The Management of Cognitive Uncertainty in Two Investment Banks: A Distributed Cognition Perspective

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Abstract

A two-year ethnographic study examines how two U.S. investment banks managed the duration of bankers’ cognitive uncertainty differently and achieved distinct forms of individual and organization cognition. Red Bank reduced cognitive uncertainty such that bankers experienced it as transient. It conveyed abstract concepts so bankers could solve problems independently using deduction. This created individual-centric organization cognition. To highlight situational uniqueness, Amp Bank amplified cognitive uncertainty such that bankers experienced it as persistent. This created collective-centric organization cognition: because demands exceeded individuals’ cognitive capacity, bankers used organizational resources to inductively solve problems. A grounded theory depicts the mutual constitution of individual and organization cognition, including how these levels match over time and how the same individual cognitive process operates differently in a different organization cognitive context. It uses a distributed cognition framework to both extend and challenge traditional cognitive psychology’s allegedly universally valid accounts, contributing toward theory development on how cognition becomes diversified and specialized in organizations.
This paper examines the duration of newcomers’ cognitive uncertainty in two U.S. investment banks. Cognitive uncertainty may be conceptualized as a subjectively perceived state of “low prior confidence” concerning the accuracy or relevance of one’s knowledge about a new situation (Trope and Liberman, 1996:256; Acredolo and O’Connor, 1991; See, Fox, and Rottenstreich, 2006; Tversky and Kahneman, 1974). The object of cognitive uncertainty is not the organization’s environment (Milliken, 1987) or role requirements (Jones, 1983; 1986) but employees’ expertise in relation to daily problem solving situations. Employees who experience cognitive uncertainty perceive that they cannot effectively solve a problem because they are missing important information, possess conflicting information, cannot discern cause-effect relationships, sense ambiguity about available courses of action and the potential consequences, or are unable to distinguish between relevant and irrelevant information (Berlyne, 1970; Daft and Macintosh, 1981; Piaget, 1985; Trope and Liberman, 1996). While the related self-efficacy construct is sometimes studied as an individual difference variable (e.g., Jones, 1986), I investigate how organizations can manage cognitive uncertainty.

Existing research views the reduction of cognitive uncertainty as a “fundamental need” at the individual level (Hogg and Mullin, 1999:253; Hogg and Terry, 2000) and as an imperative of organizational design and socialization (e.g., Ashford and Black, 1996; March and Simon, 1958). For decades, companies have structured work practices accordingly (Colvin, 2006). It is thus surprising that some organizations do not attempt to reduce cognitive uncertainty but rather highlight and even intentionally create it (Colvin, 2006; Schwartz, 2005) – a trend that has been noted in the business press but that has not yet found sufficient academic attention.

Examples include Apple Computer’s R&D unit that exploits employees’ uncertainty for innovation (Walker, 2003), Google’s “chaos by design” (Lashinsky, 2006:86), U.S. Army officer
combat training that creates “ambiguity and uncertainty” (Wong, 2004:17), and John Seely Brown’s former job title as Xerox’s “Chief of Confusion.” Similarly, anthropological studies suggest that cognitive uncertainty reduction is a cultural choice—rather than an imperative or a fundamental need—and that other responses are possible. Levy (2001), for example, described how two cultures managed adolescents’ cognitive uncertainty differently. Tahitian communities used well-structured socialization processes that reduced cognitive uncertainty. Nepalese communities, in contrast, continuously placed adolescents into new situations and thereby sustained a high level of cognitive uncertainty.

The historic emphasis in the organization literature on uncertainty reduction stems from the influential Carnegie School (e.g., March and Simon, 1958; Simon, 1976). Organizations, in this view, reduce cognitive uncertainty to simplify cognitive demands on employees. From this perspective, uncertainty amplification cannot be justified because it would overwhelm and, thereby, impede the effectiveness of boundedly rational decision-makers. However, given that both uncertainty reduction and amplification strategies are employed by successful organizations, a theoretical framework is needed that allows for the viability of both strategies. I provide such a framework. It explains the success of each strategy as the result of a matching between specific individual and organizational cognitive processes. The framework enriches the Carnegie School perspective with conceptualizations from Distributed Cognition Research (“DCR”). According to DCR, cognition is distributed in that it consists not only of an individual’s mental representations—the Carnegie School’s central unit of analysis—but also of interactions between people and their social and material context. Because cognition is distributed across a cognitive system with higher capacity, uncertainty amplification is a feasible approach.
I describe “Red Bank’s” and “Amp Bank’s” contrasting approaches to managing the duration of employees’ cognitive uncertainty. Red Bank reduced cognitive uncertainty such that bankers experienced it primarily when they entered the organization, and therefore, as transient. In contrast, Amp Bank amplified it so that bankers experienced it throughout their tenure and, therefore, as persistent. Both banks were highly successful, which suggests that both approaches are viable. The primary purpose of this research is to build theory by exploring the banks’ understandings that targeting different durations of cognitive uncertainty (transient versus persistent) could achieve distinct and reciprocally related types of individual and organization cognition. The goals of this study were threefold: (1) to describe the uncertainty management practices of each bank and the degree to which they induced different durations of cognitive uncertainty in order to address (2) how working under distinct durations of cognitive uncertainty changed individual cognition over a period of two years and (3) how differences in individual cognition, in turn, constrained and enabled organization cognition.

Acknowledging the importance of social interactions, traditional cognitive psychology increasingly studies cognition outside of the laboratory in real life situations (Levine, Resnick, and Higgins, 1993). Psychologists explore, for example, the cognitive processes that people use when they enter a new context (e.g., Higgins, Loeb, and Ruble, 1995; Ruble, 1994). However, this research often does not investigate a context’s specific conditions and their influence on cognition, perhaps in its quest to establish universally valid principles (Molden and Dweck, 2006; Higgins and Kruglanski, 1996). The resulting principles are potentially misleading to organizational researchers who apply this “basic” research. DCR criticizes traditional cognitive psychology in which “the social and the cognitive have engaged only peripherally, standing in a kind of figure—ground relationship to one another rather than truly interacting” (Resnick, 1993).
1991:1; Lave, 1991). This study presents a more genuine interaction between the social and the
cognitive. It aims to advance organizational DCR, which has either focused on snapshots of
distributed cognitive systems, largely neglecting individual cognition, or has depicted a one-way
causality from organization to individual cognition. The investigation’s longitudinal design
contributes a currently missing understanding of how individual cognition and the distributed
system come to match over time.

A DISTRIBUTED COGNITION PERSPECTIVE

DCR responds to “anomalies” that question traditional cognitive psychology’s focus on
the individual as the principal unit of analysis. Namely, people who failed on standardized tests
of a skill spontaneously exhibited it outside of the laboratory (e.g., Cole, 1991; Scribner, 1999;
Lave, 1997; see LCHC, 1983 for a review). For example, Micronesian navigators showed highly
developed memory and inference skills at work. Yet, on standardized tests of these same skills—
when the wind, waves, and sky that supported cognition were absent—navigators under-
performed (Gladwin, 1970; Rogoff, 1999). To account for these findings, DCR reconceptualizes
the cognitive role of context. It asserts that cognitive processes cannot be studied in abstraction
from the specific contexts in which they occur (Brown and Duguid, 1991; Brown, Collins, and
Duguid, 1989; Cole, 1991; Lave, 1988; Rogoff, 1999). Contexts consist of social practices
through which participants repeatedly use artifacts, concepts, and procedures. Contexts do not
merely help people work better—they do not only influence decision outcomes—but their
constraints fundamentally change cognition (e.g., Vygotsky, 1981; Wertsch, 1991, 1985).
Different contexts present different practices and different practices, in turn, shape cognition
differently (e.g., Lave, 1988; Resnick, Pontecorvo, and Säljö, 1997).
To investigate cognition, one therefore has to start with a description of the particular practices that “provide the functional matrix of and structural constraints” for skill acquisition (Cole, 1991:410; Scribner, 1999), as I do here by exploring the banks’ cognitive uncertainty management practices. The comparison of the two banks’ practices can make salient how cognition becomes specialized and diversified when different bankers participate in different practices (e.g., Scribner, 1999; Scribner and Cole, 1981) and, thus, help qualify the alleged universal validity of traditional cognitive psychology’s principles. The ethnographic methods I use are ideally suited to study the fine-grained processes through which cognition changes (Engeström and Middleton, 1998).

The Management of Cognitive Uncertainty Duration

Acredolo and O’Connor (1991: 221) observe that “understanding cognitive development requires finding those developmental metaprocesses that underlie all change, and cognitive uncertainty seems central in this respect.” Uncertainty is consequently an important variable for studying cognitive change (Campbell and Bickhard, 1986; Piaget, 1980; 1985). The classic work of the Carnegie School can be read as a precursor to contemporary DCR (Taylor and Van Every, 2000; Varela, Thompson, and Rosch, 1996) because it describes how the human mind and organizations work together, as one cognitive system. It proposes that organizations should reduce cognitive uncertainty to compensate for bounded rationality (March and Simon, 1958). They should create an “environment of ‘givens’—premises that are accepted by the subject as bases for … choice” (Simon, 1976: 79) and that reduce the amount of information individuals have to process. The organizational socialization literature builds on this perspective. Successful socialization entails that participants learn these givens (Chao et al., 1994; Fisher, 1986; van Maanen and Schein, 1979). They consequently experience uncertainty as transient: it is high
when participants enter organizations, change positions, or undergo an organization’s strategic change (e.g., Ashford and Black, 1996; Corley and Gioia, 2004; Louis, 1980) and subsequently declines.

Cognitively, transient uncertainty entails a switch from induction (Ferreir et al., 2006; Kahneman, Slovic, and Tversky, 1982; Stanovich and West, 2000), exhibited under high cognitive uncertainty, to deduction, exhibited as uncertainty diminishes (Fiske and Taylor, 1991; Higgins, Loeb, and Ruble, 1995; Ruble, 1994). Induction starts from concrete or situation-specific data to build abstract concepts, whereas deduction starts from abstract concepts to frame concrete data (Brewer and Feinstein, 1999; Walsh, 1995). A concept is abstract when it applies across specific situations or objects. The assumption of transient uncertainty, which is shared by the cognitive literature on life shifts (e.g., Higgins, Loeb, and Ruble, 1995; Ruble, 1994), remains untested, however. As Acredolo and O’Connor (1991:208) note: “we have today very little knowledge of [cognitive uncertainty’s] true prevalence [and] duration.” The present investigation documents the distinct durations of cognitive uncertainty that resulted from different organization practices.

Organizational researchers often apply the knowledge generated by basic cognitive science (Palmer, 2006). The Carnegie School perspective is a rare exception in that it has powerfully influenced basic cognitive psychology (Simon, 1990; Varela, Thompson, and Rosch, 1996). Much of the organizational work in this tradition, however, was done in the middle of the last century and involved hierarchical, industrial organizations. DCR contends that the conversation between applied and basic research requires new input from organizational scholars, which the present study aims to provide. As environments have become more turbulent, organizations have developed new uncertainty management practices that radically transform
patterns of communication and knowledge generation. Since human cognition is shaped by its task environment (Simon, 1990), the employees who experience these different practices are likely to manifest basic cognitive processes in new ways (Suchman, 1987).

Investment banks are an ideal context for exploring new uncertainty management practices and their effect on cognition. They are the epitome of the professional service firms that dominate today’s “knowledge society” (Drucker, 1993; Covaleski et al., 1998). Through communication, their non-hierarchical, collaborative structures (Eccles and Crane, 1988) distribute cognition across a high-capacity organizational system (e.g., Weick and Roberts, 1993). Therefore, bounded rationality is less of a concern. This system, however, needs to guard against another basic human tendency, the “cognitive monster” (Bargh, 1999). The Carnegie School’s cognitive miser uses simplifying heuristics (Kahneman and Tversky, 1973) adaptively to compensate for bounded rationality. The cognitive monster over-relies on simplifying concepts and acts with high certainty even when it is not warranted (Bargh and Chartrand, 1999; Fransman, 1994; Leonard-Barton, 1992). Distributed systems need to protect themselves against such over-reliance because it can disrupt communication and hence cognition (e.g., Weick, 1998). Organization practices thus should not further reduce cognitive uncertainty but should continuously counteract natural simplification tendencies so that employees “make fewer assumptions and […] notice more” (Weick, Sutcliffe, and Obstfeld, 1999: 95). This requirement is likely to generalize beyond the high-reliability organizations in which it was first explored to organizations that operate in complex and dynamic environments (Weick, Sutcliffe, and Obstfeld, 1999), such as investment banks. I describe how uncertainty amplification can counteract simplification tendencies.
In summary, the presumably generally valid processes of cognitive change—namely the progression from inductive to deductive cognition associated with transient uncertainty—have been derived from studying traditional organizations that reduce uncertainty. This investigation examines cognitive change induced by the more recent uncertainty amplifying practices, including the different duration of uncertainty individuals experience and the distinct cognitive processes they use.

**Individual and Organization Cognition**

Weick and Roberts (1993:358), among others (Barab and Plucker, 2002; Chaiklin and Lave, 2003; Kirshner and Whitson, 1997; Resnick, Säljö, Pontecorvo, and Burge, 1997; Suchman, 1987), have criticized cognitive psychology for construing the context as fundamentally separate and secondary to the individual as the focal unit of analysis, noting that:

> (t)he preoccupation with individual cognition has left organizational theorists ill-equipped to do much more with the so-called cognitive revolution than apply it to organizational concerns, one brain at a time.

Collective mind theory (Weick and Roberts, 1993), which is part of a tradition that uses connectionist brain research as a metaphor (see also Sandelands and Stablein, 1987; Taylor and Van Every, 2000; Tsoukas, 1996), expands the unit of analysis to also include the interactions among multiple participants. Similarly, work on transactive memory conceptualizes cognition as a collective process by which group members divide up the encoding, storage, retrieval, and communication of information (e.g., Brandon and Hollingshead, 2004; Moreland, 1999; Wegner, 1986).

While acknowledging commonly held knowledge, DCR studies how different components of a system contribute different pieces of knowledge. It differs from socialization research (Van Maanen, 1976; Van Maanen and Schein, 1979), classic work on group mind
(Durkheim, 1938; Fleck, 1979; LeBon, 1911), and various other conceptualizations of organization cognition as “belief-agreements” (Laukkanen, 1994), “interpretive schemes” (Barley, 1983; Bartunek, 1984; Daft and Weick, 1984), “frames of reference” (Bartunek and Franzak, 1988), and “organizational knowledge structures” (Lyles and Schwenk, 1992) that examine how different participants exhibit similar cognitions.

I adopt the connectionist literature’s definition of organization cognition: it is the pattern of interconnections that employees establish among organization resources. This definition focuses analytic attention on interactions versus on the “within-group similarity of attitudes, understanding, or language” (Weick and Roberts, 1993: 358) foregrounded by some of the approaches mentioned in the previous paragraph. The focus on interactions also differs from taxonomic approaches that study discrete knowledge types (e.g., Nonaka and Takeuchi, 1995; Leonard Barton, 1992), thereby potentially reifying cognition (Tsoukas, 1996; Orlikowski, 2002).

I go beyond the existing connectionist literature in that I do not only conceive of organization cognition as involving different people. Following the suggestions by Walsh and colleagues (Walsh, 1995; Walsh and Ungson, 1991), I use an expanded conceptualization that includes people’s interactions with objects and task structures. For example, the evolving structure of a spreadsheet constitutes cues that can “tell” the banker who works on it what to do next, similar to the instructions of another person. This broader conceptualization is illustrated by Hutchins (1990; 1999) and Hutchins and Klausen (1996) who described how battleship navigators and aircraft pilots relied on such diverse resources as colleagues, task-structures, and objects. Other empirical work includes Engeström, Miettinen, and Punamäki (1999); Engeström and Middleton (1998); Rogoff and Lave (1999); and Tyre and von Hippel (1997).
Cognitive change. DCR first had to conceptualize cognition as a distributed phenomenon, contributing much needed descriptions of “small slices of activity in complex environments” (Resnick, Pontecorvo, and Säljö, 1997:12; Elsbach, Barr, and Hargardon, 2005). As basic frameworks now exist, scholars are calling for more research on the individual in these distributed systems. For example, Resnick, Pontecorvo, and Säljö (1997: 12) seek an understanding of how people develop expertise: “how people enter new environments of distributed cognition, how they learn to act using new tools and in cooperation with new sets of people.” The present investigation addresses these issues.

Existing research on expertise (Chi, Glaser, and Farr, 1988; Ericsson and Lehman, 1996, Ericsson and Smith, 1991; Simon, 1991), learning (e.g., Argyris and Schon, 1978; Walsh and Charalambides, 1990), managerial cognition (e.g., Bartunek, Lacey, and Wood, 1992; Lurigio and Carroll, 1985; Poole, Gray, and Gioia, 1990), and socialization (e.g., Bauer, Morrison, and Callister, 1998; Chao et al., 1994; Fisher, 1986) contributes to our understanding of how individuals change as they participate in organizations but focus on how people internalize “mental entities” (Schatzki, 2001:7), such as socially shared concepts.

Criticizing such a focus (e.g., Suchman, 1987; Greeno, 1997; Lave, 1988; Ortner, 1984), DCR advocates a more relational and contextualized approach that examines how people develop attunements to cognitive resources (Resnick, 1994). This requires an analysis of what “people do every day to get their work done” (Orlikowski, 2002:249, emphasis in original). Attunement refers to how people (1) notice the information that specific resources offer and (2) utilize this contextualized information (Barab and Plucker, 2002). It is similar to the notion of information processing that underlies traditional conceptions of expertise but focuses relatively more on the ongoing interactions between people and resources, in addition to the manipulation
of mentally represented symbols. I use the attunement construct to explore how bankers learned to bring together diverse cognitive resources to complete tasks, including but not limited to a person’s concepts.

I also study the conditions under which bankers used resources more or less adaptively. In the above mentioned spreadsheet example, the banker can either (1) notice and act on the cues that the spreadsheet offers at each turn during task completion—an instance of adaptive attunement—or (2) become distracted and ignore these potential resources, constituting an instance of maladaptive attunement. Existing research has provided snapshots of attunements, including the psychological dynamics of adaptive and maladaptive patterns (e.g., Dweck and Leggett, 1988; Diener and Dweck, 1978, 1980), and explained the more relational and contextualized type of expertise involved, as compared to traditional notions of expertise (e.g., Weick, 1998; Weick and Roberts, 1993). I add to this research by examining how attunements change over time and how organizations influence this change.

DCR’s contextualized approach implies, however, that cognitive change cannot solely be studied in terms of how people develop attunements. As Markus, Kitayama, and Heiman (1996: 867) note, “the person and the social context are seen as constituting one another” and “the acquisition of skills and the opportunity to express or affirm these skills is a critical part of being a person or constructing [a self].” Because cognitive change is inseparable from change in self, the two must be studied together (Greeno, 1997; Lave and Wenger, 1991; Packer and Goicoechea, 2000; Wenger, 1998). Cognitive and organizational theories have examined changes in the self-concept (e.g., Higgins, Loeb, and Ruble, 1995; Ibarra, 1999; Pratt, 2000), defined as a mental representation of one’s attributes, skills, beliefs, inter-personal relations, and group memberships (Higgins, 1996; Linville and Carlston, 1994; Markus and Wurf, 1987). I use
DCR’s broader conceptualization of the self that also considers people’s more fundamental, implicit theories of what it means to be a self and of how a self relates to a situation (Markus, Kitayama, and Heiman, 1996; Packer and Goicoechea, 2000).2

For example, a person can implicitly construe the self in terms of traits, which are relatively stable inner causes that endure across different situations (Trope and Higgins, 1993; Alston, 1975; Ruble and Dweck, 1995). Alternatively, a person can construe the self in more contextualized terms, which means that one experiences the self as varying across time and situational contexts (Chiu, Hong, and Dweck, 1997; Markus, 1977). These different types of self, which emerged inductively from the present study, can influence cognition differently (e.g., Molden and Dweck, 2006; Morris, Ames, and Knowles, 2001; Wegener and Petty, 1998). Prior research chose national cultures in which participants are known to already exhibit these different types of self (e.g., Morris, Menon, and Ames, 2001; Hong et al., 2000). I contribute to this existing work by (1) showing that such differences in self can also be observed within a national culture, across diverse organizations and (2) empirically tracing how these differences emerged, driven by different types of structuring work.

I show how attunements and self change as a byproduct of people’s engagement in work (Rogoff and Lave, 1999; Lave and Wenger, 1991) and, thereby, go beyond the conceptual focus on semantic transmission and socialization tactics and strategies of socialization research (e.g., Ashforth and Saks, 1996; Jones, 1986; Van Maanen, 1976; Van Maanen and Schein, 1979). I also investigate a broader set of practices than such socialization events as introductory training. As recommended by Bauer, Morrison, and Callister (1998) and Adkins (1995), I begin measurement when participants enter the organization to accurately assess the organization’s

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2 The “self” is related to the “identity” construct. However, the respective literatures have not been formally integrated (e.g., Chen, Boucher, and Tapias, 2006). I use the term “self” to be congruent with the cognitive literatures that I draw on to interpret my findings.
influence. Understanding cognitive change is not a separate “developmental” concern but has to form the “very base” (Vygotsky, 1978: 65) of cognitive research: “it is possible to understand … mental processes only by understanding … the transitions they undergo” (Wertsch, 1991:87). Change processes have also been noted as both a relatively understudied and high-impact area for the advancement of organization cognition research (Walsh, 1995; Meindl, Stubbart, and Porac, 1994).

In summary, to study cognition in the context-sensitive way demanded by DCR requires reconceptualizing the basic unit of analysis, central constructs, and data collection methods. The unit of analysis should go beyond an individual’s mental representations and take interactions with a social and material context into account. Central constructs should represent relational processes, such as attunement, versus primarily intra-mental processes, such as information processing. Appropriate data collection methods emphasize the ethnographic observation of what people do on a daily basis in a particular context and grasp the attributes of a cognitive phenomenon by observing its change. This study demonstrates these imperatives. One of its original intellectual contributions is the empirical investigation of the relatively recent uncertainty amplification practices. The study of new organization practices is particularly significant because they are likely to result in the novel manifestations of basic cognitive processes that DCR seeks to discover. **There were three research questions:**

1. How do organization practices that reduce uncertainty affect cognitive change?
2. How do organization practices that amplify uncertainty affect cognitive change?
3. How do different types of individual cognitive change outcomes enable and constrain organization cognition differently?

**METHODS**

**Research Sites**
Amp Bank and Red Bank are two investment banking departments in different banks that I chose based on a one-year study. This study, which was in addition to the two-year ethnography reported here, also included 12 other professional service firms. All firms were located in a major financial center. The preliminary study consisted of 84 interviews with professionals at all levels and 48 days of observation. Numerous informants commented on how Amp Bank “created constant uncertainty” and “tried to keep bankers alert.” I chose Red Bank for maximum contrast. Among the organizations in my sample, it most strongly emphasized uncertainty reduction. For instance, one industry analyst said about Red Bank: “They are the epitome of the superstar culture. They can’t use Amp Bank’s creative chaos strategy. They are all about creating certainty so that bankers can command authority.” Also, informants at one bank often used the other as a contrast. For example, the Red Bankers said things like, “I don’t buy into Amp Bank’s management-by-confusion strategy,” while the Amp Bankers sneered at the Red Bank experts who were “frequently wrong but never in doubt.” Selecting banks for maximum contrast on the independent variable (the banks’ practices) was likely to achieve more salient differences in the dependent variables, namely organization and banker cognition (Eisenhardt, 1989b).

Red Bank and Amp Bank were comparable on dimensions that could influence cognition. Specifically, both had comparable numbers and types of employees (more than 60 bankers each), tasks (financial advisory services), and remuneration structure (base salary plus performance-contingent bonus). They targeted the same type of client (Fortune 500 companies) and often competed for the same deals. Both were about equally successful, as judged by their league table standing. (League tables rank departments according to the number and size of completed deals.) Because the banks competed for personnel, each bank matched the other’s total compensation for
comparably senior and successful bankers. The banks had similar hiring criteria and practices. Bankers often had offers from both banks. The banks’ internal statistics showed that a bank won over a contested recruit when it established contact first and could build loyalty. For instance, a recruiter at Red Bank said: “I always try to be the first on campus with information sessions and interviews because the most desirable candidates have competing offers and usually go with the bank they met first.” This suggests that systematic sources of banker selection and self-selection into the banks, such as perceived cultural fit, were less important.

**Participants**

At both banks, I followed all the associates who entered the banks at the beginning of my observation period. Each cohort had an approximately equal number of males and females and consisted of more than 15 bankers. Concerned with preserving their anonymity, the banks did not allow me to indicate exact cohort sizes. All bankers were recruited from top universities. They were on average 28 years old and generally had an MBA. One Amp Bank associate had a JD, another had an MD. One Red Bank associate had a JD.

**Personal Background**

Prior to this research, I worked at a Wall Street investment bank for four years, first as an analyst and then as an associate in the mergers and acquisition department. As Resnick, Pontecorvo, and Säljö (1997:8) note, to conduct research on distributed cognition, the “cognitive scholar must have tremendous knowledge of … the functioning of a(n) … environment under study in order to acquire an adequate understanding of the cognitive processes at work.” My prior work experience provided such knowledge. I also worked for one year in the bank’s training department, where I conducted a survey of the industry’s best practices in professional development. The personal connections I gained during this process helped me gain access for
the present investigation. My background in banking enabled me to attend client meetings in which bankers justified my presence as a form of quality control. Clients spoke about a bank’s service on the understanding that I would forward this information to the bank only in an aggregated form. I was not paid for my research. My personal experience increased my empathy with informants and positioned me as an in-group member, such that bankers included me into work and sometimes non-work activities and trusted me with private information. Both empathy and social inclusion were crucial for investigating cognitive change processes. As elaborated below, I chose the observer (versus the participant) as my primary research role to maintain the position of the “marginal native” (Hammersley and Atkinson, 1997; Freilich, 1970), that is, to balance deep familiarity with the detachment necessary for intellectualizing the experience.

**Data Sources**

I used four overlapping data sources: overt participant and non-participant observation (about 7,000 hours); 136 formal, semi-structured interviews; informal interviews of 120 informants; and analysis of company materials. I triangulated the data obtained from these sources to improve the validity of the theory developed (Jick, 1979; Yin, 1984; Eisenhardt, 1989b). Evidence for this triangulation can be found in the data tables.

**Participant and non-participant observation.** I collected observational data for two years. My most intense participation was during the first year when I observed between five and seven days—that is between 80 and 120 hours—a week, mirroring the bankers’ working week. DCR recommends the use of observational methods to study people as they repeatedly engage in organization practices and to thus empirically connect change in thought to task-related actions (Engeström and Middleton, 1998). To continuously monitor or “shadow” informants, I moved into the cubicles of traveling bankers and took notes on what the banker next to me said and did.
On a chart, I noted for each banker (1) the field log page numbers where I had recorded observations, (2) data sources I had used (e.g., continuous monitoring and informal conversations), (3) types of activities, (4) time of observation, and (5) length of observation time. I examined these charts regularly to balance these columns across bankers. I interrupted this sampling procedure to join in internal meetings, phone conversations, social functions, and training sessions.

Investment banking practices are structured around deals. I followed twelve deal teams at Amp Bank and eight deal teams at Red Bank. I asked to be assigned to all the teams that were active at the beginning of my observation period. Because deals can change their activity status or fall apart suddenly, I did not know the total number of active deal teams at any given time. Whenever the opportunity arose, I also observed additional banker teams. Being assigned to a team gave me an informal membership status and increased my chances of being included in meetings.

I moved between two research roles: (1) observer as a participant and (2) participant as an observer (Junker, 1960). As an observer, I participated passively in events, merely taking notes. As a participant, I completed such tasks as spreadsheet analyses but still retained the role of an observer in that I took notes on these experiences and reflected on them. I participated when my informants asked me to. I was able to mirror the mix of my activities in the two banks. Helping my informants further facilitated gaining their trust. Moving between roles also allowed me to collect different types of data about the same phenomenon. For example, as a participant, I could ask detailed questions about work processes that would have been too disruptive coming from an observer.3

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3 While my presence could have influenced my informants’ behavior, I believe that the bankers’ fast-paced and demanding work deflected attention from my research role. These high demands and my almost daily presence over
Semi-structured, formal interviews. I conducted 136 formal interviews, lasting between 30 and 45 minutes. The banks allowed me to formally interview each banker only once during my observation period. I therefore conducted these interviews during the study’s second year, when I had developed clearer categories. I interviewed 60 bankers at Amp Bank and 48 bankers at Red Bank, including the associates I followed, the senior bankers who interacted with these associates and who could explain the extent to which associates exhibited cultural features, and bankers with managerial responsibilities, who could discern broader patterns. The remaining 28 interviews followed up repeatedly with several bankers from the focal deal teams during their free time to avoid breaching my agreement with the banks. For each bank, I included one incoming undergraduate (“analyst”), one incoming associate and one incumbent vice president (“VP”) in these repeated interviews. I also repeatedly interviewed one Red Bank director who had started with the bank as an analyst. Appendix A provides the interview protocol. Because the banks did not permit me to tape the interviews, I relied on detailed notes that I wrote during the interview and then completed from memory immediately after each conversation.

Informal interviews. I conducted informal interviews with more than 120 informants, including Amp Bank and Red Bank employees and clients, employees of other investment banks, and industry experts. I selected informants based on the evolving needs of the research. The informal interviews with associates, conducted at least once a month, focused on their learning and change processes.

The period of two years would have made it difficult for the bankers to systematically alter their behavior. Also, my informants said that they were often so overwhelmed by their socialization that they found it useful to talk to me because I could relate to their experience. Because they worried about their image with colleagues, they preferred to talk to me because I was obliged to keep information confidential. Together, this suggests that I observed relatively genuine experiences.
Documents. I had access to comparable types and quantities of documents at both banks. I gathered relevant administrative materials, including recruiting and training manuals. These documents provided information about the banks’ distinct socialization practices. I also studied the associates’ work products, which mostly consisted of client presentation books, and the repeated rounds of feedback they received on these. This feedback gave insight both into the cognitive processes associates used and how these processes changed over time.

Analysis

Concurrent with collecting data, I regularly scanned the data from all sources for themes. I summarized units of texts with labels that were as broad as possible, preferring my informants’ own labels. To qualify as a theme, labels had to be used frequently (Miles and Huberman, 1994) and had to explain dynamics that my informants considered important (Glaser and Strauss, 1967). When I discovered a theme—such as “task-orientation” and “superstars”—I focused my research on this theme to formulate a working definition that reflected how my informants were using it. This partly involved asking bankers with whom I was friendly to code data for me and explain their ratings.

I also sorted data by banker. The first step was “local integration” (Weiss, 1994) to facilitate a within-case analysis (Eisenhardt, 1989b). I sorted all the material on a particular banker into one folder. I noted the source of the information (i.e., interview, informal conversations, or observation) to be able to triangulate. After having focused on a theme-based level, this local integration provided a more holistic understanding of an individual’s experiences. For each banker, I used diagrams and evidence tables to track cognition on a monthly basis. For a more “inclusive integration” (Weiss, 1994), I compared and contrasted data
on a small number of people to formulate a mini-theory of what was going on during a given
time. I then investigated other participants in light of these mini-theories.

To understand the data at a more abstract level and to position it in the theoretical
literature, I wrote memos about themes and mini-theories (Locke, 2001). I used tables to visually
represent evidence from multiple sources and to avoid elaborating a promising theory solely on
logical versus empirical grounds (Glaser, 1978). I checked emerging theories with my informants
to ensure that these interpretations represented their experiences. Two senior bankers at each
bank provided feedback on versions of this article. As recommended by Strauss and Corbin
(1996) and Miles and Huberman (1994), I iterated between data and theory until I had an
explanation that best accounted for all data. I terminated my observation time once I reached
theoretical saturation.

FINDINGS

This section develops a model in four parts. I illustrate (1) the two banks’ distinct
practices, these practices’ effect on (2) organization cognition, (3) individual cognition, and (4)
the interaction between these two levels of cognition.

The Banks’ Uncertainty Management Practices

Overview. This subsection shows how the banks influenced cognitive uncertainty by
structuring differently three important practices: staffing, role definitions, and feedback. When
asked an open-ended question about factors that were critical for a bank’s performance, 34 out
of 38 senior Red Bankers (i.e., VPs, directors, and managing directors or “MDs”) mentioned the
reduction of cognitive uncertainty. For example, they said that banks fail when bankers “are
overwhelmed with the information they get or the tasks they have to do,” “aren’t given clear
goals or directives,” and “do not get the training they need to know how to do their job.” Red
Bank consequently provided bankers with relatively abstract concepts, such as expert knowledge, norms, and goals, to focus the bankers’ attention and guide decisions.

When asked the same open-ended question, Amp Bankers said that banks fail when “people think of themselves as experts and don’t realize that their knowledge doesn’t apply to a new situation,” “bankers develop these recipes for how to do things and forget that each situation is different,” and “people put too much faith into what they think to be true.” Out of 42 senior bankers interviewed, 37 made reference to something resembling uncertainty amplification. For example, they said that banks succeed when they can “continuously remind people of how little they know,” and “create the ‘insecure overachiever,’ someone who compulsively doubts what they know all the time.” Because Amp Bank believed that pre-formed concepts could encourage undue certainty, it deemphasized conveying abstract concepts. But it did not only refrain from reducing uncertainty. It also actively created uncertainty to counteract people’s natural tendency to over-rely on abstract concepts, forcing bankers to attend to a comparatively broad range of information without clear guidelines. None of the Red Bankers mentioned anything resembling uncertainty amplification in their responses, and none of the Amp Bankers mentioned anything like uncertainty reduction. Table 1 surveys the main dimensions along which the banks’ practices differ. Table 2 summarizes evidence. The following section elaborates.

Red Bank: staffing. Bankers worked on projects that matched their expertise. For example, when the bank received a healthcare sell-side mandate, it staffed bankers with experience in both the healthcare industry and sell-side assignments. This was an important part of the bank’s business model. As one director said, “We sell the knowledge of our superstars.” A
VP elaborated: “Our pitch books always highlight banker biographies. You get the deal if you have individuals with strong expertise.” For instance, one biotech CEO called Red Bank after he read an interview with Gary, a biotech expert, and said: “You don’t even have to pitch to me. Just tell me that Gary works on this and I’ll give you my business.” Red Bank’s staffing practice reduced cognitive uncertainty because bankers only had to master a limited domain of knowledge. For example, one VP said: “This business is so complex and so dynamic that you just have to specialize. It is impossible for one person to be an expert at more than one small area.” A director noted:

The client is buying my expertise. I am not only expected to read out of a book that the team has produced. I am supposed to have answers and to speak with confidence and authority. You can only do that if you can draw on a deep knowledge base.

The staffing approach thus enhanced banker confidence, thereby reducing uncertainty.

**Red Bank: roles.** Each banker had a predetermined role on deal teams that depended on the banker’s title. As one MD noted, roles reduced cognitive uncertainty because they signaled required courses of actions: “We don’t have people telling us what to do. But everyone knows what they are supposed to do on a deal and what they can expect from others because we have explicit roles.” An associate provided detail:

Everything that has to do with managing this deal goes through me, just like everything that has to do with modeling and word-processing automatically ends up with Joe [the analyst]. That’s how things work around here. … We have a term here for people like Joe, we call them the “managing analyst.”

This excerpt illustrates that roles were not only associated with a division of labor but also with behavioral norms. Norms are abstract summaries of appropriate types of behavior in generic types of situations. The associate complained about Joe, who had neglected financial modeling tasks to give advice on how to manage deals, like a managing director. The derogatory term “managing analyst” signified that Joe had not only devoted attention to the wrong tasks but also
behaved in an inappropriately presumptuous way. Business cards indicated bankers’ titles and bankers introduced themselves with titles, partly for reasons relating to uncertainty reduction. A VP explained:

It helps set expectations. Otherwise things can get very disorienting and discouraging—especially for junior bankers—when clients call with requests they can’t handle and it makes them feel and look bad when they cannot respond to a client.

A senior title invited treatment that corresponded to the banker’s status. For instance, one MD said: “The more senior clients think you are, the less often they’ll challenge you.” Senior titles thus reduced cognitive uncertainty by preempting a client’s probing behavior.

**Red Bank: feedback.** Bankers were evaluated yearly through a 360-degree feedback process (see Burton, 1998 for detail on a similar process). For each review criterion, such as “diligence,” the form provided space for comments and a quantitative scale consisting of three boxes, which were labeled: area for development, meets standards, and exceeds standards. One MD commented on the review form:

I think our competitors are more sophisticated on this. They rank people on more items and make finer distinctions, letting you rate someone on a scale between one and six, for example. Here you either meet the standard or you don’t. It’s that simple. I think people here are uncomfortable with qualitative assessments. Even with this simple system, you’d think that people take the numbers as a rough guide and look more at what people actually said about a banker. What you find instead is that in review meetings, you hear people make distinctions between someone who averaged 2.7 on an item, as compared to someone who averaged 2.2 on an item, as if this difference reflected some kind of reality.

This quotation evidences the Red Bankers’ orientation toward abstract concepts, such as rating numbers that generalize across the specific situations in which bankers behaved more or less diligently. The review form did not solicit qualitative evidence, which could have provided context-specific detail. It also suggests that bankers recognized the potential problems with such an orientation, which include mistaking a concept for the more complex reality it summarized.

A VP described the structure of the typical review meeting:
They tell you in one sentence each what your strengths and weaknesses are…. if there are major problems, they might make suggestions for improvement. For example, some bankers were sent to remedial corporate finance training.

A “strength” or “weakness” represents an abstract summary of all the concrete instances in which a banker behaved in a particular way and encouraged bankers to construe their performance in such abstract ways. Most bankers valued this structured process because it reduced the uncertainty that evaluations could induce. For example, one VP said: “I like our system because it does not leave you hanging, letting you figure things out for yourself. You get clear and specific guidance.” Even though this guidance was perceived as helpful by the bankers, it was still fairly general in that it did not take the situation of particular bankers into account. For example, associates who scored low on analytic capabilities were given corporate finance training; associates who were lacking certain types of knowledge were told to seek out projects that provided this knowledge.

For senior bankers, feedback was less important than the revenue they generated:

People still give you your yearly feedback. It just becomes less important. I would just be stunned to see them fire a major rainmaker just because he wasn’t popular. We have lots of big, abrasive egos around here who get away with pissing people off because they bring in revenues. (Red Bank VP)

This feedback process reduced uncertainty because bankers were oriented toward relatively few—and, with seniority, increasingly fewer—evaluation categories. Moreover, bankers preferred to construe these categories in quantitative ways, avoiding messy, qualitative data.

In summary, this section illustrated how the abstract concepts that Red Bank conveyed to bankers reduced cognitive uncertainty because bankers could understand and respond to new situations in light of familiar concepts. The situation was different at Amp Bank.

Amp Bank: staffing. Bankers were staffed on availability rather than expertise. Client
requests for a specific banker were usually declined with the comment: “Our bankers are fungible.” When one banker went on vacation or was overloaded, other bankers substituted seamlessly. Unexpected substitutions onto unfamiliar projects created persistent uncertainty for bankers at all levels. For instance, one VP said about this staffing practice: “It is truly humbling. You never feel like you have all the answers.” A Red Bank VP noted that this was “unthinkable” at Red Bank: “It just doesn’t work that way. You can’t replicate what your colleague knows at the drop of the hat.” A fourth-year Amp Bank associate explained the cognitive uncertainty that this staffing practice caused in the form of unfamiliar tasks and unclear client expectations:

I have been staffed on this sell-side project. This is the bread and butter of our department and the client probably expects that I have done hundreds of these. But I haven’t. … So first I need to figure out what needs to get done before the first meeting. … I also don’t know what to expect from the meeting, what kinds of concerns or objections clients typically have.

This quotation exemplifies how even bankers who had been with the bank for years continued to be placed on projects for which they were lacking experience.

Amp Bank’s client presentations did not feature banker biographies but focused on the bank’s resources. This practice often caused uncertainty in the form of contentious client interactions, ranging from tough questions about banker experience to outright hostility. For example, in one pitch I witnessed, the CEO exploded at the young Amp Bank team:

What is this? The high school science project team? I have a granddaughter who is older than you are….My ass is on the line here and this is the best that you can come up with? You know what this is? [pointing to a stack of business cards in front of him]. These are business cards from other bankers I am dealing with. [reading off the name of the bank and the bankers’ title]:….Head of Investment Banking,…Head of Sales and Trading,…Head of Global Corporate Finance. These banks send in their superstars, their most experienced bankers. I want the same kind of attention from Amp Bank.

The bank’s staffing practice meant that bankers often had to deal with situations for which they
had not yet formed concepts they could apply, either because they were inexperienced or because the situations were inherently unpredictable.

**Amp Bank: roles.** Amp Bank deemphasized roles. Business cards only mentioned banker name and contact information; no title was given. Bankers also rarely introduced themselves by title. One VP said: “We don’t use titles because they fixate the client on the banker and the banker’s status. What we want the client to focus on are the resources of this organization.” A senior associate said: “I don’t even know what that means to say ‘I am an associate.’ That has no information value for the client. All the client wants to know is who is doing what for me.” Roles thus were less meaningful at Amp Bank, as compared to Red Bank. Bankers in a comparable role had similar basic tasks at both banks. But Amp Bankers up to the director level could also be assigned additional tasks that would typically be a more senior banker’s responsibility. For example, one associate said: “I sometimes lead small deals, which at other banks is left to VPs.” Another associate explained with some exasperation how this more fluid relationship between roles and tasks caused cognitive uncertainty: “I have been here for four years now and I am still on edge with every new project because the one thing I can count on is that there will be surprises about what I have to do.”

Amp Bankers believed that the bank was “a very confusing place to figure out in terms of what the norms are.” Associates complained that they could not even find out what constituted acceptable work hours:

I know that this ain’t going to be eight-hour days. But, I mean, can you at least give me some guidelines beyond that? Sometimes people work around the clock for weeks in a row, seven days a week. But then people also sometimes come to work at one pm, go to the gym during all hours of the day, sometimes they don’t show up at all because they just decided that they had been working too hard and are taking a day off, and then there is this warehouse sale when people are just out the door and come back later with huge shopping bags, walking right by Joe [the head of the department].
When associates asked senior colleagues about norms, such as acceptable work hours, they usually heard that “it all depends on the deal. When there is work, you get it done, if not, get out of here.” This answer was unsatisfactory to the associates because it failed to reduce their uncertainty. “They are basically saying: you go figure it out for yourself. So I never really know what to do,” complained one associate. This is representative of how norms at Amp Bank prioritized the concrete demands of a specific situation. It differed from the more abstract norms at Red Bank where, for example, bankers followed the norm of staying until 12 every night even when they did not have pressing work.

**Amp Bank: feedback.** Amp Bank’s 360-degree feedback process emphasized qualitative information, asking bankers to include concrete examples and narratives. The following conversation pertained to a VP’s review process:

VP: It mostly consisted of him [a director] reading from what people wrote about me and that’s about it.
Researcher: Did he interpret this information for you?
VP: No, that’s not the style around here. It’s: here are all the facts you can handle. Deal with it. … I had to make sense of this myself.
Researcher: Did you receive a quantitative score?
VP, laughing: God, no! That would make things too easy, wouldn’t it?
Researcher: Any suggestions for improvement?
VP: No.

The director thus left it to the VP to process the review information through induction. Bankers often complained about the resulting uncertainty and pressed for “specific takeaways” and “actionable suggestions.” One MD responded to such requests:

I just don’t see the point in creating an illusory world of certainty. People have to learn to be comfortable with incomplete information, to sift through lots of data and figure out for themselves what matters and what doesn’t. …That’s at the heart of being a great banker.

Specific recommendations were also rare because Amp Bank relied on other feedback mechanisms. For example, senior Red Bankers were reviewed quarterly against revenue goals. In
contrast, one director listed the many dimensions on which Amp Bankers received regular—
sometimes weekly—feedback:

Revenues here are important. So you’ll hear about that, including what you brought in
and what you missed. But we also measure people on a gazillion other dimensions that
have to do with cost and that our competitors don’t measure people on: how much junior
banker time you use up on a deal, the cost of producing client books, including whether
you used expensive color copies or not. And then you have to write down on a weekly
basis how much time you allocate to different industries and types of projects.

This excerpt illustrates how senior Amp Bankers received feedback that was more detailed, more
frequent, and encompassed more dimensions than their Red Bank counterparts. Also, the senior
Amp Bankers did not receive specific goals but were trusted to self-adjust. An MD explained:
“We do not tell people what goals they should achieve because the person closest to the situation
knows best what is possible. We just constantly feed people with all available information.” This
quotation shows how the bank prioritized the inductive gathering of situation-specific
information, as opposed to a more deductive application of abstract guidelines to a situation. The
Chief Operating Officer (COO) elaborated why the bank refrained from giving bankers
guidelines:

Whenever you give people criteria, they work up to them and lose sight of the big picture.
If you only reward people for the revenues they bring in by year end, you are bound to
create “people eaters.” People start allocating resources to deals that could be used more
productively on other deals. … So you can’t make people only focus on one thing and
only at one point in time. They have to look at everything and they have to do that
constantly. It keeps you on your toes.

This ongoing feedback process amplified uncertainty because bankers had to attend to more
information without explicit decision guidelines. For example, one VP commented:

Sometimes I do wish there was more guidance. Slugging through this stuff can be
overwhelming and continues to be a source of endless frustration and even aversion but,
hey, it also does its job and keeps everyone from becoming complacent.

In summary, this section illustrated how Amp Bank withheld abstract concepts and
sometimes even counteracted their formation so that bankers experienced new situations as
such.

**Organization Cognition**

DCR suggests that organizations differ in how they disperse cognition; they can rely
relatively more on individual or collective cognition (Weick and Roberts, 1993). Also, industry
analysts consider these different emphases as one important dimension along which banks differ
(e.g., Sorkin, 2006). For example, Evercore Partners, Greenhill, Lazard, and Merrill Lynch
follow an individual-centric “superstar” system; Citigroup, Goldman Sachs, and J.P. Morgan
Chase exemplify a more collective-centric approach. This section shows that the banks’
contrasting ways of managing uncertainty entailed distinct types of organization cognition. Table
3 summarizes evidence.

-------------------Insert Table 3 about here-------------------

Red Bank was concerned about bounded rationality. Practices that reduced uncertainty
prevented individuals from being overloaded with information. This cognitive support made it
possible for the bank to use individual-centric organization cognition. Bankers had to rely on
their personal resources. Even though they were supported by organization resources, such as
input from other departments, individual bankers were expected to have the answers to a client’s
situation by drawing on their own knowledge. The detrimental effect of banker attrition is
evidence for this individual-centrism. When one superstar left, clients and colleagues often
followed because they believed that the bank could not fill the resulting knowledge gap. One
associate explained: “When Mike leaves, he takes along a huge chunk of our industry expertise. I
do not believe that we can hold our position in the league tables without him.” Red Bank sought
to counteract the uncertainty it thus unwittingly created at the organization level. For example,
compared to Amp Bank, Red Bank was more likely to offer salary guarantees, perks like big offices, and “impressive sounding titles just to coddle our superstars and make them stay as long as we want them to” (Red Bank director).

The Amp Bankers were supposed to solve client problems by interacting ad-hoc with organizational resources. For instance, a director said: “Individual bankers here know that they do not and are not supposed to have all the answers.” Because the bank relied less on individual bankers, it was less concerned about bounded rationality. Practices that amplify uncertainty counteracted bankers’ tendencies to over-rely on their own resources and encouraged reliance on social resources. One piece of evidence for this collective-centric organization cognition was that the bank was relatively unaffected by attrition. For example, one client explained: “I have seen how this machine operates. It is more like an ant hill or like a dragon. When one head gets cut off, seven other heads fill that place without a hitch.” Similarly, the bank’s internal data and an industry survey showed that clients and colleagues rarely followed departing bankers.

Change in Banker Cognition

Overview. This section illustrates how participation in the banks’ different practices changed the focal associates’ cognition. In both banks, a distinct cognitive style emerged. A cognitive style is a preference for a particular way of thinking (Kühnen, Hannover, and Schubert, 2001; Molden, Plaks, and Dweck, 2006). The Red Bankers developed a deductive cognitive style: they encoded situations and people, including the self, in terms of abstract concepts. Red Bankers construed the self in terms of traits and made decisions partly with the goal to be a particular kind of person. After about six months, when the official learning period was over, bankers were supposed to be experts and to deduce solutions from their prior knowledge, evidencing a heightened attunement to the bankers’ personal resources. When
unfamiliar situations exceeded the bankers’ prior knowledge, their trait-based self was threatened. The cognitive distraction of this threat disconnected bankers from others and from the unique aspects of situations. It, thereby, weakened the connections among the bank’s resources, further reinforcing individual-centric organization cognition.

Amp Bank’s uncertainty amplifying practices challenged the trait-based self that bankers exhibited at entry. As a result, the Amp Bankers evidenced the same threat-related pattern as the Red Bankers but earlier in the cycle. After about six months, bankers did not experience the self in terms of stable traits (e.g., “I am a merger specialist”) but in more situation-specific or contextualized terms (e.g., “I can help you complete this cash-flow analysis”). Failure, therefore, did not threaten major aspects of the self. Cognitive style changed from deductive to inductive. Bankers encoded situations and people at a more concrete level with the goal of identifying the most appropriate organizational resources. This heightened attunement to the bank’s resources strengthened its collective-centric organization cognition. Table 4 summarizes the bankers’ change process. Refer to Tables 5, 6, and 7 for additional evidence. The following section elaborates.

-------------------Insert Tables 4, 5, 6, and 7 about here-------------------

**Red Bank: first six months. Introductory training** lasted for five weeks. Bankers listened to speakers from morning to about six at night. Evenings consisted of social events, such as cocktail parties, dinners, or dancing, during which newcomers mingled with current employees. One Red Bank associate described the training:

> We had about eight days in which professors from [local business schools] came in and gave a remedial overview of corporate finance and accounting so that the poets among us could catch up to the finance types. … For the rest of the time, we basically listened to different speakers, some junior but mostly senior bankers, who gave us their perspective on what it takes to be a great associate.
As this quotation indicates, introductory training conveyed role-relevant knowledge, including quantitative skills and knowledge about norms. For example, bankers were told that “we have a hard-charging work ethic,” that “it just looks bad if you leave at 10 or 11 in the night while everyone else is still there,” and that associates should at least stay until midnight. Another associate further described the training:

   And then we had people from HR come in, wagging the finger at us and telling us what we can and cannot spend money on. There are rules for everything, the hotels you stay in, the restaurants you can eat in. I mean, frankly, it got to be a bit ridiculous at times with rules about how much you could spend on wine for your client.

Training thus encouraged bankers to recognize general types of situations in which clearly specified types of behaviors were appropriate (e.g., stay at least until midnight), independently of a situation’s unique attributes (e.g., whether there is work or not).

   On the job, bankers were matched with a “big buddy.” Big buddies trained their “little buddies” in the generic types of skills that comprised an associate’s role, such as various types of financial analysis. Roles outlined a competence trajectory. Bankers thus knew what they needed to learn and could control their learning. For instance, one associate showed me a list with such tasks as “common stock comparison” and “leveraged buy-out analysis:”

   Jeff is my big buddy. On the first day, we sat down and put together a list of all the things I should be learning during the next six months. When I feel that I know how to do something by myself, I cross it off the list. If I am not staffed on deals where I can learn these tasks, Jeff will sit down with me and teach me.

Big buddies let associates watch tasks and let them do increasingly more of the task. One associate commented: “We have a great system for getting people up to speed here. I have never spun my wheels for long.” Bankers, therefore, experienced training as “challenging” but not as confusing or overwhelming.
After about one month on the job, bankers exhibited a **trait-based self**, which involves implicitly interpreting one’s attributes as traits. Associated with a trait-based self are the beliefs that behavior (1) reflects an underlying trait (Gilbert and Jones, 1986; Jones, 1990; Nisbett and Ross, 1980), (2) can be predicted from knowing a person’s traits (Kunda and Nisbett, 1986; Ross and Nisbett, 1991), and (3) is consistent across different situations (Kunda and Nisbett, 1986).

Bankers first showed more concern for their socially relevant attributes partly because incumbents often teased newcomers. For example, one associate recalled the mockery when he wore an olive green suit: “Hey, look at Jim. Jim got a job in advertising” and “I’d say he is making a bid for the Frankfurt office.” Looking back, Jim said:

> Before that, I never really thought that much about what to wear, as long as it is a suit, shirt, and tie and as long as it is clean. I have definitely become more thoughtful since then about how to present myself. In this job you have to think about what your clothes say about you because that is the reality of how people look at you.

This excerpt illustrates how bankers learned by experiencing **uncertainty as transient**. Teasing introduced uncertainty by challenging Jim’s functional view of attire. He consequently learned that attire also identifies one as a socially recognizable kind of person and applied this learning to new situations.

Sensitized to self-relevant issues, associates started to talk about how a wide range of choices positioned bankers as possessing socially relevant traits. These choices included how bankers dressed (“Rolex is for traders,” “Bankers wear Hermès ties”), how their cubicle looked (“You do want it messy so that people see you are busy. But if it is too cluttered, they’ll think you can’t handle the work”), and where they ate (“If you don’t eat at your desk, you clearly don’t have enough to do”). These examples illustrate how bankers switched from the inductive encoding of information at the concrete level of the specific activity—“I am eating at my desk”—to encoding it at the level of the underlying traits that motivate the behavior—“Eating at
my desk means being a hard-working kind of person.” To encode means to mentally represent an outside stimulus (Fiske and Taylor, 1991). This self-relevant encoding is more abstract because it summarizes a person’s behavior across diverse solutions.

Transient uncertainty entails that people over time need to exert less cognitive effort because they can apply familiar concepts. They consequently have more cognitive capacity for a task that is inherently important to people, namely drawing self-relevant conclusions. Therefore, when newcomers transition out of uncertainty, they naturally shift toward a self focus (Higgins, Loeb, and Ruble, 1995; Ruble, 1994). Red Bank facilitated this progression and made it more likely that bankers experienced the self in terms of traits. For example, newcomers who witnessed how clients and colleagues followed departing bankers inferred that bankers possess traits, such as charisma (“He gets the deal because people are just awed by his personality”), that caused organizational outcomes. Bankers thus learned a trait-based construal of persons partly from observing the consequences of the bank’s individual-centric organization cognition. The 360-degree review process also influenced how bankers experienced the self. For example, one associate said:

When I heard about this review and saw the form, I thought “O-h m-y g-o-d.” Just the fact that everyone you are dealing with gets a chance to say something about you to your boss. I think it is only natural for us to obsess about this when we talk to people. I know I do. And they probably want us to. I keep thinking whether this person will now think that I have a “good attitude,” “strong interpersonal skills,” and whether I have “personal presence.”

This excerpt illustrates how the review process caused bankers to take the organization’s standpoint on the self. Self-standpoints are one aspect of the self. Similar to an image, they are defined as a point of view “from which a person can be judged that reflect … a set of attitudes, opinions, or values” (Higgins: 1996: 1071). A person can represent and evaluate self-related attributes, such as traits, either from his or her own standpoint or from the perspective of
significant others, such as peers or authority figures. Others have described how people experience the self from the standpoint of important others, including peers and authority figures (Cooley, 1902; Mead, 1932; Moretti and Higgins, 1999).

This trait-based self had implication for cognition. As the last quotation above indicates, bankers thought about their traits during many interactions. When people repeatedly use a concept, such as a trait, and when this concept has important social consequences, it becomes more readily accessible and more psychologically real (Bargh, 1989). After about a month, bankers used their traits to make decisions also in situations that did not necessarily pertain to the self. For example, a junior Red Banker said:

When you leave before 10 or 11 [at night], people say things like “Half a day today?” or “Thanks for stopping by,” making you feel like a slacker. … And I just don’t want to be that kind of person.

A director commented on this excerpt: “That’s what this place does to you. Whatever you do, the main question in your mind is what this behavior says about who you are.”

The previous excerpt from the junior banker also illustrates how bankers repeatedly engaged in deductive cognition. Bankers could judge their behavior based on how it corresponded to the bank’s norms and rules. They did not need to engage with the unique aspects of particular situations. In the example, the banker stayed at work for long hours regardless of whether the situation required it. Wood and Bandura (1989) documented a similar progression. Managers engaged in a simulation first used task-relevant information to make decisions. Once they had transitioned out of their initial uncertainty, they attended relatively more to self-relevant information to make decisions. The same quotation also illustrates how a trait-based self is an instance of deductive cognition—a kind of theory about oneself (Haslam, 2004). Seeing oneself as a socially recognizable person (“a slacker”) starts from an abstract, decontextualized
representation that summarizes the many concrete instances in which one did or did not exert effort.

During the first six months, the bankers had an official status as newcomers. Even though they formed an image of themselves in terms of socially valued traits and even though they worked hard to live up to this image, they did not use these traits to judge their behavior because they saw themselves as learners and because veterans had relatively low expectations of the associates. For example, one associate explained how she tried to contain readily arising self-judgments: “I just discipline myself. Whenever I catch myself fretting about these things, I just go ‘lockbox’ and try to think about something else.” Another associate said: “At this point, it is too early to tell whether you are a success or a failure. Even if you do everything right, that may just be a fluke.” Similarly, another associate pointed out: “When you make a mistake, this really doesn’t say anything about you. It doesn’t mean you are stupid. You are simply learning.” The bankers learned this attitude partly from observing how others responded to them. For example, one associate observed that “people hold back on their judgments until the official learning time is over.” Because associates believed that even embarrassing mistakes were “recoverable,” they felt that “no question is too stupid to be asked.” One associate explained: “When I don’t know something, I see that as a great opportunity to interact with an expert, a chance to get to know them.” Senior Red Bankers agreed that most junior bankers “drew vigorously and deftly on the organization’s resources,” which is evidence for adaptive attunement.

**Red Bank: after six months.** The following quotation illustrates how the associates’ experience changed when the official learning period was over:

…the first months are all about soaking everything up. It’s literally like learning a new language like what being a banker is all about and how people think and what is important. But now it’s showtime. I mean people still cut you slack because you are still learning and stuff, but you know from now on you gotta produce and whatever you do
This excerpt indicates that different cultural beliefs were relevant at this stage. Because colleagues now believed that mistakes allowed inference about a person’s traits, associates judged their behavior as evidence for traits. The associate above distinguished between the “learning” goals she held during the first six months and the self-related performance goals (“you gotta produce”) that guided cognition now. Trait-based cognition is associated with a focus on the self-relevant (versus task-relevant) implications of performance. When people see the self in trait-based terms, mistakes are more likely to question these relatively enduring aspects of the self and are, therefore, more threatening. Preoccupied with avoiding threat, bankers thought more about how they performed versus about the means they could bring to the task (cf., Dweck, 1986; Dweck and Leggett, 1988) and indulged in previously suppressed worries. For instance, one associate said: “I sometimes dissect what I said and did for days afterwards, trying to figure out whether I just do not have the sophistication or judgment that I should have.”

This trait-oriented cognition had consequences for how bankers approached other resources (“attunement”). When bankers felt confident that they could complete the work, they made effective use of resources. For instance, one associate said: “It might sound paradoxical, but the more I feel that I know what I am doing, the more willing I am to bounce ideas off of others because I won’t have to worry about exposing myself.” Another associate told me of his eagerness to educate himself:

It does not matter how late I go to bed. Even if I do not go to bed at all, I will read at least two tearsheets every day until I know all the major companies by heart. Clients expect you to know these things.

(Tearsheets contain summary information about a company.) Other bankers read finance books in their spare time. These are instances of adaptive attunement because bankers noticed and
assembled the resources needed to perform well. I judged cognitive uncertainty as **transient** because associates felt that they were prepared for most of their tasks (e.g., “I’d say most of us are up to their job 98 percent of the time, that’s how well the system works,” “By this time in the program I can honestly say that I know how to deal with most situations”).

Nevertheless, this confidence could be disrupted temporarily. In these instances, bankers exhibited a more **maladaptive attunement** pattern, which means that people are distracted from task-relevant information because they are preoccupied with trait-relevant implications. I added the label “attunement” to the term “maladaptive pattern” that Dweck and her colleagues use (e.g., Dweck and Legett, 1988: 256; Diener and Dweck, 1978, 1980) to remind the reader of this paper’s more relational conceptualizations of cognition. The following illustrates the distraction, trait-focus, and impaired task-performance associated with a maladaptive attunement pattern:

I was working on this doozy of a deal, a firedrill that had to be done over the weekend, with all those big wigs. Really complicated transaction, completely convoluted financial statements, analyses I hadn’t even heard of before. Friday night we had a meeting and they were all there. The head of the department, the head of investment banking, the (client) CEO, CFO. And, you know, this would have been a really interesting meeting. But all I could think about is whether they are going to make me do stuff that I was clueless about and that I didn’t want to look stupid to these guys. And in my mind I kept going through the list of people I could call to help me out, you know, who owes me one. And what I would do if I couldn’t get a hold of someone. Should I say that I got sick? Better to lie than to do a shoddy job. And it wouldn’t even have been a lie because by that time, I really felt like throwing up.

When cognitive uncertainty was high, self-protective concerns also affected interactions among colleagues. For example, the associate above described how he completed his task with the help of his close friend Chad, versus relying on an expert:

Associate: I couldn’t really go to anyone on my team for help because I just didn’t want to look weak. In the end, Chad and I locked ourselves into a conference room for 24 hours straight to figure this out between us.
Researcher: Why did you ask Chad? Has he done this kind of deal before?
Associate: No, that’s one reason it took us so long. We also had incomplete information. There were some questions I just didn’t ask during the meeting. I am the one who is
responsible for these analyses. … The senior guys don’t think through these issues because they rely on me.

This example illustrates how the maladaptive attunement resulted in an indiscriminate use of the bank’s most expensive resource, namely banker time. To avoid looking weak, junior bankers exchanged such tips as shortening the presentation books (“Every page is a risk – that’s how I see it”), faking computer problems (“I’ll just say that I was almost done but then lost all the data”), and coming up with plausible excuses (“If you do something really dumb on one deal, you can always blame it on all the work you are doing on another deal.”). In these maladaptive instances, bankers withdrew even further to their personal resources, including their own efforts and allies, neglecting more effective organization resources. As a result, they weakened the connections among the bank’s resources beyond what its individual-centric organization cognition mandated.

**Amp Bank: first six months.** An Amp Bank associate described the bank’s introductory training, which also lasted for five weeks: “We only had about five days of corporate finance training and a little bit of introductory accounting. For most of the time, we just had speakers tell us about their work.” Another associate commented: “I just learned about everyone else’s job but mine.” Speakers conveyed phenomenological information about their own job and left the junior bankers to infer the implications for the newcomers. For instance, a capital market specialist said:

> Imagine you are sitting on a floor with over 300 people. All of us are watching multiple computer screens, talking on the phone, and listening to market updates, all at the same time. So you can imagine that the people on the trading floor have the attention span of gnats, which is something to think about when you need our advice.

The junior bankers experienced **uncertainty** because they had to consider a broad range of sometimes seemingly irrelevant information and because they were not given behavioral
Frankly, the whole orientation was more of a disorientation. … First, there was just a lot of stuff, in general. … And what also made this confusing is that you didn’t know what to do with it. … I mean the whole time, I just wanted to ask: why are you telling me this? And what does this have to do with my job?

Another associate, who listened to the capital market specialist, wondered afterwards: “I now know that capital markets people are apparently prickly. But I still don’t know how to deal with that.” When bankers did learn about their role, they often had more responsibility and received fewer guidelines than the Red Bankers. For example, a VP told the incoming bankers: “You are trusted to manage effectively an extraordinary amount of the company’s and the client’s resources.” The only guidelines he gave the bankers were: “Manage these resources as if they were your own.”

Many Amp Bankers did not have relevant background knowledge and, therefore, felt unprepared at the end of training. Senior bankers readily acknowledged this and tried to diffuse concerns. For example, one VP said: “This is all about getting to know the bank’s resources. No one will expect you to know anything when you start.” Adding to the newcomers’ uncertainty, some were asked to help out on urgent projects while still in training. For example, one junior banker had to complete a complicated leveraged buy-out analysis for the next morning. Instead of benefiting from a mentor’s guidance, he had to find his own resources: “I have never done this before. But they just told me to make good use of templates and colleagues and just get it done.” News of these incidents spread rapidly among newcomers. Bankers experienced uncertainty because these incidents seemed to contradict explicit statements that no prior knowledge was required (“This is confusing, to say the least. They told us that they didn’t expect us to know anything when we start.” “It just doesn’t make sense.”).

Amp Bank’s practices discouraged a trait-based self. For example, Amp Bank’s
availability-based staffing signaled that traits were irrelevant because whatever one banker did not know could be obtained from others. Senior bankers often said things like “What I know doesn’t matter,” and “We are all doing the same thing, drawing on the resources of the organization.” This staffing practice made it difficult for bankers to establish the causal connection between individual trait and organizational outcomes.

Teasing about inappropriate attire or behavior that contributed to the Red Bankers’ trait-based self occurred less frequently at Amp Bank partly because casual interactions were less frequent. Associates said they often “cringed” when they saw a peer leisurely approaching their cube because they felt too pressured to “chit chat:” “Most of the time I am just running around like a chicken with the head cut off, trying to get everything done in time.” Gossip was also actively frowned upon. When junior bankers were caught gossiping, senior bankers said things like “You should be worrying about your work instead,” or “These [personal] issues are of no concern here.” These experiences prodded bankers to encode information at the level of the task or activity (I use these terms synonymously) and to downplay trait-relevant concerns.

The Red Bankers could enact their bank’s culture early on. In contrast, during their first six months, the associates misunderstood one of Amp Bank’s important cultural themes, namely “task-orientation.” For instance, one junior banker offered the following as an example of his task-orientation:

I had to get this huge spreadsheet done and I just did it even though I had to stay up three nights in a row and was as sick as a dog. I mean, for the whole night, one minute I was typing, the next minute I threw up blood into my garbage can. …. But I just wanted to prove myself and show that I can get the task done.

The banker used his task-performance to establish his traits, such as dedication. The locus of causality was the focal banker; the underlying question was: “How will I complete tasks?” This suggests that despite the bank’s culture, concerns relating to a trait-based self were very much
in the foreground for the newcomers. Senior bankers judged the newcomer’s behavior as “stupid,” “unnecessary,” and as “the opposite of task-orientation—a pure ego trip. What he doesn’t get is that tasks get done by an organization, not by people.” Task-orientation shifted the locus of causality from the individual banker to a larger social system. As I describe below, for the more task-oriented senior bankers, the focus shifted to “How will I complete tasks?”—away from the “I” to the “how.”

The junior bankers’ lack of experience and training as well as the availability-based staffing made independent work difficult. Yet, as one MD observed: “You can tell them that this is all about making good use of our resources here and, during the first half year or so, they still insist on doing everything by themselves.” This quotation evidences the junior bankers’ maladaptive attunement. Even though junior bankers were treated as full contributors from their first day on the job, this quotation indicates that they were still seen as novices for the first six months in terms of how they did their work. For instance, senior bankers believed that junior bankers made “a lot of avoidable mistakes” during their first six months. One newcomer, Lara, had stayed up all night to complete a memo. The memo was not a critical component of the deal and the deadline was not a “hard” one. Yet, she felt compelled to get it done independently and in a timely manner because she “did not want to look stupid.” This suggests that Lara viewed her work on the memo with reference to what it said about her underlying traits, such as competence or intelligence. When the VP reviewed the memo the next morning, he found that it was of low quality. He told Lara:

You are trying too hard. You got to be more task-oriented. Don’t worry about what I will say or what the client will think about you. Then you are making bad choices. Here, look at this section. Once you made [that decision], the [other section] should have followed by itself. Take one step and then see where it takes you. Have some fun!

This quotation illustrates two cognitive patterns. Describing Lara’s trait-oriented pattern, the
VP believed that the worry about her traits caused her to make bad choices. This relationship is typical of a maladaptive attunement pattern (Diener and Dweck, 1980, 1978). Trying to teach Lara a task-oriented pattern, the VP discouraged her from encoding behavior at the level of the self (“don’t worry about what I will say or what the client will think about you”). Instead, he told her to encode her behavior at the level of the activity, literally pointing toward concrete, situation-specific information (“Here, look at this section”) that could guide behavior.

The VP’s quotation illustrates a more subtle way in which task-orientation entailed a different theory of the causation of action, as compared to a trait-orientation. Lara had made choices where she should have let the task make decisions (“take one step and see where it takes you”). Other senior bankers also talked about task-orientation in terms of “letting the task take over” or “being guided by the task,” implying that situational cues and constraints can cause action—to the extent people notice them. Task-orientation therefore means that cognition is distributed not only across people but also across material resources, such as task-structures.

**Amp Bank: after six months.** The junior Amp Bankers’ experience changed after about six months:

You know, I eventually figured it out. This is not about me, it’s not about how smart I am. This is about what you can do when you pull extraordinary resources together. I might not know whether the client should sell the business, spin it off, whatever. I might not even be able to do half of the analyses that I am responsible for. But I can still get it done and get it done well every single time because of the resources here.

An associate, Josh, illustrated how he experienced challenging situations differently than before:

Before, I used to have this knot in my stomach in each and every meeting because I was just waiting for someone to ask me something that I was clueless about and worrying about what to say and about losing credibility. … Now these are the moments I live for. … I ask tons of questions to really understand this client… then I literally say it flat out: I don’t have the answer for you right now. But we’ll get our heads together and make sure you get the best advice possible.
These excerpts illustrate how Amp Bankers continued to experience high cognitive uncertainty (“I don’t have the answer”). Yet, their experience changed because they became aware of social resources that they could use fungibly with their own resources (“this is about what you can do when you pull extraordinary resources together”). The senior Amp Bankers who helped me code the data rated Josh’s episode as exemplifying high **task-orientation** and as an effective way of using the bank’s resources (“**adaptive attunement**”). One VP explained: “I think this is task-orientation because it was more important for Josh to solve the client’s problems than his ego problems.” Josh concentrated relatively more on what to do next—encoding the situation at a concrete, activity-based level (“I ask tons of questions”)—than on the trait-based implications of this behavior. He stayed focused on the specific situation to figure out which resource to draw on—an instance of **inductive cognition**—thereby strengthening organizational resource connections.

This inductive cognition was also evident in the different kind of self that the Amp Bankers developed. Red Bankers and new Amp Bankers answered self-descriptive questions with reference to traits. For example, during his first month, one Amp Bank associate answered: “I’d say I am a go-getter: Hard-working, hopefully intelligent, clearly determined, and also reliable.” In contrast, the socialized Amp Bank associates often answered the same questions by qualifying their attributes with the time and the place when they exhibited them: “Just yesterday, I was in a phone conversation and when the VP pushed me on something, I got back way too aggressively.” This quotation suggests a more **contextualized self** (Chiu, Hong, and Dweck, 1997; Markus, 1977). It differs from a trait-based self in that people who exhibit it do “not believe in fixed traits, and instead appear to view behavior as being mediated by more dynamic … processes” (Ruble and Dweck, 1995: 128). A contextualized self is an instance of inductive
cognition in that it is generated from concrete and situation-specific information (Haberstroh et al., 2002). In contrast to a trait-based self, it is not an abstract concept that people use to interpret behaviors across different situations. I used the cognitive literature’s inductive cognitive style construct, which includes the contextualized self, to conceptualize the Amp Bankers’ own notion of task-orientation.

A contextualized self could explain why, after six months, the Amp Bankers felt less vulnerable in situations that previously elicited threat. A contextualized self entails more numerous self-representations because it reflects the diverse contexts a person participates in. For example, when I asked a VP whether he was aggressive, he answered:

I don’t think you can generalize these things. People are more discriminate than that. I might behave in pushy ways when a client is not forthcoming with information or I might not be pushy when I sense that the client is responding to constraints within the organization. I might pound the table in a tough merger negotiation or I might sit back to avoid alienating an ally. It all depends on what exactly is going on (in the situation.)

This quotation suggests that the banker construed his self based on numerous particular behaviors that vary across situations, versus in terms of one generalized attribute. Failure in a particular situation is therefore less threatening because it pertains to a smaller portion of people’s overall self, as compared to a trait-based self (Chiu, Hong, and Dweck, 1997; Dweck, 1999; Ruble and Dweck, 1995). As a result, individuals who exhibit a contextualized self are less preoccupied with avoiding threat and can focus more on the means they can bring to a task and on the implications for the task, versus on how they perform.

While the Red Bankers and the new Amp Bankers answered self-descriptive questions quickly and with elaboration, the bankers who exhibited high task-orientation often stammered and took a relatively long time to answer these questions. When I probed about these difficulties, most bankers replied along the lines of “I guess I just don’t think about these issues [i.e., my own
attributes] a lot,” and “I don’t have the time to reflect on this [i.e., my traits].” People have more difficulty reporting on something (e.g., a trait) the less frequently they activate this trait in memory (Markus, 1980). The bankers’ difficulties further suggest that they thought less frequently about their self in terms of decontextualized traits. There are two possible explanations. First, establishing one’s traits in a new context requires cognitive effort. Trait-based inference can be disrupted under high cognitive demands—such as Amp Bank’s—with the effect that people fall back to a simpler, behavioral-based contextualized self-classification (Ruble and Dweck, 1995). Second, a trait-based self requires impression formation goals (Ruble and Dweck, 1995). Amp Bankers had fewer incentives to think about traits because they were less important than access to organizational resources.

In summary, this section showed how bankers developed the kind of cognition that enabled each bank’s chosen form of organization cognition.

The Interaction Between Organization Cognition and Banker Cognition

This section illustrates how each type of individual cognition was associated with distinct vulnerabilities and how organization cognition compensated for these vulnerabilities.

Red Bank’s individual-centric practices minimized the negative effects of the maladaptive pattern that was associated with a trait-based self. Because bankers were trained extensively and staffed on familiar types of client situations, they encountered situations that exceeded their abilities less frequently. Consequently, maladaptive reactions were less likely. Like the Amp Bankers, the Red Bankers were supported by organizational resources, such as input from other departments. But while the Amp Bankers had to solicit much of this input ad-hoc, the Red Bankers sought this input as part of a formalized routine. For example, one VP explained:
There is a routine you have to go through for each type of deal. When you work on a sell-side assignment, you first have to meet with the research analyst…. Then you have to talk to people in capital markets and on the syndicate desk.

Because this input seeking was formalized, it did not reflect negatively on the input-seeking banker—it did not indicate that the banker did not know something that he or she was supposed to know but simply meant that the banker was doing his or her job. This formalization thus made it less likely that the bankers’ maladaptive pattern would prevent crucial interactions. Finally, some of the negative effects of the trait-based self were interpreted away or even turned into positives. Even when bankers were absent-minded or defensive in meetings, this was often written off as part and parcel of the flamboyant superstar personality. For example, in one client meeting, a senior Red Banker did not know the answer to a client’s question and told the client with irritation: “This line of questioning is just irrelevant here. Let’s get back on track.” While the banker’s colleagues believed this response was a “judgment error,” the client said: “Well, he can afford the ego. After all, he is Stewart Mayer.”

The vulnerabilities of a trait-based self were more costly at Amp Bank because they weakened the resource connections on which the bank relied. A contextualized self is not associated with a maladaptive pattern (Ruble and Dweck, 1995) but rather with a heightened context-sensitivity (cf., Haberstroh et al., 2002). Instead of a focus on self-judgment, it causes a focus on aspects that mediate performance, such as problem solving strategies and help from others (Chiu, Hong, and Dweck, 1997), which enabled the bank’s collective-centric organization cognition. The Amp Bankers’ inductive cognition also had vulnerabilities. For example, it can invite a “halo effect” (Cooper, 1981), which means that individuals let highly salient information dominate and cut short their information processing. I observed this effect sometimes when bankers briefed peers on client advice that they were about to give and when the group directed
the bankers to speak to more people or to conduct further analyses before talking to the client. 

This example illustrates how Amp Bank’s collective-centric organization cognition counteracted the halo effect because it functioned as a socially distributed triangulation process (cf., Hardin and Higgins, 1996; Hutchins, 1991). It meant that more people got involved to look at the same situation but from a slightly different perspective. Through comparing and contrasting different perspectives, bankers could discard unreliable or invalid information and establish valid higher-order patterns from concrete information.

We get input from others to see whether they see the same facts and interpret them in the same way. … In a business as complex as ours, there is just too much noise to do it any other way… [There is no other way] to make sure that what you are acting on is a trend, not a fluke. (Amp Bank VP)

These highly developed connections also came at a cost. They required bankers to talk a lot to one another, thereby drawing heavily on the bank’s most valuable resource. Amp Bank’s system partly compensated for that high cost. Because the bank could staff its bankers fungibly, it could leverage resources more than Red Bank. This section explains the equifinality of the two approaches to managing cognitive uncertainty. Each approach was successful because it was supported by a system of practices and cognitive styles that capitalized on strengths and compensated for weaknesses.

**DISCUSSION**

This paper is the first to examine uncertainty amplification and its cognitive effects, contrasting it to the notion of uncertainty reduction that the organizational literature has taken for granted. The findings indicate that there is no one best way to manage uncertainty. The two banks managed uncertainty differently to achieve distinct cognitive outcomes. Red Bank reduced cognitive uncertainty such that bankers experienced it as transient. It conveyed abstract concepts to simplify decision-making so bankers could solve problems independently using deduction.
These findings support well-known ideas by the Carnegie School and socialization research.

Studying a new way of managing uncertainty brought to light different cognitive processes that are difficult to account for with these existing frameworks. To highlight situational uniqueness, Amp Bank amplified cognitive uncertainty such that bankers experienced it as persistent. Because demands exceeded individuals’ cognitive capacity, bankers had to use organizational resources to inductively solve problems. The study of cognitive change from a DCR perspective helps interpret the results from both banks. It yields new ways of conceptualizing the relationship between individual and organization cognition, with significant implications for future research.

**A Distributed Model of Cognitive Change**

Figure 1 summarizes the grounded theory model derived from the data. The model suggests that each way of managing uncertainty is associated with distinct organizational practices as well as social cognitive processes and outcomes. It positions the dynamics at each bank within a social and cultural background of beliefs and habits to acknowledge that bankers were not only influenced by uncertainty management practices but also by other participants’ beliefs, for example, about the length of the learning period. The theory outlines how organizational uncertainty management practices influence the two fundamental aspects of individual cognition: (1) information processing, which I here conceptualize as attunement, and (2) encoding (Fiske and Taylor, 1991). In contrast to the decontextualized treatment by traditional cognitive theory, the model posits that individual cognition cannot be understood separately from the particular organization cognition context in which it is situated. It specifies how different types of individual and organization cognition are interrelated.

-------------------Insert Figure 1 about here-------------------
Specifically, the results at Red Bank show how practices that reduce cognitive uncertainty convey the abstract knowledge participants need to master role-related tasks. The socialization literature also focuses on how organizations convey such concepts (e.g., Chao et al., 1994; Morrison, 1993). These practices attune participants to their personal resources as they use internalized knowledge to approach situations. Using knowledge in this way is how the Carnegie School conceptualizes expertise (e.g., Newell and Simon, 1972; Simon, 1991) and how individuals enable the individual-centric form of organization cognition associated with expert cultures. By making abstract concepts salient for encoding, uncertainty reduction practices promote a deductive cognitive style. Because abstract concepts help classify new situations in familiar terms, participants experience cognitive uncertainty as transient. This progression toward deduction and reduced uncertainty has been described by the cognitive literature on life shifts and the organizational socialization literature. Yet, the Amp Bank data illustrate that this is not the only way in which cognition can change. As described in the popular business press, organizations can also amplify uncertainty by withholding abstract concepts and even counteracting their formation. These practices attune overwhelmed participants to social resources for mastering daily tasks and thus enable a collective-centric form of organization cognition. Similarly, Hargadon and Sutton (1997) and Sutton and Hargadon (1996) describe how IDEO designers drew on colleagues and material objects to design types of objects with which they had no prior experience. Absent abstract frameworks to classify new situations, participants encode situations in the more concrete terms characteristic of an inductive cognitive style. Because participants cannot classify new situations in familiar terms, they experience cognitive uncertainty as persistent.
When organization theories assume that individual cognition is deductive, they usually also assume that organization cognition is individual-centric (e.g., Simon, 1991), an association that is supported but also qualified by the model. The findings at Red Bank suggest that deductive individual cognition and individual-centric organization cognition are mutually reinforcing. Deductive cognition is relatively prone to maladaptive attunement that weakens the connection among organizational resources and exacerbates individual-centric organization cognition. Individual-centric organization cognition compensates for the vulnerabilities of deductive cognition and, thereby, makes it possible for an organization to rely on the deductive cognitive style that is typical of individual-based expertise (Nanda, 2005). The model qualifies these results by suggesting that deductive individual cognition and individual-centric organization cognition are not a given but an accomplishment: the Amp Bank data on inductive individual and organization cognition shows that there is empirical variance in cognition. It proposes that inductive individual cognition and collective-centric organization cognition are mutually reinforcing. Inductive cognition strengthens organization resource connections and thus supports collective-centric organization cognition. Collective-centric organization cognition compensates for the vulnerabilities of inductive cognition and, thereby, makes it possible for the organization to rely on the inductive cognitive style that is typical of collective-centric forms of expertise, a notion that I elaborate below. Research thus cannot simply assume but needs to empirically assess what form individual and organization cognition take.

**Limitations.** This study is limited in several ways. Because the banks had reputations for being relatively individual- versus collective-centric, I cannot completely rule out banker self-selection, despite the similarity in the banks’ hiring criteria and practices. The reliance on ethnographic notes might have lead to recall biases even though the methods sought to avoid
these. Also, the trusting relationship that developed between the informants and me, in which they sometimes treated me as a confidante, could have affected how informants viewed themselves and their role in the firms. I was careful to minimize this effect, for example, by only discussing emerging findings with bankers other than the focal associates. Issues pertaining to performance outcome were outside of this article’s scope but merit consideration. It is particularly important to keep in mind the constraints inherent in the nature of the sample and the theory-building approach. First, I examined two extreme cases to achieve salient contrasts in the dependent variables. As a result, it is not clear whether and how organizations blend the different cognitive styles. Examining larger samples with surveys, for example, might help answer this critical question and also give insight into the relative prevalence of the two types of uncertainty management in a larger population. Second, investment banks might change employees in unrepresentatively comprehensive ways. For instance, long work hours isolated employees from other social bonds and the banks’ prestige could make other work appear less desirable. Similar isolating practices are adopted by “total organizations” (Etzioni, 1975), “total institutions” (Goffman, 1961), and “greedy organizations” (Coser, 1967) and are known to render members unusually susceptible to organizational influence. Other types of organizations consequently need to be studied to establish the boundaries of the model developed here. Most importantly, while a highly context-dependent ethnography can generate detailed descriptions of processes and actors, it cannot claim generalizability or offer authoritative recommendations for practice. Therefore, the theory and its implications, discussed in next in more depth, must be understood as propositions for future research.

Theoretical Contributions and Future Research
The grounded theory generated in this article contributes to understanding the social cognitive processes and outcomes related to individual change in organizations in at least five ways.

**Encoding and attunement.** I first discuss the two basic types of social cognitive processes depicted in Figure 1: encoding and attunement. To DCR, the theory provides a currently missing understanding of how novices’ cognition changes as they interact with new distributed cognition environments. It outlines the change in fundamental cognitive processes that, according to Van Maanen and Schein (1979), is at the very heart of socialization but that has been neglected as socialization research has focused on “secondary” (Ashford and Taylor, 1990) outcomes, such as role stress, job satisfaction, and organizational commitment (Bauer, Morrison, and Callister, 1998; Fisher, 1986). The model suggests propositions about different mechanisms that organizations can use to change the two basic aspects of cognition. It extends theories of expertise, learning, managerial cognition, and socialization, which focus on how people internalize social concepts, by specifying how and when encoding and attunement can be controlled externally.

Both banks controlled encoding through a mechanism external to the individual, namely work practices. Surprisingly, the effect of work practices on individual change—versus on secondary, attitudinal outcomes—has not found sufficient attention in the socialization literature (Bauer, Morrison, and Callister, 1998). Encoding has to be managed externally because it is typically not under an individual’s control (Bargh, 1999). The banks could therefore not tell bankers how to encode information. Instead, work practices continuously directed banker attention toward either concrete or abstract information. The banks differed in how they influenced attunement. Individuals can control attunement (Bargh, 1999). Red Bank could thus
transfer control over attunement to bankers. As described by the socialization and traditional cognitive literatures (e.g., Carver and Scheier, 1990, 1981; Chao et al., 1994), Red Bank encouraged the bankers to internalize the bank’s concepts and use them to frame situations. The Amp Bank data implies that these prior literatures are incomplete. Amp Bank did not solely rely on the bankers to internalize such notions as “draw on your colleagues.” Its practices forced the bankers to draw on colleagues because that was the only way to produce a high-quality product under extreme time pressure. But even when given no choice, the bankers initially struggled against the bank’s collective-centric culture. Therefore, an external control mechanism was required to constantly restrain the cognitive monster that compels people to fall back on their penchants even in a context such as Amp Bank, where they were not adaptive.

Future research should further investigate the different dimensions of the material environment that can control cognition externally, such as artifacts and workplace design. While the early Carnegie School tradition has contributed to our understanding of how artifacts can direct attention (Cohen and March, 1974; Pfeffer and Salancik, 1978), subsequent research has neglected their cognitive properties (exceptions include Rafaeli and Pratt, 2006) in favor of symbolic considerations. One could study, for example, whether different reports that employees have to fill out or different types of software cause employees to encode different types of information. Red Bank, for instance, sometimes used software that cued bankers to produce summary financials. For similar tasks, Amp Bank preferred spreadsheet technology that required bankers to build up such summaries from more concrete client data. Amp Bank’s workplace design might have facilitated the bankers’ attunement to social resources. For example, while Red Bankers had offices, Amp Bankers sat at long tables, like traders, to facilitate interactions.
**Cognitive styles.** As a second contribution, this study challenges the assumption in the socialization literature and the cognitive literature on life shifts that participants necessarily experience uncertainty as transient. The data indicates that a progression toward deduction is not inevitable but a product of specific conditions that have so far been taken for granted, namely practices that reduce cognitive uncertainty. Traditional cognitive work on implicit theories (Dweck, 1999; Heider, 1958) and lay theories (Ross and Nisbett, 1991) bolster the logic on this social cognitive outcome depicted by the model (Figure 1). It suggests that when people experience different uncertainty durations, they develop different tacit assumptions about what the world is like and what type of information is useful. Specifically, when people frequently face transient uncertainty, they experience the world as relatively predictable. They consequently orient toward the enduring—and thus abstract—properties of people and situations with the purpose of building taxonomies to aid prediction. This orientation implies a deductive cognitive style. When people face persistent uncertainty, they experience the world as relatively unpredictable. They consequently orient more toward concrete information and processes with the goal of understanding unique dynamics (Chiu, Hong, and Dweck, 1997; Whitehead, 1938). This orientation implies an inductive cognitive style. The present investigation extends cognitive theory, showing how organizations can shape these tacit assumptions by how they manage uncertainty.

Third, this study advances knowledge about the social aspects of the self. Cognitive research has examined the trait-based and the contextualized self in a relatively context-free way. It has either studied them in maturing children (Ruble and Dweck, 1995), without attending to contextual influences, or as pre-existing in national cultures. The present study expands on this research by tracing how these selves emerge and are maintained in organizations. The grounded
theory posits that organizations shape selves not only by causing employees to internalize beliefs and values, which is the focus of the organizational identity literature (e.g., O’Reilly and Chatman, 1986, 1996), but also by how they structure the activities that people engage in on a daily basis. Moreover, the model explains why different organizations might want to achieve different types of self, a question that has not been explored previously.

Amp Bank cultivated the contextualized self to render employees more context-sensitive. As globalization intensifies and technology changes at an ever faster pace, tasks in organizations are likely to become increasingly dynamic and complex. It is, therefore, important to understand different ways in which organizations can attain the requisite alertness in employees. For this purpose, future research should compare the contextualized self to the related notion of a social identity, which also enhances context-sensitivity, in terms of cognitive processes and outcomes. The present study yields specific hypotheses. Like a social identity, the contextualized self is social in that it construes the person in relation to a context. Unlike a social identity, the contextualized self implies that people experience themselves in terms of behaviors and specific situations, versus in terms of social categories that refer to more abstract contexts, such as groups or organizations (e.g., “I am a merger banker”). Different types of knowledge structures are likely to have different cognitive properties and outcomes (e.g., Brewer, 1988). Social identities render people sensitive to a context in the sense that one thinks, feels, and acts on behalf of the entity with which one identifies, such as an organization (Brewer and Gardner, 1996; O’Reilly and Chatman, 1986). But because a social identity

summarizes one’s general interrelatedness with the world, [it] necessarily removes people from the immediate here and now, from the unique and idiosyncratic properties of specific objects and events to which one is dynamically responding (see Csikszentmihalyi, 1975; Wicklund, 1986). (Higgins, 1996: 1078)
Because a contextualized self represents one’s interrelatedness with the world in more concrete and situation-specific ways, any removal from the here and now—to the extent that it occurs at all—should be less pronounced.

Furthermore, because social identities represent people in ways that aggregate across situations, they can be readily applied to many different situations. A given social identity is therefore likely to be used more frequently than a particular aspect of a contextualized self. When a social identity (e.g., “I am a merger banker”) is made ready for use in memory, so are the associated behaviors and expectations (Thoits, 1991; e.g., asking for merger-relevant information). Schemas that are used more frequently are more likely to become applied automatically even when they are not relevant, resulting in decreased context-sensitivity (Bargh, 1989). In contrast, a contextualized self means that a person does not simply activate and apply a pre-existing social self-representation (e.g., “I am a merger banker”) but has to inductively construct a new social self-representation (e.g., “I work on this client’s project”) and thus to continuously consider new, specific expectations and needs (e.g., “this company does not require merger but corporate finance services”). Over time, people might become more practiced at discovering situation-specific uniqueness. The repeated activation of a core set of schemas is also less likely. Moreover, since the contextualized self is often generated in direct interactions, the relevant needs are likely to be available in concrete detail, versus supplied from memory. As a result, there would be fewer perceptual gaps for people to fill in automatically. Based on this logic, it is predicted that a contextualized self renders people more sensitive to a specific context than a social identity.

**The mutual constitution of individual and organization cognition.** As a fourth contribution, this study leads to a more social conception of cognition. It posits that what are
currently understood as inner-mental processes should also be viewed in distributed terms. In contrast to how traditional cognitive psychology views them, cognitive styles are not merely distinct ways in which a person forms mental representations. Nor are they simply social by virtue of the origin or content of mental concepts. This is the definition of “social” that the organizational literature uses, for example, when distinguishing between personal and social identities. They are social in the more expanded sense preferred by Weick and Roberts (1993): they are different ways in which people engage and interconnect organizational resources.

Deductive cognition means that people approach situations with their internalized concepts. This means that an individual prioritizes personal resources over other organizational resources. Deduction thus is an individual-centric form of organization cognition. Inductive cognition means that an individual approaches situations by first drawing on social resources. Induction thus is a collective-centric form of organization cognition. Individual cognition cannot be separated from the social system in which it takes place.

This reasoning has implications for how to conceptualize the interrelation that the model posits between individual and organization cognition (Figure 1). It would be misleading to interpret this interrelation as an interaction. The notion of an interaction tends to assume that the cognitive properties of one level (e.g., the individual) can be stated independently from the properties of another level (e.g., the organization) to assess such notions as fit (e.g., Chatman, 1991, 1989; Chatman and Barsade, 1995). In contrast, the data indicates that what a property such as “induction” or “expertise” means depends on the context. DCR refers to this more fundamental interrelation as “mutual constitution” (e.g., Lave, 2003). The findings lead to propositions about two different types of cognitive contexts, namely individual-centric and collective-centric, and the ways in which each context alters how a supposedly universally valid
cognitive process manifests. This insight into the context-induced specialization of cognition is the study’s fifth contribution.

In particular, within an individual-centric context, induction aims at deduction. For example, when the Red Bankers entered, they encoded concrete and observable information with the purpose to formulate abstract concepts. In contrast, in a collective-centric context, induction aims at the situation. For example, after six months, the Amp Bankers encoded concrete and observable information not necessarily for the purpose of retrieving existing solutions from memory—the bankers often did not know the relevant solution. Rather, the purpose was to generate solutions through social interaction. Similarly, the different types of organization cognition cause participants to hone their expertise in different ways. As a result, expertise manifests differently in these different contexts. In an individual-centric context, such as Red Bank, expertise manifests as described by traditional cognitive accounts. It involves the accumulation of abstract concepts that facilitates pattern recognition (e.g., Ericsson and Lehman, 1996; Simon, 1991). According to this cognitive miser perspective, experts generate abstract concepts to summarize a surfeit of information. Relevant skills are primarily intra-mental, such as memorization and classification.

While some researchers believe that this type of expertise also accrues under conditions of persistent uncertainty (e.g., Eisenhardt, 1989a; Eisenhardt and Tabrizi, 1995), others disagree. For example, Weick (1998: 549) argued that people who act effectively under persistent uncertainty “are not just Herbert Simon’s (1989) chess grandmasters who solve problems by recognizing patterns.” Yet, he did not empirically investigate what this different type of expertise consists of, which is one the present investigation’s contributions. The model posits that under conditions of persistent uncertainty organizations cultivate a collective-centric type of expertise
in which the primary resource is not a person’s mind but the larger social system. Collective-centric organizations tame the cognitive monster so that participants suspend the automatic hunches that their experience compels and augment their personal resources ad-hoc with collective resources. In addition to intra-mental skills, collective-centric expertise is also likely to require relational skills, such as listening (Weick, Sutcliffe, and Obstfeld, 1999), that future research should specify.

Collective-centric expertise differs from existing models of distributed decision-making processes, such as transactive memory and group decision-making (e.g., Baron, Kerr, and Miller, 1992; Laughlin and Hollingshead, 1995), in that the relevant resources are not a pre-specified set of persons with whom the focal individual regularly interacts. The bankers had to discern the best resource from a large and diffuse pool, consisting of hundreds of often unknown employees and also outside experts, such as accountants or lawyers. In addition, the relevant set of resources was not limited to persons but also included objects and task-structures. This means that in the present conceptualization (but not in the transactive memory and group decision-making paradigms), people can also exhibit collective-centric expertise during solitary activities, to the extent that they notice and use task cues.

In summary, this study used DCR to enrich the Carnegie School approach. The resulting framework can help understand more of the empirical variance in how organizations manage cognitive uncertainty, make more comprehensive predictions about cognition, and also realize unexploited potential of the Carnegie School theory. Namely, even though the Carnegie School theory states the importance of specific contexts in shaping cognition, the fascination with computers to simulate the human mind has predisposed scholars to abstract from particular organizational contexts to discover “invariants” of human cognition (Simon, 1990; Varela,
Thompson, and Rosch, 1996). Also, despite the Carnegie School theory’s systemic account of cognition, researchers chose the individual mind as the primary unit of analysis. In contrast, because DCR studies cognition in particular contexts, it sensitizes scholars to consequential variance in organizational practices and cognition. Its expanded unit of analysis helps conceptualize cognition as both an individual and a collective phenomenon. While the Carnegie School has advocated uncertainty reduction and DCR has advocated something like uncertainty amplification, this investigation uses DCR to investigate both organization practices comparatively. It explains the practices’ equal success and derives predictions about the different types of individual and organization cognition that are associated with each practice.

This study also advances DCR in important ways. Largely because of its neglect of individual cognition, DCR currently lacks empirical building blocks for a truly systemic account of cognition. The present analysis brings individual cognition back into distributed systems in the requisite contextualized way. Prior organizational DCR has focused on a one-way causality from organization to individual cognition (e.g., Weick, Sutcliffe, and Obstfeld, 1999). By empirically demonstrating the mutual constitution of individual and organization cognition, this article advances DCR’s understanding about cognition’s systemic aspects. In contrast to the previous emphasis on snap-shots of cognitive systems, my longitudinal approach details how and why different aspects of the system come to fit together over time.

This paper invites organizational researchers to not only apply but also contribute to basic psychological research by further exploring how organizations can modify cognitive processes—an endeavor for which they are well-positioned given their knowledge of both psychology and organizations. The desired result is a more genuinely social account of cognition to which this study contributes ideas.
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**Yin, R.K.**

Figure 1. A Distributed Model of Cognitive Change

The Management of Cognitive Uncertainty --91--
### Table 1

**Two Approaches to Managing Uncertainty**

<table>
<thead>
<tr>
<th>Practice</th>
<th>Reduce: Red Bank</th>
<th>Amplify: Amp Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staffing</td>
<td>Based on bankers’ personal expertise</td>
<td>Based on bankers’ availability</td>
</tr>
<tr>
<td></td>
<td>Bankers were “superstars”</td>
<td>Bankers were “fungible”</td>
</tr>
<tr>
<td>Roles</td>
<td>Predetermined roles on each deal</td>
<td>Deemphasized roles</td>
</tr>
<tr>
<td></td>
<td>Titles on business cards</td>
<td>No titles on business cards</td>
</tr>
<tr>
<td></td>
<td>Roles associated with specific tasks and behavioral norms</td>
<td>Fluid relation between roles and tasks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Norms difficult to infer</td>
</tr>
<tr>
<td>Feedback</td>
<td>360-degree feedback had limited number of categories. Focus on quantitative information</td>
<td>Detailed and concrete 360-degree feedback. Focus on qualitative information</td>
</tr>
<tr>
<td></td>
<td>Senior bankers: Primarily revenue goals</td>
<td>Senior bankers: Ongoing feedback, no pre-determined goals</td>
</tr>
</tbody>
</table>
### Table 2

#### Evidence of Uncertainty Reduction and Uncertainty Amplification Practices

<table>
<thead>
<tr>
<th></th>
<th>Formal Interviews</th>
<th>Informal Interviews</th>
<th>Observation</th>
<th>Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Red Bank:</strong></td>
<td>Reduced Uncertainty (Explicit, guidelines; abstract concepts; focusing of attention)</td>
<td>“The more you help people focus their attention on specific goals, the better their performance.” (MD)</td>
<td>“A lot of people look at investment banking and think that it is organic and everything. But there is a lot of structure. … One way you notice this structure is if you unintentionally violate it, overstep your bounds to a VP or do the job of an analyst. Those are interesting experiences.” (Associate)</td>
<td>“Bankers had personal development plans that guided what kinds of deal experiences they sought out. During VP training, bankers received detailed checklists on how to sell.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“We emphasize continuity in staffing. We want people to build and capitalize on their expertise.” (Director)</td>
<td></td>
<td>“When staffer received a new deal, she first checked computer to see who has relevant deal experience. Training material was designed to “simplify your daily decisions.””</td>
</tr>
<tr>
<td><strong>Amp Bank:</strong></td>
<td>Amplified Uncertainty (Withholding of guidelines; counteracting of abstract concept formation; broadening of attention)</td>
<td>“Our most catastrophic problems came about because people thought they were the experts. They thought they knew what was going on even though the market had changed. … What we do around here has to do with dispelling these illusions.” (MD)</td>
<td>“Bankers don’t get revenue goals because as soon as you have a goal you start strategizing and lose sight of things. But there was a time when they were intentionally given completely outlandish “stretch” goals, supposedly to shake up people’s thinking about what was possible and even to come to the realization that goals are sometimes not very meaningful in this kind of setting.” (Trainer)</td>
<td>“Amp Bank decided to discontinue formal banker training because “recipes are dangerous in our business.” (Presentation at staff meeting) Findings from internal study: “It is in the nature of experts to become overconfident. … Training and incentives are not sufficient to keep overconfidence in check. … Checks must be designed into the work process.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“One of the reasons why we staff bankers fungibly is to keep them on their toes, to think in fresh ways.” (Director)</td>
<td>“Sure, we have leadership. It kind of works by vacuum. People do what needs to get done. And Joe [department head] leaves you alone.” (VP)</td>
<td>“Bankers stayed at foreign offices “so that they don’t take one way of doing things for granted.” (MD) Training focus on inconsistencies: “Make swift, practical decisions and carefully analyze all available information.”</td>
</tr>
</tbody>
</table>
Table 3

| Evidence of Individual-Centric and Collective-Centric Organization Cognition |
|---|---|---|---|
| **Formal Interviews** | **Informal Interviews** | **Observation** | **Documents** |
| **Red Bank: Individual-Centric Organization Cognition** | “When the environment is that complex, you cannot rely on an organization. Organizations are simply not agile enough. You need to rely on really smart, brilliant individual minds.” (Director) | Frequent reference to individual brains to explain organizational outcomes: “He is the brain behind the derivatives effort.” | Excerpt from strategy report: “Our brand is tied to our superstars. Ask our clients who Red Bank is and they will list some of the most influential bankers in the industry.” |
| | “I hate to use clichés. But we hire athletes. Our assets do ride the elevator every night.” (Director) | “People here are originals. We attract clients because of our strong personalities.” (Associate) | When senior bankers left, financial press speculated about fate of a given business unit. |
| **Amp Bank: Collective-Centric Organization Cognition** | “I can confidently say that this is the only place […] where it is as natural for people to talk to their colleagues as it is to take the next breath.” (Director) | Frequent use of metaphors that portray bankers as merely gathering information for the organization, while thinking is attributed to the organization: “We are the arms and the legs of this organization.” | Excerpt from internal presentation: “We discourage our bankers from talking to the press…. We sell the services of an organization, not that of individuals.” |
| | “Even very junior bankers can take on very complicated projects because they have access to the firm’s resources.” (MD) | “In every other place, they tell you to talk to your colleagues or reward you when you do it. Here you don’t have any other choice if you want to get the job done.” (Director) | Industry survey showed that clients retained confidence in the bank even when it lost several senior bankers. |
| | | On a typical deal, Amp Bank had more frequent brainstorming meetings than Red Bank (average of 4 versus 2). Brainstorming meeting: bankers invited bankers outside the team to give input on a client presentation. | |
### Table 4

**Change in Banker Cognition and Self**

<table>
<thead>
<tr>
<th></th>
<th>Red Bank</th>
<th>Amp Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First six months</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introductory Training</td>
<td>Focus on banker’s role</td>
<td>Focus on bank’s resources</td>
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<tr>
<td>Training</td>
<td>Clear categories, detailed behavioral guidelines</td>
<td>Fuzzy, phenomenological info, fewer guidelines</td>
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<td></td>
<td>Defined competence trajectory, linked to roles</td>
<td>Weak link between assignments and competence</td>
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<td></td>
<td>Designated mentor (“buddy”)</td>
<td>Bankers needed to find resources</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>Transient</td>
<td>Persistent</td>
</tr>
<tr>
<td>Self</td>
<td>Trait-based (not used to judge behaviors due to newcomer status)</td>
<td>Trait-based</td>
</tr>
<tr>
<td>Cognition</td>
<td>Deductive and trait-oriented</td>
<td>Deductive and trait-oriented</td>
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<tr>
<td></td>
<td>Focus on learning</td>
<td>Focus on performance of self</td>
</tr>
<tr>
<td>Attunement</td>
<td>Mostly adaptive</td>
<td>Mostly maladaptive</td>
</tr>
<tr>
<td><strong>After six months</strong></td>
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<tr>
<td>Uncertainty</td>
<td>Transient</td>
<td>Persistent</td>
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<tr>
<td>Self</td>
<td>Trait-based</td>
<td>Contextualized</td>
</tr>
<tr>
<td>Cognition</td>
<td>Deductive and trait-oriented</td>
<td>Inductive and task-oriented</td>
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<td></td>
<td>Focus on performance of self</td>
<td>Focus on task processes</td>
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<tr>
<td>Attunement</td>
<td>When low cognitive uncertainty: Adaptive</td>
<td>Mostly adaptive</td>
</tr>
<tr>
<td></td>
<td>When high cog. uncertainty: Maladaptive</td>
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*Note: The table outlines the changes in banker cognition and self Attunement, Red Bank and Amp Bank, focusing on the first six months and after six months. The table highlights the focus on roles, resources, guidelines, competence trajectory, and mentored relationships. The Uncertainty, Self, Cognition, and Attunement aspects are compared between Red Bank and Amp Bank, with notes on transient and persistent states, trait-based and contextualized approaches, deductive and inductive orientations, and adaptive and maladaptive attunements.*
<table>
<thead>
<tr>
<th>Evidence of Deductive and Inductive Cognition</th>
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</thead>
<tbody>
<tr>
<td><strong>Formal Interviews</strong></td>
</tr>
<tr>
<td><strong>Red Bank:</strong> Deductive Cognition (Abstract encoding, top-down processing)</td>
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<tr>
<td></td>
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<tr>
<td><strong>Amp Bank:</strong> Inductive Cognition (Concrete encoding, bottom-up processing)</td>
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</table>
### Table 6
Evidence of Trait-Based and Contextualized Self

<table>
<thead>
<tr>
<th></th>
<th>Formal Interviews</th>
<th>Informal Interviews</th>
<th>Observation</th>
<th>Documents</th>
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</thead>
<tbody>
<tr>
<td><strong>Red Bank: Trait-based</strong></td>
<td>“I am a merger specialist. And to be good at that, you need to be aggressive, the go-getter type. That’s me.” (Associate)</td>
<td>“I think that people here worry a lot about who they are. You have to. This place is not called ‘the echoing halls’ for nothing. Once you have established a reputation, it precedes you wherever you go around here.” (VP)</td>
<td>Bankers introduced themselves to clients in terms of their relevant experience and personality traits (e.g., “I am competitive, I don’t like to lose.”).</td>
<td>In performance reviews, bankers described self and others in terms of traits, such as “John is highly intelligent. But he is also shy and does not have the personal presence expected of a banker at his level.”</td>
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<td><strong>Self</strong> (banker views traits as stable inner causes that motivate behavior across situations, and considers traits, therefore, as important to think about)</td>
<td>“People don’t have to describe themselves around here. You can see who someone is by the kind of watch they are wearing, how their cubicle looks. Together, all of that does predict behavior pretty accurately.” (VP)</td>
<td>“[Head of department] is sitting right behind me while I am working on a deal for him. And I am really freaking out. All I think about is whether he thinks I am too slow because I don’t build the spreadsheet fast enough or whether I am ineffective with clients.” (Associate)</td>
<td>During one year, analyst performance declined. Bankers did not analyze this decline but simply assumed that it was caused by a “bad hiring year,” thus attributing performance to a banker’s inner traits.</td>
<td>Press articles referred to the “big personalities” of the bank’s superstars, which bankers foregrounded during press interviews.</td>
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<td><strong>Amp Bank: Context-based Self</strong> (banker views self as varying across situations and considers traits, therefore, as less important to think about)</td>
<td>“I know you are interested in identities. But you just have to accept that people here don’t think in these terms. … People think of themselves in the context of the deal they are working on and what they have to do next.” (Director)</td>
<td>“Hmmm, I think you asked me that question before. What did I say the last time? … You just don’t have that much opportunity to think about these things [i.e. one’s self] around here.” (Associate)</td>
<td>Bankers introduced themselves to clients in terms of the specific activities they could complete for a particular client (e.g., “You can rely on me for all buyer contacts.”).</td>
<td>In performance reviews, bankers described self and others in more contextualized terms, qualifying attributes with reference to specific situations and also using more behavioral (versus trait-based formulations). For example: “When Sally was overworked and when the time frame was rushed, she overlooked input from team members.”</td>
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<td>“This place pounds the ego out of you. Each deal requires so much more knowledge and insight than one single person can deliver. … So my attributes really don’t matter that much.” (MD)</td>
<td>“This job glues your attention outside of yourself, to what you do. No one cares about who you are. It’s just not practical information.” (Associate)</td>
<td>To reverse one performance decline, bankers analyzed how they used resources and recommended changing software. Bankers thus viewed performance as tied in with the bank’s resources.</td>
<td>Training department material: “Bankers here learn to deemphasize their personalities…. Having a personality means that you do something because of who you are--irrespective of the situation.”</td>
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Table 7

**Evidence of Transient and Persistent Uncertainty**

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<thead>
<tr>
<th></th>
<th>Formal Interviews</th>
<th>Informal Interviews</th>
<th>Observation</th>
<th>Documents</th>
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<tbody>
<tr>
<td><strong>Red Bank:</strong></td>
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<tr>
<td>Transient Uncertainty</td>
<td>“Our system ensures that the initial confusion that everyone has when they start a new job doesn’t last for long.” (Red Bank Trainer)</td>
<td>“Initially there was some uncertainty, like in every job. That’s only natural. But I would say that when you hit the six-month mark, most of us know what they should be doing and are also good at doing it.” (Associate)</td>
<td>After about six months, when bankers were staffed on a new deal, they often worked independently to create a first draft of a client presentation.</td>
<td>After about six months, most junior bankers had covered most of the topics on their “to learn” list.</td>
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<td>“We are pretty good at ramping up our people quickly. No one likes uncertainty. Also, having clueless junior bankers is just a drain on everyone’s time and resources.” (VP)</td>
<td>“If I had to rate how uncertain I felt at different stages here, I’d give it about a 6 out of 10 during the first few months. And now, maybe a 3.” (Associate after one year)</td>
<td>In a staff meeting, the department head told the group that “almost all of our new colleagues are now up to speed after only half a year of working here.”</td>
<td>E-mail feedback from senior Red Banker on an early version of the paper: “I think you underemphasize the psychological benefits of feeling like you know what you are doing, which is something that people have here very soon, after only a period of months.”</td>
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<td><strong>Amp Bank:</strong></td>
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<tr>
<td>Persistent Uncertainty</td>
<td>“We are not different from anyone else. No one here likes uncertainty. But uncertainty is just a fact that you cannot afford to forget. And this place reminds you all the time.” (Director)</td>
<td>“If you ask me, the introductory training here just sucks… I am smart, capable, and highly motivated. The fact that I still don’t know how to do my job means that the system here simply doesn’t work.” (Associate after 4 months)</td>
<td>Even after almost 2 years, associates rarely completed first drafts of client presentations independently. They often had to call others because they were stuck on a problem.</td>
<td>White paper from training department warned that the “high uncertainty that our professionals experience on a continuous basis is unusual by industry standards … and is likely to eventually result in attrition … It is likely to damage our ability to attract the strongest talent.”</td>
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<td>“Even at my level, I often feel as confused as I did when I first started. … I still work on deals that have radically new components.” (VP)</td>
<td>“I don’t think my uncertainty rating has changed that much since I’ve started. It’s still pretty high.” (Associate after one year)</td>
<td>In an internal meeting, bankers discussed the high emotional cost of “all the uncertainty that people experience here on a daily basis.”</td>
<td>E-mail feedback from senior Amp Banker on early version of paper: “I like the term persistent uncertainty a lot better. Continuous uncertainty sounds like something you can get used to. I like ‘persistent’ because people can be persistent. The kind of uncertainty we experience here has that kind of agency. It is like an external force, something that controls you, and that you just cannot get rid of.”</td>
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APPENDIX A: SAMPLE QUESTIONS FOR FORMAL INTERVIEWS

The specific questions I asked during interviews evolved as I analyzed data and formulated new research questions. In general, my goal was to get answers to as many of the questions below as possible from as many of the bankers I observed as possible. Whatever I could not cover during a formal interview, I tried to cover in informal interviews.

1. Please summarize your personal and professional background.

2. What is your role in this organization? What kinds of activities does this entail?

3. Tell me about the organization’s socialization processes. What kinds of processes does the organization have in place to convey the knowledge you need to be effective at your job? How effective are these processes?

4. Tell me about your first few months with the organization.

5. What did you learn during these initial months with the organization? How did you learn?

6. Can you describe specific learning situations? What did you think in these situations?

7. Has membership in the organization changed you as a person? In what way? Through what processes or experiences? How do you evaluate this change?

8. How would you describe yourself when you entered the organization? How would you describe yourself at [midpoint of tenure; current point in time]? Can you illustrate your characteristics at each point with an example?

9. How would you describe your knowledge and skills [when you entered the organization; at the midpoint of your tenure; now]?

10. Please describe a situation that you considered successful. Why do you consider it successful? What caused it to be so successful? Can you recall what you were thinking during this situation? Can you guess what other key participants were thinking during this situation?
11. Please describe a situation that you considered unsuccessful. Why do you consider it unsuccessful? What caused it to be unsuccessful? Can you recall what you were thinking during this situation? Can you guess what other key participants were thinking during this situation? If you could change how this situation was handled, what would you change?

12. What makes an analyst (associate, VP, director, MD) successful in this organization?

13. How successful do you consider this organization? Why? Against which standard or comparison do you assess its relative success? How would you improve the functioning of this organization?

14. Has the organization’s performance changed over time? Why? How do you know?

15. What makes an investment bank, in general, successful? Why do investment banks fail?