



1042-2587
© 2009 Baylor University

Entrepreneurial Scripts and the New Transaction Commitment Mindset: Extending the Expert Information Processing Theory Approach to Entrepreneurial Cognition Research

J. Brock Smith
J. Robert Mitchell
Ronald K. Mitchell

In this study, we extend the expert information processing theory approach to entrepreneurial cognition research through an empirical exploration of the new transaction commitment mindset among business people in Canada, Mexico, and the United States. Using analysis of covariance, multivariate analysis of variance, and hierarchical regression analysis of data from a cross-sectional sample of 417 respondents, our results provide a foundation for additional cross-level theory development, with related implications for increasing the practicality of expert information processing theory-based entrepreneurial cognition research. Specifically, this paper: (1) clarifies the nature of the relationship between entrepreneurial expert scripts and constructs that might represent an entrepreneurial mindset at the individual level of analysis; (2) identifies analogous relationships at the economy level of analysis, where the structure found at the individual level informs an economy-level problem; (3) presents a North American Free Trade Agreement-based illustration analysis to demonstrate the extent to which cognitive findings at the individual level can be used to explain economy-level phenomena; and (4) extrapolates from our analysis some of the ways in which script-based comparisons across country or culture can inform the more general task of making information processing-based comparisons among entrepreneurs across other contexts.

Please send correspondence to: J. Brock Smith, tel.: 250 721 6403; e-mail: smithb@Uvic.ca, to J. Robert Mitchell at jrmitch@ou.edu, and to Ronald K. Mitchell at ronald.mitchell@ttu.edu.

Since the idea that entrepreneurs use expert scripts to process information differently than novices was first introduced into the literature (e.g., Mitchell, 1994), there has been considerable development of this branch of research within the larger body of entrepreneurial cognition literature (e.g., Englebrecht, 1995; Gustafsson, 2004; Mitchell & Chesteen, 1995; Mitchell, Smith, et al., 2002; Mitchell, Smith, Seawright, & Morse, 2000). During this time, the view has emerged that expert scripts in entrepreneurial decision making suggest a global culture of entrepreneurship (Mitchell, 2003; Mitchell et al., 2000, 2007; Mitchell, Smith, et al., 2002)—a view that envisions a surprisingly pervasive entrepreneurial “mindset” (McGrath & MacMillan, 2000). We believe this can be a provocative idea, with a substantial contribution to the literature, if generalized beyond the individual level of analysis, and if made relatively easy to apply. However, such generalization and application requires several questions to first be addressed: (1) At the individual level of analysis, what is the nature of the relationship between entrepreneurial expert scripts and constructs that might represent an entrepreneurial mindset? (2) Are there analogous relationships at higher levels of analysis (e.g., the economy level) where the structure found at one level (e.g., expert scripts’ relationship to entrepreneurial-mindset-type constructs) is useful to understanding structure at another? (3) To what extent can cognitive skills found at the individual level be used to explain other-level phenomena? (4) How can script-based comparisons across country or culture inform the more general task of making information processing-based comparisons among entrepreneurs across many contexts (e.g., age, education, gender, industry, recency of immigration, religion, etc.; see e.g., Shane, 1996)?

While our proposed approach to answering the above questions is intended to be neither exhaustive nor dispositive of the issues raised, it is nevertheless our intention to do some of the “heavy lifting” necessary to make the expert information processing-based approach to the study of how entrepreneurs think (Mitchell et al., 2007) more comprehensive and more accessible to researchers in the community of entrepreneurial cognition research. To do this, we: (1) utilize a portion of an earlier-reported primary data set (Mitchell et al., 2000) in a unique manner: as a peer-reviewed secondary-type data set that provides a foundation of base credibility that enables us, with minimal repetition, to effectively address the above questions; and (2) employ the sequential technique of first testing two foundational hypotheses, which then permits us to engage in the *post hoc* analysis required to address the four research questions.

In setting the boundaries of the study, we therefore adopt the stance that the information processing of entrepreneurs is distinct, that it is malleable (i.e., affected by deliberate practice, e.g., Baron & Henry 2006, and others; Englebrecht, 1995; Mitchell, 2005), and that its content at a given point in time (Walsh, 1995) can be measured by language-based methodologies, such as script–cue recognition and protocol analysis, as well as physiologically (Ericsson, 2002). This stance also necessarily embodies the position that entrepreneurship’s association with information processing is not in doubt (please see Mitchell et al., 2007, for a summary). We adopt terminology as developed in the expert information processing literature as it has been applied in the field of entrepreneurship, and, as our argument develops, we set forth these terms. We also assume that levels of analysis can be conceptualized using a “bundling” logic (e.g., Penrose, 1959, pp. 65–87: the firm as a set of indivisible resource bundles) or an aggregation logic (e.g., Mitchell, 2001: the firm as an aggregation of transactions and the economy as an aggregation of firms).

The article proceeds as follows. First we situate and present our conceptual model. We then report the testing of this model, with its associated two hypotheses to provide a baseline for conducting exploratory *post hoc* analysis for purposes of addressing the

cross-level and accessibility-enhancing questions this study is intended to inform. Next we discuss the multi-level implications of our results by demonstrating how the compositional process similarities (e.g., Chan, 1998) found in the study at the individual level of analysis can help researchers to understand interrelationships at another level of analysis, and, for this task, we explore an economy-level illustration in which we offer a new value creation interpretation of the disputes and public policies surrounding the North American Free Trade Agreement (NAFTA) using compositionally consistent inference from individual-level analysis. We conclude by discussing research and practical implications.

Conceptual Development

We begin discussion of our conceptual model by explicitly grounding the analysis in the context of entrepreneurial outcomes. In this analysis, we broadly consider the outcome of entrepreneurship to be “new value creation.” To bound and define new value creation for the purposes of this study, we first define what is meant by the term value, and then examine its creation. Value is said to exist in two forms: use value and exchange value (Bowman & Ambrosini, 2000; Lepak, Smith, & Taylor, 2007). *Use value* is defined to be the “specific quality of a new job, task, product, or service as perceived by users in relation to their needs” (Lepak et al., 2007, p. 181), as expressed in some combination of functional, experiential, or symbolic utility (Smith & Colgate, 2007). *Exchange value* is defined to be the “monetary amount realized at a certain point in time, when the exchange of the new task, good, service, or product takes place” (Lepak et al., p. 181), which takes into consideration the costs and sacrifices of producing and selling the unit of exchange and of buying and using it (Smith & Colgate). Of course, exchange value is made possible by the existence of use value. Hence arises the question: How is new use value created?

Herein we use the longstanding and predominant Schumpeterian explanation of the process whereby value is created (e.g., Hitt, Hoskisson, Johnson, & Moesel, 1996; Moran & Ghoshal, 1999; Tsai & Ghoshal, 1998). Schumpeter (1928) asserts: “economic progress means essentially putting productive resources to uses *hitherto untried in practice*, and withdrawing them from the uses they have served so far. This is what we call ‘innovation’” (p. 378, emphasis in original). In this sense, new value creation as seen through the lens of economic progress *is* innovation, where new use value is created wherever productive resources are put to uses hitherto untried in practice (Mizik & Jacobson, 2003). Mitchell (2005) further bounds and defines this innovation-based explanation of new use value creation by suggesting that new value is created through entrepreneurial thinking that creates an innovative work that is perceived by other actors in the marketplace to have use value. As a result of these perceptions of value by others, a new exchange (transaction) is thereby facilitated between actors. We adopt a similar approach. In our study, we define new value creation (in these transaction-based terms) to be: *the creation of a useful (valuable) work for purchase by others in the marketplace*. This creation of new value can occur at multiple levels of analysis (Lepak et al., 2007; Mitchell, 2001), whether it be at the individual level (e.g., the venture creation decision) or at the economy level (e.g., through policy, regulation, etc.), which enable productive resources to be put to hitherto untried uses.

So our basic approach to expanding the usefulness of the expert information processing theory-based stream of research is to focus on structural relationships in the conceptual model as they relate to new value creation. By structural relationships, we mean the antecedent and consequent features of theory-based constructs in their sequential relationship to each other. Consistent with cross-level research concepts (Chan, 1998), we propose to further extend theory by showing how process structure found at lower levels of analysis

can have analogous process structure at a higher level of analysis, enabling cross-level inferences. In this next section, we therefore establish first the fundamentals of cross-level structural comparison and provide the model setup—the literature foundations, constructs, and the proposed sequential fundamental relationships that comprise the conceptual model at the individual level of analysis. Second, we present our arguments for the relationships that will be tested as hypotheses, and lay the foundation for the post-hoc analysis that reveals compositional process similarities with analogues at the economy level.

Structure and the Conceptual Model

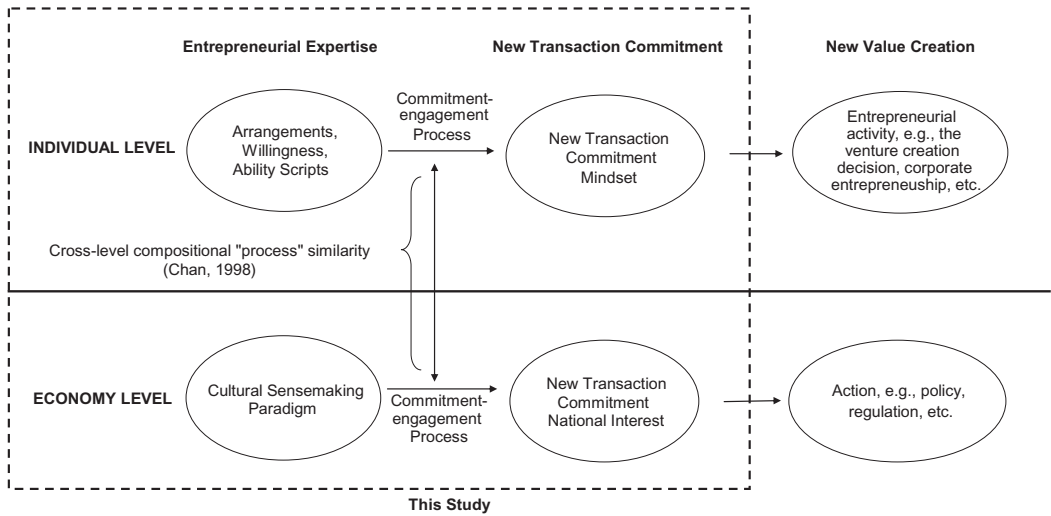
To effectively address our research questions, we utilize the notion of process composition models (Chan, 1998) to illustrate how structure found at one level of analysis (the level of the individual) can be useful to understanding structure at another level of analysis (the level of the economy). We offer such an extension because it is becoming increasingly clear that entrepreneurship phenomena are inherently multi- or cross-level (e.g., Davidsson & Wiklund, 2001, p. 81; Low & MacMillan, 1988). An investigation of structural similarity across levels therefore requires composition models, which are defined to be: *models that specify the functional relationships among phenomena or constructs at different levels of analysis that reference essentially the same content, but which are qualitatively different at different levels* (Chan, p. 234; Rousseau, 1985). In this approach, a lower-level process is “composed to the higher level by identifying critical higher level parameters, which are higher-level analogues of the lower level parameters, and describing interrelationships among higher level parameters, which are homologous (having the same relative position, value, or structure) to the lower level parameter relationships” (Chan, p. 241). In our study, a process composition model is useful insofar as it allows us to investigate how structural linkages at the individual level—between entrepreneurial scripts (Mitchell et al., 2000; Mitchell, Smith, et al., 2002) and a specifically constructed homologous variable, the new transaction commitment mindset—correspond with process analogues at the economy level of analysis. In the following paragraphs, we present the constructs and proposed relationships underlying the conceptual model.

In this model, there are three sequential elements, at two levels implicated, that give rise to the structure that addresses our research questions. These three elements (column headings) are: *entrepreneurial expertise* and *new transaction commitment* as they relate to *new value creation*. The two levels (row headings) are the *individual* and the *economy* levels of analysis. The multi-level relationship among these elements-in-sequence is illustrated in Figure 1.

Within the figure, the boundaries of this study are indicated by the dashed box. That is, in our study (at the individual level), we investigate the relationship between arrangements, willingness, and ability scripts, and the new transaction commitment mindset. It is this relationship—the commitment engagement process—that is the basis for a higher level analogue. Thus, it is in the identifying and understanding of the process underlying the relationship between arrangements, willingness, and ability scripts, and the new transaction commitment mindset that enables us to address our cross-level research questions. Accordingly, the commitment engagement process at the individual level is proposed to have a compositionally similar process analogue at the economy level of analysis. At the economy level, this process involves the relationship between national actors’ cultural sensemaking paradigm and new transaction commitment national interest. To lay the necessary foundation, we now seek to articulate at the individual level, and within the context of new value creation, the conceptual attributes of new transaction commitment mindset, and arrangements, willingness, and ability scripts, as well as the structural relationships between them.

Figure 1

Conceptual Model



Conceptual Attributes and Hypotheses

New Transaction Commitment Mindset. McGrath and MacMillan (2000) have persuasively argued that entrepreneurs have an entrepreneurial mindset that affects decisions regarding, for example, how opportunity is sought and pursued and/or which value-creation options are taken vs. discarded (pp. 2–3). Presently, because entrepreneurial decision making requires explanations of individual behavior as it is shaped by the person-environment interaction (Mitchell, Busenitz, et al., 2002), social cognition theory (which addresses such phenomena) is useful. Due to the complexity of person-environment interaction, the social cognition theory-based constructs that are used in such research tend to be multi-faceted (e.g., Fiske & Taylor, 1984). Accordingly, social cognition theory-based explanations might suggest that an entrepreneurial mindset, as a form of social cognition, is likely to be comprised of the four construct types suggested by social cognition theory to form—as a “configuration of forces”—a fairly comprehensive approximation of new venture reality in the mind of an individual (e.g., Fiske & Taylor, pp. 4–5), combining personal entrepreneurial experiences and perceptions of the venturing situation with cognition and motivation.

While some entrepreneurial decision-making variables at the individual level of analysis are relatively monofaceted (e.g., the venture creation decision [Busenitz & Lau, 1996; Mitchell et al., 2000]), others are multifaceted (e.g., entrepreneurial intentionality, which is thought to combine, for example, social and personal context with rational and intuitive thinking [Bird, 1988] at the individual level of analysis, and entrepreneurial orientation, which combines autonomy, innovativeness, proactiveness, competitive aggressiveness, and risk taking [Lumpkin & Dess, 1996] at the firm level of analysis). We therefore expect a somewhat similar structure with respect to entrepreneurial mindset-type constructs, because in this case, the multiple facets, being a gestalt, are expected to be unidimensional. Therefore, to answer our research questions, we have assembled from our target data set a multifaceted construct that is representative of such a mindset.

Accordingly, we sought to conceptualize and utilize a mindset-type construct that is both substantively important while at the same time being theoretically supported and relevant within a multi-level analysis of the value creation process. Because constructs that meet these parameters are increasingly serviceable due to their multi-level-use possibilities, we introduce through this study, a new construct that we have conceptualized for this task. We have termed it: the new transaction commitment mindset. The new transaction commitment mindset reflects the process of gaining obligation toward new action through the gestalt (configuration of the relevant forces) relating to perceived entrepreneurship transacting experience (person), new business self-efficacy (situation), transacting expertise (cognition), and behavioral intention (motivation) possessed by an individual (Fiske & Taylor, 1984). We think it important to note that the new transaction commitment mindset, as a social-cognitive phenomenon, is accordingly subjective—because it is based in perceptions of the individual.

The new transaction commitment mindset is defined to be: *the extent to which an individual is psychologically committed to engaging in new socioeconomic interactions (business transactions)*. New transaction commitment as a point of focus in an entrepreneurial mindset is an important construct, because new economic outcomes depend on the extent and skill to which individuals initiate new business transactions (Cooper, 1993; Herron & Robinson, 1993). Furthermore, venture formation capability in an economy reflects commitment to transacting; and venture formation capability (i.e., the bundling of transactions) is a leading indicator of an economy's potential for business activity (Shane, 1993, 1996). The new transaction commitment mindset may also be a particularly useful dependent construct in entrepreneurship research because it has similar compositional meaning (e.g., Chan, 1998) across levels of analysis (Rousseau, 1985). This is because the process of developing new transaction commitment occurs similarly for the socioeconomic activity of individuals in firms, industries, or economies¹ due to a common attribute across levels: the tendency toward transacting. This tendency is thought to persist for: (1) individuals entering into personal contracts and making other personal agreements; (2) individuals entering into firm contracts or making other business commitments on behalf of their firm, such as supplier or distributor agreements; (3) individuals making commitments on behalf of their industry association, such as agreements to form an industry clusters, develop industry standards, or engage in cooperative research; and (4) individuals entering into economic agreements on behalf of their government, such as entering into trade agreements (such as NAFTA, or the North American Auto Pact), or other international economic agreements, such as economic development projects. Consequently, in having the same relative position, value, or structure across levels, the new transaction commitment mindset could be used as a homologous variable in individual-level models, firm-level models, industry-level models, economy-level models, or in cross-level models, which would facilitate for entrepreneurship researchers better comparability and sense-making of entrepreneurship research results, as well as make possible meaningful replications, extensions, and elaborations of those results.

The commitment aspect of this construct is especially important, because it represents a definable point in the value creation process: between two accepted constructs, entrepreneurial intentionality/intentions (Bird, 1988; Krueger & Carsrud, 1993), and the venture creation decision (Busenitz & Lau, 1996; Mitchell et al., 2000). Commitment has

1. The aggregation logic used in this paper implies that socioeconomic action at all levels of analysis implicates individuals whether acting singly and/or as they participate in the larger (cumulating) aggregations of people in firms, industries, economies, etc.

been conceptualized as a psychological state or frame of mind that impels an individual toward a course of action of relevance to one or more targets (Meyer & Herscovitch, 2001). As such, it is a psychological attachment, bond, or attitude that links an individual to an idea or entity (or other foci) and subsequently influences behavior in ways that are consistent with that idea or entity (Hunt & Morgan, 1994). Although more fully developed in the organizational and strategic context (e.g., Ghemawat, 1991), entrepreneurship scholars have examined the concept of commitment in relation to family business successor commitment (e.g., Mitchell, Hart, Valcea, & Townsend, 2009; Sharma & Irving, 2005) and interorganizational commitment (Mäkelä & Maula, 2006). The notion of new transaction commitment is thus well suited as a likely point in the value creation process, where entrepreneurial scripts as antecedents might be expected to offer effective explanations in the value creation sequence.

Entrepreneurial Scripts. An entrepreneurial expert script, as previously defined in the literature (e.g., Mitchell et al., 2000) is: “highly developed, sequentially ordered knowledge” that forms “*an action-based knowledge structure*” used by entrepreneurs (p. 975, emphasis in original). Mitchell et al. (2007, p. 8) suggest that the reason entrepreneurial scripts provide explanations for certain types of entrepreneurial behavior (e.g., the venture creation decision) is that entrepreneurs’ unique knowledge structures help them to process information in ways that enable them to see advantage despite imperfect market conditions because they use information significantly better than nonexperts/nonentrepreneurs—i.e., at ≥ 2 standard deviations above the mean in the population at large (Ericsson, Krampe, & Tesch-Romer, 1993; Glaser, 1984; Leddo & Abelson, 1986; Lord & Maher, 1990; Mitchell et al.; Read, 1987). It is now well accepted that entrepreneurial scripts are dynamic knowledge structures that are susceptible to, for example, deliberate practice-based change (e.g., Baron & Henry, 2006; Englebrecht, 1995; Mitchell, 1994; Mitchell, 2005). And while scripts *per se* are complex (Walsh, 1995), they are also unique to particular domain-specific activities, such as, for example, chess (Chase & Simon, 1972), computer programming (McKeithen, Reitman, Reuter, & Hirtle, 1981), law enforcement (Lurigio & Carroll, 1985), physics teaching (Chi, Glaser, & Rees, 1982), entrepreneurship (Mitchell, 1994; Mitchell et al., 2000; Mitchell, Smith, et al., 2002), etc., but being relatively specific to given domains, scripts also permit researchers to identify latent/underlying structures (e.g., Merton, 1957) within each domain.

Work to date in the field of entrepreneurship has identified three somewhat-inclusive types of entrepreneurial scripts: arrangements, willingness, and ability scripts (e.g., Mitchell, 1994; Mitchell et al., 2000; Mitchell, Smith, et al., 2002). Arrangements scripts have been defined to be the knowledge structures that individuals have about the contacts, relationships, resources, and assets necessary to economic relationships. Willingness scripts have been defined to be the knowledge structures that underlie receptivity to the idea of engaging in an economic relationship. Ability scripts are the knowledge structures that individuals have about the capabilities, skills, knowledge, norms, and attitudes required to create a venture.² It is important to note that while independent, scripts and their cognitive outcomes are nevertheless interdependent through a common process (Read, 1987): the commitment engagement process, involving both independence and interdependence.

Expert information processing theory, combined with previous findings in the entrepreneurial cognition literature, suggests that people who possess entrepreneurial expert scripts are more willing to make commitments within their domain of expertise. Thus,

2. For a detailed description of these constructs, their subdimensions, and their development, please see Mitchell et al. (2000).

in its most simple illustration, people make dining-out commitments based upon their “restaurant” scripts (Read, 1987), and, in more extreme and uncertain cases, trauma physicians make life/death decisions (commitments) based upon the script-type “triage” emergency room decision process (Warner, 1979). While it has only been demonstrated that entrepreneurial arrangements, willingness, and ability scripts are antecedent to the venture creation decision (which unfortunately is not a dependent variable that sufficiently supports the homologous features of the value creation process across levels), we believe that it is reasonable to expect that these same entrepreneurial scripts are also antecedent to other middle-type steps in the value creation process, such as the new transaction commitment mindset. And, in pursuit of this expectation, we, more specifically, suggest a relationship between arrangements, willingness, and ability scripts, and the new transaction commitment mindset.

Accordingly, consistent with prior research (Mitchell et al., 2000), we argue that those who: (1) are able to more appropriately utilize arrangements scripts about idea protection, resource possession, venture networks, and venture specific skills; (2) have more highly developed willingness scripts relating to their opportunity seeking focus, opportunity motivation, and risk tolerance; and (3) rely upon ability scripts to enact the “doing” of individual plans, such as in diagnosing the condition and potential of ventures, in being able to see the need for, and to create value and in drawing on and applying lessons learned in a variety of ventures, (Leddo & Abelson, 1986, p. 121; Mitchell, 1994; Mitchell et al.), will have a more pronounced new transaction commitment mindset. The reasoning for this expectation is consistent with the reasoning underlying the finding that entrepreneurs may not perceive starting a venture as risky because, as a result of certain underlying cognitions,³ what may be perceived as risky to one individual is not to another (Simon, Houghton, & Aquino, 2000)—the same logic that abets dining-out or triage-script decision making. And while the particular type of cognitions may differ (i.e., the use of heuristics vs. the presence of expert scripts), the resulting commitment engagement process is the same (i.e., the commitment and resultant action). We define this commitment engagement process (Figure 1) to be: *the process whereby cognition affects perception-based commitment*. Hence, we expect that business people who do not possess arrangements, willingness, or ability scripts are likely to differ in their perceptions of their relevant configuration of social-cognitive forces (Fiske & Taylor, 1984): transacting experience and new business self-efficacy (the person in situation), combined with transacting expertise and behavioral intention (cognition and motivation). Expressed, then, in terms of our model (Figure 1), we suggest that due to the commitment engagement process as defined herein, individuals’ expert scripts are expected to affect their new transaction commitment mindset. Consistent with prior findings, individuals working in specialized domains (e.g., chess, computer programming, law enforcement, etc.) have unique knowledge. Thus, it is logical to anticipate that across a wide range of demographic groupings (e.g., age, culture, gender, etc.), people who are experts within the domain of entrepreneurship are likely to have similar thinking patterns. To the extent that they can reliably be distinguished from non-entrepreneur managers, we expect to find that:

Hypothesis 1: Regardless of country of origin, higher levels of arrangements, willingness, and ability scripts are positively associated with higher levels of new transaction commitment mindset.

3. We note that the plural use of the term cognition (cognitions) is becoming increasingly useful in the literature (e.g., Taylor, Lerner, Sherman, Sage, & McDowell, 2003), and accordingly, have adopted this form of usage to more precisely describe our intended meaning.

The Commitment Engagement Process and Country of Origin. However, it is also well accepted that in many cases, the variance in an expected relationship is not fully explainable by between-group analysis alone—that there are often within-group differences that can explain additional variance in these relationships (Keppel, 1991). And in the case of the conceptual model under scrutiny in this study, there is strong reason to suggest the possibility of within-group variance. This is important, because our capability to address the cross-level and accessibility-enhancing research questions that are the object of this study is better enabled where the homologous nature of the commitment engagement process is demonstrable across levels and contexts, and we find the introduction of country of origin as a possible within-group variance explanation to be particularly serviceable to this task. We thus observe that because the underlying logic for the script/mindset relationship, which we have defined to be *the commitment engagement process*, implicates *perception* in the cognition–mindset linkage, we may therefore argue that it is reasonable to expect that to the extent individual perception is influenced by the cultural values associated with the country of origin of respondents, there could be explainable within-group variation in levels of the new transaction commitment mindset.

Cultural values reflect the way human societies organize knowledge and social behavior (Kroeber & Kluckhohn, 1952) into a fairly consistent and limited set of cognitive orientations that reflect “. . . a broad tendency to prefer certain states of affairs over others” (Hofstede, 1980, p. 19). While it is well accepted that cultural values are an antecedent to human behavior (Berry, Poortinga, Segall, & Dasen, 1992; Shweder, 1990), cultural values are also thought to affect the individual perceptions that precede such behavior (Busenitz & Lau, 1996; Mitchell et al., 2000; Mitchell, Smith, et al., 2002). Because each culture may have unique values and norms about conducting business, we therefore wonder whether individual entrepreneurial scripts may be culturally specific in their effects on the new transaction commitment mindset due to differences in perception that arise within the commitment engagement process. Thus we are led to expect, according to the foregoing logic, that insofar as cultural differences exist among countries, the effects of entrepreneurial scripts on the new transaction commitment mindset may also be country specific, and therefore suggest:

Hypothesis 2: The effects of arrangements, willingness, and ability scripts on new transaction commitment mindset vary by country.

Exploratory Post Hoc Analysis. To address the cross-level and accessibility-enhancing questions this study is intended to inform, we also propose to utilize the baseline established by analysis of the foregoing two hypotheses as a beginning point for conducting exploratory *post hoc* analysis (e.g., to establish bases for process-similarity comparisons). We therefore also inquire how script-based comparisons across country or culture can inform the more general task of making information processing-based comparisons among entrepreneurs across many contexts, and, accordingly, we further examine the data to surface specific arrangements, willingness, and ability subscripts (e.g., idea protection, venture network, etc.), which may be likely to reveal more fine-grained differences by country. Consequently, this question is treated herein as empirical, and is explored in *post hoc* analysis conducted at the subconstruct (lower-order/factor) level. Hence, following a description of the methodology and hypothesis test results, our exploratory *post hoc* analysis is also presented. By further enabling cross-level analogues, this analysis positions us to evaluate and discuss the practical policy implications of the findings for a multilevel cross-culture illustration (NAFTA dispute resolution), and it also provides

a descriptive foundation for a discussion of implications for entrepreneurial cognition research.

Methods

Data Gathering

To facilitate our study objectives (cross-level and accessibility enhancing new value creation interpretation of the disputes and public policies surrounding NAFTA), the hypotheses were tested using a cross-sectional sample of 417 business-person respondents in the three NAFTA countries, all of whom had at least some business experience, and about a third of whom had started at least one venture. These data are a subset of the primary data set used in Mitchell et al. (2000; Mitchell, Smith, et al., 2002),⁴ making the current study an elaboration of the previous work, and the data secondary for the current analysis.

Consistent with the difficulty of accessing sampling frames for probability samples in international business research (McDougall & Oviatt, 1997), these data were originally acquired using a purposeful sampling approach. This approach relied on the combined judgment of the research team and local assistants to select participants who reflected a range of business experiences, industries, education, and ages. Respondents were business owners, entrepreneurs, and mid-level managers from both public and private sectors, and in Canada and the United States, the sample included some business students (less than 15% of respondents were students, and these were age 22 or older and had work experience).

A self-administered structured survey was personally delivered and retrieved from all participants by local assistants. This personal approach resulted in a 98% response rate. The instrument was pretested in each of the three countries, and, to reduce the impact of translation errors, was translated into Spanish by a bilingual native of Mexico and back into English by a bilingual American. Both translators and one of the researchers met to reconcile the differences where discrepancies arose in translation.

Of the 417 respondents, 131 are from Canada, 102 are from Mexico, and 184 are from the United States (Table 1). Approximately 75% of respondents are male. Respondents range in age from 22 to 71 years, and the average age of respondents is 34.3 years in the Canadian sample, 31.8 years in the Mexican sample, and 34.0 years in the U.S. sample. No significant differences were found in the mean age, sex, or past business experience of Canadian, Mexican, and U.S. respondents. The extent of formal education was also similar across countries. Typically, respondents held a university degree or college diploma, although the U.S. sample had greater variability in formal education (more college diplomas and more graduate degrees represented). Respondents with greater venturing experience tended, on average, to be older than those with less venturing experience. Although age is not theoretically linked to new transaction commitment mindset or to entrepreneurial cognition (Reuber & Fischer, 1994), age could limit the clarity of variance explained by level of perceived expertise (an indicator of new transaction commitment mindset) and was hence controlled for in subsequent hypothesis testing. Although the sample is not random, respondents are demographically similar in each country, and reflect the intended cross-section of business experiences, industries, education, and ages. Thus, we believe that the sample is suitable to address our cross-level and accessibility enhancing research questions.

4. The items in the subdata set used to measure new transaction commitment mindset were not, in fact, used in the previous studies; but the items forming the independent variables were operationalized similarly.

Table 1

Descriptive Statistics: Means, Standard Deviations (SDs), and Correlations

	Canadian sample (N = 131)				Mexican sample (N = 102)				U.S. sample (N = 184)										
	Mean	SD	1	2	3	4	Mean	SD	1	2	3	4	Mean	SD	1	2	3	4	
1. Arrangements scripts	3.88	1.75					3.90	1.77					3.50	1.54					
2. Willingness scripts	3.76	1.64	.26**				3.67	1.42	.02				3.41	1.69	.25**				
3. Ability scripts	3.18	1.54	.39***	.17			3.77	1.58	.30***	.21*			3.01	1.59	.37***	.17**			
4. Transaction commitment	.16	3.16	.49***	.31**	.37***		.30	3.18	.16	.19	.10		-.24	2.98	.42***	.42***	.34***		
5. Age	34.3	12.95	.35***	-.01	.01	.45***	31.8	9.67	.15	.04	.00	.41***	34.0	11.32	.29***	.18*	.27***	.47***	
Subscales:																			
Protectable idea	.53	.73				.16***	.79	.81					.52	.71					.05
Resource possession	1.49	1.08				.52***	1.45	1.06					1.21	.92	.26**				.50***
Venture network	1.63	.61				.26**	1.06	.72					1.52	.64	.18***				.25***
Venture-specific skill	.22	.42				.04	.60	.49					.25	.43	-.20*				-.01
Seeking focus	1.76	.96				.38***	1.81	.78					1.76	.97	.35***				.38***
Opportunity motivation	.70	.78				.14	.89	.78					.62	.74	.08				.15*
Risk tolerance	1.30	.69				.05	.96	.69					1.03	.78	-.09				.29***
Venture diagnostic ability	1.24	1.01				.30**	1.07	1.01					1.13	.95	.03				.35***
Ability/opportunity fit	.89	.78				.27**	1.72	.94					.81	.80	.05				.18*
Venture situational knowledge	1.05	.71				.09	.99	.75					1.07	.64	.12				.10

* $p < .05$; ** $p < .01$; *** $p < .001$; **** $p < .10$

Note: The highest correlation among the four arrangements scripts subscales is .16; the willingness scripts subscales is .22, and the ability scripts subscales is .10, suggesting low multicollinearity.

Measurement

Dependent Variable. New transaction commitment mindset is conceptualized as a high order attachment construct concerned with the process of gaining obligation toward entrepreneurial action resulting from a configuration (gestalt) of relevant social–cognitive forces *as perceived* by an individual: person, in the form of transacting experience; situation, in the form of new business self-efficacy; cognition, in the form of transacting expertise; and motivation, in the form of behavioral intention. Consistent with this conceptualization, new transaction commitment mindset was measured with four items, each of which relates to one of these forces. Perceived transacting experience (person) was captured with a semantic differential scale; “I rate my past experience as: Limited/Extensive.” Perceived new business self-efficacy (situation) was captured with a semantic differential scale; “I rate my chances at being a success in a new business venture as: Poor/Excellent.” Perceived transacting expertise (cognition) was measured with a dichotomous variable; “In new business venturing I consider myself to be: A Novice/An Expert.” Finally, behavioral intention (motivation) was measured with a semantic differential scale “I rate my attitude toward starting a new business as: Reserved/Enthusiastic.” Confirmatory factor analysis demonstrated that the items are unidimensional (Table 2); supporting the notion of a configuration of forces. With a Cronbach’s alpha of .78, the resulting scale exceeds Nunnally’s (1978) criteria of .70 for scale reliability in exploratory research. Because these items use different scale formats, they were standardized before being summed to form a continuous scale measuring new transaction commitment mindset.

Independent Variables. As per the description in Mitchell et al. (2000), entrepreneurial arrangements, willingness, and ability scripts were measured using script cues (Appendix) generated using an accepted script-scenario construction model (Mitchell, 1994; Read, 1987). The script-scenario construction approach is based on the expert information processing theory premise that experts, when presented with problems or issues within their domain of expertise, will access their knowledge structures/scripts and select a response choice (cue) consistent with that script (Glaser, 1984, p. 99). Nonexperts, being unable to access an appropriate expert script, are not expected to recognize the expert response choice and are more likely to choose a socially desirable (Crowne & Marlowe, 1964) distracter cue. Respondents were presented with paired statements and asked to select the one that describes them most closely. Both cues represent credible choices, but only one forms evidence of the existence of an expert-level script.

As more fully explained in Mitchell et al. (2000), the cues are not the scripts. Recognition of the expert cue is an indication of the existence of an expert script, which itself is not directly observable. Some cues, particularly those relating to arrangements scripts, were worded to reflect possession or outcomes, which also indicate the existence of the script. For example, evidence of an increase in the pool of people and assets that a respondent controls (Appendix, item 20) is one indication of the presence of a script relating to resource possession. However, a respondent may have a resource possession script that is based on the possession of other resources, and not about changes in their available pool of people and assets. The script cues are formative indicators of the underlying scripts, and affirmative responses to all items are not required from an individual respondent to capture construct meaning. Since formative indicators are independent components of a construct, they may not be highly correlated, and it is inappropriate to expect unidimensionality at the construct level, and it is inappropriate to assess reliability at the item level with Cronbach’s alpha, which is based on inter-item correlation (Howell, 1987, p. 121).

Table 2

Factor Analysis Results

Variable/factor loading	Arrangements scripts				Willingness scripts			Ability scripts			Transaction commitment	
	F1	F2	F3	F4	F1	F2	F3	F1	F2	F3	F1	
V18		.69		.43	V41	.61		V19	.59		TC1	.85
V20		.63	.30		V33	.60	.44	V9	.68		TC2	.77
V8		.73			V37	.74	-.27	V11	.61		TC3	.85
V35	.83				V7	.80		V42		.69	TC4	.61
V14	.81		.68	-.30	V12	.77		V44		.69		
V45			.82	.88	V31		.64	V4	.26	.53		
V36					V32		.76	V16		.79		
V47								V40		.58		
Percent of variance	21.0	17.0	14.9	12.1		24.1	16.5	14.4	18.2	15.3	14.2	60.4

Note: Item loadings are consistent with the conceptualization of the subconstructs. Arrangements scripts factors are labeled: F1—protectable idea, F2—resource possession, F3—venture network, and F4—venture-specific skills. Willingness scripts factors are: F1—seeking focus, F2—opportunity motivation, and F3—risk tolerance. Ability scripts factors are: F1—venture diagnostic ability, F2—ability/opportunity fit, F3—venture situational knowledge. Cross-loading items were not removed from the analysis, as summed scales were appropriate at this stage of theory testing. Loadings of less than .25 are suppressed. TC1—transacting experience (person), TC2—new business self-efficacy (situation), TC3—transacting expertise (cognition); TC4—behavioral intention (motivation).

As is appropriate with the use of independent formative indicators (Pedhazur & Schmelkin, 1991, p. 54), principal components factor analysis (using a minimum eigenvalue of 1 and varimax rotation) was used to confirm the hypothesized dimensionality of each of the script constructs. As reported in Table 2, support was found for the conceptualized dimensions of the arrangements, willingness, and ability scripts. Five items were removed from the analysis due to low loadings on both intended and unintended constructs. A few items were found to have high cross-loadings, but they were not removed from the analysis because these items were summed into scales with other items, which when combined, created a scale with a unique meaning that derives from the contribution of all items when taken together (Nunnally, 1978). Consistent with the exploratory nature of the study, discriminant validity is further evidenced by correlations significantly less than unity among the script constructs (Kidder & Judd, 1986). Also, descriptive statistics for each factor (sub-scale) are reported in Table 1.

Data Analysis

Hypothesis 1 was tested using analysis of covariance (ANCOVA) controlling for the effects of age, and country. Hypothesis 2 was tested with both multivariate analysis of variance (MANOVA) and hierarchical regression analysis. ANCOVA is an appropriate analytic tool for testing theory at early stages of development, where research questions are more concerned with the existence of effects than with the relative strength of relationships developed in the conceptual model (Pedhazur & Schmelkin, 1991). Because ANCOVA requires categorical independent variables, the summed scales used to measure arrangements, willingness, and ability scripts were recoded into high, medium, and low categories of approximately equal size (each category had at least 20% of the responses). This was accomplished, as in Mitchell et al. (2000), by assigning values in the midpoint of the scale to the medium category and assigning at least two values to each of the high and low categories. Three categories were chosen to minimize the loss of explanatory power in the categorization process while maintaining groups of sufficient size to meet analytic assumptions. Although categorization decisions can influence results, the original interval scale independent variables were employed in the hierarchical regression analysis used to test hypothesis 2. In addition to providing further insight into the nature of new transaction commitment mindset, the use of hierarchical regression provides a check of the ANCOVA results using all of the information provided by the measures.

Results

After accounting for the effects of age and country, ANCOVA analysis (Table 3A) showed that arrangements, willingness, and ability scripts explained 35% of the variance in new transaction commitment mindset, and these cognition-based constructs explained approximately 20% of the total variance in that construct when age and country effects were not accounted for. The main effects were all significant, indicating support for hypothesis 1: arrangements, willingness, and ability scripts are related to the level of new transaction commitment mindset, regardless of country of origin. Similar results were found using hierarchical regression (Table 3C, "All"). While not unanticipated given the results in Mitchell et al. (2000), these results show significance for willingness scripts. Where previous investigation of these constructs did not show significance for willingness scripts, we suggest that this finding may have occurred because of the substantive

Table 3

Hypothesis Tests

A. Hypothesis 1—ANCOVA [†]			B. Hypothesis 2—MANOVA				C. Hypothesis 2—hierarchical regression [‡]						
	MS	F	p		Multivariate F	Wilkes' lambda	p	F	p	All	Canada	Mexico	United States
Covariates	621.1	98.6	.000		.954	.004				.44***	.45***	.40***	.47***
Age	4.13	.7	.419	Country effect				2.07	.127	.18***	.21*	.09	.21**
Country				Arrangements				1.68	.188	.24***	.22**	.16	.29***
Main effects	60.9	9.7	.000	Willingness				7.86	.000	.15**	.25**	.04	.13*
Arrangements	88.9	14.1	.000	Ability						.36***	.35***	.39**	.32***
Willingness	88.9	14.1	.000							.19***	.21***	.16***	.22***
Ability	35.1	5.6	.004							.16***	.23***	.04	.18***
										Age (base model)			
										Scripts model			
										Arrangements			
										Willingness			
										Ability			
										Age			
										R ² (base model)			
										Δ R ²			

[†] Model R² = .35; arrangements = arrangements scripts, etc.

[‡] Standardized beta coefficients reported; * p < .05; ** p < .01; *** p < .001; the country models did not differ significantly from the all inclusive based on Chow's test (Q = 1.01). Dummy coding of country effects found no significant differences in the beta coefficients between the models. ANCOVA, analysis of covariance; MANCOVA, multivariate analysis of variance; MS, mean square.

difference between the prior mono-level dependent variable: the venture creation decision, and the broader dependent variable: new transaction commitment mindset. As we have argued, new transaction commitment mindset is a homologous variable that is susceptible to analysis at more than one level, and one of the benefits of this broader conceptualization may be the increased explanatory power in evidence here. The control variable age (of the respondent) was significant as a covariate ($p = .000$), but country of origin ($p = .419$) was not. Although not the focus of our study, the significance of age as a covariate supports the notion that older people may (but not always) have greater expertise than younger people, if they have had more substantial experiences and have learned from those experiences (Brehmer, 1980).

Hypothesis 2 was tested using MANOVA (Table 3B). The results of this analysis indicate that mean values of ability scripts ($p = .000$) were significantly different in at least two of the NAFTA countries, while mean values of willingness scripts ($p = .188$) and arrangements scripts ($p = .127$) were not. These results suggest that there may be some differences in the content of entrepreneurial scripts by country, but that there are also similarities. Accordingly, hierarchical regression analysis was used to further understand the potential differential effects of the script constructs on new transaction commitment mindset (Table 3C). Based on Chow's test for pooling (Dillon & Goldstein, 1984), none of the country level models was found to be significantly different than the all-inclusive (All-NAFTA) model. However, none of the script constructs were significant in the Mexican sample, while all of them (arrangement scripts, willingness scripts, and ability scripts) were significant in both the Canadian and U.S. samples. Dummy coding country effects (Dillon & Goldstein, p. 247) found no significant difference between the Canadian and U.S. samples with respect to script betas. These MANOVA and hierarchical regression results indicate that while arrangements, willingness, and ability scripts are related to new transaction commitment mindset within the NAFTA countries generally, some differences nonetheless do exist among countries.

It is not clear from the *ex-ante* tests, however, how the scripts differ among the NAFTA countries. Correlations between the lower-order subscales (factors) and new transaction commitment mindset (Table 2) indicate that some arrangements, willingness, and ability scripts are more highly associated with new transaction commitment mindset than others. Consistent with the need to: (1) uncover the content and structure of particular knowledge structures that managers might use; and (2) “. . . relate the use of this knowledge structure to consequences of substantive organizational importance . . .” (Walsh, 1995, p. 282), we believe that understanding the content of entrepreneurial scripts is an important task for entrepreneurial researchers that would assist in theory building. Accordingly, we conducted a *post hoc* hierarchical regression analysis to examine the attributes of new transacting scripts within each country.

Block effects (Table 4A) indicate the contribution of each set of cognition-based script variables, separately, beyond a base model that includes only respondent age as an explanatory variable of new transaction commitment mindset. The arrangements scripts block of variables were significant in the Canadian and U.S. samples, explaining 15% of the variance in new transaction commitment mindset in both models beyond that explained by age. Resource possession is significant in both the Canadian and U.S. models, and is approaching significance ($p = .053$) in the Mexican model. Venture network is significant in both models, while protectable idea and venture specific skills were not significant in any of the models.

The willingness scripts block of variables is significantly related to new transaction commitment mindset in each of the NAFTA countries, explaining 10–14% of the variance in new transaction commitment mindset, beyond the base model (age). Seeking focus is

Table 4

Post Hoc Tests

	A. Block effects						B. Full model stepwise						
	Canada		Mexico		United States		Canada		Mexico		United States		
	ΔR^2	<i>B</i>	<i>p</i>	ΔR^2	<i>B</i>	<i>p</i>	ΔR^2	<i>B</i>	<i>p</i>	ΔR^2	<i>B</i>	<i>p</i>	
Age (base)	.21***	.45	.000	.16***	.41	.001	.22***	.37	.000	.37	.000	.28	.000
Arrangements scripts	.15***	.08	.300	.06	-.02	.877	.15***						
Protectable idea		.35	.000		.19	.053		.47	.000		.03	.668	
Resource possession		.15	.044		.12	.218		.36	.000		.24	.000	.26
Venture network		-.03	.641		-.13	.213		.12	.039				
Venture specific skills (Age)	.13**	.28	.000	.10*	.31	.002		-.07	.219				
Willingness scripts		.33	.000					.33	.000				
Seeking focus		.04	.578		.30	.002		.29	.000		.29	.000	.22
Opportunity motivation		.06	.400		.01	.885		.03	.676		.19	.003	.13
Risk tolerance (Age)	.14***	.44	.000	.01	-.06	.512		.19	.003		.40	.000	.026
Ability scripts		.25	.001		.36	.000							
Venture diagnostic ability		.13	.097		.04	.688		.22	.001		.20	.006	.15
Ability/opportunity fit		.24	.002		.37	.479		.10	.133		.22	.002	
Venture situational knowledge (Age)		.48	.000		.06	.547		.02	.719				
					.40	.000		.39	.000		$\Delta R^2 =$.29***	.14 [†]
													.23***

[†] $p < .10$; * $p < .05$; ** $p < .01$, *** $p < .001$.

significant in all three country models with betas ranging from .29 to .33. Opportunity motivation is not significant in any of the country models, and risk tolerance is significant only in the U.S. model with a beta of .19.

The ability script block of variables are significant in the Canadian and U.S. models, explaining 14 and 6% of the variance in new transaction commitment mindset beyond the base model (age), respectively. Venture diagnostic ability is significant in both models, while venture situational knowledge is significant in the Canadian model.

An explanation of these findings is provided by expert information processing theory. Leddo and Abelson (1986) suggest that in expert script enactment, individuals require both “entry” (arrangements) and “doing” (willingness and ability) scripts in a two-step sequence. Thus, according to theory, arrangements scripts are expected to occur first in the script enactment sequence, as it relates to new transaction commitment mindset, followed by willingness and ability scripts. The block effect findings are consistent with this theoretical expectation. Both script “entry” arrangements scripts, and “doing” willingness scripts are found to be significant in Canada and the United States, and arrangements scripts (driven by resource possession, $p < .053$) is approaching significance in the Mexican sample. The significance of ability scripts for U.S. and Canadian respondents suggests that respondents in these countries may have better access to resources that facilitate the gaining of capabilities, skills, and knowledge related to venture creation than those respondents in Mexico.

The total effects of the script constructs were examined in a stepwise regression (Table 4B) that identifies the script factors most salient to each country. Seeking-focus scripts (willingness) are found to be significantly related to new transaction commitment mindset in all three NAFTA countries ($p < .01$). Resource possession scripts (arrangements) and venture diagnostic ability scripts (ability) are significant in the Canadian and U.S. models at the .05 level, but not in the Mexican model. Opportunity motivation scripts (willingness) are significant in the U.S. model, and venture situational knowledge (ability) is significant in the Canadian model.

These results further support the idea that there are both similarities and differences in the content of entrepreneurial scripts between countries, extending the work of Mitchell et al. (2000) in identifying where some similarities and differences may exist. Moreover, and important to this study, the results lend insight into differences in the commitment engagement process between countries at the individual level, which due to process composition similarity, can illuminate economy-level transacting explanations.

At the individual level, social cognition theory suggests that interactions among arrangements, willingness, and ability scripts may be critical to script enactment, since enactment requires a configuration of forces (both entry and doing scripts) (Fiske & Taylor, 1984, pp. 4–5). Arrangements scripts are therefore necessary for enactment of further steps in the value-creation sequence, but they are not likely to be sufficient. Without willingness scripts, there may not be sufficient motivation to enact arrangements scripts. Without ability scripts, there may not be sufficient skill to enact arrangements scripts. Willingness scripts without ability scripts may result in further steps in the value-creation sequence, but these results are not likely to last very long (a “rockets to oblivion” phenomenon). These potential interaction effects were explored using *post hoc* ANCOVA (controlling for age and country effects). None of the two-way interaction effects were significant, but the three-way interaction among arrangements, willingness, and ability scripts was significant ($p < .041$) beyond the significant main effects, consistent with social cognition and entrepreneurial cognition theory that arrangements, willingness, and ability scripts all combine to affect new transaction commitment mindset.

Discussion

Our task in this paper has been twofold: First, to expand theory development in entrepreneurial cognition research beyond the individual level, and, second, to increase the usability of previous work in the expert information processing theory-based research stream. To do this, we have: (1) utilized a portion of an earlier-reported primary data set as a previously defined and peer-reviewed foundation that, with minimal repetition, can be treated as secondary-type data; and (2) employed the sequential technique of first testing two basic hypotheses, which then enabled us to engage in the elaborative *post hoc* analysis required to address the four research questions that drive our twofold task. Specifically, this *post hoc* analysis lets us more closely examine the homologous structure of the commitment engagement process across levels.

We have addressed research question (RQ) 1 concerning the nature of the relationship between entrepreneurial expert scripts and constructs that might represent an entrepreneurial mindset through the hypothesis testing reported in the prior section. We have established, as a foundation, that while there is a significant between-groups (expert-novice) relationship between entrepreneurial scripts and the new transaction commitment mindset regardless of country of origin, there also exists significant within-the-expert-group variation by country.

We have also conducted *post hoc* analysis to address RQ2 and RQ3 (respectively): RQ2 to ascertain the extent to which analogous relationships at higher levels of analysis (e.g., the economy level) enable the structure found at one level (e.g., entrepreneurial scripts' relationship to new transaction commitment mindset) to be useful in understanding structure at another, and RQ3 to examine the extent to which cognitive skills found at the individual level can be used to explain other-level phenomena. In the immediately following subsections, we analyze, discuss, and explain how the homologous nature of the commitment engagement process enables cross-level inference—from findings at the individual level, to interpretations at the economy level, and we present an application illustration wherein we use the cross-level attributes of the commitment engagement process to offer an interpretation of NAFTA disputes. Following this subsection, we then address RQ4 and suggest a roadmap for expanding future expert information processing theory-based research. Lastly, we conclude with a discussion of study limitations and practical applications.

The Commitment Engagement Process and Cross-Level Research

To ascertain the extent of analogous relationships across levels of analysis, we have employed the notion of compositional *process* similarity: i.e., we attempted to identify a process that references essentially the same content across levels, which may be qualitatively different at different levels, but is nevertheless homologous (having the same relative position, value, or structure) across levels (Chan, 1998). The commitment engagement process as we have utilized it in this study is one such example. As may be seen in Figure 1, the constructs and relationships in this study comport with the foregoing criteria. The commitment engagement process, which relates entrepreneurial scripts to the new transaction commitment mindset at the individual level, is also suggested to relate constructs at the economy level of analysis: a given “cultural sensemaking paradigm” to “new transaction commitment national interest.” The basic logic that explains how the commitment engagement process references the same structural content across levels, while such content may be different in its specifics, follows.

We have previously defined the commitment engagement process to be the process whereby cognition affects perception-based commitment. Consistent with the requirements of compositional similarity, comparison of the underlying structure of relationships defined by this process is examined using higher-order analogues. Hence, in the independent-construct column of the figure (entrepreneurial expertise), we can observe that at the individual level, the structural attributes of entrepreneurial scripts as “highly developed, sequentially ordered knowledge” that forms “an action-based knowledge structure” used by entrepreneurs (Mitchell et al., 2000, p. 975), can be seen to be analogous to a sensemaking paradigm, “. . . those sets of assumptions, usually implicit, about what sorts of things make up the world, how they act, how they hang together, and how they may be known” (Brown, 1978; Weick, 1995, p. 118), and more specifically a “cultural” sensemaking paradigm, when cultural values are understood to mean “a fairly consistent, and limited, set of cognitive orientations that reflect a broad tendency to prefer certain states of affairs over others” (Hofstede, 1980, p. 19). And in the dependent-construct column of Figure 1 (new transaction commitment), we can observe that at the individual level, the structural attributes of the new transaction commitment mindset construct, which include the “extent to which an individual is psychologically committed to engaging in new socioeconomic interactions” (as defined above), are also analogous to new transaction commitment national interest, which at the economy level can be seen as outcome preferences, consensus about cause–effect relations (Weick, p. 119), and/or agreement on goals (Pfeffer, 1981, p. 124) by national actors. Fisher and Ury (1981) assert that negotiations centering on group interests are more effective, which we argue is strong reason to suggest compositional similarity between a new transaction commitment mindset at the individual level and its analogue new transaction commitment national interest at the economy level. This is because a “mindset” and an “interest” both reflect the type of perceptual aspiration (e.g., Cyert & March, 1963) that focuses/unifies behavior: entrepreneurial action (e.g., the venture creation decision) in the case of the individual level, and action generating new value-creating possibilities (e.g., trade policy) at the economy level.

Based on the proposed analogues to structural content across levels, we then suggest the logic that supports the homologous nature of the commitment engagement process across levels. Pfeffer (1981) suggests, for example, that levels of disagreement are related to level of consensus, and (Weick, 1995, p. 120) explains that in such cases, social influence processes based in sensemaking through storytelling and representative anecdotes (e.g., Burke, 1969; Firestone, 1990) relate the two constructs. This logic is very similar to transmission processes whereby scripts are thought to influence decision making through stories and exemplar anecdotes. For example, Read (1987) provides the foundation for this approach stating: “. . . the ways in which people typically explain and predict social behavior have a great deal in common with how people understand and tell stories” (p. 300). As a storytelling and story understanding device, a script “. . . provides a large bundle of information from which to generate the inferences necessary to connect a sequence of actions into a coherent whole” (p. 290). Thus, we argue, as does Weick, that a theory of action (such as, for example, the commitment engagement process) holds together sensemaking frames by which cues—whether at the individual or at the economy level—are noticed and interpreted. We thus turn to the illustration of NAFTA disputes to demonstrate how our establishing process compositional similarity across levels, permits us to utilize the *post-hoc* analysis of the results of testing two basic hypotheses at the individual level in the interpretation of a dispute at the economy level of analysis.

Application Illustration: Interpreting NAFTA Disputes

A quotation from an editorial in the Canadian national newspaper *The Globe and Mail* (2006: A16) introduces the economy-level issue of trade relations among countries in the NAFTA bloc:

Not again. Not another trade dispute in which the United States financially penalizes Canada's exporters (along with Canadian travelers). This country has just settled the softwood lumber dispute. Now, with little more than an obscure entry in the Federal Register of routine notices, the U.S. Department of Agriculture has declared that it intends to remove the exemption from inspection for imports of Canadian fruit and vegetables. More astonishing, it will impose user fees on Canadian commercial vessels, trucks, railway cars and aircraft and on international air passengers to pay for those inspections . . . What are the Americans doing? Are they trying to bring the Canadian-U.S. border to a complete standstill?

This stark appraisal of the transacting relationship between Canada and the United States, although presenting only a Canadian point of view, points to significant barriers in cross-border transacting between Canada and the United States. Herein we apply our findings as a first step in understanding the barriers to new transacting among NAFTA countries, and, by illustrating how new transaction commitment at the individual level informs economy level issues; we also demonstrate its potential value as a dependent construct in entrepreneurship research.

We set this illustration in terms attributed to social reformer and organizational visionary, Elbert Hubbard, who offers an encouraging viewpoint concerning conflicts, such as the longstanding disagreements between Canada, Mexico, and the United States: *It may happen sometimes that a long debate becomes the cause of a longer friendship. Commonly, those who dispute with one another at last agree.* We therefore ask both: why might the disagreement exist in the first place, and how does this agreement spoken of by Hubbard finally occur? We apply our *post hoc* analysis to inform these questions. Specifically, we focus on what cognitive differences at the individual level mean for the commitment engagement process at the economy level. To do this, we examine the results presented in Table 4B for cross-country differences and then discuss what these differences may mean.

Our first observation of the results presented in Table 4B relates to the similarity among respondents from the three countries. On one hand, respondents from the three countries appear to have important scripts in common: in all three countries, seeking-focus scripts are significantly related to a new transaction commitment mindset. This commonality between countries at the individual level would seem to suggest the important role of opportunity seeking in the cultural sensemaking paradigm. That is, stories and anecdotes based in opportunity seeking form a necessary foundation for the creation of a new transaction commitment national interest. From the perspective of attaining agreement, the presence of the seeking-focus script across countries represents a very hopeful finding that may suggest a much narrower dispute divide than previously thought.

Our second observation relates to the differences that exist across countries. While these differences in cognitive orientation may hinder the commitment engagement process and result in disputes (Fisher & Ury, 1981), we believe that an understanding of these differences might actually hold the key to bridging this commitment engagement process divide over the longer term. Specifically, we note that both resource possession scripts and venture diagnostic ability scripts are significantly related to new transaction commitment mindset for respondents from both Canada and the United States, but not

Mexico. What may account for these differences is that both the United States and Canada have established institution-based paradigms (e.g., Ernst and Young's Entrepreneur of the Year Award⁵) that aid in the creation and transmission of anecdotes and stories that facilitate commitment engagement. Through social influence (Weick, 1995), such paradigms transmit an understanding of the resource acquisition process and the feasibility of potential venture ideas, while also engendering understanding of the systematic elements involved in venture creation (Krueger & Carsrud, 1993). In Mexico, while institutions have been established to accomplish a similar set of purposes (e.g., the Mexican Enterprise Information System), these institutions are relatively new and not as impactful as the social influence-based, paradigm-creating institutions that exist in both Canada and the United States. In this way, such paradigmatic differences related to resource possession and venture potential may hinder commitment engagement and instead result in disputes as a result of these strong perceptual differences.

Lastly, we note that risk tolerance scripts are significant for respondents from the United States only, while situational knowledge scripts are significant for respondents from Canada only. What is particularly interesting about these differences across countries is their inherent potential for conflict. Specifically, as a result of risk tolerance scripts, economic actors in the United States may approach commitment engagement with a greater focus on resource-based action (i.e., commit now or miss the boat) as compared with their Canadian counterparts; conversely, economic actors in Canada may approach commitment engagement with a greater focus on situational information (i.e., get more information before committing or sink the boat) as compared with their U.S. counterparts. The challenge lays in the observation that these two approaches (sink, v. miss the boat risk preferences) are at odds (Dickson & Gigliano, 1986; Mullins & Forlani, 2005), potentially hindering commitment engagement and thereby leading to disagreements in trade relations. That is, a Canadian policy maker who requires situational knowledge before committing may struggle to comprehend their American counterpart who, with limited situational information, is nonetheless pressing for commitment. And for the American, it may be difficult to understand why the Canadian is so hesitant to commit *now*.

A Roadmap for Expanding Expert Information Processing Theory-Based Research

Increasing the accessibility of expert information processing theory-based research hinges on solving three problems: (1) generating the script-cue recognition frame, (2) identification of the latent structure, and (3) enabling the interpretation of results. As described below, the literature contains clear direction for the first two problems, which is why in this study, we have focused on the third.

Generating the Script-Cue Recognition Frame. As an alternative to physiology-based methods (eye movements, brain scans, etc.) script-cue recognition and protocol analysis have emerged to provide relatively rigorous methods for eliciting data on thinking. The extent to which these data are valid depends in large measure on rigor in the elicitation process. Whereas protocol analysis concentrates on eliciting verbalizations of thought sequences as a source of data (being limited by the sequentiality requirement), script cue

5. The Entrepreneur of the Year award is well established in both the United States (21 years) and Canada (14 years), but not yet in Mexico.

recognition is not constrained by sequence but does require the development a set of cues that is representative of the domain (Nunnally, 1978). Mitchell (1994, pp. 229–242) illustrates how a set of representative script cues can be obtained from a domain-bounded literature (in this case the entrepreneurship literature). Compared with protocol analysis, script–cue recognition as a data elicitation method has the added advantage of more straightforward generalizability potential because the scope of a literature review is wider, and also because the relatively complex logistics of protocol collection are eliminated. Pilot studies, however, are generally recommended for both.

Latent Structure Identification. The advantage of the script–cue recognition method is the well-developed argument for formative indication (Howell, 1987; Mitchell et al., 2000; Nunnally, 1978; Pedhazur & Schmelkin, 1991). Item construction using distracter cues provides clearly detectable (hence decreased error) variance (please see Appendix). Scale construction is possible using principal components analysis (eigenvalues ≥ 1), and the workhorse method of factor analysis (e.g., Mitchell, 1994) can provide a research model with substantial explanatory power.

Enabling Interpretation. As noted, this study most clearly illustrates increased accessibility in addressing the interpretation problem. With the item and scale clarity that is possible (per above), and with the compositional logic clearly specified for making cross-level assertions based on process analogues from the individual level, it now becomes increasingly feasible for researchers to utilize the script–cue recognition patterns identified to interpret practical problems (as illustrated by our simple application of commitment engagement process findings at the individual level to analogous commitment engagement process problems at the economy level).

Summary. In our view, where the major problem in entrepreneurial cognition research is the evaluation of entrepreneurial thinking processes that are not directly observable (Mitchell et al., 2007; Posner, 1973), this study demonstrates an accessible means to make tractable this problem in the case of entrepreneurial cognition research at multiple levels of analysis.

Limitations and Practical Implications

The foregoing results should be considered in light of study limitations. First, this study is exploratory in nature in that it applies relatively new theory, and examines relatively new constructs in an entrepreneurship research context that is still in the early stages of development. In this study, we have taken several necessary expert information processing theory-driven steps in making cross-level-based methods more practical.

Second, our measure of new transaction commitment mindset is a first attempt at operationalizing the construct, wherein we utilized a set of single items to capture the domain of each facet of the construct. Future research should involve the further development of the construct that involves multiple measures of transacting experience, self-efficacy, transacting expertise, and behavioral intention each of which could be adapted from existing scales.

Third, in this study, we utilized a purposeful sample. However, we do not believe that this materially impinged upon the results, as respondents in each country were demographically similar and reflect a cross-section of business experiences, industries, education levels, and ages. Cross-sectional sampling may even make the hypothesis tests conservative, as entrepreneurial cognition may be industry specific.

Fourth, because of the theoretical requirement that the total “cognitive situation” be captured at a given point in time, it was necessary to use the same instrument to measure both the dependent and independent variables. While in many other research circumstances, this operationalization decision raises concerns regarding common method bias, we took steps to mitigate potential problems by using a mix of self-report and more objective measures, using different scales to measure the four questions that constitute the dependent variable, and asking the questions related to the dependent variable before those of the specific entrepreneurial scripts. In this manner, we sought to satisfy necessary measurement requirements while minimizing potential measurement disabilities.

Despite the above limitations, however, we nonetheless see a number of important practical implications that our study results suggest. First, our results would seem to offer to policy makers a potential pathway whereby disputes in economy-level (e.g., trade) relations can be minimized. As Fisher and Ury (1981) note, parties to a dispute can “get to yes” when they shift the focus away from “positions” and seek instead to satisfy “interests.” What our results illustrate is how the interests among NAFTA countries may differ. Armed with this knowledge, policy makers can negotiate with these interests in mind and can thereby facilitate mutually beneficial new transacting.

Second, we also see benefit for entrepreneurs involved in international venturing and global start-ups (Oviatt & McDougall, 1995). Indeed, our findings regarding similarities and differences in new venture arrangements, willingness, and ability scripts across cultures indicate both the existence of shared meaning in a cross-cultural transacting community—which serves as a starting point for transacting in international venturing—and the existence of differences—which facilitate a means for better understanding and situating a venture in the broader global context. This cognitive explanation would suggest that the multitude of apparently heterogeneous phenomena that have in the past been thought to affect transacting outcomes might form the elements of a coherent cognitive model across countries that still illuminates and acknowledges differences in cognitive models within countries.

Conclusion

In this paper, we have argued that if generalized beyond the individual level of analysis, and if made relatively easy to apply, the view that expert scripts in entrepreneurial decision making suggest a global culture of entrepreneurship/pervasive entrepreneurial “mindset” can be a provocative idea. The evaluation of this argument has led us to investigate and speak to four research questions. Through this study, we have therefore: (1) clarified the nature of the relationship between entrepreneurial expert scripts and constructs that might represent an entrepreneurial mindset at the individual level of analysis; (2) identified analogous relationships at the economy level of analysis where the structure found at the individual level has informed an economy-level problem; (3) presented a NAFTA-based illustration analysis to demonstrate the extent to which cognitive findings at the individual level can be used to explain economy-level phenomena; and (4) extrapolated from our analysis some of the ways in which script-based comparisons across country or culture can inform the more general task of making information processing-based comparisons among entrepreneurs across other contexts. Taken together, we believe these research results provide a foundation for additional cross-level theory development, with related implications for increasing the practicality of expert information processing theory-based entrepreneurial cognition research.

Appendix: Independent Variables

Respondents were given the following instructions: "The attached questionnaire helps you to identify your personal approach to getting involved with a new business. Please CIRCLE THE ANSWER THAT DESCRIBES YOU MOST CLOSELY"

Arrangements Script Cues:

Protectable Idea

14. My new venture is/will be:

- (a) protected from competition by patent, secret technology, or knowledge
- (b) based on a product or service with no "barriers to entry"

35. My new venture is/will be:

- (a) protected from competition by franchise or other territory restrictions
- (b) based on a product or service which may experience a lot of competition

Resource Possession

8. I own assets such as:

- (a) proprietary technology, patents, or an operating business
- (b) mutual funds, real estate, or savings accounts

18. I presently:

- (a) control acquisition or expansion funds in an ongoing business, or have my own funds available for venturing
- (b) will need to raise financing for my venture from third parties

20. In the last 3 years:

- (a) the size of the pool of people and assets I control has grown
- (b) I have not extended my business control over people or assets

Venture Network

36. I could:

- (a) raise money for a venture if I did not have enough
- (b) provide an investor with a lot of very good ideas for a new venture

45. I:

- (a) can often see opportunities for my plans to fit with those of other people
- (b) rarely find that results match what I expect

Venture Specific Skills

47. I am very:

- (a) good at a high-demand specialty
- (b) well rounded, with broad expertise in a variety of areas

Willingness Script Cues:

Seeking Focus

33. Are you more:

- (a) action oriented
 - (b) accuracy oriented
37. Do you want things:
- (a) open to the possibilities

(b) settled and decided

41. I am more comfortable in:

- (a) new situations
- (b) familiar territory

Opportunity Motivation

7. When investing in a new venture, I think it is worse to:

- (a) wait too long, and miss a great opportunity
- (b) plunge in without enough information to know the real risks

12. Is it worse to:

- (a) waste your time thinking over an opportunity
- (b) commit time and money to a cause that may not succeed

Risk Tolerance

31. I do not mind:

- (a) being committed to meet a regular payroll if it means that I can have a chance at greater financial success
- (b) giving a little of the value I create to the company that hired me

32. I am looking for a:

- (a) place to invest my resources
- (b) better way to manage my resources

Ability Script Cues:

Venture Diagnostic Ability

9. When confronted with a new venture problem, I can:
- (a) recall quite vividly the details of similar situations I know about
 - (b) usually figure out what to do, even if it is by trial and error
19. New ventures, small business, and business:
- (a) are distinctly different disciplines
 - (b) have much in common, especially the need for sharp guesswork
11. When someone describes a problem with a new business I:
- (a) recognize key features of the problem quickly,

- and can suggest alternatives from examples I can cite
- (b) use my instincts to suggest questions that should be asked to solve the problem

Ability/Opportunity Fit

42. I feel more confident:
- (a) that I know a lot about creating new ventures
 - (b) in my overall business sense
44. When I see a business opportunity, I decide to invest based upon:
- (a) how closely it fits my “success scenario”
 - (b) whether I sense that it is a good investment
4. If asked to give my time to a new business, I

- would decide based on how this venture fits:
- (a) into my past experience or
 - (b) my values

Venture Situational Knowledge

16. It is more important to know about:
- (a) creating new ventures
 - (b) business in general—staying diversified
40. The new venture stories I recall:
- (a) illustrate principles necessary for success
 - (b) are a telling commentary on the foibles of human nature that can rarely be predicted.

REFERENCES

- Baron, R.A. & Henry, R.A. (2006). Why do some entrepreneurs achieve extraordinary success? Insights from basic research on exceptional performance. Babson College Entrepreneurship Research Conference, Bloomington, IN.
- Berry, J.W., Poortinga, Y.H., Segall, M.H., & Dasen, P.R. (1992). *Cross cultural psychology: research and applications*. Cambridge: Cambridge University Press.
- Bird, B. (1988). Implementing entrepreneurial ideas: The case for intention. *Academy of Management Review*, 13(3), 442–453.
- Bowman, C. & Ambrosini, V. (2000). Value creation versus value capture: Towards a coherent definition of value in strategy. *British Journal of Management*, 11(1), 1–15.
- Brehmer, B. (1980). In one word: Not from experience. *Acta Psychologica*, 45, 233–241.
- Brown, R.H. (1978). Bureaucracy as proxis: Toward a political phenomenology of formal organizations. *Administrative Science Quarterly*, 23, 365–382.
- Burke, K. (1969). *A grammar of motives*. Berkley: University of California Press.
- Busenitz, L.W. & Lau, C.-M. (1996). A cross-cultural cognitive model of new venture creation. *Entrepreneurship Theory and Practice*, 20(4), 25–39.

- Chan, D. (1998). Functional relations among constructs in the same content domain at different levels of analysis: A typology of composition models. *Journal of Applied Psychology*, 83(2), 234–246.
- Chase, W.G. & Simon, H.A. (1972). The mind's eye in chess. In W.G. Chase (Ed.), *Visual information processing* (pp. 215–281). New York: Academic Press.
- Chi, M.T.H., Glaser, R., & Rees, E. (1982). Expertise in problem solving. In R. Sternberg (Ed.), *Advances in the psychology of human intelligence* (Vol. 1, pp. 17–76). Hillsdale, NJ: Erlbaum.
- Cooper, A.C. (1993). Challenges in predicting new firm performance. *Journal of Business Venturing*, 8(3), 241–253.
- Crowne, D.P. & Marlowe, D. (1964). *The approval motive*. New York: John Wiley.
- Cyert, R.M. & March, J.G. (1963). *A behavioral theory of the firm* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Davidsson, P. & Wiklund, J. (2001). Levels of analysis in entrepreneurship research: Current research practice and suggestions for the future. *Entrepreneurship Theory and Practice*, 25(4), 81–99.
- Dickson, P.A. & Giglierano, J.J. (1986). Missing the boat and sinking the boat: A conceptual model of entrepreneurial risk. *Journal of Marketing*, 50(3), 58–70.
- Dillon, W.R. & Goldstein, M. (1984). *Multivariate analysis: Methods and applications*. New York: John Wiley.
- Englebrecht, A.R. (1995). *Women business owners in traditional and nontraditional industries: Exploring the differences*. Salt Lake City: University of Utah.
- Ericsson, K.A. (2002). Towards a procedure for eliciting verbal expression of non-verbal experience without reactivity: Interpreting the verbal overshadowing effect within the theoretical framework for protocol analysis. *Applied Cognitive Psychology*, 16(8), 981–987.
- Ericsson, K.A., Krampe, R.T., & Tesch-Romer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, 100(3), 363–406.
- Firestone, W.A. (1990). Accommodation: Toward a paradigm-praxis dialectic. In E. Guba (Ed.), *The paradigm dialog* (pp. 105–135). Newbury Park, CA: Sage.
- Fisher, R. & Ury, W. (1981). *Getting to yes: Negotiating agreement without giving in*. Boston: Houghton Mifflin.
- Fiske, S.T. & Taylor, S.E. (1984). *Social cognition*. Reading, MA: Addison-Wesley.
- Ghemawat, P. (1991). *Commitment: The dynamics of strategy*. New York: The Free Press.
- Glaser, R. (1984). Education and thinking. *American Psychologist*, 39, 93–104.
- Gustafsson, V. (2004). *Entrepreneurial decision-making: Individuals, tasks and cognitions*. Unpublished dissertation, Jönköping International Business School (JIBS), Jönköping, Sweden.
- Herron, L. & Robinson, R.B. (1993). A structural model of the effects of entrepreneurial characteristics on venture performance. *Journal of Business Venturing*, 8(3), 281–294.
- Hitt, M.A., Hoskisson, R.E., Johnson, R.A., & Moesel, D.D. (1996). The market for corporate control and firm innovation. *Academy of Management Journal*, 39, 1084–1119.
- Hofstede, G. (1980). *Culture's consequences: International differences in work related values*. Beverly Hills, CA: Sage Publications.

- Howell, R. (1987). Covariance structure modeling and measurement issues: A note on “Interrelations among a channel entity’s power sources. *Journal of Marketing Research*, 24, 119–126.
- Hunt, S.D. & Morgan, R.M. (1994). Organizational commitment: One of many commitments or key mediating construct? *Academy of Management Journal*, 37(6), 1568–1588.
- Keppel, G. (1991). *Design and analysis: a researcher’s handbook*. Englewood Cliffs, NJ: Prentice-Hall Inc.
- Kidder, L.H. & Judd, C.M. (1986). *Research methods in social relations* (5th ed.). New York: Holt, Rinehart and Winston.
- Kroeber, A. & Kluckhohn, F. (1952). *Culture: A critical review of concepts and definitions*. Cambridge, MA: Peabody Museum.
- Krueger, N.F. & Carsrud, A.L. (1993). Entrepreneurial intentions: Applying the theory of planned behaviour. *Entrepreneurship and Regional Development*, 5, 315–330.
- Leddo, J. & Abelson, R.P. (1986). The nature of explanations. In J.A. Galambos, R.P. Abelson, & J.B. Black (Eds.), *Knowledge structures* (pp. 103–122). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Lepak, D.P., Smith, K.G., & Taylor, M.S. (2007). Value creation and value capture: A multilevel perspective. *Academy of Management Review*, 32(1), 180–194.
- Lord, R.G. & Maher, K.J. (1990). Alternative information-processing models and their implications for theory, research, and practice. *Academy of Management Review*, 15(1), 9–28.
- Low, M.B. & MacMillan, I.C. (1988). Entrepreneurship: Past research and future challenges. *Journal of Management*, 14(2), 139–161.
- Lumpkin, G.T. & Dess, G.G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, 21(1), 135–172.
- Lurigio, A.J. & Carroll, J.S. (1985). Probation officers’ schemata of offenders: Content, development, and impact on treatment decisions. *Journal of Personality and Social Psychology*, 48, 1112–1126.
- Mäkelä, M.M. & Maula, M.V.J. (2006). Interorganizational commitment in syndicated cross-border venture capital investments. *Entrepreneurship Theory and Practice*, 30(2), 273–298.
- McDougall, P.P. & Oviatt, B.M. (1997). International entrepreneurship literature in the 1990s and directions for future research. In D.L. Sexton & R.W. Smilor (Eds.), *Entrepreneurship* (pp. 291–320). Chicago: Upstart Publishing.
- McGrath, R.G. & MacMillan, I.C. (2000). *The entrepreneurial mindset*. Boston: Harvard Business School Press.
- McKeithen, K.B., Reitman, J.S., Reuter, H.H., & Hirtle, S.C. (1981). Knowledge organization and skill differences in computer programmers. *Cognitive Psychology*, 13, 307–325.
- Merton, R.K. (1957). *Social theory and social structure*. Glencoe, IL: Free Press.
- Meyer, J.P. & Herscovitch, L. (2001). Commitment in the workplace: Toward a general model. *Human Resource Management Review*, 11(3), 299–327.
- Mitchell, J.R., Hart, T.A., Valcea, S., & Townsend, D.M. (2009). Becoming the boss: Discretion and post-succession success in family firms. To appear in *Entrepreneurship Theory and Practice*.
- Mitchell, R.K. (1994). *The composition, classification, and creation of new venture formation expertise*. Unpublished dissertation, University of Utah, Salt Lake City, UT.

- Mitchell, R.K. (2001). *Transaction cognition theory and high performance economic results (first edition). A research monograph summarizing the development of transaction cognition theory at multiple levels of analysis*. Victoria, BC: International Centre for Venture Expertise, University of Victoria.
- Mitchell, R.K. (2003). A transaction cognition theory of global entrepreneurship. In J.A. Katz & D.A. Shepherd (Eds.), *Advances in entrepreneurship, firm emergence and growth* (Vol. 6, pp. 181–229). Greenwich, CT: JAI Press.
- Mitchell, R.K. (2005). Tuning up the global value creation engine: The road to excellence in international entrepreneurship education. In J.A. Katz & D.A. Shepherd (Eds.), *Advances in entrepreneurship, firm emergence and growth* (Vol. 8, pp. 185–248). Greenwich, CT: JAI Press.
- Mitchell, R.K., Busenitz, L., Bird, B., Gaglio, C.M., McMullen, J.S., Morse, E.A., et al. (2007). The central question in entrepreneurial cognition research 2007. *Entrepreneurship Theory and Practice*, 31(1), 1–27.
- Mitchell, R.K., Busenitz, L., Lant, T., McDougall, P.P., Morse, E.A., & Smith, B. (2002). Toward a theory of entrepreneurial cognition: Rethinking the people side of entrepreneurship research. *Entrepreneurship Theory and Practice*, 27(2), 93–104.
- Mitchell, R.K. & Chesteen, S.A. (1995). Enhancing entrepreneurial expertise: Experiential pedagogy and the entrepreneurial expert script. *Simulation and Gaming*, 26(3), 288–306.
- Mitchell, R.K., Smith, J.B., Morse, E.A., Seawright, K.W., Peredo, A.M., & McKenzie, B. (2002). Are entrepreneurial cognitions universal? Assessing entrepreneurial cognitions across cultures. *Entrepreneurship Theory and Practice*, 26(4), 9–32.
- Mitchell, R.K., Smith, B., Seawright, K.W., & Morse, E.A. (2000). Cross-cultural cognitions and the venture creation decision. *Academy of Management Journal*, 43(5), 974–993.
- Mizik, N. & Jacobson, R. (2003). Trading off between value creation and value appropriation: The financial implications of shifts in strategic emphasis. *Journal of Marketing*, 67(1), 63–76.
- Moran, P. & Ghoshal, S. (1999). Markets, firms, and the process of economic development. *Academy of Management Review*, 24(3), 390–412.
- Mullins, J.W. & Forlani, D. (2005). Missing the boat or sinking the boat: A study of new venture decision making. *Journal of Business Venturing*, 20(1), 47–69.
- Nunnally J.C. (Ed.) (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.
- Oviatt, B.M. & McDougall, P.P. (1995). Global start-ups: Venturers on a worldwide stage. *Academy of Management Executive*, 9(2), 30–44.
- Pedhazur, E.J. & Schmelkin, L.P. (1991). *Measurement, design, and analysis: An integrated approach*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Penrose, E. (1959). *The theory of the growth of the firm: Inherited resources and the direction of expansion*. New York: Wiley.
- Pfeffer, J. (1981). *Power in organizations*. Marshfield, MA: Pitman.
- Posner, M.I. (1973). *Cognitions: An introduction*. Glenview, IL: Scott, Foresman and Company.
- Read, S.J. (1987). Constructing causal scenarios: A knowledge structure approach to causal reasoning. *Journal of Personality and Social Psychology*, 52(2), 288–302.
- Reuber, A.R. & Fischer, E.M. (1994). Entrepreneurs' experience, expertise, and the performance of technology-based firms. *IEEE Transactions on Engineering Management*, 41(4), 365–374.

- Rousseau, D.M. (1985). Issues of level in organizational research: Multi-level and cross-level perspectives. *Research in Organizational Behavior*, 7, 1–37.
- Schumpeter, J.A. (1928). The instability of capitalism. *The Economic Journal*, 38(151), 361–386.
- Shane, S. (1993). Cultural influences on national rates of innovation. *Journal of Business Venturing*, 8(1), 59–73.
- Shane, S. (1996). Explaining variation in rates of entrepreneurship in the United States: 1899–1988. *Journal of Management*, 22(5), 747–781.
- Sharma, P. & Irving, P.G. (2005). Four bases of family business successor commitment: Antecedents and consequences. *Entrepreneurship: Theory and Practice* 29(1), 13–33.
- Shweder, R.A. (1990). Cultural psychology: What is it? In J.W. Stigler, R.A. Shweder, & G. Herdt (Eds.), *Cultural psychology: Essays on comparative human development* (pp. 1–43). Cambridge: Cambridge University Press.
- Simon, M., Houghton, S.M., & Aquino, K. (2000). Cognitive biases, risk perception, and venture formation: How individuals decide to start companies. *Journal of Business Venturing*, 15(2), 113–134.
- Smith, J.B. & Colgate, M. (2007). Customer value creation: A practical framework. *Journal of Marketing Theory and Practice*, 15(1), 7–23.
- The Globe and Mail*. (2006, September 2). The unwelcome landing of another U.S. penalty, p. A16.
- Tsai, W. & Ghoshal, S. (1998). Social capital and value creation: The role of intrafirm networks. *Academy of Management Journal*, 41(4), 464–476.
- Walsh, J.P. (1995). Managerial and organizational cognition: Notes from a trip down memory lane. *Organization Science*, 6(6), 280–321.
- Warner, H.R. (1979). *Computer-assisted medical decision making*. New York: Academic Press.
- Weick, K.E. (1995). *Sensemaking in organizations*. Thousand Oaks, CA: Sage Publications.

J. Brock Smith is Professor of Marketing and Entrepreneurship, and Winspear Scholar in the Faculty of Business, University of Victoria, Victoria, BC, Canada.

J. Robert Mitchell is an Assistant Professor of Management and Entrepreneurship in the Price College of Business, University of Oklahoma, Norman, OK.

Ronald K. Mitchell is Professor of Entrepreneurship and Jean Austin Bagley Regents Chair in Management in the Rawls College of Business, Texas Tech University, Lubbock, TX.

The authors would like to thank Barbara Bird and two anonymous reviewers for the helpful comments they provided on earlier drafts of this article.

Copyright of Entrepreneurship: Theory & Practice is the property of Blackwell Publishing Limited and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.