility as a result of a combination of rational and intuitive as well as local and global processing (see Pondy 1983), and has been empirically verified with respect to rational and intuitive styles (Hodgkinson and Sadler-Smith 2003). A number of scholars in the field have chosen to embrace a complex, as opposed to unitary, perspective in this regard (Epstein et al. 1996; Jabri 1991; Scott and Bruce 1995; Sternberg 1997; Whetten, and Cameron 1994). For example, Jabri (1991) conceptualized problem-solving style as comprising
two independent modes of thinking: an associative mode based on following set routines and the use of rationality and logic; and a bisociative mode based on lack of attention to existing rules and an emphasis on imagery and intuition. Sternberg (1997) posited local and global dimensions in his theory of Mental Self-Government (MSG) and operationalized these constructs in separate local and global scales. Scott and Bruce (1995) identified rational and intuitive dimensions as two of five separate decision-making styles in their General Decision Making Scale (GDMS) questionnaire (the others being dependent, spontaneous and avoidant decision styles). In earlier research, Scott and Bruce (1994) observed statistically significant, but low correlations between the intuitive problem-solving style and the systematic (rational) problem-solving style ($r = -0.17; p < 0.01$). If the assertion that there are separate and independent facets within both the processing and organizing of information is robust, the following hypotheses are suggested.

**Hypothesis 1a:** The correlations between intuitive and rational cognitive styles will be low and non-significant.

**Hypothesis 1b:** The correlations between local and global cognitive styles will be low and non-significant.

Furthermore, it may be more appropriate to conceptualize processing (for example, as measured by the GDMS rational and intuitive scales) and organizing (for example, as measured by the MSG local and global scales) as being unrelated. A further hypothesis may, therefore, be proposed:

**Hypothesis 1c:** The correlations between the MSG and GDMS scales will be low and non-significant.

**Cognitive Styles, Behaviour and Performance**

Since the intuitive, rational, local and global cognitive styles are conceptualized as habitual and in-built modes of processing and organizing information, which are assumed to be automatic to a large degree (that is, they are styles per se, rather than strategies that may be exercised as the result of a conscious choice), it is argued that they will not be related to environment, but may interact with the perception of environment in their relationship with performance (Hypothesis 2a). If this were not the case, one might anticipate ‘gut feel’ (intuition), for example, to be associated with uncertain environmental conditions in which there is limited availability of information upon which managers may base their actions. The nature of intuition has often been debated. Hogarth (2001: 14) proposed that managers’ intuitive responses are those that are ‘reached with little apparent effort, and typically without conscious awareness. They involve little or no conscious deliberation.’ Some have argued that intuition is ‘simply experiences frozen into habit and into the capacity for rapid response’ (Simon 1989: 38). This suggests that a manager may acquire by experience an ability to recognize seemingly instantly the patterns and consequences of alternative actions (Agor 1989: 13), hence one might expect intuition to be positively correlated with managerial experience. Such a view would militate against the notion of
intuition as an in-built style and in favour of it as an acquired strategy or skill. Claxton (1998) provided an alternative perspective by placing less emphasis upon the relevance of past experience. These competing views will be tested in Hypothesis 2b.

**Hypothesis 2a:** The correlations between cognitive styles and perceived environmental stability will be low and non-significant.

**Hypothesis 2b:** The correlations between an intuitive cognitive style and number of years of managerial experience will be positive and statistically significant.

Khatri and Ng (2000) explored the role of intuitive cognitive style (referred to as ‘intuitive synthesis’) and the moderating effect of environmental instability (competition, technology and government regulation) upon performance. They argued that an intuitive synthesis (comprising judgement, experience and ‘gut feeling’) would be positively associated with organizational performance (financial and non-financial) under unstable environmental conditions, while under stable environmental conditions the relationship with performance would be negative. In a study of senior managers in computer, banking and utility companies in the USA, they found that intuitive synthesis had a negative or no relationship with performance in a stable environment, and that intuitive synthesis was negatively associated with the financial performance of banks (moderately unstable environment), but did not show a significant relationship with non-financial performance (Khatri and Ng 2000: 77). One of the justifications for their study was that no previous research had, to their knowledge, examined whether intuition showed any relationship with business performance. They did, however, also draw attention to the fact that intuitive synthesis and rational analysis may both be important in strategic decision-making. Pondy (1983: 190) argued for a union of rationality and intuition in management action because ‘to be exclusively rational is to mediate all one’s perceptions and actions through a previously articulated frame of reference; to be exclusively intuitive is to relate to the world without the mediation of such a frame’.

**Limitations of Previous Research**

One limitation in the design of Khatri and Ng’s (2000) study was that the rational style was not included in their research model, but was inferred presumably from their measure of intuitive synthesis predicated upon the (potentially problematical) unitary conception of style. In order to be more comprehensive in its coverage of a range of cognitive styles, any theoretical and empirical elaboration of Khatri and Ng’s arguments should include other complementary facets of information processing (for example, rational) and might usefully include the mode of organizing information (for example, local and global). This framework is not subject to the limitations of the unitary conception. The purpose of this article is to address these limitations by building upon Khatri and Ng’s work and explore the extent to which a multidimensional style construct is a potentially useful variable for studying
small-firm management and entrepreneurial performance. The majority of individual-difference research in small and medium-sized firms has focused upon personality traits (including, from a critical perspective, Chell 1985; Chell and Haworth 1988; Chell et al. 1991), while research in the field of cognitive styles has, in the main, been conducted in large firms (for example, Allinson and Hayes 1996; Khatri and Ng 2000; Kirton 1989; Sadler-Smith et al. 2000), with the notable exception of Allinson et al. (2000).

**Purposes of Study**

Given the importance of small and medium-sized firms to regional and national economies, there is a need to conduct research into the role of cognitive styles in such firms to the extent that it: (1) explores the validity of a complex (that is, multidimensional) perspective of cognitive styles, rather than a unitary perspective; (2) looks at the relationship between the cognitive styles and organizational performance of owner-managers and managing directors (referred to here as ‘managers’) in small and medium-sized firms; and (3) adopts a contingency perspective by acknowledging the moderating effect that environmental instability may have upon the relationship between managers’ cognitive styles and firm performance. Unstable environments are likely to be characterized by information uncertainties, and therefore data-rational modes of processing may be both inappropriate and difficult to apply successfully. Intuitive and global styles of processing will be more suited to unstable environmental conditions in that they will enable managers to rely upon past experience, judgement and ‘gut feel’ (Khatri and Ng 2000) and to link together disparate strands of information to provide a more integrated and holistic picture of the uncertain situation with which they are faced and so make more effective decisions. The evidence from the literature (see, for example, Riding 2001) is that style is habitual and hence largely independent of the current environment (though it may be shaped by early life experiences). Riding and Rayner (1998: 6) stated, ‘style has a physical basis and does control the way individuals respond to events and ideas they experience’. This suggests that the construct has a temporal stability and is a constant aspect of a person’s psychological make-up that does not appear to change. Consequently, given the view that it is very difficult for individuals to ‘switch off’ their style (Riding 2001), managers are likely to employ their style with consistency across different tasks, situations and environments. These assertions lead to the following hypotheses.

**Hypothesis 3:** Intuitive cognitive style under unstable environmental conditions will be positively associated with organizational performance.

**Hypothesis 4:** Global cognitive style under unstable environmental conditions will be positively associated with organizational performance.

Stable environments are likely to be characterized by greater degrees of information certainty than are unstable environments. In this situation, rationality may be both feasible and appropriate as a cognitive style in that
data sources are likely to yield information that is more predictable. This level of certainty may also be commensurate with detailed levels of analysis (as manifested in a local style) without the need necessarily to scan the broader picture to compensate for potential uncertainties. These assertions lead to the following hypotheses.

**Hypothesis 5**: Rational cognitive style under stable environmental conditions will be positively associated with organizational performance.

**Hypothesis 6**: Local cognitive style under stable environmental conditions will be positively associated with organizational performance.

**Method**

**Instruments**

A number of instruments were used in the present research.

1. **Mental Self-Government (MSG) Local and Global Thinking Styles**. Sternberg (1997) posited two styles or levels of thinking that he labelled as ‘local’ and ‘global’. The local style is described thus: ‘[it] characterizes individuals who prefer tasks that require engagement with specific concrete details and that often require considerable precision in execution’ (Sternberg and Grigorenko 1997: 707). Individuals with a more global style, on the other hand, ‘prefer to deal with relatively large and abstract issues. They ignore or don’t like details, and they prefer to see the forest rather than the trees’ (Sternberg 1997: 24). Up to this point in the discussion the generic term ‘style’ has been used; however, in the interests of clarity, the local style will be referred to henceforth as a ‘local thinking style’, and similarly for the ‘global thinking style’. Sternberg’s MSG local and MSG global scales each consist of eight items and were scored on a seven-point Likert scale according to how well participants felt that the item described them (from ‘strongly disagree’, coded one, through to ‘strongly agree’, coded seven).

2. **General Decision-Making Style (GDMS) questionnaire**. The GDMS, as reported by Scott and Bruce (1995: 825–826), consists of twenty-four items in five scales. Two of the scales were used in the present study since they were most closely related to extant theories of intuitive-rational cognitive styles, namely: (1) intuitive (five items, for example, ‘When making decisions, I rely upon my instincts’); (2) rational (five items, for example, ‘I make decisions in a logical and systematic way’). The items were scored on a five-point Likert scale from one (strongly disagree) to five (strongly agree). In keeping with Scott and Bruce’s conceptualization, the intuitive style will be referred to henceforth as an ‘intuitive decision style’, and similarly for the ‘rational decision style’. Each is held to represent a distinctive aspect of the processing of information and hence may be located within a superordinate category of cognitive style (as may the local and the global styles).
Both the MSG and GDMS scales were developed in a North American cultural context. The developers of the MSG model have argued that its various scales have demonstrated reliability and validity for US samples (Zhang and Sternberg 2001). The internal consistencies of the scales ranged from the high 0.50s to the low 0.80s and factor analyses were generally supportive of the structure of the overall theory. The MSG scales also have good external validity showing statistically significant relationships with other measures that the scales might be expected to correlate with, for example, the Myers Briggs Type Indicator and the Gregorc Style Delineator (Zhang and Sternberg 2001: 204). With respect to the GDMS, its authors report high levels of face validity, internal consistency and a factor structure that is commensurate with the hypothesized five scales (Scott and Bruce 1995). Outside of the USA the use of these scales with UK undergraduate samples revealed acceptable levels of reliability (Spicer and Sadler-Smith 2000).

In addition to measuring these cognitive-style variables, respondents were also asked to provide additional information relating to the following.

3. **Personal and company characteristics.** These consisted of age, gender, and number of years’ managerial experience; industry sector; the number of years the company had been trading; and number of employees. In order to be able to screen out those firms whose change in performance may have been attributable to a merger or acquisition, respondents were asked to indicate whether their firm had been involved in such an activity.

4. **Company performance.** Two measures of performance were used: (1) financial performance (percentage sales growth over the previous 12 months); and (2) Khatri and Ng’s (2000) three-item, non-financial performance scale (efficiency of operations, public image and good will, and quality of products and services). The Khatri and Ng items were scored on a 10-point scale from 1 (low) to 10 (high).

5. **Environmental instability.** The three items used by Khatri and Ng (2000) were employed in the present study to measure environmental instability (impact of technology, intensity of competition and government regulation), for example, ‘Government regulation in determining the performance of your company is: (1 = negligible; 7 = critical).’ The use of individuals as respondents in reporting environmental stability is justifiable in the present context given that the research is concerned with the perceptions of a key decision-maker (that is, the owner or the general manager) and the interaction of endogenous and exogenous variables as reported by this key informant, who is assumed to be knowledgeable with regard to both the business and its environment. Bowman and Ambrosini (1997) criticized the use of single informants for strategy (that is, firm-level) research; the use of a single informants is justifiable in the present context since they are reporting upon individual-level variables (cognitive style) and their perception of exogenous factors and not firm-level information.
Procedure
The various scales and items were combined into a questionnaire survey form. Names and addresses of companies were obtained by random sampling from a commercially available database according to a number of criteria. Two contrasting industrial sectors were chosen and the sample was drawn from US Standard Industrial Classification (US-SIC) Codes 3500 (machinery manufacturing) and 7372 to 7379 (computing services). The sample was also limited to firms with less than 250 employees, thus conforming to the definitions of small and medium size of the UK’s Department for Trade and Industry and the European Commission. To control for national geographical variations, the sample was confined to firms in the south and west region of the UK. The surveys, along with a covering letter, were mailed to the owner-manager or managing director of 500 randomly selected businesses. Owner-managers and managing directors in small and medium firms, as well as being knowledgeable key informants and thus providing a valid approach to measuring organizational processes (Shortell and Zajac 1990), were chosen as respondents since they are likely to be critical actors in determining and effecting system-wide change in their organizations (Nadler and Tushman 1990). Furthermore, a number of scholars are of the view that style dimensions ‘are inborn or learned at an early age’ (Riding 2001: 55) to the extent that they are likely to have shaped managers’ actions over some period of time. The survey was conducted in two waves, with non-respondents mailed for a second time after a period of three weeks had elapsed.

Results
Sample Characteristics
The sample characteristics were as follows.

1  Sector: manufacturing, \( N = 91, \) 64.5 percent; computing, \( N = 50, \) 35.5 percent.
2  Gender: male, \( N = 122, \) 86.5 percent; female, \( N = 19, \) 13.5 percent.
3  Mean age (years): 48.05 (SD = 9.67).
4  Median size: 21 employees.
5  Median years trading: 17 years.

A total of 141 usable questionnaires were returned (28.2 percent response rate). There were no statistically significant differences between the first wave and the second wave of respondents with regard to any of the sample characteristics.

Descriptive Statistics
Collecting data from the same source in the same survey can result in problems associated with common method variance (Li and Atuahene-Gima 2001). In order to test for common method variance in the data, a procedure based upon Harman’s single-factor test (Harman 1967) was followed, as described by Podsakoff and Organ (1986). A factor analysis of the dependent and independent variables was conducted (principal components extraction),
which yielded 12 factors accounting for 67 percent of the variance and in which the first factor accounted for 12 percent of the variance. The fact that a single factor failed to emerge or that a general factor did not account for the majority of the variance leads to the conclusion that common method bias is unlikely to be a serious problem with these data. Means, standard deviations, scale reliabilities and the intercorrelations between the various measures used are reported in Table 1. The most widely used measure of scale reliability is Cronbach’s alpha. There are no rigid guidelines available on appropriate magnitudes for the coefficient (Finkelstein 1992: 519) and those that are available appear to reflect either ‘experience or intuition’ (Peterson 1994: 381). Nunnally’s (1967: 226) recommendation for preliminary research was for alphas in the range 0.50–0.60, while in 1978 he recommended a value of 0.70 (Nunnally 1978: 245–246). The internal consistencies for the cognitive-styles scales were in the range 0.50–0.80. Those for the rational and local scales were below the threshold level suggested by Nunnally (1978).

The correlation between the rational and intuitive decision styles was statistically significant and negative, but low; hence, Hypothesis 1a was not supported. The correlation between the local and global thinking styles was non-significant, thus supporting Hypothesis 1b. Furthermore, neither of the MSG thinking styles correlated with the GDMS decision styles, thus supporting Hypothesis 1c. The correlations of the four cognitive styles with perceived environmental instability were non-significant and hence provided support for Hypothesis 2a. Together these results suggest that the cognitive styles are, with the exception of the rational and intuitive decision styles ($r = -0.27$), independent of each other and of managers’ perceptions of environmental instability. Hypothesis 2b (that intuition would be positively related to the number of years of managerial experience) was not supported; indeed, the correlation between intuitive decision style and experience was statistically significant ($p < 0.05$), but was low and, surprisingly, negative. At this point, it is also worth noting that some researchers (for example, Allinson and Hayes 1996) have observed gender differences in cognitive style, with females being more analytical and hence less rational (within a unitary framework) than their male counterparts. Although incidental to the main line of enquiry of the present study, male and female respondents’ intuitive decision-style scores were compared (a random sample of 22 males was used to give approximately equal cell sizes, given the preponderance of males among respondents). There were no statistically significant differences between male and female managers in small and medium firms with respect to intuitive decision style ($t_{40} = -0.67; p = 0.504$). The findings with respect to the rational decision style and the local thinking style should be treated with caution in the light of the comparatively low internal consistencies observed for these two scales (Cronbach alpha < 0.70). For this reason, the rational decision style and the local thinking style were omitted from subsequent main analyses.

**Regression Analyses**

In order to test the Hypotheses 3–6, the two cognitive style variables (intuitive decision style and local thinking style), perceived environmental instability,
Table 1. Means, Standard Deviations and Scale Intercorrelations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Rational decision style</td>
<td>4.00</td>
<td>0.36</td>
<td>0.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Intuitive decision style</td>
<td>3.28</td>
<td>0.68</td>
<td>-0.27*</td>
<td>0.80</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Local thinking style</td>
<td>2.94</td>
<td>0.39</td>
<td>0.15</td>
<td>0.13</td>
<td>0.57</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4) Global thinking style</td>
<td>3.06</td>
<td>0.47</td>
<td>-0.11</td>
<td>0.07</td>
<td>-0.08</td>
<td>0.70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5) Age (years)</td>
<td>48.05</td>
<td>9.67</td>
<td>-0.10</td>
<td>-0.09</td>
<td>0.08</td>
<td>0.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>(6) Managerial experience (years)</td>
<td>19.13</td>
<td>10.11</td>
<td>0.08</td>
<td>-0.17*</td>
<td>0.01</td>
<td>0.08</td>
<td>0.78***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(7) Perceived environmental instability</td>
<td>3.50</td>
<td>0.66</td>
<td>-0.02</td>
<td>-0.01</td>
<td>0.03</td>
<td>0.11</td>
<td>-0.02</td>
<td>-0.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(8) Non-financial performance</td>
<td>7.26</td>
<td>1.22</td>
<td>-0.01</td>
<td>0.21*</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.01</td>
<td>-0.00</td>
<td>0.13</td>
<td>0.78</td>
<td></td>
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<tr>
<td>(9) Financial performance</td>
<td>13.96</td>
<td>30.64</td>
<td>0.03</td>
<td>0.17*</td>
<td>-0.07</td>
<td>0.17*</td>
<td>-0.09</td>
<td>-0.02</td>
<td>0.18</td>
<td>0.23**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(10) Years trading</td>
<td>21.46</td>
<td>19.34</td>
<td>0.06</td>
<td>-0.13</td>
<td>-0.03</td>
<td>-0.06</td>
<td>0.03</td>
<td>0.03</td>
<td>-0.13</td>
<td>-0.28*</td>
<td>-0.29***</td>
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</tr>
<tr>
<td>(11) Size</td>
<td>41.28</td>
<td>48.00</td>
<td>0.13</td>
<td>-0.07</td>
<td>-0.26**</td>
<td>-0.01</td>
<td>-0.03</td>
<td>0.01</td>
<td>0.07</td>
<td>-0.07</td>
<td>0.02</td>
<td>0.35***</td>
</tr>
</tbody>
</table>

Notes: Internal reliabilities shown along the diagonal (Cronbach alpha)
*** Correlation is significant at the 0.001 level
** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level.
controls (sector, size and years trading) and two interaction terms (cognitive style with environmental instability) were regressed separately on the two performance measures (financial and non-financial). The measures of performance were contemporaneous with the measurement of the independent variables. As a precursor to and as part of the regression analysis, a number of tests, screening procedures and transformations were conducted. Collinearity statistics were computed (tolerance values and variance inflation factors) and did not suggest that multicollinearity was likely to be a problem with these data. The Cook’s distance measure ($D_i$) is one way of identifying the influence of individual observations on overall model fit (Hair et al. 1998). A simple ‘rule of thumb’ suggested by these authors is to identify observations where $D_i \geq 1.0$, while a more conservative criterion for use with small samples (as in the present study) may be obtained by computing a threshold value (Hair et al. 1998: 225). The Cook’s distance measure was computed and the more conservative threshold suggested by Hair et al. was employed, and this resulted in a small number of observations being suppressed in the regression analyses. Given that number of years trading and size were positively skewed, the log$_{10}$ for both of these measures was used in the regression. Those firms whose change in performance may have been associated with a merger or acquisition were excluded from the regression analyses. The results are shown in Table 2.

### Contemporaneous Financial Performance (Sales Growth)

Model 1 (control variables) revealed that the number of years the business had been trading showed a negative relationship with sales growth ($p < 0.01$), indicating that younger firms showed higher rates of sales growth. This finding was as might have been predicted from life-cycle theories in which

<table>
<thead>
<tr>
<th>Controls</th>
<th>Financial performance</th>
<th>Non-financial performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td>Sector</td>
<td>2.11*</td>
<td>1.40</td>
</tr>
<tr>
<td>Size</td>
<td>1.68†</td>
<td>1.67†</td>
</tr>
<tr>
<td>Years trading</td>
<td>−3.58**</td>
<td>−3.46**</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Variables</th>
<th>Financial performance</th>
<th>Non-financial performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intuitive decision style</td>
<td>2.36*</td>
<td>2.33*</td>
</tr>
<tr>
<td>Global thinking style</td>
<td>0.92</td>
<td>−1.13</td>
</tr>
<tr>
<td>Perceived environment</td>
<td>1.50</td>
<td>2.62*</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Summary statistics</th>
<th>Financial performance</th>
<th>Non-financial performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model $F$</td>
<td>8.12**</td>
<td>5.70**</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.18</td>
<td>0.24</td>
</tr>
<tr>
<td>Model $d.f.$</td>
<td>3.110</td>
<td>6.107</td>
</tr>
<tr>
<td>$\Delta R^2a$</td>
<td>0.18***</td>
<td>0.06*</td>
</tr>
</tbody>
</table>

Notes: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.10$; a significance levels refer to $F$ statistic associated with the variance explained
the early development stage of a firm’s life is characterized by a rapid growth in sales revenue (Smallbone and Wyer 2000). Size of firm showed a positive relationship with sales growth, but only at the $p < 0.10$ level of significance. In Model 1, there was also an effect of sector ($p < 0.05$). Between Model 1 and Model 2 $\Delta R^2$ was statistically significant ($p < 0.05$). In Model 2, the addition of the cognitive style variables accounted for a further 4 percent of the variance. Intuitive decision style ($p < 0.05$) showed a positive relationship with sales growth, whereas there was no statistically significant relationship between global thinking style and sales growth. To examine the moderating effect of environmental instability, two interaction terms were generated, one for each of the two style variables included in the analyses. Moderated regression is generally considered to be a conservative method for testing interaction effects, since the interaction term is entered into the regression equation after all main effects for controls and predictors have been included (Schilling and Steensma 2001: 1159). Between Model 2 and Model 3 (interaction) $\Delta R^2$ was not statistically significant ($p < 0.10$) for either of the interaction terms. Hence, there were no moderated relationships between style and financial performance that were statistically significant and therefore Hypotheses 3 and 4 were not supported. (The inclusion of the rational decision style (Cronbach alpha < 0.70) in a regression model revealed a statistically significant interaction between the rational decision style and perceived environment in their relationship with performance ($F = 3.87; p < 0.001; \text{d.f.} = 9; R^2_{\text{adj}} = 0.16; \Delta R^2 = 0.03$ and $p = 0.03$). The interaction suggested that a more rational style was associated with lower performance under conditions of high environmental instability (unstable) than was a more rational style under conditions of low environmental instability (stable) ($r = -0.17$ and $p < 0.05$).)

Contemporaneous Non-financial Performance

Model 1 (control variables) revealed that size of firm showed a negative relationship with sales growth ($p < 0.05$); this indicated that younger firms reported higher levels of non-financial performance than did firms that had been trading for longer. Between Model 1 and Model 2 $\Delta R^2$ was statistically significant ($p < 0.001$). In Model 2, the addition of the cognitive style variables accounted for a further 8 percent of the variance. Intuitive decision style ($p < 0.05$) showed a positive relationship with non-financial performance, whereas there was no statistically significant relationship between global thinking style and non-financial performance. In addition, there was a positive relationship between perceived environmental instability and non-financial performance ($p < 0.05$); higher non-financial performance was associated with higher environmental instability. Again, to examine the moderating effect of environmental instability, a number of interactions were generated, one for each of the two cognitive-style variables. Between Model 2 and Model 3 $\Delta R^2$ was not statistically significant ($p < 0.10$) for either of the interaction terms. Hence, there were no moderated relationships between cognitive style and non-financial performance and, therefore, Hypotheses 3 and 4 were not supported.
Subsequent Performance

In order to check the above findings, data relating to subsequent performance were gathered from respondents via a postal questionnaire survey two years (T2) after the contemporaneous performance data were gathered (T1). The same performance measures used at T1 were employed at T2. A total of 38 usable questionnaires were received after two mailings (27 percent response rate). The characteristics of this subsample were as follows.

1. Sector: manufacturing, 23 (60 percent); computing, 15 (40 percent).
3. Median size: 25.5 employees.
4. Median years trading: 20 years.

There were no statistically significant differences between the first and second wave of respondents for the T2 survey. The T2 subsample differed from the T1 sample with respect to size of firm (t = –1.59 and p = 0.04). The correlations between cognitive styles measures gathered at T1 and the subsequent performance measures at T2 were computed, as were correlations with control variables (sector, size at T2 and years trading). There were statistically significant correlations between years trading and subsequent financial performance (r = –0.29 and p = 0.09, two-tailed test) and between intuitive decision style and subsequent financial performance (r = 0.43 and p < 0.01, two-tailed test). The correlations between the study variables and subsequent non-financial performance were low and non-significant.

Hair et al. (1998) make recommendations regarding sample size for conducting regression analyses; they suggest 15 cases to one variable as a minimum, but that the number of cases to variables should never fall below 5:1. The small sample size here presented restrictions in this regard, therefore, the decision was taken not to test the full model, but merely to attempt to replicate the findings that were obtained for the contemporaneous performance data (the T1 study); hence, the statistically significant variables from the regression for the contemporaneous performance data, that is, the control variables (sector, years trading and log10 size), and intuitive style were regressed on the subsequent performance measures (sales growth and self-rated non-financial performance). The Cook’s distance measure was employed as in previous analyses in order to identify any observations that should be omitted, and a small number of cases were dealt with accordingly. Perceived environment was not included as this was incorporated in the original model as a potential moderator, but since no moderated relationships were observed at T1, this measure was not included in the regression for the analysis using the subsequent performance data. The regression model for subsequent financial performance was statistically significant (F = 5.67, d.f. = 4, 30 and p = 0.002), with the main effects of number of years trading (t = –2.06 and p = 0.048) and intuitive decision style (t = 1.18 and p = 0.079) upon financial performance. The regression model for subsequent non-financial performance was non-significant. The observations of a statistically significant correlation between intuitive decision style (p < 0.01) and subsequent financial performance, along with a main effect for intuitive decision style in
the regression ($p < 0.10$), provide some corroboration for the results observed for the contemporaneous financial performance measure.

**Summary and Implications**

**Summary**
The main findings of the study may be summarized as follows. These data suggest that mode of organizing information and mode of processing information are orthogonal. In the case of organizing information, the local and global facets failed to correlate, which suggests orthogonality, while for rational and intuitive styles, the intercorrelation was statistically significant ($p < 0.01$), but low ($r = -0.27$), consistent with oblique facets. If cognitive styles reflect adaptations to the degree of information richness and certainty under particular sets of environmental circumstances (that is, they are strategies rather than styles per se), then one might justifiably expect some relationship between styles and environmental instability as managers adopt a style commensurate with the environmental demands. No such relationship was observed. This supports the view that styles are likely to be context independent.

One of the principal objectives of the study was to explore the moderating effect of environmental instability on cognitive style’s relationship with organizational performance. Intuitive and global cognitive styles were not moderated by environmental instability, but intuitive style showed a positive relationship with financial and non-financial performance, suggesting that an intuitive style is associated positively with performance, but in a causally ambiguous way. These findings may also be viewed in the light of previous research: for example, Khatri and Ng (2000: 77–78) observed that intuition ‘showed a stronger relationship with financial performance than it did with non-financial performance’. They argued that this is counter to the received wisdom that a rational-analytical approach is more suited to financial analysis in that their data suggested that experience, judgement and gut feel may play an important role in financial performance. These assertions are lent additional weight from the findings of the present research (which arguably is an advance over previous studies in that the intuitive style was supplemented by the inclusion of other measures of style in the research model). Furthermore, the findings relating to contemporaneous performance are lent additional support by the observed relationships between intuitive decision style and subsequent financial performance.

**Contribution and Implications**
The study makes a number of contributions with respect to matters both of theoretical and practical concern.

**Cognitive Styles**
With respect to individual difference theory, as was previously noted, there are long-standing debates about the nature of the rational-intuitive construct and its relevance for management practice. This research makes a number of
contributions in this regard. First, two separate facets of cognitive style were hypothesized, referred to here as processing (rational and intuitive) and organizing (local and global), and to the extent that processing and organizing are separate, they would not be expected to correlate, and this was the case in the present study. Second, bipolarity with respect to either processing or organizing, while being both simple and elegant, precludes the possibility of an individual being simultaneously strong (or weak) on both poles of a dimension. Therefore, it was argued that bipolarity might be better substituted for by a unipolar conception for both facets of processing and organizing. This was confirmed with respect to the organizing facet of style, but not for processing (although the intercorrelation of the rational and intuitive decision styles was low). The findings should be tempered by the observation that the internal consistencies for the rational decision style and the local thinking style were below the criterion suggested by Nunnally (1978). The conceptualization of style as non-unitary raises the possibility of identifying individuals who are versatile with respect to organizing and, given the low intercorrelation, processing also. Third, if these constructs are to be useful, we might expect them to be associated with aspects of performance. Positive relationships were observed with respect to intuitive decision style and contemporaneous measures of performance (financial and non-financial) and subsequent financial performance. Intuitive cognitive style may, therefore, have some potential value as a variable to be modelled within a complex system of the entrepreneurial process (see Peterson and Meckler 2001). Such an assertion is not incommensurate with the observations that Peterson and Meckler derived in their qualitative investigations into the backgrounds and experiences of Cuban-American entrepreneurs (2001: 43), wherein intuition was identified as an important element in the process of the establishment of successful businesses.

Small-Business Management and Entrepreneurship

Carland et al. (1984) attempted to draw a distinction between entrepreneurs and owner-managers of small businesses; the former, they argued, are concerned with profitability and growth, while the main concern of the latter is securing an income to meet their immediate needs. Stewart et al. (1998) found that small-business owners were more comparable to managers than to entrepreneurs (the latter were higher in achievement motivation, risk-taking propensity and preference for innovation). This suggests, therefore, that the intention to grow (Georgellis et al. 2000) and an innovation or change orientation are characteristics of entrepreneurial behaviour. Kuratko and Hodgetts (1998) noted the importance of new and smaller firms to the US economy and, in particular, of job-creating, fast-growing businesses (‘gazelles’) versus ‘life-style’ businesses. They also noted that business owners’ motives for growth are not homogeneous and ‘appear to reflect experiential and situational differences’ (Kuratko and Hodgetts 1998: 44). Stewart et al. (1998) suggested that the difference between entrepreneurs and small-business owners is one area for further research that may add to a more complete understanding of the entrepreneur. While not participating directly
in these debates, the present study offers some findings in this regard. It appears that owner-managers or managing directors of faster-growing small and medium-sized firms are more intuitive in their cognitive styles than are their lower-growth counterparts, although any causality remains ambiguous and unconfirmed. The research does, therefore, provide a cognitively based alternative to traditional trait-based approaches for describing the characteristics of managers of higher-growth firms. Future research might test the assertion that entrepreneurs are more intuitive than their counterparts in firms in which the prime intention is not necessarily to grow the business (small-business owners). Other questions that complement the research of Allinson et al. (2000) with respect to the degree of similarity or otherwise between entrepreneurs and senior executives and ‘intrapreneurs’ in large firms are also worthy of investigation using a range of cognitive style measures.

Management and Organizational Development
These findings have implications for management and organizational development in small and medium-sized firms. In particular, they raise questions about whether attempts should be made to develop intuitive thinking strategies among those managers whose natural styles and predilections incline toward rational information processing. If the answer to this question is in the affirmative, then the further question is raised of how intuitive strategies may be developed. A non-unitary approach to style allows for the coexistence of what may be termed ‘dominant’ styles that represent a ‘default setting’ alongside ‘auxiliary’ styles that may be brought more to the fore in specific situations (perhaps as a coping strategy). It has long been recognized that the ability to deploy a variety of styles and strategies that are commensurate with the requirements of a particular situation is an important feature of effective managerial behaviour. For example, more than a quarter of a century ago Mintzberg (1976) argued that one of the keys to organizational effectiveness lies in a synthesis of clear-headed logic and powerful intuition. More recently, Khatri and Ng (2000: 58) have argued that rational analysis is a useful and indispensable tool in strategy-making, but that a ‘theory of strategic decision-making has to take into account both rational and intuitive processes’. An important issue for management and organizational development practitioners is the design and implementation of interventions that facilitate the acquisition of the capability to synthesize a variety of styles commensurate with the needs of specific situations. In doing so, managers may develop the capability to exercise personal judgement in determining those behaviours which are likely to be effective in solving organizational problems.

The issue of developing such strategies is a significant challenge for management education and development. Possible ways of addressing this issue might include raising individuals’ awareness of their dominant and auxiliary styles, counselling individuals on the utility of their principal and auxiliary styles, and exploring through expert facilitation and guided self-development ways in which individuals’ auxiliary style may be developed. The latter might include enabling learners to engage in simulations to explore
the consequences of alternative modes of thinking and learning through experimentation in ‘safe’ environments (for example, Winch 2001). There may also be scope for enhancing the management education and development curriculum to enable the development of intuitive as well as rational thinking skills and devising assessment regimes that acknowledge intuitive and rational thinking (see, for example, Agor 1989; Hogarth 2001; Myers 2002; Pearman 1998; Ray and Myers 1989; Sadler-Smith 2002).

But perhaps the most important questions with respect to intuition relate, first, to its recognition and, second, to the decision of whether to trust to it (referred to by Myers (2002) as one of the ‘perils’ of intuition). Prior theorizing and research has queried the pre-eminence of the rational paradigm in management thinking and raised important questions about the potential role that intuition may play. These data suggest that intuition may not be a contingent phenomenon, but, rather, a habitual characteristic of owner-managers in higher-growth businesses (including those who might be categorized as successful entrepreneurs). Opportunities for further exploration might include an examination of managers’ perceptions of the role of intuition at critical junctures in the entrepreneurial process. These findings open up further questions and opportunities for investigating the nature and role of cognitive styles in entrepreneurial and managerial thinking, decision-making and action.

**Note**

The author is very grateful to the following: Sage Publications (Thousand Oaks, California) for permission to use the rational and intuitive scales from the General Decision Making Style questionnaire; Professor Robert J. Sternberg (Yale University, USA) for permission to use the Mental Self-Government local and global scales; and the anonymous reviewer who drew attention to the issues of chance, chaos and complexity in entrepreneurship research.

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