

# The Psychological Basis of Opportunity Identification: Entrepreneurial Alertness

Connie Marie Gaglio  
Jerome A. Katz

**ABSTRACT.** Opportunity identification represents a unique entrepreneurial behavior yet its processes and dynamics remain mysterious. Entrepreneurial alertness, a distinctive set of perceptual and information-processing skills, has been advanced as the cognitive engine driving the opportunity identification process. To date, empirical support has been equivocal; however, these early studies suffer from fundamental mistakes in theory and method. These mistakes are examined and addressed. A research agenda for the systematic and conceptually sound study of entrepreneurial alertness and opportunity identification is outlined.

## 1. Introduction

As the empirical investigation of entrepreneurship progresses, an increasing number of scholars are concluding that opportunity identification represents the most distinctive and fundamental entrepreneurial behavior (Gaglio, 1997a; Kirzner, 1979; Stevenson and Jarillo, 1990; Venkatamen, 1997).

Other market actors do not have the responsibility to create innovative market opportunities although they do have an obligation to consider such opportunities once they are available in the marketplace. Consequently, understanding the

opportunity identification process represents one of the core intellectual questions for the domain of entrepreneurship.

Despite its importance to the theoretical advancement of the field, research regarding opportunity identification is in its infancy and is best characterized as a scattering of descriptive studies rather than as a systematic research program of theory testing and development. To date, investigators have examined issues such as whether entrepreneurial opportunities are the result of serendipity or deliberate search (Koller, 1988; Peterson, 1988). Numerous search behaviors have been profiled including the source of the idea (Long and Graham, 1988; Peterson, 1988); search strategies; and amount of search effort (Busenitz, 1996; Gilad et al., 1988; Kaish and Gilad, 1991). In addition, the influence of the entrepreneur's social network on search strategies and boundaries have been explored (Aldrich and Zimmer, 1986; Long, 1979; Pekerti, 1985). Evaluation strategies (Crawford, 1980; Long and McMullan, 1984) have been studied. Finally, some have tried to map the stages or phases of the opportunity identification process (Herron and Sapienza, 1992; Long and McMullan, 1984) and document the length of time needed in this process in order to shape successful business opportunities (Singh et al., 1999; Van de Ven, 1980).

The nature of topics studied thus far suggests that the discipline implicitly thinks about opportunity identification or creation as a process of social construction (Berger and Luckman, 1967) which is most evident when entrepreneurs offer their opinions about the meaning of an event, a trend, an invention, or a new technology through the creation and introduction of new products, services, or processes. These opinions are then

---

Final version accepted on November 1, 2000

Connie Marie Gaglio  
College of Business  
San Francisco State University  
1600 Holloway Ave.  
San Francisco, CA 94132, USA  
E-mail: cmgaglio@sfsu.edu

and

Jerome A. Katz  
Murray Endowed Professor  
Saint Louis University  
3674 Lindell Blvd.  
St. Louis, Missouri 63108 USA  
E-mail: katzja@slu.edu



legitimated or rejected by the other actors in the marketplace through purchase, consumption and imitation.

The nexus for these reciprocal influences lay in an individual entrepreneur's perceptions and decision-making. Shaver and Scott (1991) pose the salient psychological questions: how are market environments represented and interpreted in the mind of the entrepreneur such that opportunity identification occurs? Do these representations and interpretations differ from those of other market actors? If so, in what ways?

Kirzner (1979) asserts that the mental representations and interpretations of entrepreneurs do indeed differ because they are driven by *entrepreneurial alertness*, a distinctive set of perceptual and cognitive processing skills that direct the opportunity identification process. To date, empirical support for the construct has been equivocal, leading at least one scholar (Busenitz, 1996) to question its value. However, as will be shown shortly, this may follow in part from an unduly narrow approach to the operationalization of theory as well as a potential problem in the match of the psychometric method to the type of phenomenon being studied. As has been noted by others reviewing entrepreneurship research (Carsrud, 1988; Shaver and Scott, 1991) similar problems in design have resulted in findings with little or no explanatory power.

Therefore, the purpose of this paper is to advance theoretical development in the area of opportunity identification. It will start by providing a new translation of the concept of entrepreneurial alertness into its appropriate cognitive and psychological properties. From this new translation a new research agenda will be offered for systematically testing this more inclusive psychological heuristic of the opportunity identification process.

## 2. Entrepreneurial alertness

The concept of the skill or ability known as entrepreneurial alertness has its origins in the writings of economist Israel Kirzner (1973, 1979, 1985) who has defined alertness in two ways: as "the ability to notice without search opportunities that have hitherto been overlooked" (1979, p. 48) or as

"a motivated propensity of man to formulate an image of the future" (1985, p. 56). To date, the major work on entrepreneurial alertness has focused only on the first definition, to an ambivalent result.

Almost all of the initial empirical investigations of alertness have focused on the means by which an individual might literally "notice without search." For example, Kaish and Gilad (1991) interpret this as having an aptitude to position oneself in the flow of information so that the probability of encountering opportunities without a deliberate search for a specific opportunity is maximized. Therefore, in their operational measures of alertness, they asked founders to recall: (a) the amount of time and effort exerted in generating an information flow; (b) the selection of information sources for generating an information flow; and (c) the cues inherent in information that signal the presence of an opportunity. From this data the authors deduced: (d) the quantity of information in the flow and (e) the breadth and diversity of information in the flow.

Their results conform to expectations in some ways but also reveal some unexpected patterns. Compared to the sample of corporate executives, the sample of new venture founders do appear to spend more time generating an information flow and do seem more likely to use unconventional sources of information. Interestingly, the founders do seem more attentive to risk cues rather than to market potential cues. However, the data also reveal that only inexperienced or unsuccessful founders engage in such intense information collection efforts. Successful founders actually behave more like the sample of corporate executives. Cooper et al. (1995) found a similar pattern of results in their survey of 1100 firms although Busenitz (1996), in an altered replication of Kaish and Gilad's survey, did not. Indeed Busenitz found few significant differences between corporate managers and new venture founders. In addition, validity checks of the survey measures yielded low reliability scores, which led the author to conclude that future research in alertness required improved theoretical and operational precision.

This paper contends that, essentially, Busenitz is correct. Advancement in this research area requires considerable maturation. Most importantly, it requires that investigators shift their focus

from the phrase “without search” in the first definition of alertness to the whole of Kirzner’s (1973, 1979, 1980, 1985) theory regarding entrepreneurial alertness. In particular, investigators need to consider and incorporate the more comprehensive definition of alertness as motivated propensity. Such an approach, if successful, would account for finding without search but place it in a more powerfully descriptive and predictive context.

Supporting this approach is a body of work that includes extensive comparisons of how alert and non-alert people behave in the marketplace. These comparisons suggest a distinctive set of perceptual and reasoning behaviors that may not necessarily depend upon information gathering efforts nor upon cues inherent in the information. Rather, the exercise of these abilities and behaviors leads to a “shrewd and wise assessment of the realities” (Kirzner, 1980, p. 7) which may lead to those flashes of insight known as opportunity identification. Kirzner maintains that the crucial difference between opportunity finders (aka entrepreneurs) and non-finders can be found in their relative assessment of the market event or situation. In other words, compared to other market actors, entrepreneurs have a better grip on reality because they perceive it more accurately and are better at inferring the likely implications and consequences.

This leads to a new, more mature, operationalization of entrepreneurial alertness. Logically, the alert individual or entrepreneur must perceive the market environment correctly (veridical perception); identify the true driving forces and critical factors; and infer the real relational dynamics among these elements (veridical interpretation). Veridical perception and interpretation enable entrepreneurs to discern when the existing way of producing or distributing goods and services or indeed the products and services themselves may no longer work because of significant market or social changes. Furthermore, the alert individual correctly infers the commercial potential of the situation.

Valid tests of the theory of entrepreneurial alertness must focus on the core assertions of veridical perception and veridical interpretation, assuming of course, that these phenomena are defined and measured in psychometrically appropriate ways.

The study of entrepreneurial alertness requires answers to Shaver and Scott’s original questions about opportunity identification. Kirzner’s contribution is that his theory predicts how alert and non-alert market actors will behave. In a discipline so bereft of theory, this can be a welcome gift.

### 3. The psychological schema of alertness

Schema are dynamic, evolving mental models that represent an individual’s knowledge and beliefs about how physical and social worlds work. These mental models help direct attention and guide information processing and reasoning for any specific event, real or imagined. If Kirzner is correct, alert individuals have more accurate mental models. Therefore, in order to understand how the market environment is represented in the mind of the entrepreneur and whether such representations differ from non-entrepreneurs, schema content and dynamics must be investigated.

Perceptions and interpretations of the marketplace or of an industry can vary among individuals for many reasons including differences in schema content and complexity. Cognitive psychologists (Chase and Simon, 1973, Chi et al., 1982) have demonstrated that the differences in the decisions and performance of experts and novices can be traced back to differences in schema content. Specifically, experts have more complex schema characterized by extensive cross-links to other schema. These linkages enable experts to see patterns developing, to detect anomalies more quickly, and so forth. It is possible, then, that the behavioral differences Kaish and Gilad uncovered simply reflect differences between experts and novices; that is, differences in schema content and complexity. The inexperienced or unsuccessful founders were still developing their industry schema while successful founders had achieved or were close to expert status.

#### *Chronic schema*

Perceptions and interpretations can also vary because of the particular schema, or part of a schema, that is called upon in response to a real or imagined event or stimulus. Activation can be

influenced by many factors such as information primacy, schema accessibility, or personal motives. In addition, psychologists have observed that some people habitually activate a particular schema, regardless of its appropriateness to the moment (Fiske and Taylor, 1991; Higgins and King, 1981). Psychologists refer to that schema as a “chronic” schema. Everyone employs several chronic schema such as the self or male/female. The influence of these schema is so pervasive and constant that while the individual can consciously activate and use them, he or she is rarely aware of doing so, which is precisely the point of a chronic schema. Some people create additional chronic schema to guide their perceptions and understanding – eternal optimists or pessimists, for example.

What matters for the theory of entrepreneurial alertness is that habitual or chronic schema activators appear to be especially sensitive to key schema features or attributes such that they can quickly yet accurately notice these in ambiguous situations or regardless of information load (Bargh, 1989; Fiske and Taylor, 1991). Furthermore, research evidence indicates that the habitual use of a particular schema “automates” it to the extent that activation occurs without the individual’s attentional or intentional control (Bargh and Pratto, 1986). Habitual use would explain how alert entrepreneurs may be able to “notice without search.” Thus the early Kirzner definition might be reset in a more powerfully descriptive context, given earlier as a *desiderata* for a more mature theory of alertness.

So differences in perceptions and interpretations that lead to differing assessments (which may ultimately lead to opportunity identification) will vary among market actors because of differences in schema activation, schema content, and degree of schema complexity. Differing not only in content, these assessments will differ in quality, with actors possessing more realistic (i.e., veridical) schema doing a better job of projecting the future and guiding their actions or their firm’s actions towards the future. If the schema, their underlying processes, and their applications to the real world are all potentially accessibly in theory and operationalization, it seems plausible to propose an investigation of entrepreneurial alertness. Such an effort would start with the proposi-

tion there is a chronic schema that heightens the individual entrepreneur’s awareness to the possibility of innovations that have commercial potential – what could be called an alertness schema.

#### *Modeling a schema of entrepreneurial alertness*

At this stage of the research process, the goal is to demonstrate the existence of a schema of entrepreneurial alertness. This will be done by developing a series of hypotheses describing the operation of the proposed schema. In future research, if the hypotheses can be supported, the underlying model of entrepreneurial alertness would be shown to exist as described. The general flow of this section will follow the sequence depicted in Figure 1, starting with instances of disequilibrium in the market, and moving through the stages of schema application by alert and non-alert individuals.

*The process of entrepreneurial alertness.* In its essential form, the theory of alertness (Kirzner, 1979, 1985, 1992) asserts that the difference between alert and non-alert individuals lay in the different decisions they make about their current circumstances. Non-alert individuals fail to identify or create entrepreneurial opportunities because they misjudge their market environment and the kind of behavior demanded by the moment. These different types of non-alert individuals will be profiled later. For the moment, it is important to note that non-alert individuals either do not detect, or they ignore, or they discount informational cues indicating that current way of “doing business” (that is, producing or marketing) may no longer be as efficient or as effective or both. Consequently, non-alert individuals believe that their behavioral requirements consist of allocating their existing resources in ways that historically have had the highest probability of maximized returns or have been congruent with previous institutional responses.

Alert individuals, prompted by a schema emphasizing objective accuracy, apprehend the changing environmental cues and realize that the appropriate behavior at that moment requires reassessment of the situation and the environment, in other words, figuring out what is really going on.

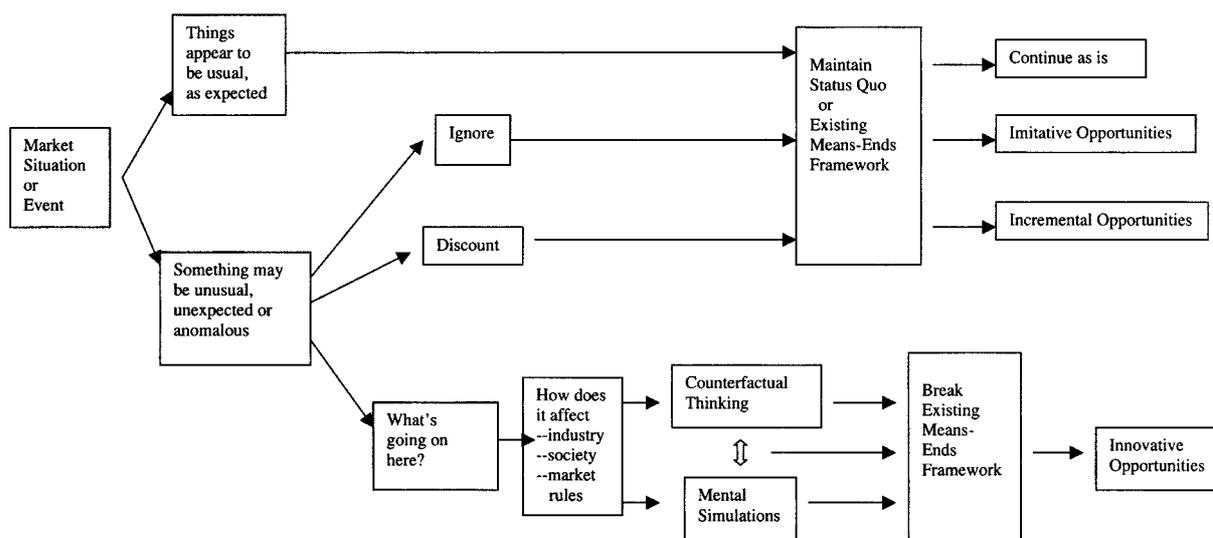


Figure 1. Alertness and the opportunity identification process.

Figure 1 depicts the hypothesized cognitive underpinnings of the opportunity identification process if driven by entrepreneurial alertness. Like all schema, alertness directs attention (in this case towards the novel, unusual or contrary) and guides information processing (towards the integration of the unusual event even if it means rethinking the existing means-ends framework or the way things are done). Specifically, the theory of alertness proposed that unlike most market actors, who accept information as given, alert individuals may simply have a habit of being contrary and/or looking for change. Periodically, the results of this habit may challenge the entrepreneur's current understanding and the entrepreneur is confronted with the option of ignoring or discounting the new possibilities or with assessing their impact on the existing relevant schema. Counterfactual thinking and mental simulations facilitate the reassessment process and may (but not always) indicate that it is necessary to radically alter the contents or the relational dynamics of schema and the existing means-ends framework. Occasionally, (but not always) this alteration process affords an insight about the commercial value of the newly found or reconfigured information, in which case a market opportunity has been identified or created. Whether the opportunity should be pursued is a separate question.

*Recognizing events of disequilibrium.* What would an alertness schema contain and how would it work if it were to lead to a more accurate or superior assessment of a market situation? Kirzner (1979, 1985) posits that the alert individual is especially sensitive to signals of market disequilibrium, which can occur at the macroeconomic and microeconomic levels.

Macroeconomic disequilibrium is the most common form at the moment and in Kirzner's theory, the less considered form. In this situation, market disequilibrium arises from disruptive changes brought about because of new technology, knowledge, demographics, or social values that, as Drucker (1985) observed, force industries to reinvent themselves through radical innovation. Therefore, it seems logical to expect an alertness schema to include mental models of these kinds of changes and specifically extensive representations of the kinds of signals or cues that would indicate not just the presence of these disruptions but more importantly, to their *potential* presence. Indeed, it is probable that an alertness schema directs attention and focus to search for anomalies, the unexpected or anything remotely new or different.

Non-alert individuals are not necessarily oblivious to major disruptions in the marketplace. When anyone encounters something different or unexpected that is signaled in a clear, unam-

biguous, strong and persistent way, he or she will attempt to accommodate the new information (Fiske, 1993). Weick (1995) notes that these kinds of disruptions trigger extensive “sensemaking” efforts within organizations; research suggests that the context or framework used for sensemaking may lead non-alert actors away from the conclusion that an entirely new assessment is needed.

Kiesler and Sproull (1982) contend that managers activate their organizational culture as the schema to guide assessment of a situation and that the historical perspective inherent in that schema tends to bias managers against noticing the less forceful or more subtle signals of market change. However, Cowan (1986) found that managers do notice signals of change but use the organization schema to discount the meaning of these signals. In perhaps the most interesting line of research, Johnson et al. (1991) found that there are a group of people who do appear to be more attuned to cues of anomalies and inconsistencies. However, like Cowan, Johnson et al., found that the mere notice of cues did not lead to any special insight. Some people explained or discounted each anomaly when encountered and this interpretive behavior allowed them to conclude that nothing had or would change; that is, they could maintain the status quo. Only those who attempted to integrate the perceived anomalies or inconsistencies into a pattern then formed hypotheses that the status quo may not be the most accurate description of that particular situation.

While disruptive macroeconomic market changes are forceful and generally more easy to discern, they are only one source of market disequilibrium. The other source is microeconomic – a less dramatic form but one that has the advantage of being ever present because it is inherent in the marketplace. Ongoing microeconomic market disequilibrium arises from the everyday mistakes market actors make in their investment, production, and distribution decisions and actions. These mistakes create pockets of disequilibrium, which become evident as underpriced products, unused capacity, unmet needs, and so on. In more popular terms, these pockets represent market niches, the favored spawning ground of new business opportunities.

Kirzner appears more interested in market dis-

equilibrium on the microeconomic level; indeed, his comparisons of alert and non-alert individuals are primarily embedded in this context. Once again, the key question is what would an alertness schema contain such that it facilitates the anticipation or detection of these mundane pockets of disequilibrium? It is entirely possible that alert entrepreneurs simply recognize the fact that misapprehension and bad judgment occur and they try to capitalize on it. If so, an alertness schema would probably include mental models for detecting the “herd mentality” of other market actors and for developing contrarian positions as the initial reference point for a shrewd assessment of a particular market situation. Again, this does not guarantee that the contrarian niches or pockets of opportunity will be successful.

The discussion regarding the alternative sources of market disequilibrium is important because investigators will have to examine both in their operationalizations of market environments when testing for the existence of entrepreneurial alertness. Regardless of the source or kind, the theory of entrepreneurial alertness predicts that alert individuals will be more sensitive to early indicators of disequilibrium. This leads to Hypothesis 1:

*H1: In any given market situation, alert individuals are more sensitive to signals of market disequilibrium than non-alert individuals.*

*Changing schema vs. information.* Schema theory assumes that people engage in a kind of pattern matching between environmental stimuli and the information stored in the activated schema (Fiske and Taylor, 1991; Mitchell and Beach, 1990). If the pattern match is good enough, attention turns to action and developing a response. If the pattern match is not good enough – that is, when the individual detects something unusual or unexpected, then additional cognitive processing is required. When actors are motivated to be accurate, they usually try to integrate the new information within their existing schema by creating new subcategories or new causal links that increase the differentiation and complexity of their schema (Fiske and Taylor, 1991; Sherman et al., 1989). If the actor places a higher value on quick action or if he or she feels it is socially desirable to adhere to a schema, then the actor will either discount the

new information or engage in elaborate re-interpretations that maintain the structure and dynamics of the existing schema (Fiske, 1993; Kiesler and Sproull, 1982). Given the nature of this cognitive dynamic, the theory of alertness would predict:

H2: *Alert individuals will change their schema to accommodate non-matching information; non-alert individuals will change the information.*

*Cognitive error control.* The failure to recognize and integrate information regarding market disequilibrium are not the only kinds of cognitive mistakes non-alert actors can make. Kirzner (1985) identified several other assessment mistakes non-alert individuals may make: (a) failure to recognize that assumptions were never or no longer are appropriate; (b) ignorance of new resource availability; (c) excessive optimism or pessimism about resource availability; (d) excessive optimism or pessimism regarding probable results of actions or decisions. The common thread in all these mistakes appears to be inaccuracy. The chain of inaccurate processing may begin with the non-alert individual simply following the human tendency to uncritically accept and use information only in its original form (the “concreteness principle,” Slovic, 1972) or to unquestioningly accept the initial frame of reference (the “framing effect,” Kahneman and Tversky, 1986).

If alert individuals are not making these kinds of cognitive processing mistakes, then it seems logical to conclude that an alertness schema includes a dynamic that induces skepticism about information perceived and that questions, if not challenges, the initial frame of reference. In fact, Gunderson (1990) maintains that veridical perception simply means a willingness to challenge assumptions and perceptions, much like a good scientist. Alert individuals then, take to heart and have integrated into their schema the graduate student mantra: “what are the three other ways to think about this?” – another form of contrarian perception and reasoning! This leads to hypothesis 3:

H3: *In any given market situation, alert individuals will be impervious to framing effects while non-alert individuals will succumb.*

*Accuracy vs. timeliness.* Kirzner examines at considerable length the theoretical proposition that alert individuals have veridical (accurate) perception and interpretation. For example, the four forms of inaccuracy discussed above represent one type of threat to veridical perception. Therefore, it would seem logical to conclude that accuracy is a major component of an alertness schema, perhaps even the driving force of the schema.

From a psychological perspective, the issue of accuracy is somewhat problematic because accuracy can also be considered part of an individual’s motivation that *triggers* the activation of a particular schema. A central tenet of cognitive psychology is that people employ information processing tactics that best facilitate their goals (Fiske, 1993; Showers and Cantor, 1985) and that one of the first decisions people must make, implicitly or explicitly, in any information processing episode is whether their goal is to be completely accurate or to act quickly.

This stark choice minimizes a crucial and distinctive element of opportunity identification, that is its time-limitedness. Pockets of microeconomic disequilibrium can quickly change, be filled, or become exhausted. The window of opportunity when viewing macroeconomic changes is also limited and shrinks substantially as other actors see the opportunity and visibly exploit it. Thus there is a need to balance perceptual accuracy with time-to-action or timeliness. Even managers embedded in a corporate context recognize the time-limitedness of opportunities.

Weick (1979) argues that managers need to process information in ways that are just good enough to determine the course of action. He suggests that most managers stop their sense-making activities when they have found the first plausible explanation or framework regardless of its accuracy (Weick, 1995). Isenberg’s (1986) detailed analysis of managerial decision-making appears to confirm Weick’s supposition that managers feel more pressure to act than to be absolutely accurate in their analysis. In other words, what is proposed and observed in managerial decision-making is a simple application of March and Simon’s (1958) satisficing concept where enough analysis is done to satisfy personal and peer expectations of adequate consideration and therefore, adequate accuracy.

When alertness is conceptualized as a chronic schema, the tradeoff between timeliness and accuracy is blurred because one advantage of a chronic schema is that information about key schema attributes can be processed quickly without sacrificing accuracy. Therefore, we would predict that alert individuals will not accept a satisficing goal as they balance their information-processing strategies with the demands of timeliness.

H4: *Non-alert individuals will satisfice; alert individuals will seek objective accuracy.*

*Schema complexity.* As noted earlier, an observable difference between experts and novices or between creative and non-creative individuals is the degree of schema elaboration, content complexity, and cross linkages with other schema. Research into expert performance suggests that, beyond a certain level of preparation (which will vary by domain), experience and education do not inevitably lead to more elaborate and complex schema (Bonner and Pennington, 1991; Camerer and Johnson, 1991). What does lead to the increase in complexity necessary to achieve expert status are increasingly complex and hence veridical or realistic mental representations of causal patterns and interacting factors. The availability of these complex patterns as a single unit of information is the mechanism that produces comparatively more accurate, albeit very fast opportunity identification and problem solving in experts than in the novices (Chase and Simon, 1973; Chi et al., 1982).

An important caveat from research about expert performance is that it is domain specific and does not extend to all areas of life. For purposes of our discussion, we define the domain of interest as the market environment or what might be called the “business world.” Given the kind of information processing and schema revisions we predict alert individuals to make, we would expect an alertness schema to contain elaborate mental models about the cues indicating market disequilibrium as well as elaborate and complex models about the process of disequilibrium and its range of outcomes. Therefore, we predict:

H5: *Alert individuals will have more complex schema about change in the market environment than the non-alert.*

*Schema cross-linkages.* In addition to elaborate and complex representations, we would expect to see numerous cross linkages with other schema. For example, an alert individual would not only have anticipated when the Baby Boomers would hit middle age but his/her alertness schema would continue to direct attention towards the ways in which demographics have typically caused change and go looking for relevant preliminary evidence. This near-expert status (perhaps brought on by habitual use) enables the alert individual to detect a pattern in the midst of the level of noise change normally generates. Furthermore, we would expect to see extensive cross-linkages to industry schema and socio-political schema such that alert individuals automatically consider the implications of these changes for the relevant industry. This leads to hypothesis six:

H6: *Alert individuals will have more complex schema about their industry or social environment or market process or any combination thereof.*

Figure 2 diagrams what an alertness schema and its cross-linkages might look like.

*Schema change – counterfactual thinking:* Counterfactual thinking (e.g., what if; if only, etc.) is a fairly normal response to unexpected events (Roese and Olsen, 1995). However, we would expect alert and non-alert people to use counterfactual thinking in different ways. Non-alert individuals most likely use the typical strategy for dealing with the unexpected which is to mentally undo the unusual circumstance that caused the unexpected outcome. Mentally undoing the unusual highlights its abnormal quality but also shifts focus back to the usual, that is, towards normalcy. This kind of counterfactual thinking may be one of the cognitive mechanisms for discounting. On the other hand, if alert individuals increase the complexity of their schema and change their schema to accommodate novel events, we would expect alert individuals to mentally maintain the unusual circumstance and use counterfactual thinking to undo other elements in the causal sequence as he or she imagines how the unusual information will affect other elements or other schema. Furthermore, it is possible that alert individuals undo several causal links, which



be viewed as either a case of breaking the presented frame or as an extreme instance of schema change.

Given the central importance of frame-breaking to the theory of entrepreneurial alertness, we would predict that alert individuals would be more likely to break the existing means-ends framework and indeed, there is some preliminary evidence that this is a crucial step in the identification of entrepreneurial opportunities (Gaglio, 1997b).

*H8: Alert individuals are more likely to break the existing means-ends framework than non-alert individuals.*

Psychologists have identified several cognitive heuristics for breaking the existing or presented framework: changing category labels (thereby activating different schema); using analogies (thereby making connections between schema); looking for the counterintuitive (another contrarian strategy); and, of course, engaging in counterfactual thinking (thereby undoing outcomes, causes, cause-effect links), or running mental simulations (thereby creating alternatives). We would expect alert individuals to use any or all of these heuristics. Future research may want to examine whether one or more of these heuristics are more likely to facilitate frame-breaking than the others but at this stage of theory development, it is more important to test the hypothesized causal between breaking the existing mean-ends framework and the identification or creation of entrepreneurial opportunities.

*Sensitivity to profit potential.* Finally, there is one more perceptual and cognitive component to an alertness schema based on Kirzner's theory of entrepreneurial alertness: the individual's sensitivity to profit potential. This sensitivity can be reflected in the schema in at least two ways. First, the individual may direct his or her attention to find under-priced products, services, processes, and so on. Secondly, the individual may include the question "how can I make money at this" as part of the assessment process itself. This situation is analogous to the differentiation in the innovation literature between invention and innovation. Invention may involve the identification of a new idea or opportunity but it only becomes an innovation when the invention or idea is translated into

a form that demonstrates its economic potential (Kirzner, 1979; Schumpeter, 1971; Timmons, 1999).

Kaish and Gilad (1991) tried to test this proposition in their early study of alertness and found quite the contrary: founding entrepreneurs appeared to be more sensitive to downside risk while corporate managers were more attracted to the market potential. However, the data collection method used in their study (survey of past behaviors) relies on retrospection; this technique confounds the processes of opportunity identification and opportunity evaluation so, in fact, the question of sensitivity to profit potential still requires a definitive empirical test. It is entirely possible that alert individuals are more sensitive to commercial value of ideas and are able to quickly identify or create entrepreneurial opportunities but as they move on to implementation, they become more sensitive to the downside risks as it becomes more apparent that their careers are on the line with each new venture launch (Ronen, 1983).

Mindful that theory development requires making important analytical distinctions such as that between opportunity identification and evaluation, we predict that at the identification state, alert individuals will be more sensitive to the commercial value or profit potential of facts and ideas.

*H9: Alert individuals are more sensitive to the profit potential of ideas and events than non-alert individuals.*

#### *The continuum of entrepreneurial alertness*

The prior hypotheses advance a cognitive model of entrepreneurial alertness that reflects the scope of Kirzner's original theoretical formulation. Accounting for the intuitively appealing "notice without search" while shifting focus to the more essential issue of breaking the means-ends framework represents a substantial step forward in the study of entrepreneurial alertness and opportunity identification. However, Kirzner's theory does little beyond differentiating alert individuals from other non-market actors. While this distinction is a beginning and there is much to be learned by contrasting ideal types, such a dichotomy is insufficient and indeed inappropriate for a psycholog-

ical explanation. Psychologists presume that all skills and abilities, including alertness and opportunity identification, fall along continua and are best conceptualized and measured in these terms (Gehisellie et al., 1981).

Clearly, Kirzner's theory anchors one end of the alertness continuum; he defines the alert individual (the "10" on a 1 to 10 scale). Such a person recognizes disequilibria and is willing to make changes in the schema, frame, or evaluation process to accurately accommodate, predict, and profit from the new information. Their goal is to correctly assess the new information and its implications. At the other end of the continuum would be truly non-alert people whose perceptual and processing behaviors stand in marked opposition to alert behaviors. Non-alert individuals are not even aware of market situations or events leading to disequilibrium. They are not aware there is data on potential new opportunities for profit. Their goal is the continuation of the status quo.

How can we characterize the kinds of behaviors that lay in between these two anchors? Logic and experience suggest at least two other recognizable points. As noted earlier, there are individuals who are able to detect signals and cues of market disequilibrium or potential disequilibrium but for a number of reasons choose to interpret these cues in ways that discount their impact. The motivations for discounting are numerous. Perhaps the political pressure overwhelms the need for accuracy. Weick (1995) suggests that most actors stop their sensemaking activity when they uncover the first plausible account for the unusual, regardless of its accuracy; such a cognitive strategy may be at work here. It is important to note that this group of actors do not summarily dismiss the new information. Rather their interpretations attempt to make the data fit into existing frameworks or cognitive structures. This group can be called the discounters or marginally alert. When they take action in the marketplace, they may discover business opportunities but they would identify and pursue business opportunities that either represent incremental improvements over existing goods, services, and processes or represent imitations of existing opportunities (recognizing the need for a Blockbuster video store in the neighborhood, for example).

The fourth group consists of individuals who also recognize the signals or cues but elect to ignore them. Such individuals continue to use their standing cognitive structures and dismiss the evidence of disequilibrium. As a result, they achieve their goal which is to continue as before, without any change. This group can be called dismissives or uselessly alert individuals. These considerations lead to hypothesis seven:

H10: *Individuals can be categorized as demonstrating one of four outlooks: assessing (the fully alert individual), discounting (the marginally alert individual), dismissing (the uselessly alert individual) or uninterested (the non-alert individual).*

#### *Non-alert schema*

It is proposed that alert individuals activate a schema that guides their perception and information processing in ways that tunes them in to the subtle market cues and propels them to fully and accurately account for the cues regardless of where it ultimately leads. This may mean that alert individuals develop several alternative frameworks to be tested against reality.

However, not all non-alert individuals mindlessly ignore the world around them. They are making decisions about the allocation of their personal and positional resources and these decisions are based on their understanding of how the world works. What schema are the non-alert activating that interferes with or prohibits an accurate assessment of the situation?

As agents of the firm, it may be expected that managers will activate their organization's schema. Managers may compare current situations with expectations based on the organization's history (Keisler and Sproull, 1982); the organization's past performance; a forecast or plan; the expectations of important stakeholders (Pounds, 1969); the desired strategic direction (Peters, 1979); or the expectations derived from one's position within the organizational structure (March and Simon, 1958; Spencer, 1990). It is possible that because these schema are not chronic, their activation imposes on the non-alert individual's information processing capacity which may then constrain what is noticed and processed. It is also

conceivable that the activation of these kinds of schema impose real or imagined social or political constraints which again limits what is noticed and processed.

The discussion about non-alert schema thus far appears plausible when considering how managers in an existing organization may perceive and interpret but what kind of schema might non-alert independent businesspeople, the self-employed activate that interferes with an accurate assessment of the market situation? Indeed, many in this group would probably report that they believe they are activating an opportunity identification schema. This may be true in a sense; we believe the way they define opportunity would be substantially different in that they are scanning the market for proven business opportunities in which the opportunity and solution alternatives have been identified and the implementation procedures demonstrated and documented. While this may be effective for the goal of starting a new venture or replacing lost income, this group of non-alert individuals is accepting an external schema (in this case one developed and defined by the marketplace) that still uses past success (even if it was someone else's) as the reference point for perceiving and interpreting information.

The theory of alertness as currently formulated predicts that the non-alert individuals will activate some other schema, most likely a schema most relevant to their current market actor role while the alert individual will activate the alertness schema regardless of its appropriateness to his or her current market role (recall that potential inappropriateness is a hallmark of chronic schema).

H11: *Non-alert individuals will activate a schema from the set of schema already existing and defined by the market.*

#### **4. Important considerations and cautions for empirical investigations of alertness**

While the discipline would prefer a paper and pencil inventory of attitudes and behaviors indicating the presence or absence of entrepreneurial alertness, we simply do not know enough to be able to construct inventories or scales that will have the necessary internal and external validity as well as reliability. Those claiming an interest in

entrepreneurial alertness must do the necessary groundwork for the appropriate psychometric operationalization of the concept. There are several crucial theoretical and methodological issues that must be carefully considered and addressed.

#### *Theoretical considerations*

*Entrepreneurial alertness vs. entrepreneurship.* Although this paper proposes a model of entrepreneurial alertness, not all of those who demonstrate entrepreneurial alertness will be entrepreneurs. The term entrepreneurial in this paper refers to the creation of wealth, a definition common in economics, and pioneered in entrepreneurship research at Harvard through the works of McClelland (1976) and later by other colleagues (Stevenson et al., 1998). This definitional approach contrasts to definitions based on firm creation (Gartner et al., 1988) or self-employment (Reynolds, 1991). Using the wealth creation approach means that the person demonstrating entrepreneurial alertness could be self-employed or a manager within an existing firm. Such an approach permits the accommodation of entrepreneurial alertness wherever it occurs in the economy – the identification of potential new goods or services to exploit opportunities resulting from alertness schema.

Once found there is nothing in the proposed model of opportunity identification that specifies the organizational form used to bring the opportunity to market. Although the popular press discusses creating new firms as an “opportunity,” it is a wholly different matter than what the theory of entrepreneurial alertness considers an opportunity. In fact, the decision to start a firm has been shown to be influenced by other variables that have little or nothing to do with the ability to find market opportunities (Carter et al., 1996; Cooper and Dunkelberg, 1986).

For Kirzner's theory of entrepreneurial alertness, the relevant domain of interest is the market or industry. In this theory, opportunity identification refers to the opportunity to offer new products, services, or processes to the market or industry. The “opportunity” to become self-employed or to create new ventures is irrelevant in this domain; another theory would be needed to

explain the decision to start a business. Therefore, operational definitions of alertness must focus on market opportunities and not confound identification of opportunities for new venture creation with identification of new goods and services.

*Opportunities vs. successful opportunities.* Another important theoretical consideration in the development of operational definitions of alertness is avoiding the common confound between opportunities and successful opportunities. While it is entirely possible that the difference between alert entrepreneurs and other business people is that their accurate assessment helps them triangulate on the successful opportunities, it is unlikely. Ultimately, the success of any opportunity depends on a multitude of factors including the entrepreneur's persuasion and communication abilities in order to procure necessary resources and stimulate buyer interest. This distinction is implicit in the wealth creation definitions of entrepreneurship, such as that of Stevenson et al., where the entrepreneur's goal is the exploitation of opportunities, without regard to the personal ownership of resources.

The journey from idea to feasible opportunity to successful opportunity must be explained in a theory of entrepreneurship. This journey may be non-linear and reiterative (Long and McMullan, 1984; Timmons, 1999) but nevertheless it has identifiable stages even if the boundaries between each stage are fuzzy. The theory of entrepreneurial alertness applies to the initial stages of the opportunity-shaping journey and research about alertness must reflect this theoretical limit. Therefore, the commonly accepted practice of asking successful entrepreneurs recount how they "found" their opportunities is problematic for alertness investigators because it allows respondents to collapse all the stages into one moment. This may explain why Busenitz could not find convincing evidence of entrepreneurial alertness.

Finally, and most importantly, the phenomena of interest in this theory are the perceptual and cognitive processes. This also has profound implications for the research methods used to study and test the theory.

### *Methodological considerations*

*Data collection.* While surveys and in-depth interviews that request the recall of pre-launch or startup activity are convenient and efficient, these forms of data collection do not and *cannot* capture the phenomena of interest. The data collection techniques used in most studies of alertness thus far (Busenitz, 1996; Kaish and Gilad, 1991) have called for retrospection and therefore produced impressions and feelings about cognition, they did not produce the behavioral processes themselves.

Psychologists (Ericsson and Simon, 1984) recommend the use of concurrent verbalizations as the most reliable data collection technique. Concurrent verbalization requires the informant to think out loud while engaged in a task designed to demand the specific cognitive processes of interest. At first glance, this type of data collection may seem too intrusive and too time consuming for use with busy professionals. However, it is possible to get business people to engage in think aloud procedures (Gaglio and Taub, 1992; Isenberg, 1986; Sandberg et al., 1987) with no higher a refusal rate than currently experienced as non-returns in mail surveys. Some respondents will label the various schema they activate, which makes an interesting point of comparison for an investigator. Furthermore, the logistics and operations necessary to permit valid inferences from this technique actually increase the level of control over some kinds of extraneous variables that must be tolerated in survey research.

However, concurrent verbalization is not the only data collection method available. Pencil and paper (or computer assisted) techniques are possible. The fundamental requirement is that informants must *do* the thinking rather than report their perceptions about what they believe about how they thought in the past. Carefully constructed choice scenarios that are the foundation of behavioral decision making research (e.g., Elliott and Archibald, 1989; Highhouse and Yuce, 1996; Kahneman and Tversky, 1979) are examples of pencil and paper techniques that reliably and validly capture cognitive processes. Investigators who choose this route have two concerns. First, the investigators must control the environment so that distractions invoking other schema do not contaminate data collection. Second, reliability

and validity in this circumstances depend on the investigator walking a fine line between constructing scenarios that rule out alternative explanations of the decision but are not so forcefully structured that they preordain the decision through a demand characteristic.

*Sampling.* The problem of developing an effective sampling frame for opportunity identification is a problem facing all researchers in the area. It is a problem held in common with entrepreneurship researchers (Katz and Gartner, 1988; Aldrich et al., 1989) and with those interested in studying rare phenomena in any domain (Sudman et al., 1988).

As noted in several contexts above, not all entrepreneurs demonstrate entrepreneurial alertness, nor is entrepreneurial alertness impossible among managers in large organizations. Several approaches to appropriate sampling suggest themselves. Some have been used while others remain to be tested.

The first approach depends on retrospective identification, that is, sampling those who have demonstrated entrepreneurial alertness. This is the model used in most research to date and relies on a *post hoc* identification of relevant individuals. Gilad et al. (1988) for example, identified twenty-one practicing entrepreneurs who clearly fit Kirzner's ideal type profile in their pilot study of entrepreneurial alertness. While this approach may make sense for some research questions (e.g., trying to map the contents of an alertness schema), it will be important to avoid the discipline's tendency to combine this type of sampling method with retrospective data collection techniques. As long the research procedures have this group thinking and doing prospectively, the probability of obtaining important insights is very high.

The second approach, prospective identification, develops a sampling frame based on those individuals whose position should place them in close proximity to entrepreneurial alertness. Both Kaish and Gilad and Busenitz used this procedure for developing their samples. While this approach seems logical and more likely to produce a large sampling frame, it can be fraught with confounds. For example, using state tax rolls uncovers a comprehensive list of the self-employed. If an investigator wants to study the self-employed in

order to uncover some of the differences between alert and non-alert individuals (again assuming prospective data collection), the sampling procedure would appear valid. If however, one wanted to use the self-employed as a proxy for alertness and compare cognitive processes with corporate managers or investors, then the technique will be suspect because of the confound between self-employed and entrepreneurship discussed earlier.

Another alternative for sampling would be to use a population modeling approach. If the ability to unearth or create opportunities is not as rare as currently believed, then using samples drawn from the general population becomes expedient. For example, Carter et al. (1996) used this approach to study nascent entrepreneurs in the United States and found that the incidence of consideration to become self-employed was quite high although the incidence of actually doing activities that led to self-employment was quite low. It is practically a truism among entrepreneurship educators that "ideas are a dime a dozen." If true, then this sampling method would make sense for use in studies of opportunity identification. It may also make sense for those investigators who want to distinguish among imitative opportunities or ideas (which probably are a dime a dozen), incremental opportunities and truly innovative opportunities (which is the domain of alertness theory).

Finally, the experimental or quasi-experimental approach opens up an interesting avenue for future research. For those elements of entrepreneurial alertness that can be modeled in vignettes and simulations such as sensitivity to signals of disequilibria (H1) or framing effects (H3) or counterfactual thinking (H7) or changing schema (H2), future research could even use samples of MBA entrepreneurship students to produce reliable results about the cognitive processes of this theoretically narrow topic.

Obviously, the choice of sampling method depends on the research question and the nature of the phenomenon under investigation. For future studies of entrepreneurial alertness, we hope authors discuss their sampling procedures in greater detail with special attention given to the concerns outlined above.

## 5. Conclusion

As noted earlier, Shaver and Scott (1991) assert that anyone claiming an interest in the opportunity identification process among entrepreneurs would have to address the essential issues of how market environments are represented in the minds of entrepreneurs and whether these representations differed from those of other market actors in any substantial way. This article has detailed a conceptual model and research agenda designed to answer these questions based on a comprehensive and cognitive approach to the theory of entrepreneurial alertness. Specification of behaviors along an alert/non-alert continuum has generated hypotheses whose tests should provide insight into the core questions.

While the model presented and the discussion of crucial operational considerations represent a substantial advance in this line of inquiry which has been hampered by equivocal results, nonetheless, it represents only the first step. Ultimately, an explanation of entrepreneurial alertness as a chronic schema must address: (a) the content of the schema; (b) how it works; (c) whether it is truly chronic; (d) how it is acquired; (e) why it is acquired; (f) whether it facilitates veridical perception and interpretation; (g) its role in the opportunity identification process – that is, does alertness have a direct, mediating or a lack of effect on an individual's ability to identify entrepreneurial opportunities. Logic and expediency dictate that compelling answers to the first and last issues should be formed before pursuing the remaining questions. Furthermore, the issue of motivation for both alert and non-alert actors will require more consideration than time and space permit here. It is our hope that this article prompts a fruitful line of research and debate that will lead to improvements in theories about alertness, opportunity identification, and entrepreneurship.

## Acknowledgements

The authors gratefully acknowledge I. Kirzner, W. Gartner and S. Winter for their insights and comments of earlier drafts.

## References

- Aldrich, H. E., G. Kalleberg, P. Marsden and J. Cassell, 1989, 'In Pursuit of Evidence: Sampling Procedures for Locating New Businesses', *Journal of Business Venturing* **4**(6), 367–387.
- Aldrich, H. E. and C. Zimmer, 1986, 'Entrepreneurship Through Social Networks', in D. L. Sexton and R. W. Smilor (eds.), *The Art And Science of Entrepreneurship*, Cambridge, MA: Ballinger, pp. 3–23.
- Amabile, T., 1983, *The Social Psychology of Creativity*, New York: Springer-Verlag.
- Argyris, C. and D. A. Schon, 1978, *Organizational Learning*, Reading, MA: Addison-Wesley.
- Bargh, J. A., 1989, 'Conditional Automaticity: Varieties of Automatic Influence in Social Perception and Thought', in J. S. Uleman and J. A. Bargh (eds.), *Unintended Thought*, New York: Guilford, pp. 3–51.
- Bargh, J. A. and F. Pratto, 1986, 'Individual Construct Accessibility and Perceptual Selection', *Journal of Experimental Social Psychology* **22**, 293–311.
- Berger, P. L. and T. Luckman, 1967, *The Social Construction of Reality*, New York: Anchor Books.
- Bonner, S. E. and N. Pennington, N., 1991, 'Cognitive Processes and Knowledge as Determinants of Auditor Expertise', *Journal of Accounting Literature* **10**, 1–50.
- Busenitz, L. W., 1996, 'Research on Entrepreneurial Alertness', *Journal of Small Business Management* **34**(4), 35–44.
- Camerer, D. F. and E. J. Johnson, 1991, 'The Process-Performance Paradox in Expert Judgment: How Can the Experts Know So Much and Predict So Badly?' in K. A. Ericsson and J. Smith (eds.), *Towards a General Theory of Expertise: Prospects and Limits*, Cambridge: Cambridge University Press, pp. 195–217.
- Carsrud, A. L., 1988, 'Social Science Disciplines and Entrepreneurship Research', in R. Peterson and K. Ainslie (eds.), *Understanding Entrepreneurship*, London, ON, Canada: National Centre for Management Research and Development.
- Carter, N. M., W. B. Gartner and P. D. Reynolds, 1996, 'Exploring Startup Event Sequences', *Journal of Business Venturing* **11**(3), 151–167.
- Chase, W. G. and H. A. Simon, 1973, 'The Mind's Eye in Chess', in W. G. Chase (ed.), *Visual Information Processing*, New York: Academic Press, pp. 215–281.
- Chi, M. T. H., R. Glaser and E. Rees, 1982, 'Expertise in Problem Solving', in R. S. Sternberg (ed.), *Advances in the Psychology of Human Intelligence*, Vol. 1, Hillsdale, NJ: Erlbaum, pp. 1–75.
- Cooper, A. C. and W. C. Dunkelberg, 1986, 'Entrepreneurship and Paths to Business Ownership', *Strategic Management Journal* **7**(1), 53–69.
- Cooper, A. C., T. B. Folta and C. Woo, 1995, 'Entrepreneurial Information Search', *Journal of Business Venturing* **10**, 107–120.
- Cowan, D. A., 1986, 'Developing a Process Model of Problem Recognition', *Academy of Management Review* **11**, 763–776.
- Crawford, C. M., 1980, 'The Idea Evaluation Function in

- Smaller Firms', *Journal of Small Business Management* **18**(2), 31–40.
- Csikszentmihalyi, M., 1996, *Creativity*, New York: HarperCollins.
- Drucker, P. F., 1985, *Innovation and Entrepreneurship*, New York: Harper and Row.
- Elliott, C. S. and R. B. Archibald, 1989, 'Subjective Framing and Attitude Towards Risk', *Journal of Economic Psychology* **10**, 321–328.
- Ericsson, K. A. and H. A. Simon, 1984, *Protocol Analysis: Verbal Reports as Data*, Cambridge, MA: MIT Press.
- Fiske, S. T., 1993, 'Social Cognition and Social Perception', *Annual Review of Psychology* **44**, 155–194.
- Fiske, S. T. and S. E. Taylor, 1991, *Social Cognition*, 2nd ed., New York: McGraw Hill.
- Gaglio, C. M., 1997a, 'Opportunity Identification; Review, Critique and Suggested Research Directions', in J.A. Katz (ed.), *Advances In Entrepreneurship, Firm Emergence and Growth*, Vol. 3, pp. 139–202.
- Gaglio, C. M., 1997b, *The Entrepreneurial Opportunity Identification Process*, Ph.D. Thesis, University of Chicago.
- Gaglio, C. M. and R. P. Taub, 1992, 'Entrepreneurs and Opportunity Recognition', in N. C. Churchill, S. Birley, W. D. Bygrave, D. Muzyka, C. Wahlbin and W. E. Wetzel, Jr. (eds.), *Frontiers of Entrepreneurship Research*, Wellesley, MA: Babson College.
- Gartner, W. B., J. W. Carland, F. Hoy and J. A. C. Carland, 1988, 'Who Is an Entrepreneur? Is the Wrong Question', *Entrepreneurship Theory and Practice* **12**(4), 11–33.
- Gehiselliee, E., J. P. Campbell and S. Zedeck, 1981, *Measurement Theory for the Behavioral Sciences*, San Francisco: Freeman.
- Gilad, B., S. Kaish and J. Ronen, 1988, 'The Entrepreneurial Way with Information', in S. Maital (ed.), *Applied Behavioral Economics* **2**, 481–503.
- Gunderson, G., 1990, 'Thinking About Entrepreneurs: Models, Assumptions and Evidence', in C. A. Kent (ed.), *Entrepreneurship Education*, New York: Quorum Books, pp. 41–52.
- Herron, L. and H. Sapienza, 1992, 'The Entrepreneur and the Initiation of New Venture Launch Activities', *Entrepreneurship Theory and Practice* **17**(1), 49–55.
- Higgins, E. T. and G. King, 1981, 'Accessibility of Social Constructs: Information Processing Consequences of Individual and Contextual Variability', in N. Cantor and J. F. Kihlstrom (eds.), *Personality, Cognition and Social Interaction*, Hillsdale, NJ: Lawrence Erlbaum, pp. 69–121.
- Highhouse, S. and P. Yuce, 1996, 'Perspectives, Perceptions and Risk-Taking Behavior', *Organizational Behavior and Human Decision Processes* **65**(2), 159–167.
- Isenberg, D. J., 1986, 'Thinking and Managing: A Verbal Protocol Analysis of Managerial Problem Solving', *Academy of Management Journal* **29**(4), 775–778.
- Johnson, P. E., K. Jamal and R. G. Berryman, 1991, 'Effects of Framing on Auditors Decisions', *Organizational Behavior and Human Decision Processes* **50**(1), 75–105.
- Kahneman, D. and A. Tversky, 1979, 'Prospect Theory: An Analysis of Decision Under Risk', *Econometrica* **47**(2), 263–291.
- Kahneman, D. and A. Tversky, 1986, 'Choices, Values, and Frames', *American Psychologist* **39**(4), 341–350.
- Kaish, S. and B. Gilad, 1991, 'Characteristics of Opportunities Search of Entrepreneurs Versus Executives: Sources, Interests, General Alertness', *Journal of Business Venturing* **6**(1), 45–61.
- Katz, D. and R. L. Kahn, 1978, *The Social Psychology of Organizations*, New York: Wiley.
- Katz, J. and W. B. Gartner, 1988, 'Properties of Emerging Organizations', *Academy of Management Review* **13**(3), 429–441.
- Kiesler, S. and L. Sproull, 1982, 'Managerial Response to Changing Environments: Perspectives on Problem Sensing from Social Cognition', *Administrative Science Quarterly* **27**, 548–570.
- Kirzner, I., 1973, *Competition and Entrepreneurship*, Chicago: University of Chicago Press.
- Kirzner, I., 1979, *Perception, Opportunity, and Profit*, Chicago: University of Chicago Press.
- Kirzner, I., 1980, 'The Primacy of Entrepreneurial Discovery', in A. Seldon (ed.), *The Prime Mover of Progress*, London: The Institute of Economic Affairs, pp. 5–30.
- Kirzner, I., 1985, *Discovery and the Capitalist Process*, Chicago: University of Chicago Press.
- Kirzner, I., 1992, 'Entrepreneurship, Uncertainty and Austrian Economics', in B. J. Caldwell and S. Boehn (eds.), *Austrian Economics: Tensions and New Directions*, Boston, MA: Kluwer Academic Publishers, pp. 85–102.
- Koller, R. H., 1988, 'On the Source of Entrepreneurial Ideas', in B. A. Kirchoff, W. Long, W. McMullan, K. H. Vesper and W. E. Wetzel (eds.), *Frontiers of Entrepreneurship Research*, Wellesley, MA: Babson, pp. 194–207.
- Long, N., 1979, 'Multiple Enterprise in the Central Highlands of Peru', in S. M. Greenfield, A. Strickon and R. T. Aubey (eds.), *Entrepreneurs in Cultural Context*, Albuquerque, NM: University of New Mexico Press, pp. 123–158.
- Long, W. and W. E. McMullan, 1984, 'Mapping The New Venture Opportunity Identification Process', in J. A. Hornaday, F. A. Tardley, J. A. Timmons and K. H. Vesper (eds.), *Frontiers of Entrepreneurship Research*, Wellesley, MA: Babson College, pp. 567–591.
- Long, W. and J. B. Graham, 1988, 'Opportunity Identification Process: Revisited', in G. E. Hills, R. W. Laforge and B. J. Parker (eds.), *Research and the Marketing/Entrepreneurship Interface*, Chicago: Office of Entrepreneurial Studies, University of Illinois, Chicago.
- March, J. G. and H. A. Simon, 1958, *Organizations*, New York: Wiley.
- McClelland, D. C., 1976, *The Achieving Society*, New York: Irvington Press
- Mitchell, T. R. and L. R. Beach, 1990, 'Toward An Understanding of Intuitive and Automatic Decision Making', *Organizational Behavior and Human Decision Processes* **47**, 1–20.
- Pekerti, A., 1985, *The Personal Networks of Successful Entrepreneurs*, Ph.D. Thesis, University of Southern California.
- Peterson, R. T., 1988, 'An Analysis of New Product Ideas in Small Business', *Journal of Small Business Management* **26**, 25–31.

- Peters, T., 1979, 'Leadership: Sad Facts and Silver Linings', *Harvard Business Review* **57**(6), 164–172.
- Pounds, W. F., 1969, 'The Process of Problem-Finding', *Industrial Management Review* **11**(1), 1–19.
- Reynolds, P. D., 1991, 'Sociology and Entrepreneurship: Concepts and Contributions', *Entrepreneurship Theory and Practice* **16**(2), 47–71.
- Roese, N. J. and J. M. Olson (eds.), 1995, *What Might Have Been: The Social Psychology of Counterfactual Thinking*, Mahwah, NJ: Lawrence Erlbaum.
- Ronen, J. (ed.), 1983, *Entrepreneurship*, Lexington, MA: Lexington Books.
- Sandberg, W. R., D. M. Schweiger and C. W. Hofer, 1987, 'Determining Venture Capitalists Decision Criteria', in B. Kirchoff, O. J. Krasner and K. H. Vesper (eds.), *Frontiers of Entrepreneurship Research*, Wellesley, MA: Babson College.
- Schumpeter, J. A., 1971, 'The Fundamental Phenomenon of Economic Development', in P. Kilby (ed.), *Entrepreneurship and Economic Development*, New York: Free Press. pp. 43–70.
- Shaver, K. G. and L. R. Scott, 1991, 'Person, Process, Choice: The Psychology of New Venture Creation', *Entrepreneurship Theory and Practice* **16**(2), 23–45.
- Sherman, S. J., C. M. Judd and B. Park, 1989, 'Social Cognition', *Annual Review of Psychology* **40**, 218–326.
- Showers, C. and N. Cantor, 1985, 'Social Cognition: A Look at Motivated Strategies', *Annual Review of Psychology* **36**, 275–305.
- Slovic, P., 1972, 'From Shakespeare to Simon: Speculations and Some Evidence about Man's Ability to Process Information', *Oregon Research Institute Bulletin*, 12.
- Singh, R. P., G. E. Hills and G. T. Lumpkin, 1999, 'New Venture Ideas and Entrepreneurial Opportunities: Understanding the Process of Opportunity Recognition', *Proceedings*, 1999 United States Association for Small Business and Entrepreneurship, pp. 657–671.
- Spencer, B. A., 1990, 'Reframing Techniques for Creative Strategy Development', *SAM Advanced Management Journal* **55**(1), 4–8.
- Stevenson, H. H. and J. C. Jarillo, 1990, 'A Paradigm of Entrepreneurship: Entrepreneurial Management', *Strategic Management Journal* **11**, 17–27.
- Stevenson, H. H., M. J. Robert and H. I. Grousbeck, 1998, *New Business Ventures and The Entrepreneur*, 5th Ed., Burr Ridge, IL: Irwin Press.
- Sudman, S., M. G. Sirken and C. D. Cowan, 1988, 'Sampling Rare and Elusive Populations', *Science* **240**, 991–996.
- Timmons, J. A., 1999, *New Venture Creation*, Boston, MA: Irwin McGraw-Hill.
- Van de Ven, A. H., 1980, 'Early Planning, Implementation, and Performance of New Organizations', in J. R. Kimberly and R. H. Miles (eds.), *The Organizational Life Cycle*, San Francisco: Jossey Bass.
- Venkataraman, S., 1997, 'The Distinctive Domain of Entrepreneurship Research', in J. A. Katz (ed.), *Advances in Entrepreneurship, Firm Emergence and Growth*, Vol. 3, Greenwich, CT: JAI Press, pp. 119–138.
- Weick, K. E., 1979, 'Cognitive Processes in Organizations', in B. M. Staw (ed.), *Research in Organizational Behavior*, Vol. 1, Greenwich, CT: JAI Press, pp. 41–74.
- Weick, K. E., 1995, *Sensemaking in Organizations*, Newbury Park, CA: Sage.