

ADHERENCE TO ORGANIZATIONAL ROUTINES:

A MICRO-FOUNDATIONS LENS

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ABSTRACT

Organizational routines are viewed as a source of strategic competitive advantage that enhances firm performance. How do organizations continue to adhere to organizational routines after the routines are integrated in the work flow? I introduce and define a new construct, adherence to routines, which captures the theoretical phenomenon of maintaining the repeatability of organizational routines. I apply trait activation theory to explain why employees adhere to routines. I theorize that three individual traits: (1) conscientiousness, (2) openness to experience, and (3) individual entrepreneurial orientation impact adherence to routines. Moreover, I theorize that employees' perception of their supervisors' initiating structure leadership moderates the relationships between the three individual traits and adherence to routines. In this study, I developed a scale for the newly introduced construct adherence to routines. Using a sample of 543 employees surveyed in the U.S., I validated the new scale. The findings also support my arguments that conscientiousness is positively related to adherence to routines, and that openness to experience and individual entrepreneurial orientation are negatively related to adherence to routines. I also found support for employees' perception of their supervisors' initiating structure leadership as a moderator to the relationship between conscientiousness and adherence to routines. These results suggest that initiating structure leadership may have triggered the expression of conscientiousness, resulting in higher levels of adherence to routines.

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CHAPTER ONE: INTRODUCTION

Strategic management researchers study why some organizations outperform others (Meyer, 1991). One central theory that explains why some firms perform better than others is resource-based theory, which posits that some firms possess strategic resources that allow them to create a competitive advantage that leads to superior performance (Barney, 1991). Strategic resources can create competitive advantages because they are valuable, and because they are not available to competitors and are hard to imitate (King & Zeithaml, 2001; Peteraf, 1993; Schmidt & Keil, 2013).

One such strategic resource is organizational routines (Conner & Prahalad, 1996). They are defined as repetitive, recognizable patterns of interdependent actions, carried out by multiple actors (Becker, 2004; Feldman & Pentland, 2003; Friesl & Larty, 2013; Salvato & Rerup, 2011). Organizational routines are complex processes that rely on existing knowledge, experience, and repetition to produce predictable outcomes (Salvato & Rerup, 2011). Organizational routines are also known as standard operating procedures (SOP) (Gersick & Hackman, 1990). For example, an aircraft's cockpit is conducive to certain standard operating procedures for takeoff and landing which are complex routines composed of multiple interdependent actions (Edmondson, Bohmer, & Pisano, 2001). Organizational routines can be valuable to the firm because the knowledge embedded in them is intrinsic to how a firm creates products and services, and conducts various activities (Argote & Ingram, 2000; Yang, Lin & Peng, 2011). They are viewed as efficient mechanisms that store organizational knowledge, reduce governance costs, and improve firm

performance (Allatta & Singh, 2011; Gersick & Hackman, 1990). The formation of routines has an ambiguous and a path-dependent nature. As a result, routines are often unique to each firm thereby making them challenging for competitors to copy (Szulanski, 1996; Szulanski & Winter, 2002). Thus, routines can be viewed as a source of competitive advantage because of their intrinsic value and because they are difficult to imitate (Helfat & Peteraf, 2003; Mahoney & Pandian, 1992; Nag & Gioia, 2012; Nelson & Winter, 1982).

Many organizations' growth strategies depend on successfully transferring organizational routines from one location to multiple other locations. Research shows that the successful transfer of a routine is the main form of growth for organizations such as McDonald's, Walmart, and Starbucks (Winter, Szulanski, Ringov, & Jensen, 2012). Transferring a routine in an organization from a sending to a receiving unit is a process that depends on the characteristics of everyone involved (Feldman & Pentland, 2003; Williams, 2007). The transfer process is identified as having four stages: initiation, implementation, ramp-up, and integration (Szulanski, 1996). The initiation stage encompasses all events that lead to the decision to transfer. The implementation stage begins with the decision to proceed. This stage involves the flow of resources between the sending and receiving units, and the stage phases out when the receiving unit begins using the transferred knowledge. Ramp-up begins when the receiving unit starts using the transferred knowledge. This stage involves identifying and resolving unexpected problems that impede the receiving unit's ability to match the post-transfer performance expectations. Research shows that the receiving unit is likely to use the new knowledge ineffectively at first (Adler, 1990; Chew, Leonard-Barton, & Bohn, 1991), but gradually improves performance, ramping up toward a satisfactory level. Integration begins after the

receiving unit achieves satisfactory results with the transferred knowledge. After the integration stage, use of transferred knowledge gradually becomes routinized.

Research has shown that transferring routines is challenging and some of the reasons that make them valuable also make them hard to transfer (Szulanski, 1996; Szulanski & Winter, 2002; Winter et al., 2012). There are multiple reasons why routines are hard to transfer. First, the receiving unit might not have the required knowledge to comprehend and execute a routine, that is, the receiving unit lacks absorptive capacity (Cohen & Levinthal, 1990; Szulanski, 1996). Second, routines are complex in their formation and are path-dependent by nature. Accordingly, the receiving party might alter the routines without understanding their causes and consequences, which could leave the routines less impactful in the new unit (Winter & Szulanski, 2002). A third potential challenge that makes it harder to transfer routines is the nature of the relationship between the source unit and the receiving unit. The existence of an arduous relationship between the source and receiver adds an extra barrier to the transfer process (Szulanski, 1996; Szulanski & Winter, 2002). In sum, transferring routines can be difficult.

There are two ways to transfer routines: replication and adaptation (Williams, 2007). Replication is repeating the routines in their exact form, and adaptation is allowing managers in the receiving unit the freedom to adapt routines to local conditions (Williams, 2007). Some research suggests that managers should replicate routines in an exact form because routines are causally ambiguous, include tacit knowledge, and are path-dependent. As a result, any modifications might be hazardous (Jensen & Szulanski, 2007; Szulanski & Jensen, 2008; Winter & Szulanski, 2001). Research also suggests that replication is favored when routines are transferred among identical units in similar environments (Williams, 2007). Other research, however, suggests that there are advantages to allowing managers to adapt routines to local

conditions because adaptation ensures a better fit between the routine and its environment (Kostova, 1999; Kostova & Roth, 2002).

Statement of the problem

What we know so far about organizational routines is that: first, organizational routines enhance firm performance and are viewed as a strategic competitive advantage (Feldman & Pentland, 2003; Jonsson & Foss, 2011; Pentland, Feldman, Becker, & Liu, 2012; Winter & Szulanski, 2001). Second, transfer of routines is a complex process that includes four stages: initiation, implementation, ramp-up, and integration (Feldman & Pentland, 2003; Jensen & Szulanski, 2007; Szulanski, 1996). Third, transfer of organizational routines can come either in the form of exact replication or adaptation that allows deviation from rules and templates (Szulanski & Jensen 2006; Winter & Szulanski, 2001). Fourth, there are multiple factors that impede transferring routines within an organization from one unit to another (Szulanski, 1996; Winter & Szulanski, 2002).

What we do not know is why organizational routines (being an initial routine or a transferred routine) are maintained after full integration. That is, do employees continue to adhere to routines after they are integrated into the work flow, and why? I introduce a new construct called ‘adherence to routines’ and define it as a form of work behavior where employees follow and implement all the ordered steps of a routine exactly as trained. This construct aims to capture the theoretical phenomenon pertaining to the maintenance and repeatability of an organizational routine.

Therefore, the main research question of this study is to examine why employees continue to adhere to organizational routines (being an initial routine or a transferred routine) after the routines are set in place and integrated into the work flow. It is important to study adherence to routines because of the established link between routines as a source of competitive

advantage and firm performance (Allatta & Singh, 2011). But in order to sustain this competitive advantage, managers need to ensure that employees are adhering to routines that were set up and integrated. Routines enhance firm performance because they provide the building blocks for what the firm can do (Cyert & March, 1963; Karim & Mitchell, 2000; Nelson & Winter, 1982). Routines are also an efficient mechanism for storing organizational knowledge (Bingham & Eisenhardt, 2011; Kogut & Zander, 1992). Routines can save governance costs because they minimize deliberation over decision-making because decisions about what to do and what not to do are embedded in the routines. Routines are strategic resources because they are used to support firm growth strategies, and create value by applying existing and proven routines in new settings (Helfat & Peteraf, 2003; Nelson & Winter, 1982; Szulanski & Winter, 2002). For example, Knott (2003) found that the total returns to franchised establishments were fifty percent higher than those to independent establishments, and that a third of that difference was attributable to the specific routines that franchised establishments follow. In another study, Winter et al. (2012) found that deviation from transferred routines increased the risk of unit failure and decreased the survival likelihood of replicating units. Thus, given the significant relationship between routines and performance, understanding the factors that explain why employees adhere to routines is important and timely.

Summary of the study

In this study I examine factors that affect employees' propensity to adhere to organizational routines. The specific research question is: Why do employees continue to adhere to organizational routines after routines have been set up and integrated in the work flow? The new construct introduced in this study, adherence to routines, is described as a specific form of work behavior pertinent to organizational routines.

Work behavior as an employee outcome has been heavily studied in the organizational behavior literature (Salgado, 1997; Salgado, 2002; Schmidt, Shaffer, & Oh, 2008; Tett, Jackson, & Rothstein, 1991). There is a wide stream of research in the organizational behavior literature that shows that individual traits and situational factors affect various forms of work behavior such as task performance, organizational citizenship behavior (OCB), and counter-productive work behavior (CWB) (Barrick & Mount, 1991; Barrick, Mount, & Judge, 2001; Borman & Motowidlo, 1993; Campbell, McCloy, Oppler, & Sager, 1993). Task performance involves activities that provide support for the organization's core technical processes. When employees use technical skills to accomplish a task, they are engaging in task performance (Borman & Motowidlo, 1993; Van Scotter & Motowidlo, 1996). On the other hand, OCB and CWB are contextual performances that involve behavioral patterns that support the psychological and social context in which task activities are performed (Scotter, Motowidlo, & Cross, 2000).

One of the theories that explain why individual traits affect employees' work behavior and how this relationship is moderated by situational factors is trait activation theory (Tett & Gutterman, 2000; Tett & Burnett, 2003). According to trait activation theory, individual traits represent a propensity to behave in an identifiable way, and are expressed in response to situational cues in the work environment; cues that are more likely to activate some traits more than others (Colbert & Witt, 2009; Tett & Gutterman, 2000).

Accordingly, this study applies trait activation theory, from the organizational behavior literature, to explain how individual traits and situational cues impact adherence to routines. This study falls under the umbrella of a micro-foundations approach to organizational routines since it will examine the role of individuals in adhering to routines. While some research work has considered the role of individuals in organizational routines, many individual traits remain

unexplored. The current literature found that some individual characteristics matter for successfully implementing and integrating routines (Friesl & Larty, 2013; Lervik, Hennestad, Amdam, Lunnan, & Nilsen, 2005). We know that employees' willingness and abilities (Maritan & Brush, 2003), their shared reference to quality guides (Essen, 2008), and their intentions and orientations (Howard- Grenville, 2005) have an impact on how they implement routines. However, many other individual traits remain unexplored regarding how they impact not only implementation of routines, but repeatedly maintaining them, i.e. adherence to routines. Moreover, there have been multiple calls in the routines literature that suggest future research on micro-foundations of organizational routines (Felin, Foss, Heimeriks, & Madsen, 2012; Friesl & Larty, 2013; Hoopes & Madsen, 2008; Miller, Pentland, & Choi, 2012; Salvato, 2003; Salvato & Rerup, 2011), and the most recent review paper on routines concluded that the role of individual agency in the practice of routines has not yet been considered enough in empirical and conceptual research on organizational routines (Friesl & Larty, 2013).

Specifically in this study, I focus on three individual traits, which are conscientiousness, openness to experience, and individual entrepreneurial orientation, and one situational cue from the work environment, which is initiating structure leadership. This study explores the main effects of these three individual traits on adherence to routines, as well as the moderating effect of initiating structure leadership on the three main relationships. By doing so, I address a specific theoretical gap in the literature, which is the link between individual traits and adherence to routines, moderated by situational cues from the work environment.

I chose the first two traits, conscientiousness and openness to experience, which are two out of the big 'five-factor personality model' (Barrick & Mount, 1991), because a major subset of individual traits that trait activation theory considers is personality traits (Barrick & Mount,

1991; Carter, Dalal, Boyce, O'Connell, Kung, & Delgado, 2013; Perrewe & Spector, 2002). Moreover, the big five-factor personality model is the most commonly used model that provides a general framework for understanding how employees' personality traits influence their work behaviors (Barrick & Mount, 1991; Barrick & Mount, 2005; Hertz & Donovan, 2000). The big five-factor model includes the traits of conscientiousness, openness to experience, emotional stability, agreeableness, and extraversion. In this study, I focus on conscientiousness and openness to experience as predictors of adherence to routines because the three remaining traits (extraversion, agreeableness, and emotional stability) are more relevant in team functioning contexts (Hogan & Holland, 2003; Liao, Joshi, & Chuang, 2004; Mount, Barrick, & Stewart, 1998; Penney, David, & Witt, 2011), which is not the context of this study.

In addition to the two personality traits, conscientiousness and openness to experience, I consider a third individual trait as a predictor of adherence to routines, which is individual entrepreneurial orientation (IEO). IEO is a multi-dimensional construct that includes the factors: proactiveness, risk-taking, and innovativeness (Bolton & Lane, 2012). IEO is a fairly new construct that captures the well-established firm-level entrepreneurial orientation (EO) construct (Lumpkin & Dess, 1996; Moreno & Casillas, 2008) at the individual level (Bolton & Lane, 2012). Researchers in the field of entrepreneurship have frequently studied what characterizes individuals who are entrepreneurs as compared to non-entrepreneurs, however the relationship between an individual level construct such as IEO and individual work behavior, such as adherence to routines, has not been studied. It is important to study this relationship because EO has been shown to positively influence firm performance and profitability at the firm level (Johan & Dean, 2003; Avlontis & Salavou, 2007; Tang, Tang, Marino, Zhang, & Li, 2008).

Therefore, in this study I will be able to test at the individual level the relationship between IEO and individual work behavior, namely adherence to routines.

Finally, the situational moderator that I consider in this study is initiating structure leadership. Trait activation theory asserts that cues from the work environment serve as situational moderators to the relationship between individual traits and work behavior (Tett & Burnett, 2003). The cues may come from the task itself, from the social environment, or from the organizational culture (Tett & Burnett, 2003). In this study, I focus on one trait-relevant cue from the social environment: the employees' direct supervisor, and more specifically the employees' perception of their supervisors' initiating structure leadership. I will explore the moderating effect of initiating structure leadership on the three main relationships between adherence to routines and: (1) conscientiousness, (2) openness to experience, (3) IEO. The reason I chose this situational moderator is that initiating structure leaders focus on establishing and maintaining structures for shaping subordinates' tasks and activities (DeRue, Nahrgang, Wellman, & Humphrey, 2011). Therefore, initiating structure leadership is a relevant cue to the work behavior in this study, adherence to routines. Moreover, the routines literature provides evidence that leadership plays a role in enhancing the efficiency of routines. For example, in a case study in the automotive industry, Adler, Goldaftas, and Levine (1999) found that support of leadership played a role in enhancing routines efficiency. Another example from the routines literature found that certain leadership practices support the adoption of new routines in a hospital setting (Edmondson et al., 2001).

In order to test the theoretical model and relationships described above, I collect data using a Qualtrics online survey. The online survey asks employees from the United States of America to respond to a series of questions using validated scales, new items for the new

construct adherence to routines, as well as demographic questions. I use student-recruited sampling, which is a technique that involves the use of student recruiters to find participants on behalf of a researcher (Salganik & Heckathorn, 2004). The student-recruiters are from the business school at the University of Alabama.

Contribution

Given the importance of the link between organizational routines and firm performance, the potential for organizations to become deficient in adhering to routines, research investigating what factors lead firms to adhere to routines is both well-timed and necessary. My theoretical contribution is to provide theory to explain why organizations continue to adhere to routines after they the routines have been integrated in the work flow. This study applies trait activation theory from the organizational behavior literature, and uses it in organizational routines literature to explain how individual traits (conscientiousness, openness to experience, and individual entrepreneurial orientation) and situational cues (initiating structure leadership) impact adherence to routines. This study also introduces and defines a new construct, adherence to routines that captures the theoretical phenomenon pertaining to the maintenance of the repeatability of an organizational routine.

Moreover, this study also offers empirical evidence on how firms continue to adhere to routines, in addition to offering a new scale to measure adherence to routines. Finally, this study offers empirical evidence to test the validity of the fairly new construct, IEO, which has been recently introduced to the literature in 2012.

CHAPTER TWO: LITERATURE REVIEW

Origins of organizational routines

Over thirty-two years have passed since Nelson and Winter (Nelson & Winter, 1982) put the concept of routines at the center of analysis of organizational and economic change. One of the important contributions made in their book “*An Evolutionary Theory of Economic Change*” is to draw attention to the role of routines in the economy. Even though Nelson and Winter were not the first to define routines, they were the pioneers in introducing routines as the central unit of analysis used to understand how firms and the economy work. Prior to Nelson and Winter, routines were defined as patterns. In 1964, Sidney Winter (1964; p. 263) defined a routine as ‘a pattern of behavior that is followed repeatedly, but is subject to change if conditions change.’ Similarly in 1967, Arthur Koestler defined routines as ‘flexible patterns offering a variety of alternative choices’ (Koestler, 1967; p. 44). Expanding on the definition of patterns, Nelson and Winter (1982) explained that routines also involve ‘remembering by doing’ and, as such, routines are a way of storing important organizational knowledge. Accordingly, routines allow for an organization’s experience and knowledge to be turned into programmed rules that are useful to the firm (March & Simon, 1958; Nelson & Winter, 1982). Moreover, Nelson and Winter (1982; p. 120) discussed that replication of routines is important because it ‘makes possible a relatively precise copying of a functioning system that is far too large and complex to be comprehended by a single person.’ They suggest that the process of routine replication requires recurrent observation of the routine in action in order to ensure that the tacit knowledge

embedded in organizational routines is passed on to new units (Nelson & Winter, 1982; Polanyi 1964).

Definition of organizational routines

While Nelson and Winter's work (1982) was not the first to mention routines, it was a significant milestone in that it drew attention to and stimulated research on the concept of routines.

Organizational routines are viewed in the management literature as key mechanisms by which organizations achieve much of what they do (Feldman & Pentland, 2003; Nelson & Winter, 1982). It is widely accepted now that routines are defined as '*repetitive, recognizable patterns of interdependent actions, carried out by multiple actors.*' (Becker, 2004; Feldman & Pentland, 2003; Friesl & Larty, 2013; Salvato & Rerup, 2011). Routines are the most common form of decision-making in organizations and they enhance firm performance because they provide the building blocks for what the firm can do (Cyert & March, 1963; Karim & Mitchell, 2000; Nelson & Winter, 1982). Routines have been viewed as complex processes that extensively rely on existing knowledge, linear execution, and repetition in order to produce predictable outcomes at different organizational levels (Cohen, Burkhart, Dosi, Egidi, Marengo, Warglien, & Winter, 1996; Eisenhardt & Martin, 2000).

Routines are valuable to firms because of the tacit knowledge embedded in them (Foss, 2003; Gavetti & Levinthal, 2000; Parmigiani & Howard-Grenville, 2011). Knowledge, defined as information and know-how (Kogut & Zander, 1992), is known to be an important valuable resource to firms (Grant, 1996; Heimeriks, Schijven, & Gates, 2012). Resource-based theory predicts that managers keep those resources in the firm that are central to competitive advantage (Conner & Prahalad, 1996). Such resources are characterized as valuable, rare, inimitable and non-substitutable (VRIN) (Barney, 1991). Tacit knowledge is defined as idiosyncratic

knowledge that requires time to develop and is path dependent (Conner & Prahalad, 1996; Kogut & Zander, 1992). Accordingly, tacit knowledge stored in organizational routines renders routines as valuable resources to the firm and a source of competitive advantage (Lewin, Massini, & Peeters, 2011; Nag & Gioia, 2012).

In sum, routines (1) are processes in which important organizational knowledge is stored (Nelson & Winter, 1982), (2) involve ‘remembering by doing,’ (3) are created, adjusted, and fine-tuned by ‘doing’ and ‘re-doing’ tasks by multiple actors (Winter & Szulanski, 2001), and (4) are viewed as valuable resources to the firm and a source of competitive advantage. Next, I will discuss the transfer of organizational routines.

Transfer of organizational routines

Transfer of organizational routines inside the firm consists of the firm’s transfer of an internal routine performed in some unit of the organization to another unit(s). Routine transfer is a complex process that involves transferring the knowledge embedded in tacit components of the routine from the receiving to the sending unit (Kogut & Zander, 1992; Nelson & Winter, 1982; Szulanski, 1996). Based on the empirical evidence of research on innovation diffusion (Rogers, 1983), technology transfer (Galbraith, 1990; Teece, 1976), and implementation (Tyre, 1991; Tyre & Orlikowski, 1994), Szulanski (1996) defines internal transfer of routines as a process consisting of four stages: initiation, implementation, ramp-up, and integration.

The first stage, the initiation stage, encompasses all events that lead to the decision to transfer. A transfer is initiated when both a need and the discovery of that need coexist within the firm. For instance, the detection of a need may start a search for potential solutions, and this search could lead to the discovery of a routine elsewhere in the firm that could offer a solution (Glaser, Abelson, & Garrison, 1983; Rogers, 1983; Zaltman, Duncan, & Holbek, 1973). As a

result, the firm would inquire into how this routine is obtaining the sought after results (Balm, 1992). This process often requires months of information collection and evaluation (Teece, 1976). Another instance that could trigger the need to transfer a routine could be that the firm is expanding geographically, and the need to transfer routines is embedded in the expansion decision. For example, Knott (2003) explains how franchising is about transferring a set of operational routines from franchisors to either franchisees or employee-managers.

The second stage, the implementation stage, begins with the decision to proceed. During this stage, resources and information are expected to flow between the receiving unit and the sending unit (Szulanski, 1996). In this stage, the sending and receiving units are expected to communicate in order to facilitate the transfer of information embedded in the routines (Rice & Rogers, 1980; Szulanski, 1996). In case of repetitive transfers of the same routine from the sending unit to different receiving units, this stage also helps to identify previous problems in previous transfers of the same routine, and facilitates introducing the new routine to the receiving unit(s) (Buttolph, 1992; Szulanski, 1996). The implementation stage starts to fade after the receiving unit begins using the transferred routine (Jensen & Szulanski, 2007).

The third stage, the ramp-up stage, begins when the receiving unit starts using the transferred routine. It is at this stage that the receiving unit usually identifies and attempts to resolve unexpected problems that hinder its ability to match the expected performance of the routine (Szulanski, 1996; Tyre & Orlikowski, 1994). It is very likely that the receiving unit uses the new knowledge ineffectively at first because the knowledge embedded in the routine is tacit and interdependent (Adler, 1990; Baloff, 1970; Chew et al., 1991; Kogut & Zander, 1992). But research shows that performance gradually improves, ramping up toward an acceptable level (Chew et al., 1991; Galbraith, 1990; Szulanski & Jensen, 2006).

The fourth stage, the integration stage, begins after the receiving unit achieves satisfactory results with the knowledge embedded in the transferred routine. In this stage, the use of the transferred knowledge progressively becomes routinized. That is, the actions and actors of the routine become typified (Szulanski, 1996; Szulanski & Winter, 2002). It is expected at this stage that the level of coordination of the activities within the transferred routine is at a stable and predictable level (Nelson & Winter, 1982; Szulanski, Cappetta, & Jensen, 2004; Tolbert, 1987). As a result, the routine progressively loses its novelty and becomes part of the taken-for-granted reality of the organization (Feldman & Pentland, 2003; Szulanski 1996; Zucker, 1977).

Replication versus adaptation of organizational routines

The literature reveals that organizational routines are transferred from one organizational unit to another in two ways: either replicated exactly, or adapted to local conditions (Williams, 2007). Williams (2007; p. 869) defines replication of organizational routines as ‘replication as effort aimed at creating activities at one location that are identical to those at another location.’ Williams (2007; p. 869) also defines adaptation as ‘adaptation as effort toward the goal of modifying or combining practices from a source unit.’ Some research suggests that managers make the decision to replicate routines exactly because, for instance, routines often interact with each other in causally ambiguous ways that make them hazardous to modify (Jensen & Szulanski, 2007; Szulanski & Jensen, 2008). Other research suggests that allowing managers in receiving units to adapt transferred routines to local conditions is advantageous because adaptation ensures a better fit between the receiving unit and its environment (Kostova, 1999; Kostova & Roth, 2002). Winter and Szulanski (2001) call this the ‘replication dilemma:’ the benefit of organization-wide standardization versus the need to adapt to the specific local context. Below, I summarize the factors favoring each.

There are many factors that favor replicating organizational routines in their exact form. One factor favoring replication is that routines are described as causally ambiguous, because the actions and tasks within them are interrelated in non-obvious manners. Because of this ambiguity, replicating routines exactly is likely to lead to a more effective transfer since altering imperfectly understood routines could be harmful to the way these routines work (Jensen & Szulanski, 2007; Winter et al., 2012). For example, research involving medical equipment (Mitchell & Singh, 1993) and manufacturing (Dobrev, Kim, & Hannan, 2001; Dowell & Swaminathan, 2000) showed negative consequences from modifying previously successful routines. A second factor favoring replication is that it allows managers to compare transferred routines in the receiving unit to the original routines in the sending unit. This is particularly important in diagnosing and solving problems that inevitably occur, and the exact replication allows for gaps and mistakes to be easily identified (Jensen & Szulanski, 2004). If adaptation was allowed, then it becomes harder to compare the routine in the receiving unit to the original routine, rendering the original routine less valuable as a reference for measuring the success of the transferred routine (Yu & Zaheer, 2010). A third factor favoring replication is the characteristics of an industry in terms of its dynamism and complexity (D'Aveni, Dagnino, & Smith, 2010; Rivkin, 2001). For example, Rivkin (2001) showed that in high technology industries that are highly dynamic, even small attempts to deviate from the original routine could spoil the whole replication effort.

On the other hand, some researchers argue that successful transfer of organizational routines depends on a company's ability to adapt routines and re-deploy them in order to adjust to new markets, geographical locations or customer groups (Ambrosini & Bowman, 2009; Aspara, Hietanen, & Tikkanen, 2010; Eisenhardt & Martin, 2000; Helfat & Peteraf, 2003;

Lockett, Thompson, & Morgenstern, 2009; Teece, Pisano, & Shuen, 1997). There are multiple factors that suggest advantages of adaptation. One factor is that it might sometimes be necessary to allow adaptation of transferred routines to local conditions because customers, employees, and business customs could differ among geographic locations (Kaufmann & Eroglu, 1999). So in cases where the receiving unit is distinctly different from the sending unit, local adaptation would ensure a better overall fit between the receiving unit and its corresponding environment. Different environments could potentially involve differences in decision-making style (Baum & Wally, 2003), culture (Lemak & Arunthanes, 1997), local government regulations (Kostova & Roth, 2002), or customer preferences (Kauffmann & Eroglu, 1999). Another factor that favors adaptation is that local managers in the receiving unit often have more relevant know-how about local habits and customers' preferences that allows them to effectively modify the routines for better performance (Szulanski & Jensen, 2008).

Challenges of transferring organizational routines

The organizational routines literature reveals that transfer of routines within an organization from one unit to another is challenging and not straightforward. For example, IBM experienced limited success in transferring reengineered processes between business units, most notably logistics and hardware design practices developed in its PC division (Economist, 1993). Another example is General Motors which could not successfully replicate the manufacturing practices from its joint venture with Toyota, into other GM's plants in California (Brown & Reich, 1989) or foster its imitation in its Oldsmobile division (Kerwin & Woodruff, 1992).

Researchers have investigated why routines are difficult to transfer and discovered several barriers. A first barrier is that the recipient might lack absorptive capacity (Maritan & Brush, 2003; Zahra & George, 2002). That is, the receiving unit might not have the pre-existing

knowledge that is needed to understand and execute a routine (Cohen & Levinthal, 1990; Szulanski, 1996). A second barrier is that because routines are causally ambiguous and path-dependent, the receiving unit might alter the routines without understanding their causes and consequences, which leaves the routines less effective in the receiving unit (Szulanski, 1996; Winter & Szulanski, 2002). Researchers indicate that obtaining ‘complete’ knowledge about the underlying mechanisms of routines is not possible partly due to causal ambiguity (Winter & Szulanski, 2001). That limits the propensity of managers as well as actors involved in the performance of organizational routines to (1) delineate the components of a routine (King, 2007; King & Zeithaml, 2001; Reed & DeFellipi, 1990) and to (2) understand how each component relates to performance outcomes (Lippmann & Rumelt, 1982; Simonin, 1999).

A third barrier that hinders internal transfer of organizational routines is an arduous relationship between the source and the recipient, which adds an extra layer of difficulty to the transfer process (Szulanski, 1996; Szulanski & Winter, 2002). The relationship between the source and recipient has been shown to be important in the process of transferring routines (Feldman & Pentland, 2003). In an investigation of the mediating effect of trustworthiness, Szulanski et al. (2004) found that, especially in situations of high causal ambiguity, high levels of trustworthiness between the source and recipient might help overcome some of the challenges that occur in transferring routines.

Finally, research reveals that another factor that might help overcome the difficulty of transferring routines is the degree of codification using templates in the organizational routines (Zander & Kogut, 1995). In fact, templates are viewed as a way to overcome the stickiness of knowledge embedded in organizational routines, and there is empirical evidence that suggests that the enforcement of compliance with a template increases the performance of the replicating

units (Szulanski & Jensen, 2004; Winter, 2005). One reason behind why the use of templates increases performance is that templates decrease resistance to accepting new knowledge (Jensen & Szulanski, 2007). Baden-Fuller and Winter (2005), for example, found that the use of templates in replicating routines in the retail sector increased the efficiency of knowledge-transfer. Similarly, another study found that when Intel used template-based replication to internally transfer routines within production facilities, knowledge-transfer efficiency was enhanced (McDonald, 1998).

It can be concluded from above that routines are challenging to transfer within an organization and researchers have studied various barriers that make the transfer difficult and non-obvious. However, what is interesting is that the same barriers that make routines hard to transfer internally also make them difficult for competitors to imitate. As a result, routines are viewed as a strategic competitive advantage and replication of routines is considered as a value-creation strategy (Pentland et al., 2012; Winter & Szulanski, 2001).

Adherence to organizational routines: A new construct

What we know so far about organizational routines is that: (1) organizational routines enhance firm performance and are viewed as a strategic competitive advantage (Feldman & Pentland, 2003; Helfat & Peteraf, 2003; Jonsson & Foss, 2011; Pentland et al., 2012; Winter & Szulanski, 2001); (2) transfer of routines is a complex process that includes four stages: initiation, implementation, ramp-up, and integration (Feldman & Pentland, 2003; Jensen & Szulanski, 2007; Szulanski, 1996); (3) transfer of organizational routines can come either in the form of exact replication or adaptation that allows deviation from rules and templates (Szulanski & Jensen 2006; Winter & Szulanski, 2001; Winter et al., 2012); and (4) there are multiple

challenges to transferring routines within an organization from one unit to another (Szulanski, 1996; Winter & Szulanski, 2002).

What we don't know is how organizational routines (being an initial routine or a transferred routine) are maintained after full integration. That is, do employees continue to adhere to routines after they are set in place, and why? I introduce a new construct 'adherence to routines' and define it as a form of work behavior where employees follow and implement all the ordered steps of a routine exactly as trained. This construct aims to capture the theoretical phenomenon pertaining to the maintenance and repeatability of an organizational routine.

It is important to study adherence to routines because routines are value-creating; they lead to competitive advantage, which enhances performance (Helfat & Peteraf, 2003; Jonsson & Foss, 2011; Pentland et al., 2012). But in order to sustain this competitive advantage, managers need to ensure that employees are adhering to routines that were set up and integrated. Therefore, the main research question of this study is: Why do employees continue to adhere to organizational routines? Existing research shows that organizational routines are strategically important to firms because they are value-creating mechanisms. First, routines are considered to be a strategic value-creating mechanism for firm growth (Aspara et al., 2010; Frery, 2006). Helfat and Peteraf (2003) argue that applying existing routines in new contexts is a strategy for organizations to stretch their life cycle and grow. Examples of this value-creating mechanism are replicated routines as a form of managing internationalization (Jonsson & Foss, 2011; Ruuska & Brady, 2011), as well as in 'replicator organizations' such as franchising companies (Knott, 2003; Winter & Szulanski, 2001). Since valuable tacit knowledge is embedded in routines (Nelson & Winter, 1982; Prahalad & Hamel, 1990; Zollo & Winter, 2002), organizations and managers can strategically benefit from this strategic value-creating mechanism for firm growth

(Helfat & Peteraf, 2003; March, 1991; Szulanski & Winter, 2002) by focusing on adherence to routines. Adherence to routines ensures that the aim of obtaining the effects of those routines across a variety of organizational units and repeatedly maintaining them is achieved. Second, routines are considered to be a strategic value-creating mechanism because they improve the efficiency of an organization (Baden-Fuller & Winter, 2005; Giddens, 1984; Nelson & Winter, 1982). Researchers have found that employees' choices of how to proceed become automatic because all the decisions are embedded in the routine, which reduces cost and increases efficiency (Giddens, 1984; Orlikowski, 2000; Szulanski & Winter, 2002). Therefore, to maintain this value-creating mechanism of efficiency from routines, managers need to ensure that their employees are adhering to the routines in place.

Theoretical gap: Where does this study fit in the literature?

The main purpose of this study is to examine why employees continue to adhere to organizational routines after those routines have been set up and integrated. I define adherence to routines as a form of work behavior where employees follow and implement all the ordered steps of a routine exactly as trained. This new construct, which is introduced in this study, is described as a specific form of work behavior pertinent to organizational routines. Work behavior as an outcome has been heavily studied in the organizational behavior literature (Salgado, 1997; Salgado, 2002; Schmidt, Shaffer, & Oh, 2008; Tett, Jackson, & Rothstein, 1991). There is a stream of research in the organizational behavior literature that shows that individual traits affect various forms of work behavior such as task performance, organizational citizenship behavior, and counter-productive work behavior (Barrick & Mount, 1991; Barrick et al., 2001; Borman & Motowidlo, 1993; Campbell et al., 1993). One important theory that explains why individual traits affect employees' work behavior is trait activation theory (Tett & Gutterman, 2000; Tett &

Burnett, 2003). According to trait activation theory, individual traits represent a propensity to behave in an identifiable way, and are expressed in response to situational cues in the work environment; cues that are more likely to ‘activate’ some traits than others (Colbert & Witt, 2009; Tett & Gutterman, 2000).

The specific theoretical gap that this study hopes to address is to apply trait activation theory to answer the research question of this study by explaining how individual traits and situational cues affect adherence to routines. The role of individuals in adhering to routines falls under the umbrella of micro-foundations approach to organizational strategy. A micro-foundations approach focuses on phenomena that need explanation at lower-levels of analysis, particularly individuals’ characteristics, motives, behaviors, and their interactions (Felin et. al, 2012). There has been some research that studied the micro-foundations of routines.

Micro-foundations of organizational routines

Some research has been conducted that considers the role of individuals in organizational routines, and found that some individual characteristics matter to successfully implement and integrate routines (Friesl & Larty, 2013; Lervik et al. 2005). For example, Maritan and Brush (2003) studied the implementation of a specific routine, namely flow manufacturing within a firm, in four plants operated by a business unit. They concluded from the interviews they conducted that one important factor that contributed to the success of the implementation of routine was the willingness and ability of employees to follow the transferred manufacturing routine. In another example, Essen (2008) studied healthcare workers and found that when they share common understandings about quality of care, these workers use this shared understanding as a reference to guide their everyday implementation of routines. A third example is a study by

Howard- Grenville (2005) who found that individuals' intentions and orientations affect how they perform the routines.

So we know from the above that employees' willingness and abilities (Maritan & Brush, 2003), their shared reference to quality guides (Essen, 2008), and their intentions and orientations (Howard- Grenville, 2005) have an impact on how they implement routines. However, many other individual traits remain unexplored in how they impact not only implementation of routines, but repeatedly maintaining them, i.e. adherence to routines. In the most recent review on organizations routines, Friesl and Larty (2013) concluded that research on routines has rarely focused on the role of individuals traits such as personality traits in the enactment of routines. In addition, many researchers have repeatedly suggested that future research on organizational routines should acknowledge the micro-foundations of routines and study more specific individual traits of employees (Emirbayer & Mische, 1998; Feldman, 2000; Feldman & Pentland 2003, Foss, Heimeriks, Winter, & Zollo, 2012). Work on individual-level traits and behaviors are receiving increasing attention in the strategy and organizations literature (Hatch & Dyer, 2004; Ployhart & Moliterno, 2011). However, more work is needed to explicitly identify how individual-specific characteristics such as personality traits affect specific phenomena within routines (Felin et. al, 2012), such as adherence to routines. This study aims to aid in filling this gap by offering a micro-foundations lens to understanding why employees continue to adhere to organizational routines. I do so by offering a theoretical model that applies trait activation theory to test relationships between individual traits and adherence to routines, in addition to moderating effects of situational factors.

CHAPTER THREE: MODEL AND HYPOTHESES DEVELOPMENT

In this chapter, I discuss relationships I expect to find between employees' individual traits and adherence to routines. The theory behind the predicted relationships is to offer a micro-foundations lens that explains why employees adhere to routines. I define a new construct 'adherence to routines' as a form of work behavior where employees follow and implement all the ordered steps of a routine exactly as trained. Being a new construct defined as a form of work behavior specific to organizational routines, there are no current relationships studied in the literature that predict the link between individual traits and adherence to routines. However, and as discussed, there are streams of research in the organizational behavior literature that study the relationships between individual traits and other forms of work behavior such as task performance, organizational citizenship behavior, and counter-productive work behavior (Barrick & Mount, 1991; Barrick et al., 2001; Borman & Motowidlo, 1993; Campbell et al., 1993; Salgado, 1997; Salgado, 2002; Schmidt et al., 2008; Tett et al., 1991).

These work behaviors are defined as follows: First, task performance refers to activities that contribute either directly or indirectly to the organization's technical core (Borman & Motowidlo, 1997). Second, organizational citizenship behavior is defined as a set of behaviors that is not directly related to task performance but that improves the social and psychological environments of the organization, and thus contributes to the organization's goals (Rotundo & Sackett, 2002). Third, counter-productive work behavior is defined as a set of behaviors that potentially negatively affect the organization's well-being (Rotundo & Sackett, 2002). The

literature provides evidence that employees' individual traits influence all of the above work behaviors (Barrick et al., 2001; Barrick & Mount, 2005; Hogan, 2005; Rotundo & Sackett, 2002; Sackett, 2002; Viswesvaran & Ones, 2000). By definition, adherence to routines captures a form of work behavior that is specific to routines and different from task performance, organizational citizenship behavior, and counterproductive work behavior.

One of the theories that explain why individual traits are linked to employees' work behavior is trait activation theory (Tett & Gutterman, 2000; Tett & Burnett, 2003). According to trait activation theory, individual traits represent a propensity to behave in an identifiable way, and are expressed in response to cues in the work environment; cues that are more likely to 'activate' some traits rather than others (Colbert & Witt, 2009; Tett & Gutterman, 2000). The cues may come from the task itself, from the social environment, or from the organizational culture (Tett & Burnett, 2003). I apply trait activation theory to help explain why some employees represent a higher propensity to adhere to routines, based on differences in their individual traits. Moreover, I study how a certain cue from the work social environment, specifically initiating structure leadership, may influence the relationships between individual traits and adherence to routines.

A subset of individual traits that trait activation theory considers is personality traits (Barrick & Mount, 1991; Carter et al., 2013; Perrewé & Spector, 2002). The big five-factor personality model is commonly used to provide a general framework to understand how employees' personality traits affect work behaviors (Barrick & Mount, 1991; Barrick & Mount, 2005; Hertz & Donovan, 2000). The big five-factor model includes the traits of conscientiousness, openness to experience, emotional stability, agreeableness, and extraversion.

In this study I focus on conscientiousness and openness to experience as predictors of adherence to routines for the reasons that follow.

First, conscientiousness is the most consistent big-five predictor of work behavior across jobs (Barrick et al., 2001; Roberts, Jackson, Fayard, Edmonds, & Meints, 2009; Schmidt et al., 2008). Therefore, it is important to study the relationship between conscientiousness and adherence to routines especially since conscientious employees are described as dependable, persistent, organized, and goal-directed (Barrick & Mount, 2005). From this I predict that they will more likely adhere to routines. Second, openness to experience is rationally related to the work behavior in this study, 'adherence to routines.' As people who score high on openness to experience are more likely to explore their surroundings and to experiment with new ways of doing things (Costa & McCrae, 1992) and tend to be more imaginative (Minbashian, Earl, & Bright, 2013). I predict that they will be less likely to adhere to routines. Moreover, there is empirical evidence that openness to experience is negatively correlated with task performance (Griffin & Hesketh, 2004), positively correlated with creativity (Thoresen, Bradley, Bliese, & Thoresen, 2004), and finding innovate new ways of doing things (Griffin, Hoffman, Price, & Vojak, 2007). The three remaining traits of the big-five (extraversion, agreeableness, and emotional stability) are more relevant in team functioning contexts (Hogan & Holland, 2003; Liao et al., 2004; Mount et al., 1998; Penney et al. 2011), which are not the context of this study.

In addition to the two personality traits of conscientiousness and openness to experience, I consider a third individual trait as a predictor for adherence to routines: individual entrepreneurial orientation (IEO). IEO is a multi-dimensional construct that includes the factors of proactiveness, risk-taking, and innovativeness (Bolton & Lane, 2012). IEO is a fairly new construct that captures the well-established firm-level entrepreneurial orientation (EO) construct

(Lumpkin & Dess, 1996; Moreno & Casillas, 2008) at the individual level (Bolton & Lane, 2012). Even though researchers in the field of entrepreneurship have studied what characterizes individuals who are entrepreneurs as compared to non-entrepreneurs, the relationship between an individual level construct such as IEO and individual work behavior, such as adherence to routines, has not been studied. It is important to study this relationship because EO has been shown to positively influence firm performance and profitability at the firm level (Johan & Dean, 2003; Avlontis & Salavou, 2007; Tang et al., 2008). Therefore, in this study I will be able to test at the individual level the relationship between IEO and individual work behavior, namely adherence to routines. This is particularly interesting since employees who score high on the underlying factors of IEO (proactiveness, risk-taking, and innovativeness) are less likely to adhere to routines and implement the steps of the routines exactly as trained. The reason is that proactive, risk-taking and innovative individuals are more likely to think outside the box (Bessant, 2005; Roche, Wick, & Stewart, 2005; Rogers, 1983), but we also know from the routines literature that adherence to routines can enhance performance (Allatta & Singh, 2011; Chew et al., 1991). This makes the relationship between IEO and adherence to routines more interesting to study.

Trait activation theory asserts that cues from the work environment serve as situational moderators to the relationship between individual traits and work behavior (Tett & Burnett, 2003). In this study, I focus on one trait-relevant cue from the social environment: the employees' direct supervisor, and specifically employees' perception of their supervisors' initiating structure leadership. The reason is that initiating structure leaders focus on establishing and maintaining structures and routines for shaping subordinates' tasks and activities (DeRue et

al., 2011). Therefore, initiating structure leadership is a relevant cue to the work behavior of this study, adherence to routines.

I propose the model in Figure 1 to test all of the above relationships. Namely, aspects of individual traits effect on adherence to routines (type of work behavior) as moderated by initiating structure leadership (type of work social cue).

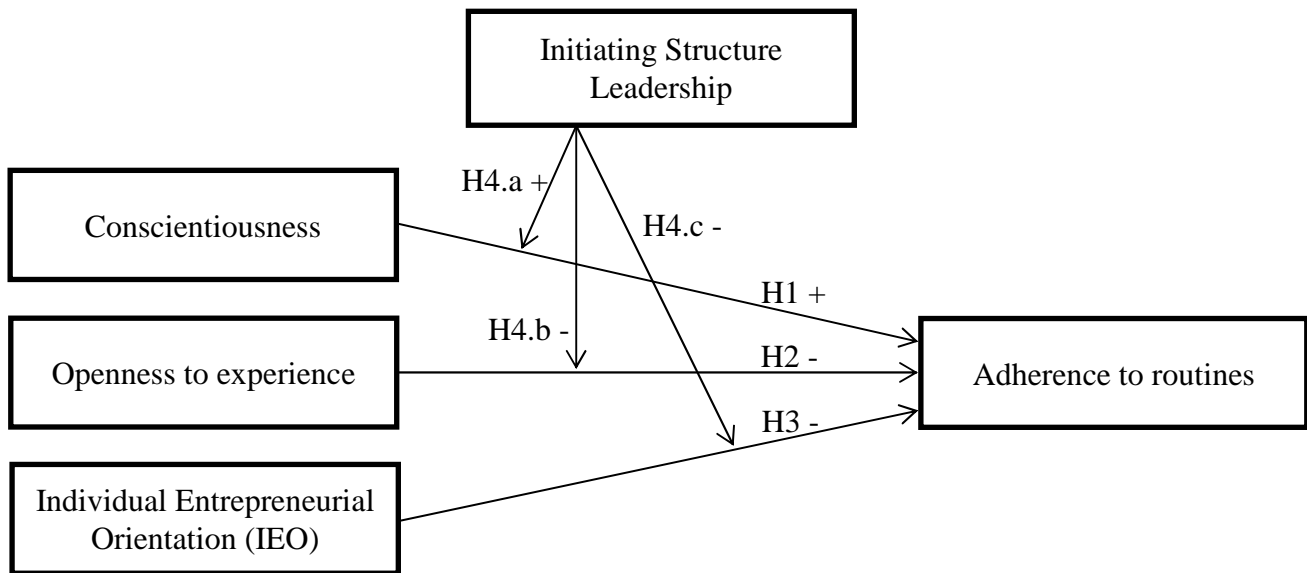


Figure 1: Hypothesized Research Model and Relationships

Conscientiousness

Much of the progress in the research stream linking personality traits to job performance leads to a consensus among personality researchers that the big five-factor personality model best represents personality (Barrick et al., 2001; Berry, Ones, & Sackett, 2007; Borman, Penner, Allen, & Motowidlo, 2001; Goldberg, 1992; John & Srivastava, 1999; McCrae & Costa, 1999; Salgado, 2002; Wiggins & Trapnell, 1997). Barrick et al. (2001) reviewed fifteen meta-analytic studies of the relationship between personality and performance, which revealed that conscientiousness is the most consistent big-five predictor of work outcomes across jobs.

Accordingly, I chose to study conscientiousness because of its established reputation as the big-five factor model trait most predictive of job performance across jobs (Barrick et al., 2001; Roberts et al., 2009; Schmidt et al., 2008).

Conscientiousness is defined as behavior that is "responsible, dependable, persistent, and achievement-oriented" (Barrick & Mount, 1993, p. 111). The relationship between conscientiousness and job performance is often ascribed to several behavioral tendencies that are characteristic of conscientious individuals. For instance, conscientious people are described as dependable, persistent, organized and goal-directed (Barrick & Mount, 2005; Costa & McCrae, 1992). Conscientious individuals also tend to be dutiful and thorough as opposed to careless and negligent (Goldberg, 1993). Moreover, they also exert effort and persist in an attempt to meet challenges and achieve goals. These types of behaviors enhance the job performance of conscientious workers and past research has consistently found that conscientiousness is positively related to job performance and that this relationship is generalizable across settings and types of jobs (Barrick & Mount, 1991; Barrick et al., 2001; Hurtz & Donovan, 2000; Schmidt et al., 2008; Tett et al., 1991). Highly conscientious individuals also tend to be more motivated to perform well on the job (Judge & Ilies, 2002) and therefore are more likely to attain better job performance through careful planning, goal-setting, and persistence (Barrick & Mount, 1991; Barrick, Mount, & Strauss, 1993; Gellatly, 1996; Hurtz & Donovan, 2000; Robie & Ryan, 1999).

In addition to the established relationship in the literature between conscientiousness and job performance, past research has consistently found that conscientiousness is positively related to organizational citizenship behavior and negatively related to counter-productive work behavior (Berry et al., 2007; Ilies, Fulmer, Spitzmuller, & Johnson, 2009). As highly

conscientious individuals are more likely to perform extra-role behaviors at work that benefit the organization as compared to low conscientious individuals (Bettencourt, Gwinner, & Meuter, 2001; Zhang, 2014). Indeed, highly conscientious individuals are also more likely to avoid counter-productive behaviors that could be harmful to the organization (Bowling & Eschleman, 2010).

Gellatly (1996) noted that the traits that distinguished high conscientious individuals are that they are more ambitious, exacting, methodical, and disciplined than low conscientious individuals. Moreover, Gellatly (1996) described low conscientious individuals as lazy, imprecise, impetuous, and disorganized. As a result, high conscientious individuals are expected to strive for greater success on the job. That is, employees who score high on conscientiousness are more confident in their abilities (Barrick & Mount, 1991), are more effective in setting goals (Barrick et al., 1993; Gellatly, 1996), and are more preserving and disciplined (Colquitt & Simmering, 1998) than employees who score low on conscientiousness. As a result, high conscientious employees attain higher levels of performance than low conscientious employees. In particular, high conscientious employees are more likely to effectively identify key priorities and to find ways to get things done (Digman, 1990). In contrast, low conscientious employees do not identify key priorities and do not find ways to get things done because they lack the sense of urgency, diligence, tenacity, and patience (Digman, 1990).

It can be concluded from all of the evidence above that employees need to be highly conscientious to keep tasks and deadlines well organized, follow relevant rules and guidelines, and catch errors in one's own work. By definition, adherence to routines refers to a form of work behavior wherein employees follow and implement all the ordered steps of a routine exactly as trained. Therefore, based on trait activation theory and the prominent evidence in the literature

summarized above suggesting that conscientious employees are more likely to follow rules and guidelines, I predict that highly conscientious employees are more likely to adhere to routines and hypothesize the following:

Hypothesis 1: Conscientiousness is positively related to adherence to routines.

Openness to experience

The second personality trait I am studying is openness to experience. Openness to experience is defined as a propensity to be imaginative, curious, broad-minded, novel, and not conservative (Barrick & Mount, 1991). Individuals who score high on openness to experience are more likely to explore their surroundings, tolerate, and consider new and unfamiliar ideas and experiences (McCrae & Costa, 1987); experiment with new ways of doing things (Costa & McCrae, 1992); and tend to be highly imaginative (Minbashian et al., 2013). Individuals who score low on openness to experience prefer what is practical, familiar, and concrete (McCrae & Costa, 1997).

Researchers have shown that openness to experience is positively related to work behavior outcomes that benefit from employees who are exploratory, creative, and like to experiment with new ways and ideas. Such outcomes include intellectual flexibility (Thoresen et al., 2004) and creativity (LePine, Colquitt, & Erez, 2000). In particular, intellectual flexibility and creativity are important traits to possess in uncertain conditions that are characterized by changes in processes, structures, or systems. Subsequently, openness to experience also influences how employees respond to uncertainty (Griffin & Hesketh, 2004; Thoresen et al., 2004). Examples of empirical evidence of the positive relationship include Tett and Burnett (2003) who showed that openness to experience is more likely expressed when there is an opportunity for an employee to be creative or to learn new ways of doing things. In another

study, employees who scored high on openness to experience had a higher propensity to be creative, broad-minded, and curious at work; and those traits positively correlated with self-directed behaviors intended to initiate change in employees' pre-set roles (Neal, Yeo, Koy, & Xiao, 2012). In another example, openness to experience positively predicted creative work performance and the ability to generate novel solutions (Pace & Brannick, 2010).

On the contrary, there is empirical evidence that openness to experience is negatively correlated with work behavior outcomes that are routinized. For instance, Griffin and Hesketh (2004) showed in a sample of medical interns that employees who score high on openness to experience have lower scores on task performance. Moreover, Migliore (2011) showed that employees who score high on openness to experience are more likely to display a non-conforming way of thinking, whereas employees who score low are more likely to have preference for familiarity. Additionally, Thoresen et al. (2004) found that openness to experience was positively related to sales performance for employees who carried out non-routine sales tasks, and negatively related to sales performance for employees who carried out routine sales tasks. Detrick, Chibnall, and Luebbert (2004) similarly showed in a sample of seventy four members of the police training program that openness to experience negatively predicted various criteria of police academy performance, in particular disciplinary memos and activities involving physical performance.

Based on trait activation theory and the avid evidence in the literature above, I propose that openness to experience will be negatively related to adherence to routines. The reason is that adherence to routines is similar in nature to routinized work behaviors that have been showed to be negatively correlated with openness to experience such as task performance (Griffin & Hesketh, 2004), and sales performance of routine-sales tasks (Thoresen et al., 2004). As

employees who score high on adherence to routines are expected to comply with the steps and tasks embedded in the routine and not be creative and experimental. Therefore I hypothesize that:

Hypothesis 2: Openness to experience is negatively related to adherence to routines.

Individual entrepreneurial orientation (IEO)

IEO is the individual level construct of the well-established firm-level construct entrepreneurial orientation (EO). EO is a central construct that has been extensively studied in the entrepreneurship literature (Lumpkin & Dess, 1996), and has been shown to influence firm performance, profitability, growth, and product innovation in entrepreneurial firms (Johan & Dean, 2003; Avlontis & Salavou, 2007; Moreno & Casillas, 2008; Tang et al., 2008). IEO construct was built by using EO variables and their definitions and modifying their corresponding measures to assess EO at the individual level (Bolton & Lane, 2012). While EO is a five-dimensional construct that includes the distinct factors autonomy, competitive aggressiveness, innovativeness, proactiveness, and risk-taking (Lumpkin & Dess, 1996); IEO scale development led to a three-dimensional construct that includes three factors that measure EO at the individual level. These factors are proactiveness, risk-taking, and innovativeness (Bolton & Lane, 2012).

Being a fairly new construct, the relationship between IEO and individual work behavior such as adherence to routines has not yet been studied. It is important to study this relationship because EO has been shown to positively influence firm performance and profitability at the firm level (Avlontis & Salavou, 2007; Johan & Dean, 2003; Tang et. al, 2008). Therefore, in this study I will test at the individual level the relationship between IEO and individual work behavior, namely adherence to routines. We also know from the routines literature that

adherence to routines is important for maintaining routines and enhancing performance (Allatta & Singh, 2011; Chew et al., 1991). So, this makes the relationship between IEO and adherence to routine more interesting to study.

Researchers in the field of entrepreneurship have studied what characterizes individuals who are entrepreneurs as compared to non-entrepreneurs. Evidence shows that entrepreneurs are different than non-entrepreneurs in many ways. Early researchers in entrepreneurship identified entrepreneurs as smart and even having 'super normal' intelligence (Knight, 1921; Schumpeter, 1934). The first important trait that characterizes entrepreneurs is risk-taking. Risk-taking is defined as a willingness to commit large amounts of resources to projects where the likelihood and cost of failure may be high (Lumpkin & Dess 1996; Wiklund & Shepherd, 2003).

Entrepreneurs are more willing to assume risk and work under conditions of uncertainty (Knight, 1921). Because of their perception of risk and uncertainty, they not only recognize opportunities but can also exploit them (Hayek, 1945). For instance, Sarasvathy, Simon, and Lave (1998) used a quasi-experimental design where a group of entrepreneurs and a group of bank managers were given a set of problems to solve. The aim of the study was to examine whether entrepreneurs and bank managers (non-entrepreneurs) have different perspectives regarding how they perceive and manage risk. The results showed that entrepreneurs assume risk as a given and turn their attention to regulating outcomes regardless of the level of risk. On the other hand, bank managers were almost the opposite because they tried to mitigate risk as much as possible and avoided situations where they risk higher levels of personal responsibility. Another empirical study that investigated the differences between entrepreneurs and non-entrepreneurs was conducted by Busenitz and Barney (1997) who showed that entrepreneurs use more heuristics and decision-making biases than managers in large organizations, especially under conditions of

environmental uncertainty and innovativeness. As a result, it can be concluded that entrepreneurs are more likely to be risk-takers than non-entrepreneurs. Therefore, I predict that employees who score high on risk-taking are less likely to adhere to routines since adherence to routines requires minimal levels of risk-taking; most of the decisions are already made and embedded in the pre-set steps of the routine (Feldman & Pentland, 2003; Levitt, Thomson, Christiansen, & Kunz, 1999).

A second important trait that characterizes entrepreneurs is innovativeness. Innovativeness is identified as the ability to combine already existing resources in creative ways (Schumpeter, 2000). Innovation can take multiple forms, namely: the introduction of new technical methods, products, and sources of supply (Schumpeter, 2000). In fact, Schumpeter believed that innovation was the central characteristic of the entrepreneurial endeavor (Schumpeter, 1934), and McLelland (1961) argued that innovation is a novel instrumental activity that comprised a key factor of entrepreneurial activity. Therefore, the Schumpeterian entrepreneur is frequently conceptualized as an innovator and/or adventurer (McMullen & Shepherd, 2006; Timmons, 1978). So there is a general consensus that entrepreneurs are more likely to be innovative (Carland, Hoy, Bouton, & Carland, 1984; McMullen & Shepherd, 2006; Schumpeter, 2000). Moreover, we also know that innovative individuals are more likely to think outside the box and not follow pre-set rules (Bessant, 2005; Roche et al., 2005; Rogers, 1983). Therefore, I predict that employees who score high on innovativeness are less likely to adhere to routines since adherence to routines requires following and implementing exact pre-set steps.

A third important trait that characterizes entrepreneurs is proactiveness. Bateman and Crant (1993) define a proactive personality as one that is relatively unconstrained by situational forces and that affects environmental change. Proactive personalities identify opportunities and act on

them (Atuahene-Gima & Ko, 2001; March, 1991). Individuals who score high on proactiveness are more likely to show initiative, take action, and persevere until they bring about meaningful change. In contrast, individuals who score low on proactiveness fail to identify or seize opportunities to change (Covin & Slevin, 1989). Crant (1996) showed that possessing a proactive personality was positively associated with entrepreneurial intention. Accordingly, I predict that employees who score high on proactiveness are less likely to adhere to routines since they are constantly looking for ways to show initiative and change the status-quo, which goes against the work behavior of adherence to routines that signals following and implementing specific steps of a routine.

Based on the combination of the evidence in the entrepreneurship literature above, and the fact that individuals who score high on IEO are more likely to be risk-takers, innovative and proactive (the underlying factors of IEO), I predict IEO to be negatively related to adherence to routines. The reason is that employees who score high on the underlying factors of IEO are less likely to adhere to routines and implement the exact steps in their pre-set order. Because proactive, risk-taking and innovative individuals are more likely to think outside the box (Bessant, 2005; Roche et al., 2005; Rogers, 1983), less likely to follow pre-set steps of the routine (Feldman & Pentland, 2003; Levitt et. al., 1999), and more likely to pursue change (Covin & Slevin, 1989). I hypothesize that:

Hypothesis 3: Individual entrepreneurial orientation is negatively related to adherence to routines.

Initiating structure leadership

Trait activation theory asserts that individual traits represent a propensity to behave in an identifiable way and are expressed in response to cues in the work environment; cues that are

more likely to activate relevant traits than others (Colbert & Witt, 2009; Tett & Gutterman, 2000). Accordingly, the trait-relevant cues in the work environment are situational moderators to the relationship between individual traits and work behavior outcomes (Tett & Gutterman, 2000; Tett & Burnett, 2003). The trait-relevant cues may come from the task itself, from the social environment, or from the organizational culture (Tett & Burnett, 2003). In this study, I focus on one trait-relevant cue from the social environment: the employees' direct supervisor, and specifically, the employees' perception of their supervisors' initiating structure leadership.

By definition, initiating structure leaders initiate structure, organize activities, define the work that has to be done, and maintain standards and deadlines (Bass, 1990; de Vries, 2012). Initiating structure leadership behaviors encompass leader behaviors that 'clarify task-role expectations, shape and direct follower goal-directed behavior, manage individual and team task conflicts and resources, and take corrective actions' (Braddy, Gooty, Fleenor, & Yammarino, 2013, p. 374). Initiating structure leaders focus on establishing and maintaining structures and routines and shaping subordinates' tasks and activities (DeRue et al., 2011). Therefore, initiating structure leadership is a relevant cue to the work outcome of this study as initiating structure leaders reflect an anticipated behavior to adhere to routines.

As summarized earlier in this chapter, the study of individual traits main effects on various work behavior outcomes has a rich history. Recently, however, researchers have shifted their attention to identifying the boundary conditions of such effects (Barrick, Mitchell, & Stewart, 2003; Tett & Burnett, 2003). It is important to study the boundary conditions of these main effects in order to be able to explain more specifically how and why different situations allow the expression of certain traits (Spangler, House, & Palrecha, 2004).

It is likely that aspects of the work situation may enhance or suppress the effect of individual traits on work behavior outcomes (Barrick et al., 2001). Consistent with trait activation theory (Tett & Guterman, 2000; Tett & Burnett, 2003), I propose that initiating structure leadership serves as a relevant cue that is more likely to activate the expression of conscientiousness for employees, and mitigate the expression of openness to experience and IEO for employees. The reason is that initiating structure leaders portray expectations for detailed, precise work, and for compliance with rules, deadlines, and quality standards (Ilgen & Hollenbeck, 1991; Katz & Kahn, 1978). Thus, initiating structure leadership strengthens the already positive relationship between conscientiousness and adherence to routines, and weakens the negative relationship between openness to experience and IEO and adherence to routines, respectively.

I suggest that the relationship between employee conscientiousness and adherence to routines is likely to be stronger among employees who perceive that their supervisors exhibit high levels of initiating structure leadership. As highly conscientious employees tend to be thorough, responsible, efficient, organized, and reliable (McCrae & John, 1992) as well as persevere and disciplined (Colquitt & Simmering, 1998). According to the trait activation theory, these trait-relevant behaviors are more likely to be expressed in situations in which supervisors emphasize the importance of task-orientation. And since initiating structure leaders are consistently reminding their subordinates about the significance of compliance with rules and routines in place, I hypothesize that:

Hypothesis 4.a: Initiating structure leadership will moderate the positive relationship between conscientiousness and adherence to routines. Conscientiousness will be more

strongly and positively related to adherence to routines among employees who perceive their supervisors to exhibit high rather than low levels of initiating structure leadership.

By consistently emphasizing compliance with rules and routines, initiating structure leaders provide an environment in which employees' tendency toward openness to experience is attenuated. The reason is that the situational cue that employees receive from initiating structure leaders does not 'activate' a trait such as openness to experience, but rather mitigates it. Employees who score high on openness to experience are constantly receiving cues from initiating structure leaders not to experiment and look for new ways. Instead, initiating structure leaders encourage their employees to comply with the existing rules and routines. Therefore, I hypothesize that:

Hypothesis 4.b: Initiating structure leadership will moderate the negative relationship between openness to experience and adherence to routines, such that the negative relationship will be weaker for employees who perceive their supervisors to exhibit high rather than low levels of initiating structure leadership.

I suggest that the relationship between IEO and adherence to routines is likely to be weaker among employees who perceive that their supervisors exhibit high levels of initiating structure leadership. Again, based on trait activation theory, employees who score high on IEO who work with initiating structure leaders are not receiving cues that 'activate' this particular trait, which is composed of proactiveness, risk-taking, and innovativeness. On the contrary, initiating structure leaders are consistently sending cues to their employees to abide by the rules, regulations, and pre-set routines, and not to take risks, be proactive, and innovative. Thus having initiating structure leadership will mitigate the negative effect of IEO on adherence to routines.

As a result, I hypothesize that:

Hypothesis 4.c: Initiating structure leadership will moderate the negative relationship between individual entrepreneurial orientation and adherence to routines, such that the negative relationship will be weaker for employees who perceive their supervisors to exhibit high rather than low levels of initiating structure leadership.

CHAPTER FOUR: METHODS

In this chapter I describe the research methodology used for conducting this study. This includes a description of the data source and sample, the data collection method, the operationalization of the variables, and the statistical methods used to analyze the data.

Data source

The data for this study was collected using a Qualtrics online survey that I have constructed for this dissertation. The online survey asked employees to respond to a series of questions using validated scales, new items for the new construct adherence to routines, as well as demographic questions. I have attached the survey questions in Appendix B. I used student-recruited sampling technique, which is a technique that involves the use of student recruiters to find participants on behalf of a researcher (Salganik & Heckathorn, 2004). This technique has been increasingly used in organizational research (Semaan, Lauby, & Liebman, 2002). The most recent meta-analysis found that student-recruited samples were not substantively demographically different from non-student-recruited samples. Moreover, the meta-analysis found few differences in the observed correlations of student-recruited samples compared with non-student-recruited samples, and these differences did not lead to different practical conclusions (Wheeler, Shanine, Leon, & Whitman, 2014). The student-recruiters were all from the business school at the University of Alabama. The students were given the opportunity to receive extra credit for recruiting participants for this study. I targeted two classes, the first had a capacity of 85 students. Each student was given the opportunity to recruit up to 7 participants

(total possible number of participants from wave one was 595). The second class had a capacity of 76 students, and each student was given the opportunity to recruit up to 10 participants (total possible number of participants from wave two was 760). As a result, the total maximum number of potential respondents for the survey was 1,355 respondents. Wave one from the first class had a total of 276 responses (46 % response rate), and wave two from the second class had a total of 388 responses (51 % response rate). After removing responses that: (1) were incomplete, or (2) were completed in less than five minutes, or (3) failed to pass all the four speed bumps included in the survey, wave one yielded a sample size of 220, and wave two yielded a sample size of 323, for a total sample size of 543. I conducted a non-response bias mean-comparison two-tailed t-test using SPSS 22.0 where the removed responses based on the above (incomplete, completed in less than five minutes, or failed to pass all the four speed bumps) were considered as the non-responses. The results showed that there were no significant differences between responses and non-responses based on age, gender, and education in both waves one and two.

Required sample size

I used hierarchical moderated regression to analyze the main effects of conscientiousness, openness to experience and individual entrepreneurial orientation on adherence to routines. I used the same technique to analyze the moderating effects of initiating structure leadership on the three main effects. I used structural equation modeling (SEM) to conduct a confirmatory factor analysis (CFA) for the new construct that this study introduces, i.e., adherence to routines as well as for IEO using LISREL 8.80. Each of these techniques requires a minimum sample size in order to ensure statistical power. As shown below, the sample size collected in this study exceeded the minimum required sample size to conduct all statistical methods used.

Required sample size for hierarchical moderated regression

In order to compute the minimum required sample size, I considered three factors: statistical power level, alpha level of significance, and effect size. The first factor, power, is described as the probability of rejecting the null hypothesis H_0 in favor of H_a when H_a is true. Power is $(1-\beta)$, where β is the probability of Type II error (the probability of accepting a false null hypothesis). In organizational research the standard power is set to 0.80 (Cohen, 1988). To be conservative, I set the desired statistical power level to be 0.90. The second factor is the alpha level of significance (α), which is the level of acceptable risk of making a Type I error (rejecting the null hypothesis when it is true). In organizational research, $\alpha = .05$ is a common standard (Ferguson & Ketchen, 1999), and I used the common standard of 0.05 alpha level. The third factor is the effect size, described as the extent to which the independent and dependent variables are related. To maximize the probability of detecting effects, I assumed a small effect size ($r = 0.1$) (Cohen, 1988).

In this study, I had 16 predictors in the regression equation: 9 control variables, 3 independent variables, 1 moderator, and 3 interaction terms. Using all of the above numbers, I calculated the minimum required sample size needed to conduct the regressions. Given the desired probability level ($\alpha = .05$), the number of predictors in the model (16), the anticipated effect size ($r = 0.1$), and the desired statistical power level (0.9), the minimum required sample size is 256 (Cohen, 1988; Green 1991). For the regression analysis, I combined waves one and two, and therefore the sample size collected in this study ($N = 543$) exceeded this minimum required sample size of 256.

Required sample size for confirmatory factor analysis (CFA)

The new proposed items that measure adherence to routines are reflective items. The total number of items is 5. Accordingly, the minimum required sample size to conduct confirmatory

factor analysis on these 5 items is 25. As for IEO, the total number of items is 10. Accordingly, the minimum required sample size to conduct confirmatory factor analysis on these 10 items is 50. So the sample size I collected exceeded the minimum required sample size to conduct both CFA's.

Data collection strategy

I solicited responses from employees in organizations through student-recruiters from the University of Alabama in the United States of America. This study was open to all employees of age 19 and over regardless of their gender, ethnic backgrounds, social status, religion, and health status. Vulnerable populations were not targeted. The student-recruiters from the University of Alabama contacted the employees directly by email and directed them to the Qualtrics survey. Employees were informed that their responses would only be viewed by the researchers. Upon reading the informed consent and before starting the survey, respondents were asked to select 'agree.' Respondents who selected 'disagree' automatically exited the survey.

Employees reported answers to the three independent variables (conscientiousness, openness to experience, and individual entrepreneurial orientation), moderator (employees' perception of their direct supervisors' initiating structure leadership) and control variables (education, age, job tenure, organizational tenure, gender, need for achievement, need for affiliation, retentive capacity, and causal ambiguity) and the dependent variable (adherence to routines). For the items of the routine-related variables (adherence to routines, retentive capacity, and causal ambiguity) the respondents were asked first to think about a specific routine at their workplace that they implemented repeatedly. Then they were asked to name and describe the specific routine they thought about, and then proceeded to answer the items.

The survey was designed in Qualtrics to randomize items among respondents. This meant that items of each question appeared in a different random order for each participant. Moreover, I have included four ‘speed bumps’ in the survey such as ‘select agree for this item.’ Any response that failed to pass all of the speed bumps was disregarded. In addition, Qualtrics collected the time it took for respondents to complete the survey. Any response in which the survey was completed in less than five minutes was disregarded as well. These are all design techniques recommended by Podsakoff, MacKenzie, Lee, and Podsakoff (2003) to demonstrate a priori consideration of common method bias and take proactive design steps to mitigate threats of method effects. The survey took approximately 10-15 minutes to complete. All the respondents were informed that they would remain anonymous.

Variables and measures

Dependent variable

Adherence to Routines

This study introduces and defines a new construct ‘adherence to routines’ as a form of work behavior where employees follow and implement all the ordered steps of a routine exactly as trained. In order to measure this new construct, I developed new items that reflect the definition. Each item is assessed using a 7-point Likert scale that ranges from (*strongly disagree*) to (*strongly agree*). In order to ensure that the items I developed adequately reflect the theoretical construct (Schriesheim, Powers, Scandura, Gardiner, & Lankau, 1993), I tested for content validity by asking two professors and one doctoral student in the Management department at the University of Alabama to read the items and identify whether they adequately reflect the theoretical construct. Based on their expert input, the items’ wording was tweaked, and the agreed upon final wording is

found in Table 1 below. This scale was validated in this study and the results of the scale validation are described in details in Chapter five.

Table 1: Items of Adherence to Routines

| | |
|-----|---|
| 1. | I always follow all steps of the routine exactly as I was trained. |
| 2.* | I sometimes deviate from the routine to accommodate unique situations. |
| 3.* | I do not always do the less important steps. |
| 4. | The only way I implement the routine is by applying all the steps in their exact order. |
| 5.* | I sometimes do the steps out of order as needs arise. |

* reverse-coded items

Independent variables

Conscientiousness and Openness to Experience

The first two independent variables in this study are conscientiousness and openness to experience. Conscientiousness is defined as behavior that is "responsible, dependable, persistent, and achievement-oriented" (Barrick & Mount, 1993, p. 111), and openness to experience is defined as a propensity to be imaginative, curious, broad-minded, novel, and not conservative (Barrick & Mount, 1991). They are two out of the big-five factor model of personality traits (Barrick & Mount, 1991). To measure them, I used the established measure of the public domain International Personality Item Pool (IPIP) developed by Goldberg (1998). The IPIP is a 50-item instrument that measures the five-factor model, with 10 items for each personality trait. Each item is assessed using a 7-point Likert scale that ranges from (*strongly disagree*) to (*strongly agree*). This measure has been demonstrated to have acceptable reliability (coefficient alphas range from 0.79 to 0.87) and convergent and discriminant validity with other personality scales such as the NEO-FFI (Goldberg, 1999; Lim & Ployhart, 2006). The items of conscientiousness and openness to experience are listed in Table 2 and Table 3 below:

Table 2: Items of Conscientiousness

| I see myself as someone who ... | |
|---------------------------------|---|
| 1. | is always prepared. |
| 2. | pays attention to details. |
| 3. | gets chores done right away. |
| 4. | likes order. |
| 5. | follows a schedule. |
| 6. | is exact in my work. |
| 7.* | leaves my belongings around. |
| 8.* | makes a mess of things. |
| 9.* | often forgets to put things back in their proper place. |
| 10.* | shirks my duties. |

* reverse-coded items

Table 3: Items of Openness to Experience

| I see myself as someone who ... | |
|---------------------------------|---|
| 1. | believes in the importance of art. |
| 2. | has a vivid imagination. |
| 3. | tends to vote for liberal political candidates. |
| 4. | carries the conversation to a higher level. |
| 5. | enjoys hearing new ideas. |
| 6.* | is not interested in abstract ideas. |
| 7.* | does not like art. |
| 8.* | avoids philosophical discussions. |
| 9.* | does not enjoy going to art museums. |

| | |
|------|--|
| 10.* | tends to vote for conservative political candidates. |
|------|--|

* reverse-coded items

Individual Entrepreneurial Orientation (IEO)

The third independent variable in this study is the multi-dimensional variable Individual Entrepreneurial Orientation (IEO) (Bolton & Lane, 2012). IEO is a newly developed variable that captures the well-established firm-level entrepreneurial orientation (EO) variable (Lumpkin & Dess, 1996; Moreno & Casillas, 2008) at the individual level (Bolton & Lane, 2012). The IEO variable was developed by using EO variables and their definitions and modifying their corresponding measures to assess EO at the individual level (Bolton & Lane, 2012). While the firm-level EO is a five-dimensional variable that includes the distinct factors of autonomy, competitive aggressiveness, innovativeness, proactiveness, and risk-taking (Lumpkin & Dess, 1996), IEO scale development led to a three-dimensional variable that includes three factors that measure EO at the individual level. These factors are risk-taking, innovativeness, and proactiveness (Bolton & Lane, 2012). Risk-taking is defined as a willingness to commit large amounts of resources to projects where the likelihood and cost of failure may be high (Lumpkin & Dess 1996; Wiklund & Shepherd, 2003). Innovativeness is defined as the ability to combine already existing resources in creative ways (Schumpeter, 2000). And Bateman and Crant (1993) define a proactive personality as one that is relatively unconstrained by situational forces and that affects environmental change. The total number of items that measure IEO variable is 10, and each item is assessed using a 7-point Likert scale that ranges from (*strongly disagree*) to (*strongly agree*). The items of IEO are listed below in Table 4.

Table 4: Items of Individual Entrepreneurial Orientation (IEO)

| | |
|-----------------|---|
| 1. ^R | I like to take bold action by venturing into the unknown. |
|-----------------|---|

| | |
|------------------|---|
| 2. ^R | I am willing to invest a lot of time and/or money on something that might yield a high return. |
| 3. ^R | I tend to act 'boldly' in situations where risk is involved. |
| 4. ^I | I often like to try new and unusual activities that are not typical but not necessarily risky. |
| 5. ^I | In general, I prefer unique, one-of-a-kind approaches rather than revisiting tried and true approaches. |
| 6. ^I | I prefer to try my own unique way when learning new things rather than doing it like everyone else does. |
| 7. ^I | I favor experimentation and original approaches to problem solving rather than using methods others generally used. |
| 8. ^P | I usually act in anticipation of future problems, needs or changes. |
| 9. ^P | I tend to plan ahead on projects. |
| 10. ^P | I prefer to 'step-up' and get things going on projects rather than sit and wait for someone else to do it. |

^RRisk-taking factor: Items 1, 2, and 3.

^IInnovativeness factor: Items: 4, 5, 6, and 7.

^PProactiveness factor: Items: 8, 9, and 10.

Moderator

Initiating Structure leadership

In this study, I focus on one situational moderator from the work social environment: employees' perception of their supervisors' initiating structure leadership. I predict that initiating structure leadership will moderate the relationships between the three independent variables (conscientiousness, openness to experience, and individual entrepreneurial orientation) and the dependent variable, adherence to routines. Initiating structure leaders are defined by their

attempts to initiate structure, organize activities, define the work that has to be done, and maintain standards and deadlines (Bass, 1990; de Vries, 2012). To measure this moderator, I used a well-established measure for initiating structure leadership (Stogdill, 1963). This measure is frequently used in empirical research and has shown acceptable reliability and validity (Judge & Piccolo, 2004; Van Scotter et al., 2000). It is composed of a total of 10 items, and each item is assessed using a 7-point Likert scale that ranges from (*strongly disagree*) to (*strongly agree*).

The items of initiating structure leadership are listed below in Table 5.

Table 5: Items of Initiating Structure Leadership

| | |
|------|---|
| 1. | My supervisor lets group members know what is expected of them. |
| 2. | My supervisor encourages the use of uniform policies. |
| 3. | My supervisor makes his or her attitudes clear to the group. |
| 4. | My supervisor decides what shall be done and how it will be done. |
| 5. | My supervisor assigns people to particular tasks. |
| 6. | My supervisor makes sure that his/her part in the group is understood by group members. |
| 7. | My supervisor schedules the work to be done. |
| 8. | My supervisor maintains definite standards of performance. |
| 9. | My supervisor asks that employees follow standard rules and regulations. |
| 10.* | My supervisor tries out his or her ideas in the group. |

* reverse-coded item

Control variables

In the routines literature, the seminal work by Szulanski (1996) investigated major barriers to the internal stickiness of transfer of routines. The findings showed that in addition to conventional wisdom that places primary blame on motivational factors, the major barriers to

internal transfer of routines are retentive capacity and causal ambiguity. Accordingly, in this study I control for motivational factors (need for affiliation, need for achievement) in addition to retentive capacity and causal ambiguity.

Need for Achievement

Need for achievement is defined as a behavior toward competition with a standard of excellence. People with a high need for achievement want to do things better and more efficiently than others have done before. They prefer to set their own goals rather than to have no goals or to accept the goals set for them by others (McClelland, 1965). Accordingly, employees who score high on need for achievement do not accept easily the goals set for them by their supervisors. By definition they are more likely to want to do things differently than others have done before. But adherence to routines requires that employees follow and implement pre-steps in their exact order. That is why need for achievement is a possible confounding variable for which I am controlling. To measure need for achievement, I used the well-established five-item scale by Steers and Braunstein (1976). Table 6 below lists the items:

Table 6: Items of Need for Achievement

| | |
|-----|---|
| 1. | I do my best work when my job assignments are fairly difficult. |
| 2. | I try very hard to improve on my past performance at work. |
| 3. | I take moderate risks and stick my neck out to get ahead at work. |
| 4.* | I try to avoid any added responsibilities on my job. |
| 5. | I try to perform better than my co-workers. |

* reverse-coded item

Need for Affiliation

People with a high need for affiliation are defined as having a strong desire to be liked and to stay on good terms with most other people (McClelland, 1965). Accordingly, employees who score high on need for affiliation are more likely to stay on good terms with their co-workers and supervisors. Therefore, they are likely to score high on adherence to routines as well because by adhering to routines they signal to their co-workers and supervisors that they want to follow rules and stay on good terms with everyone. As a result, need for affiliation could confound with the dependent variable, adherence to routines, and so I controlled for it. To measure need for affiliation, I used the well-established five-item scale by Steers and Braunstein (1976). Table 7 below lists the items:

Table 7: Items of Need for Affiliation

| | |
|-----|--|
| 1. | When I have a choice, I try to work in a group instead of by myself. |
| 2. | I pay a good deal of attention to the feelings of others at work. |
| 3.* | I prefer to do my own work and let others do theirs. |
| 4.* | I express my disagreements with others openly. |
| 5. | I find myself talking to those around me about non-business related matters. |

* reverse-coded items

Causal Ambiguity

Causal ambiguity is present when the precise reasons for success or failure cannot be determined even ex-post, and it is impossible to produce a clear list of the reasons that lead to success (Lippman & Rumelt, 1982; Rumelt, 1984). According to trait activation theory, situational cues moderate the relationship between individual traits and adherence to routines (Tett & Burnett, 2003). These cues are likely to activate some traits more than others (Colbert & Witt, 2009; Tett & Gutterman, 2000). The cues may come from the social environment, from the routine itself, or from the organizational culture (Tett & Burnett, 2003). In the design of this

study, I have chosen one situational cue related to the social environment, particularly employees' perception of their initiating structure leadership as a situational moderator, so I need to control for other important sources of cues. One important cue that comes from the routine itself is causal ambiguity. Causal ambiguity reflects the routine complexity, which might affect the relationship between individual traits and adherence to routines. That is, employees might adhere or not adhere because the routines are causally ambiguous and difficult to follow and understand. Accordingly, causal ambiguity is a potential confounding variable and I controlled for it. To measure causal ambiguity, I used the well-established five-item scale by Szulanski (1996) and re-worded it explicitly to routines. Table 8 below lists the items:

Table 8: Items of Causal Ambiguity

| | |
|-----|--|
| 1.* | Within the routine, I know why a given step results in a given outcome. |
| 2. | When a problem surfaces, it is not easy to know whether the routine is at fault. |
| 3.* | It is well known how steps of the routine interact to produce positive outcomes. |
| 4.* | Everyone knows why these routines work. |
| 5.* | The limits to this routine are fully known. |

* reverse-coded items

Retentive Capacity

Retentive capacity is defined as the ability of a recipient to institutionalize the utilization of new knowledge (Zaltman, Duncan, & Holbek, 1973). Retentive capacity is a second potentially important situational cue. It is influenced by the organizational culture and could be related to adherence to routines. Accordingly, retentive capacity is a potential confounding variable and I controlled for it. To measure retentive capacity, I used the well-established five-item scale by Szulanski (1996) and re-word it explicitly to routines. Table 9 below lists the items:

Table 9: Items of Retentive Capacity

| | |
|----|---|
| 1. | Existing personnel are periodically retrained on the routine. |
| 2. | Managers have ways to detect when the routine is not being followed. |
| 3. | Managers regularly measure performance and correct problems. |
| 4. | I can predict how I will be rewarded for good performance on the routine. |
| 5. | We are given opportunities to commit freely and publicly to these routines. |

Gender, age, education, current job tenure, and organizational tenure

In addition to the above control variables, I also control for employee gender, age, education, current job tenure, and organizational tenure as these have been repeatedly shown to be related to work behaviors (Mowday & Sutton, 1993; Neal, Yeo, Koy, & Xiao, 2012; O’Reilly, Chatman, & Caldwell, 1991). Similarly, it seems likely that gender, age, education, and job-tenure are related to the work behavior investigated in this study, which is adherence to routines. Therefore, I controlled for them. Gender was coded using a dummy variable (1 for female; 2 for male); age was measured as years since employee was born; education was coded as 1-high school diploma 2-associate degree 3-bachelor’s degree 4-master’s degree 5- PhD or MD; and current job tenure and organizational tenure were measured in number of years.

Data analysis method

Hierarchical moderated regression

In this study I used hierarchical moderated regression (Cohen & Cohen, 1983) using SPSS 22.0 to analyze the main effects of conscientiousness, openness to experience and individual entrepreneurial orientation on adherence to routines. In addition, I used the same technique and same software to analyze the moderating effects of initiating structure leadership on the three main effects. To mitigate multi-collinearity, I mean-centered the interaction terms

(initiating structure leadership X conscientiousness, initiating structure leadership X openness to experience, and initiating structure leadership X individual entrepreneurial orientation) before running the regression analysis (Aiken & West, 1991). I also computed VIF (collinearity statistics) to check for multi-collinearity. In the first step of the hierarchical regression, I entered the nine control variables. In the second step of the hierarchical regression, I entered the first independent variable (conscientiousness). In the third step of the hierarchical regression, I entered the second independent variable (openness to experience). In the fourth step of the hierarchical regression, I entered the third independent variable (individual entrepreneurial orientation). In the fifth step I entered the moderator variable (initiating structure leadership). And in the sixth and final step, I entered the three interaction terms (initiating structure leadership X conscientiousness, initiating structure leadership X openness to experience, and initiating structure leadership X individual entrepreneurial orientation). After the regression analysis, I plotted the two slopes for the significant interaction term: one at one standard deviation above the mean and one at one standard deviation below the mean (Stone & Hollenbeck, 1989). In addition to plotting the significant interactions, I conducted simple slope tests to determine if the slopes of the lines were significantly different from zero. The results of all the above are described in detail in Chapter five.

Scale validation

As I mentioned above, I needed to validate the scale for the newly introduced construct, adherence to routines. First, I needed to determine the scale structure. To do that, I used SPSS 22.0 statistical software to run an exploratory factor analysis (EFA) with principal axis factor (PAF), and oblimin rotation to determine the underlying composition of the items that make up the construct adherence to routines. I used PAF because it assumes measurement errors, includes

only the variance that is shared by all indicators, and treats items as reflective indicators. I used oblimin rotation because it assumes that the factors are correlated. Then, I ran reliability analysis to determine the Cronbach's alpha for this scale (Schwab, 1980; Schwab, 2005). Following the EFA, I ran a confirmatory factor analysis (CFA) using LISREL 8.8 to confirm the results for the adherence to routines construct. In order to run the EFA and CFA as explained above, I collected data in two waves following the technique demonstrated by Neubert, Kacmar, Carlson, and Chonko (2008). The first wave came from participants recruited by students of the first class (N = 220), and the second wave came from participants recruited by students of the second class (N = 323). I used the first wave to conduct the EFA and explore the factors of the adherence to routines construct. Then, based on the EFA results, I used the data collected in the second wave from the second class to run a CFA and confirm the factors. Finally, to complete the scale validation process, I conducted convergent, discriminant and predictive validities of the adherence to routines scale (Fornell & Larcker, 1981). Moreover, I ran a CFA on individual entrepreneurial orientation (IEO), since it is a fairly new construct and my study provides an opportunity to confirm this scale.

Common Method Variance (CMV)

In the design of this study, common method variance (Podsakoff et al., 2003) is a potential issue that I acknowledge since I collected measures of the independent variables and the dependent variable in the same way, at the same time, and from the same source. Moreover, I analyzed the results using a regression technique that is correlations-based. As a result, the relationships between the variables of interest might be inflated due to the variance attributable to the common method of data collection. Accordingly, I have designed the survey to help reduce CMV by collecting the IV's before the DV's; randomizing the items of each question;

and including ‘speed bumps’ and disregarding responses that fail to pass all speed bumps following Podsakoff et al. (2003) recommendations. In addition, I tested for CMV using the marker variable technique (Williams, Hartman, & Cavazotte, 2010). This method suggests that if CMV is present in the dataset then it will affect all the variables in the same way. The goal of this method is to isolate the effect of CMV and then partial it out to check if the results are still significant. To do that, I included a scale that is theoretically unrelated to at least one other scale in the questionnaire, so there is an a priori justification for predicting a zero correlation and followed the marker variable approach (Williams et al., 2010). The marker variable I used is composed of three items, and each item is assessed using a 7-point Likert scale that ranges from (*strongly disagree*) to (*strongly agree*). The three items of the marker variable are: (1) I like to watch NFL games, (2) I like to watch college football games, and (3) I like to play football.

CHAPTER FIVE: RESULTS

In this chapter, I discuss the statistical results for the methodology described in Chapter four and the hypotheses that were developed in Chapter three. I start with reporting the descriptive statistics, followed by describing the scale development analysis, the common method variance testing approach, and ending with the results of the hierarchical moderated regression analysis that tests the hypotheses.

Descriptive statistics

As described in Chapter four, data were collected in two waves from two different classes at the University of Alabama through student-recruited responses. The first class had 85 students, and each student was given the opportunity to recruit up to 7 participants (total maximum number of responses is 595). The second class had 76 students, and each student was given the opportunity to recruit up to 10 participants (total maximum number of responses is 760). Wave one from the first class had a total of 276 responses (46 % response rate), and wave two from the second class had a total of 388 responses (51 % response rate). After removing responses that: (1) were incomplete, or (2) were completed in less than five minutes, or (3) failed to pass all the four speed bumps included in the survey, wave one yielded a sample size of 220, and wave two yielded a sample size of 323, for a total sample size of 543. I conducted a non-response bias mean-comparison two-tailed t-test using SPSS 22.0 where the removed responses based on the above (incomplete, completed in less than five minutes, or failed to pass all the four speed bumps) were considered as the non-responses. The results

showed that there are no significant differences found between responses and non-responses based on age, gender, and education in both waves one and two. Note that waves one and two will be used separately in the scale development analysis as described in the scale development section below, and the total sample size combined will be used in the regression analysis.

In order to prepare the data for analysis, first I reverse-coded all the items that were collected in reverse-coded language, as labeled in Chapter four. Second, I verified that all the items composing the variables fell in their proper range. None of the items was out of range since I had forced the responses to be in range using the online Qualtrics survey tools. Also, I did not have any missing items since I had disregarded all the responses that were incomplete. Then, I computed the variables from the items, and I ran reliabilities on the established scales using the combined sample size ($N = 543$). The reliabilities of the independent variables and moderator were: conscientiousness (Cronbach alpha = .845), openness to experience (Cronbach alpha = .776), IEO (Cronbach alpha = .822), and initiating structure (Cronbach alpha = .733). Moreover, the established scales of the control variables have the following Cronbach alphas: need for achievement (Cronbach alpha = .627), need for affiliation (Cronbach alpha = .384), causal ambiguity (Cronbach alpha = .737), and retentive capacity (Cronbach alpha = .666). Table 10 shows the means, standards deviations and correlations of the all the variables used in the analyses of this study.

Table 10: Means, Standard Deviations, and Correlations

| Variable | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|----------------------------|-------|-------|---------|--------|----------|---------|----------|---------|---------|---------|-------|---------|----------|---------|--------|----|
| 1. Need for Achievement | 5.31 | 0.73 | | | | | | | | | | | | | | |
| 2. Need for Affiliation | 4.02 | 0.63 | -0.03 | | | | | | | | | | | | | |
| 3. Causal Ambiguity | 2.84 | 0.84 | -0.09* | -0.01 | | | | | | | | | | | | |
| 4. Retentive Capacity | 4.91 | 1.04 | 0.14*** | 0.06 | -0.42*** | | | | | | | | | | | |
| 5. Gender | 1.45 | 0.50 | 0.04 | -0.03 | 0.08 | 0.01 | | | | | | | | | | |
| 6. Age | 35.95 | 13.37 | 0.03 | -0.10* | -0.04 | -0.03 | 0.02 | | | | | | | | | |
| 7. Education | 2.34 | 1.17 | 0.04 | 0.09* | 0.05 | -0.04 | -0.02 | 0.23*** | | | | | | | | |
| 8. Current job tenure | 5.14 | 5.77 | 0.03 | -0.03 | -0.10* | 0.04 | -0.03 | 0.57*** | 0.08 | | | | | | | |
| 9. Organizational tenure | 7.93 | 8.78 | 0.04 | -0.05 | -0.12** | 0.04 | -0.01 | 0.60*** | 0.15*** | 0.69*** | | | | | | |
| 10. Conscientiousness | 5.72 | 0.82 | 0.31*** | -0.06 | -0.20*** | 0.12** | -0.07 | 0.17*** | 0.09* | 0.09* | 0.09* | | | | | |
| 11. Openness to Experience | 4.81 | 0.85 | 0.27*** | 0.06 | -0.01 | 0.07 | -0.18*** | -0.02 | 0.05 | -0.08 | -0.06 | 0.15*** | | | | |
| 12. IEO | 5.03 | 0.80 | 0.48*** | -0.01 | -0.08 | 0.20*** | 0.04 | -0.12** | -0.04 | -0.04 | -0.05 | 0.25*** | 0.40*** | | | |
| 13. Initiating Structure | 5.13 | 0.72 | 0.09* | -0.03 | -0.36*** | 0.31*** | -0.04 | -0.05 | -0.09* | 0.05 | 0.02 | 0.19*** | 0.02 | 0.10* | | |
| 14. Adherence to Routines | 3.64 | 1.31 | -0.06 | -0.06 | -0.17*** | 0.12** | -0.03 | -0.03 | -0.10* | -0.00 | -0.07 | 0.12** | -0.15*** | -0.11** | 0.13** | |

Note: two-tailed test; M = Mean; SD = Standard Deviation

List-wise, N = 543

*(p<.05); **(p<.01); ***(p<.001)

Initial analyses

Scale development of Adherence to Routines

The first two steps of scale development (item generation and content validity) were described in Chapter four. Next, I describe step 3, which is exploratory factor analysis:

Exploratory Factor Analysis (EFA) for Adherence to Routines

I used the responses from wave one (N = 220) to run an exploratory factor analysis (EFA) for the variable adherence to routines in order to explore which items performed best (Hair, Black, Babin, Anderson, & Tatham, 2006). Of these, 52.7 % were female, and the average age was 36.51 years. Respondents provided their agreement with each item on a Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). I conducted an exploratory factor analysis using the principal axis factor (PAF) model and an Oblimin rotation for the five items reflecting adherence to routines using SPSS version 22. Following the recommendation of Hair et al. (2006), I chose 0.4 as a factor loading cut-off since the sample size is 220. I chose PAF because the items are reflective indicators. PAF includes the variance that is shared by all indicators, assumes measurement error, and treats items as reflective indicators (Hair et al., 2006). I chose Oblimin rotation because it assumes that the items are correlated. The results indicated that I should remove one item ('I do not always do the less important steps') because it had low extraction communality (0.177 which is less than 0.5) and a boarder-line cut-off loading (0.421). All the other four items had high extraction communalities (larger than 0.5) and high factor loadings (larger than 0.69). Moreover, the EFA results (Factor matrix and scree plot results) using all five items showed that the five items loaded on a single factor, and explained 46.9 % of the variance, and had an eigenvalue of 2.349. After removing the item which had low extraction communality, I re-ran EFA on the four remaining items in two ways. In the first run I requested one factor, and in the second run I did not force one factor. Both runs gave the same results: All

four items loaded on one factor, had high extraction communalities (larger than 0.5), and explained 54.4 % of the variance, and had an eigenvalue of 2.175. Moreover, they all had factor loadings above 0.66. In addition, the Cronbach alpha of adherence to routines scale using the remaining four items is 0.823. The factor loadings of the final EFA are shown in Table 11.

Table 11: Exploratory Factor Analysis Loadings for Adherence to Routines

| Item | Adherence to Routines |
|--|-----------------------|
| 1. I always follow all steps of the routine exactly as I was trained. | .667 |
| 2*. I sometimes deviate from the routine to accommodate unique situations. | .717 |
| 3. The only way I implement the routine is by applying all the steps in their exact order. | .766 |
| 4*. I sometimes do the steps out of order as needs arise. | .792 |

N= 220, Principal Axis Factor, Oblimin rotation, 0.4 is the cut-off value for significant

factor loadings.

** reverse-coded items*

Confirmatory factor analysis (CFA) on Adherence to Routines

Following the EFA on adherence to routines scale, step 4 of scale development analysis is to conduct a confirmatory factor analysis (CFA) on the scale to confirm the factor structure that EFA resulted in (one factor, four items). To conduct the CFA, I used the responses from

wave two (n = 323). Of these, 56 % were female, and the average age was 35.57 years. I used LISREL 8.8 and maximum likelihood estimation, using a one-factor solution. All the standardized path loadings were significant (p < 0.01). Fit statistics of the one-factor model except for RMSEA showed that the model fit the data (goodness of fit index [GFI] = 0.924; normed fit index [NFI] = 0.92; comparative fit index [CFI] = 0.924; root-mean-square error of approximation [RMSEA] = .238; Chi-squared = 38.70, df = 2).

In addition, I computed the average variance explained (AVE) which represents the percentage of variance accounted for in the construct by the items. I calculated the AVE for adherence to routines using the significant path loadings from the CFA. The computation gave an AVE = 0.5 with a reliability ICR = 0.8. To be acceptable, AVE should be greater than or equal to 0.5 and ICR should be greater than or equal to 0.7 (Fornell & Larcker, 1981). So, both AVE and ICR are acceptable. Table 12 lists the significant path loadings of the four items.

Table 12: Confirmatory Factor Analysis Loadings for Adherence to Routines

| Item | Path loading |
|--|--------------|
| 1. I always follow all steps of the routine exactly as I was trained. | .66** |
| 2*. I sometimes deviate from the routine to accommodate unique situations. | .68** |
| 3. The only way I implement the routine is by applying all the steps in their exact order. | .77** |
| 4*. I sometimes do the steps out of order as needs arise. | .71** |

N= 323

* reverse-coded items

** significant path loading ($p < 0.01$)

Scale evaluation

The last step in the scale validation of adherence to routines is scale evaluation where the convergent, discriminant, and predictive validities of the scale are tested. Ideally, convergent validity is used to test if different scales of the same construct converge. Moderate significant correlations between the different scales are an indication that the scales converge. In the case of adherence to routines scale, the closest scales in the data set to it are employees' perception of their supervisors' initiating structure and conscientiousness. Table 13 below shows that adherence to routines is moderately positively significantly correlated with employees' perception of their supervisors' initiating structure and conscientiousness. As a result, the scale shows convergent validity.

Table 13: Correlations and AVE's for Scale Evaluation

| Variable | M | SD | 1 | 2 | 3 | 4 | 5 |
|---------------------------|------|------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 1. Conscientiousness | 5.72 | 0.82 | <i>0.61</i> | | | | |
| 2. Openness to experience | 4.81 | 0.85 | 0.15*** | <i>0.54</i> | | | |
| 3. IEO | 5.03 | 0.80 | 0.25*** | 0.40*** | <i>0.57</i> | | |
| 4. Initiating structure | 5.13 | 0.72 | 0.19*** | 0.02 | 0.10* | <i>0.61</i> | |
| 5. Adherence to routines | 3.64 | 1.31 | 0.12** | -0.15*** | -0.11** | 0.13** | <i>0.73</i> |

Note: two-tailed test, M = Mean; SD = Standard Deviation

List-wise, N = 543

*($p < .05$); **($p < .01$); ***($p < .001$)

Values on the diagonal (***bold and italic***) are the square root of the average variance explained (AVEs used to demonstrate discriminant validity)

Second, to test the discriminant validity of adherence to routines, I followed the procedure outlined by Fornell and Larcker (1981) by calculating the square root of the average variance explained for all the variables. The values on the diagonal (***bold and italic***) of Table 13 correspond to the square root of the average variance explained. This value represents the variance accounted for by the items that compose the scale. To demonstrate discriminant validity, this value should be greater than the latent variable correlations in the same row and column. Since it is greater, there is a strong indication that the amount of variance within the scale (explained by the items) is greater than the amount of variance between two variables (the correlation). Table 13 shows that this condition is met for adherence to routines and thus the scale shows discriminant validity. In addition, all the other substantive established scales used in this study also meet this condition which shows that they are discriminant, and therefore I can conclude that there is no evidence of multi-collinearity.

In the final step of the scale evaluation, I tested for the predictive validity of adherence to routines. Predictive validity is used to test how well a scale predicts other key variables. The correlations would give a good indication whether predictive validity exists because correlations would tell how linearly related the scales are. I use the results of the correlations in Table 13 to investigate the predictive validity of the scale adherence to routines on how well it predicts the three other variables (conscientiousness, openness to experience, and IEO). Since all the correlations are significant, I conclude that adherence to routines demonstrates predictive validity.

Confirmatory factor analysis (CFA) on Individual Entrepreneurial Orientation (IEO)

Since IEO is a relatively new multi-dimensional scale, this study offers an opportunity to confirm it. I first ran an EFA (on the combined sample, $n = 543$) and fixed the number of factors

to three to confirm whether the items loaded on their expected corresponding factors. I used the principal axis factor (PAF) model and an Oblimin rotation for the ten items reflecting the three factors (innovativeness, risk-taking, and proactiveness) using SPSS version 22. All ten items had high extraction communalities (larger than 0.5). Moreover, the EFA results showed that all ten items loaded on their corresponding factors and had high factor loadings (larger than 0.4), except for one item of innovativeness ('I often like to try new and unusual activities that are not typical but not necessarily risky') which cross-loaded on both innovativeness and risk-taking. Moreover, the scree plot results confirmed three factors, and the EFA results showed that the three factors explained 62 % of the variance, and that the smallest had an eigenvalue of 1.443.

Next, I conducted a confirmatory factor analysis (CFA) on the IEO scale at the construct level to confirm if all the items would load significantly, because I am using the scale at its construct, and not at the factor level. I used the responses from waves one and two ($n = 543$). Of these, 54.7 % were female, and the average age was 35.95 years. I used LISREL 8.8 and maximum likelihood estimation. All the standardized path loadings were significant ($p < 0.01$). Fit statistics of the model except for RMSEA showed that the model fit the data (goodness of fit index [GFI] = 0.867; normed fit index [NFI] = 0.866; comparative fit index [CFI] = 0.877; root-mean-square error of approximation [RMSEA] = .131; Chi-squared = 362.33, $df = 35$).

In addition, I computed the average variance explained (AVE) which represents the percentage of variance accounted for in the construct by the items. I calculated the AVE for IEO using the significant path loadings from the CFA. The computation gave an AVE = 0.32 with a reliability ICR = 0.82. To be acceptable, AVE should be more than 0.5 and ICR should be more than 0.7 (Fornell & Larcker, 1981). So, the AVE was low. Table 14 lists the significant path loadings of the ten items of IEO scale.

Table 14: Confirmatory Factor Analysis Loadings for IEO

| Item | Path loading |
|--|--------------|
| 1. I like to take bold action by venturing into the unknown. | 0.72** |
| 2. I am willing to invest a lot of time and/or money on something that might yield a high return. | 0.50** |
| 3. I tend to act 'boldly' in situations where risk is involved. | 0.64** |
| 4. I often like to try new and unusual activities that are not typical but not necessarily risky. | 0.63** |
| 5. In general, I prefer unique, one-of-a-kind approaches rather than revisiting tried and true approaches. | 0.61** |
| 6. I prefer to try my own unique way when learning new things rather than doing it like everyone else does. | 0.55** |
| 7. I favor experimentation and original approaches to problem solving rather than using methods others generally used. | 0.65** |
| 8. I usually act in anticipation of future problems, needs or changes. | 0.43** |
| 9. I tend to plan ahead on projects. | 0.31** |
| 10. I prefer to 'step-up' and get things going on projects rather than sit and wait for someone else to do it. | 0.48** |

N = 543

** Significant path loading ($p < 0.01$)

Testing for Common Method Variance (CMV) threat

Common method variance (CMV) occurs when the measures of the independent variables and the dependent variables are collected using the same method, or at the same time, or from the same source, and the results are analyzed using techniques that have correlations as the base. The results are likely to be overstated because of variance due to the method used to collect the data, and the common method variance would affect all the correlations (Neubert et al., 2008; Podsakoff et al., 2003; Williams et al., 2010). Since CMV is a potential threat to my study, I test in this section the degree of this threat. I follow the procedure outlined in Williams et al. (2010) which uses the marker variable approach within a multi-phase procedure using structural equation modeling (SEM) to explore the degree of common method variance (CMV) in the data. I ran all the SEM analyses using LISREL 8.8. By definition, the marker variable is the variable in the dataset that is included in the model (not among the substantive variables) and that is expected to be least correlated to the substantive variables (Williams et al., 2010). My marker variable consists of three items as stated in Chapter four and has an acceptable reliability (Cronbach alpha = .756) (Nunnally, 1975). Following are the steps of the marker variable analysis to test for CMV threat:

Based on Williams et al. (2010) procedure, step one is running a confirmatory factor analysis (CFA) model that includes the marker variable, all independent variables (conscientiousness, openness to experience, and IEO), moderator (initiating structure), and the dependent variable (adherence to routines). In this CFA, the marker variable is allowed to correlate with all of the latent variables in the model. The purpose of running this step is to determine the path loadings between the marker variable and its indicators and the error

variances associated with them since they will be used in the remaining steps. The results of the CFA are shown in Table 15.

The second step includes running the baseline model which is very similar to the CFA model I ran in step one, except for the following modifications: First, I forced the path loadings from the marker variable to its indicators and the associated error variances to be exactly the ones I got from the CFA model in step one. Second, I un-correlated the marker variable with all the latent variables, but kept the latent variables correlated amongst each other. The results of the baseline model are recorded in Table 15.

The third step includes running the constrained model (Method-C model) using the following modifications from the baseline model: First, I allowed the items of each of the latent variables to load on the marker variable as well by adding paths between the marker variable and all the items of the substantive variables in the model. Second, I set these path loadings to be all equal to one another. The reason behind that is the underlying assumption of CMV that the effect of the marker variable is the same across all the variables. The results of Method-C model are recorded in Table 15.

The fourth step includes performing a chi-square difference test between the baseline model and Method-C to determine whether the marker variable is significantly related to the items of the substantive variables. Here, I am testing whether there is evidence of CMV. If Method-C is better than the baseline, then there is support for CMV threat. The results in Table 15 show that the chi-square difference test between the baseline model and Method-C model is significant. Thus, there is evidence of CMV threat in my data.

The fifth step includes running the unconstrained model (Method-U model) which is similar to Method-C model with the modification that I let the path loadings between the marker

variable and the items corresponding to the substantive variables to be free (and not all equal to each other like in Method-C model). I did so in order to compare Method-C model to Method-U model to check whether the marker variable has an equal effect among all the variables or not. The results in Table 15 of the chi-square difference test between the two nested models Method-C and Method-U show that the test is significant and that Method-U is superior because it has a lower chi-square. This leads to the interpretation that the marker variable had different effects. In other words, allowing the path loadings between the marker variable and the items of the substantive variables to vary rather than being forced to be equal is a better representation of my data. So since the unconstrained model is better, I can conclude that the effect of the marker variable is not equal for all the items of the substantive variables.

In the sixth step, I name the better model from step five as my last model, Model-R, where R stands for 'restricted'. This model-R is similar to the unconstrained model except for the following modification: the correlations between the substantive variables are forced to be equal to the ones of the baseline model. Through this test I am assessing whether the marker variable has inflated these correlations among the substantive variables. I test for this using a chi-square difference test between the Method-U model and Method-R to check whether the correlations between the substantive variables are significantly biased by the CMV attributed to the marker variable. The results show in Table 15 that the chi-square difference test between the Method-U model and Method-R is significant. This means that Method-U, the model with the lower chi square and unconstrained loadings, is a better representation of the data. This means that the CMV attributed to the marker variable did not bias the correlations among the substantive variables.

Table 15: Marker Variable Analysis - CMV

| Model | X^2 | df | GFI^a | CFI^b | NFI^c | RMSEA^d |
|--------------|------------|-----------|------------------------|------------------------|------------------------|--------------------------|
| 1.CFA | 3420.22*** | 1019 | .79 | .88 | .83 | 0.066 |
| 2. Baseline | 3516.76*** | 1029 | .78 | .88 | .83 | 0.067 |
| 3. Method-C | 3512.84*** | 1028 | 0.78 | 0.88 | 0.83 | 0.067 |
| 4. Method-U | 3232.94*** | 985 | 0.80 | 0.84 | 0.89 | 0.065 |
| 5.Method-R | 3400.23*** | 995 | 0.79 | 0.88 | 0.84 | 0.067 |

Chi-Square Model Comparison

Tests

| ΔModels | ΔX^2 | Δdf | Chi-Square critical value: .05 |
|-------------------------|--------------|------------|---------------------------------------|
| 1.Baseline vs. Method-C | 3.92* | 1 | 3.84 |
| 2.Method-C vs. Method-U | 279.9** | 43 | 59.3 |
| 3.Method-U vs. Method-R | 167.33** | 10 | 18.3 |

In the seventh and final step, after statistically showing with evidence for CMV threat above, in this step I quantify the amount of method variance associated with measuring the substantive variables in the model. To calculate that, I decompose the reliabilities of the substantive variables in order to capture how much is associated to the marker variable. The reliability of each scale is decomposed into the amount due to CMV and the amount due to substantive variables. This step is called reliability decomposition. Table 16 shows the reliability decomposition of the winning Method-U model. These results suggest that: 10.53 % of the reliability in conscientiousness is due to CMV, 15.38 % of the reliability in openness to

experience is due to CMV, 13.33 % of the reliability in IEO is due to CMV, 15.96 % of the reliability in initiating structure is due to CMV, and 14.74 % of the reliability in adherence to routines is due to CMV. Based on these results, all of the substantive variables had a relatively low % of their reliability due to CMV. I conclude that CMV is not a significant threat in my data.

Table 16: Reliability Decomposition

| Latent Variable | Reliability Baseline | | Decomposed Reliability: Method-U Model | | |
|------------------------|----------------------|--|--|-------------|-----------------|
| | Model | | Substantive | Method | % Reliability |
| | Total reliability | | reliability | reliability | Marker Variable |
| Conscientiousness | 0.95 | | 0.85 | 0.10 | 10.53 % |
| Openness to experience | 0.91 | | 0.77 | 0.14 | 15.38 % |
| IEO | 0.90 | | 0.78 | 0.12 | 13.33 % |
| Initiating structure | 0.94 | | 0.79 | 0.15 | 15.96 % |
| Adherence to routines | 0.95 | | 0.81 | 0.14 | 14.74 % |
| Marker Variable | 0.76 | | 0.76 | | |

Hierarchical moderated regression analysis

The hierarchical moderated regression analysis results are shown in Table 17. Note that I mean-centered all the independent variables and the moderator in order to be conservative and mitigate multi-collinearity. Moreover, all the interaction terms were created using the mean-centered variables. It can be noted also that the collinearity statistics in Table 17 (VIF's) show no evidence of multi-collinearity.

In step one I entered all nine control variables that I have described in Chapter four. The results from Table 17 show that four out of nine of these control variables were significantly

correlated with the dependent variable adherence to routines. Namely, causal ambiguity, retentive capacity and education were negatively significantly correlated, and organizational tenure was positively significantly correlated with adherence to routines. In addition, the amount of variance explained by the control variables is 4.2 %.

In step two I entered the mean-centered independent variable conscientiousness. The results show that conscientiousness is significantly and positively related to adherence to routines ($p < 0.001$). Thus, I found evidence to support hypothesis 1. In addition, conscientiousness explained an additional 1.4 % of the variance explained.

In step three I entered the mean-centered independent variable openness to experience. The results show that openness to experience is significantly and negatively related to adherence to routines ($p < 0.05$). Thus, I found evidence to support hypothesis 2. In addition, openness to experience explained an additional 2.2 % of the variance explained.

In step four I entered the mean-centered independent variable IEO. The results show that IEO is significantly and negatively related to adherence to routines ($p < 0.05$). Thus, I found evidence to support hypothesis 3. In addition, IEO explained an additional 0.8 % of the variance explained.

In step five I entered the mean-centered moderating variable initiating structure. The results show that initiating structure is not significantly related to adherence to routines.

In the final step six, I entered the three interaction terms that were created using the mean-centered variables: 'Conscientiousness X Initiating Structure', 'Openness to Experience X Initiating Structure', and 'IEO X Initiating Structure'. The results show that the interaction term 'Conscientiousness X Initiating Structure' is positively and significantly related to adherence to

routines and the two other interaction terms were not significant. In addition, this step explained an additional 1.5 % of the variance explained.

In order to assess the support of hypothesis 4.a, that initiating structure moderates the relationship between conscientiousness and adherence to routines, the significant interaction that was found in this final step of the hierarchical regression needs to be graphed. Following a similar procedure to the one recommended by Stone and Hollenbeck (1989), and since then utilized by many researches (e.g., Workman, Kahnweiler, & Bommer, 2003; Witt & Ferris, 2003), I plotted the two slopes of the significant interaction from step 6 of the hierarchical moderated regression analysis: one at one standard deviation above the mean (high initiating structure) and one at one standard deviation below the mean (low initiating structure). The graph is shown in Figure 2. In addition, to determine if the slope of the lines significantly differ from zero, I conducted simple slope tests. The slopes of the lines, representing high initiating structure and low initiating structure, were found to be significantly different from zero ($t= 2.964$, $p<0.05$ for low; $t= 2.407$, $p<0.05$ for high). As such I can conclude that the relationship between conscientiousness and adherence to routines is more positive for subordinates who perceive their supervisors to have high initiating structure than those who perceive their supervisors to have low initiating structure. Therefore, I can conclude that I found support for hypothesis 4.a, and did not find support for hypotheses 4.b and 4.c.

Table 17: Hierarchical Moderated Regression Analyses of the Interactions between Initiating structure and: (1) Conscientiousness, (2) Openness to experience, and (3) IEO

| Dependent variable: Adherence to Routines ^a | | | | |
|--|-------|-------|--------------|---------|
| Variables | B^b | R^2 | ΔR^2 | VIF^c |
| Step 1 : <i>Control Variables</i> | | .042 | .042*** | |
| Need for Achievement | -.034 | | | 1.397 |

| | | | | |
|--|---------|------|---------|-------|
| Need for Affiliation | -0.081 | | | 1.059 |
| Causal Ambiguity | -.168** | | | 1.366 |
| Retentive Capacity | .096* | | | 1.324 |
| Gender | -.076 | | | 1.078 |
| Age | -.001 | | | 1.918 |
| Education | -.086* | | | 1.099 |
| Current job tenure | .011 | | | 2.106 |
| Organizational tenure | -.019** | | | 2.197 |
| <i>F</i> (9,533)=3.634, <i>p</i> < .001 | | | | |
| Step 2: Conscientiousness | .250*** | .056 | .014** | 1.252 |
| <i>F</i> (10,532)=4.213, <i>p</i> < .001 | | | | |
| Step 3: Openness to Experience | -.207** | .078 | .022*** | 1.313 |
| <i>F</i> (11,531)=5.183, <i>p</i> < .001 | | | | |
| Step 4: IEO | -.204** | .086 | .008** | 1.598 |
| <i>F</i> (12,530)=5.241, <i>p</i> < .001 | | | | |
| Step 5: Initiating Structure | .060 | .086 | .000 | 1.249 |
| <i>F</i> (13,529)=4.904, <i>p</i> < .001 | | | | |
| Step 6: Conscientiousness X Initiating Structure | .221** | .101 | .015** | |
| Openness to Experience X Initiating Structure | .140 | | | |
| IEO X Initiating Structure | .054 | | | |

$F(16,526)=4.801, p < .001$

^a N = 543. ^b unstandardized regression coefficients from the last step of the hierarchical regression. ^c Collinearity statistics

Note: * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

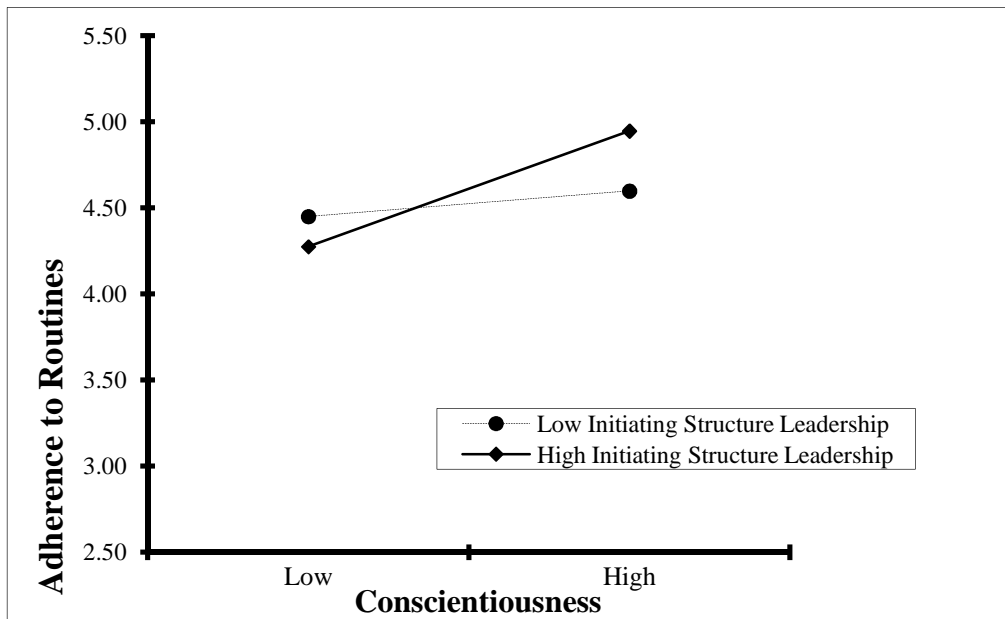


Figure 2: Interaction of Conscientiousness and Initiating Structure on Adherence to Routines

Summary of results

In this chapter, I reported the scale development results of the new scale introduced in this study 'adherence to routines'. The results showed that the five items created were reduced to four. The remaining four items were confirmed as a one-factor scale with a Cronbach alpha of 0.823. Moreover, the scale showed discriminant, convergent and predictive validities. In addition, I tested for common method variance (CMV) potential threat using a marker variable approach. The results showed that even though there is evidence of CMV in my data, the CMV

attributed to the marker variable did not bias the correlations among the substantive variables. Last, the results from the hierarchical moderated regression showed support for all three main effects, in addition to the interaction effect of conscientiousness and initiating structure. That is, conscientious employees who perceive their supervisors as scoring high on initiating structure are more likely to adhere to routines. Table 18 below summarizes the support results for all the hypotheses.

Table 18: Summary of Support for All Hypotheses

| | IV → DV | Hypothesized Direction | Level of Support |
|------|---|-------------------------------|-------------------------|
| H1 | Conscientiousness → Adherence to routines | Positive | Supported |
| H2 | Openness to experience → Adherence to routines | Negative | Supported |
| H3 | IEO → Adherence to routines | Negative | Supported |
| H4.a | Conscientiousness X Initiating structure → Adherence to routines | Positive | Supported |
| H4.b | Openness to experience X Initiating structure → Adherence to routines | Negative | Not supported |
| H4.c | IEO X Initiating structure → Adherence to routines | Negative | Not supported |

CHAPTER SIX: DISCUSSION AND CONCLUSION

The purpose of this study is to investigate using a micro-foundations lens whether employees continue to adhere to organizational routines after the routines have been integrated into a work flow. Organizational routines are important strategic firm resources because they are used in firm growth strategies, and create value for firms by applying existing and proven routines in new settings (Helfat & Peteraf, 2003). Moreover, organizational routines enhance firm performance and are viewed as a source of strategic competitive advantage (Feldman & Pentland, 2003; Jonsson & Foss, 2011). But in order to achieve and sustain a competitive advantage, managers need to ensure that employees are adhering to routines as they were trained. I introduced a new construct, adherence to routines, which captures the theoretical phenomenon of maintaining the repeatability of organizational routines. I defined adherence to routines as a ‘form of work behavior where employees follow and implement all the ordered steps of a routine exactly as trained.’ I developed a new scale to measure adherence to routines. The EFA and CFA analyses in Chapter five yielded a four-item scale with a Cronbach alpha of 0.823. A sample item is ‘I always follow all steps of the routine exactly as I was trained.’ Moreover, the scale showed discriminant, convergent, and predictive validities. This scale can be used in future studies that research organizational routines.

I offered a theoretical model to explain why employees adhere to routines. I applied trait activation theory and hypothesized three main relationships between three individual traits (conscientiousness, openness to experience, and individual entrepreneurial orientation) and

adherence to routines. First, I hypothesized that employees who are highly conscientious are more likely to adhere to routines because conscientious employees tend to keep tasks and deadlines well organized, and follow relevant rules and guidelines. I found empirical support for this hypothesis. These results were not surprising since conscientiousness is a strong predictor of many forms of work behavior, and is the most consistent big-five predictor of work behavior across jobs (Barrick et al., 2001; Roberts, Jackson, Fayard, Edmonds, & Meints, 2009; Schmidt et al., 2008). Therefore, highly conscientious recruited employees are more likely to achieve the anticipated job performance by adhering to organizational routines.

Second, I hypothesized that employees who score high on openness to experience are less likely to adhere to routines because they are creative, experimental, and consider new and unfamiliar ideas and experiences. I found empirical support for this hypothesis. These results suggest that employees who score high on openness to experience are less likely to adhere to routines because by definition adherence to routines requires them to comply with exact steps and to implement the steps in their exact order. This goes against the nature of employees who are open to experience since they are constantly looking for new ideas, like to explore their surroundings, and are less likely to have preference for familiarity. So jobs that require adherence to pre-set routines, such as nurses or pilots, are not compatible with employees who score high on openness to experience. On the other hand, there are jobs that would benefit from employees who are exploratory, creative, and like to experiment with new ways and ideas.

Third, I hypothesized that employees who score high on individual entrepreneurial orientation (IEO) are less likely to adhere to routines because individuals who score high on IEO are more likely to be risk-takers, innovative and proactive. I found empirical support for this hypothesis as well. These results suggest that employees who are highly entrepreneurially

oriented are less likely to adhere to routines and implement the exact steps in their pre-set order. Because proactive, risk-taking and innovative individuals are more likely to think outside the box, less likely to follow pre-set steps of a routine, and more likely to pursue change. So this individual trait does not show compatibility with jobs that are highly routinized and require strict adherence to routines to succeed.

To increase understanding about the relationship between individual traits and adherence to routines, the conditions under which individual traits are related to adherence to routines must be further investigated. The theoretical model of this study hypothesized that initiating structure leadership moderates the relationship between the three main effects and adherence to routines. I found empirical support for the moderating effect of initiating structure leadership on the relationship between conscientiousness and adherence to routines. These results suggest that when leaders provide structural direction for employees by defining roles, responsibilities, and priorities, conscientious employees respond with higher levels of performance on their assigned routines. These results are consistent with trait activation theory (Tett & Guterman, 2000), which suggests that traits are more likely to be expressed in the presence of certain task, social, and organizational cues. My results suggest that initiating structure leadership may have triggered the expression of conscientiousness, resulting in higher levels of adherence to routines.

This study falls under the umbrella of a micro-foundations approach to organizational routines since it examines the role of individuals in adhering to routines. While some research has considered the role of individuals in organizational routines, many individual traits remain unexplored. The current literature found that some individual characteristics matter for successfully implementing and integrating routines (Friesl & Larty, 2013; Lervik, Hennestad, Amdam, Lunnan, & Nilsen, 2005). For instance, we know that employees' willingness and

abilities to follow transferred manufacturing routines (Maritan & Brush, 2003) impact how employees implement routines. Also, we know that healthcare employees' common understanding and shared references of quality of care have an impact on how they implement routines (Essen, 2008). This study adds to the micro-foundations approach of understanding organizational routines by showing that conscientious employees are more likely to adhere to routines, while employees who exhibit high scores on openness to experience and IEO are less likely to adhere to routines. Moreover, this study shows that one situational cue, particularly employees' perception of their supervisors' initiating structure, moderates the relationship between conscientiousness and adherence to routines.

Limitations of the study

The present study does have limitations. First, I examined only one type of leadership as a moderator of the relationship between individual traits and adherence to routines. While the results of this study showed that initiating structure leadership significantly moderated the relationship between conscientiousness and adherence to routines, it should be noted that other leadership behaviors may differentially impact the relationships between individual traits and adherence to routines. Thus investigating only one type of leadership behavior in this study is a limitation.

Second, trait activation theory suggests that individual traits may be activated by situational cues from the task, social, and organizational environments (Tett & Burnett, 2003). This study only investigated one situational cue from the social environment, which is employees' perception of their supervisors' initiating structure leadership. This is a limitation since it only considers one cue from the social environment but does not consider other cues

from the task and organizational environments as moderators to the relationship between individual traits and adherence to routines, as trait activation theory suggests.

Third, I used cross-sectional data to test the hypotheses. Cross-sectional data could be a limitation since it does not allow causal inferences to be drawn.

Fourth, I collected measures of the independent variables, moderator, and the dependent variable in the same way, at the same time, and from the same source using the same method. Although I took preventive measures while designing my study as recommended by Podsakoff et al. (2003) to mitigate common method variance threat, it would have been better had I collected my measures at different times using different sources and methods. However, I did not find evidence of common method variance threat in my data based on the marker variable analysis that I conducted.

Implications for future research

The results of this study suggest that highly conscientious employees are more likely to adhere to routines than low conscientious employees. The results also suggest that employees that are highly open to experience are less likely to adhere to routines. These results could have implications on the selection process in strategic human resource management research. For instance, when recruiting for job positions that require strict adherence to routines, should HR managers strategically select potential employees who score high on conscientiousness in personality tests and avoid choosing employees who are highly open to experience? Another research question that could be investigated is: are highly conscientious recruited employees who are expected to adhere to routines more likely to achieve the anticipated job performance?

The results of this study also suggest that individuals who are highly entrepreneurially oriented are less likely to adhere to routines than employees who score low on individual

entrepreneurial orientation. There are interesting implications that could stem from this result. For instance, how can leaders motivate highly entrepreneurially oriented employees to adhere to routines? My results showed that initiating structure leadership did not affect the relationship between IEO and adherence to routines. Future research could investigate other moderators that might influence the relationship between IEO and adherence to routines. For example, would highly entrepreneurially oriented employees adhere more to routines if their compensations were contingent upon their performance on those routines? This result also raises questions about entrepreneurs. While entrepreneurs need aggressiveness, proactiveness, and risk-taking to pursue opportunities and build new ventures, the long-term strategic advantages of their new ventures might require them to build routines and ask employees to adhere. My results raise questions about whether entrepreneurs who are high on IEO are able to construct the routines that they themselves appear unable to adhere to.

In this study, I examined one type of leadership, namely initiating structure leadership, as a moderator of the relationship between individual traits and adherence to routines. Future researchers might examine how other leadership behaviors, such as relational leadership or leader member exchange (LMX), might impact the relationship between various individual traits and adherence to routines. For example, relational leaders may be able to motivate employees who are low in conscientiousness by using extrinsic rewards. Additionally, conscientiousness may serve as a substitute for some leadership behaviors such that conscientious employees may perform well even in the absence of the close management provided by a directive leader.

Another implication for future research could be to investigate how personality traits interact with rewards to influence adherence to routines. For instance, since we know from the results of this study that conscientious employees are more likely to adhere to routines and

employees who are highly open to experience are less likely to adhere to routines, should firms develop different reward systems that motivates individuals to adhere to routines based on their personalities?

Whereas I found support for initiating structure leadership as a moderator of the relationship between conscientiousness and adherence to routines, it is likely that other aspects of the situation also facilitate the expression of conscientiousness or compensate for low levels of conscientiousness. Future research on situational moderators of individual traits–adherence to routines relationships may be guided by trait activation theory, which suggests that individual traits may be activated by cues from the task, social, and organizational environments (Tett & Burnett, 2003). Future research could, therefore, investigate other moderators associated with task, social, and/or organizational environmental cues. For example, future research could study how certain cues from the routine characteristics such as routine complexity, causal ambiguity, and frequency of applying the routine affect adherence to routines. Cues from the social environment due to other types of leadership behaviors, such as LMX and relational leadership, might also influence adherence to routines. For example, perhaps highly open to experience employees who perceive themselves as part of their supervisors’ in-group might adhere more to routines because in-group members are usually willing to apply extra efforts to help their supervisors achieve their work goals. On the other hand, the relationship between conscientiousness and adherence to routines might be weakened when employees perceive themselves as having a strong relationship with their leader. Because they consider their supervisors as their ‘friends’, they might choose not to adhere to routines knowing that their backs are covered by their leader, with whom they have a good personal relationship.

Team dynamics is another aspect of the social environment that could be investigated. That is, if implementation of the routine is contingent on a team effort, then how would the team dynamics affect adherence to routines? It might be, for example, that newly formed teams are less likely to adhere to routines at the beginning due to lack of experience in working together and communicating efficiently. As teams gain more experience working with each other and become more coherent, does their performance on routines ramp-up to a more satisfying level? Also, future research could investigate how certain cues from the organizational environment might affect adherence to routines. For example, do strong technical organizational cultures that emphasize periodical training increase employees' adherence to routines?

Additionally, future research could investigate possible mediators to the relationships between individual traits and adherence to routines. For instance, since routines are repetitive by nature, could burnout serve as a mediator to the relationships between certain individual traits and adherence to routines?

The new construct introduced in this study, adherence to routines, was treated as a dependent variable. However, future research could consider adherence to routines as an independent variable. For instance, the relationship between adherence to routines and firm level outcomes such as firm performance could be studied.

Implications for management practice

Although research has shown that conscientious workers have tendencies toward being dependable and achievement oriented (Gellatly, 1996), trait activation theory suggests that characteristics of the task, the social environment, and the organization's climate and culture influence the extent to which these tendencies are expressed. Specifically, the results of this study suggest that supervisors should clearly communicate the underlying processes and steps of

the organizational routines and align employees' efforts with these orderly steps to enable the expression of conscientious behaviors. Accordingly, when conscientious employees are supervised by initiating structure leaders, the employees are more likely to adhere to routines compared with other employees.

Contributions of the study

My first contribution is providing theory to explain why employees continue to adhere to routines after they are integrated in the work flow. Specifically, this study applied trait activation theory from the organizational behavior literature, and used it in the organizational routines literature to explain how individual traits (conscientiousness, openness to experience, and individual entrepreneurial orientation) and situational cues (initiating structure leadership) impact adherence to routines. This study also introduced and defined a new construct, adherence to routines, which captures the theoretical phenomenon pertaining to the maintenance of the repeatability of an organizational routine.

Moreover, this study also offered empirical evidence on how firms continue to adhere to routines, in addition to offering a new scale to measure adherence to routines. Finally, this study offered empirical evidence to test the validity of the fairly new construct, IEO, which has been recently introduced to the literature in 2012.

Conclusion

There have been multiple calls in the routines literature that suggest future research on micro-foundations of organizational routines (Felin et al., 2012; Friesl & Larty, 2013; Salvato & Rerup, 2011), and the most recent review paper on routines concluded that the role of individual agency in the practice of routines has not yet been considered enough in empirical and conceptual research on organizational routines (Friesl & Larty, 2013). Thus, this study answers

these calls from the current literature to study the micro-foundations of routines. Specifically, it addresses the question: Why do employees continue to adhere to organizational routines? It is important to study adherence to routines because of the established link between routines as a source of competitive advantage and firm performance. But in order to sustain competitive advantages based on routines, managers need to ensure that employees are adhering to routines that were set up and integrated. Thus, given the significant relationship between routines and performance, understanding the factors that explain why employees adhere to routines is important and timely. This study investigates three predictors of adherence to routines: conscientiousness, openness to experience and individual entrepreneurial orientation. The results of this study show that highly conscientious employees are more likely to adhere to routines. Also, employees who score high on openness to experience are less likely to adhere to routines. Additionally, individuals who are highly entrepreneurially oriented are less likely to adhere to routines. Moreover, initiating structure leadership serves as a situational moderator to the relationship between conscientiousness and adherence to routines. This moderator renders the positive relationship between conscientiousness and adherence to routines even stronger for employees who perceive their supervisors to score high on initiating structure. Additionally, this study developed a scale for the new construct that was introduced, adherence to routines and the scale showed discriminant, convergent and predictive validities.

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APPENDIX A: THE UNIVERSITY OF ALABAMA IRB APPROVAL

January 16, 2014

Office for Research
Institutional Review Board for the
Protection of Human Subjects

Jamal Maalouf
Department of Management & Marketing
College of Commerce & Business Administration
The University of Alabama



Re: IRB # EX-14-CM-007 "Adherence to Organizational Routines: A
Microfoundations Lens"

Dear Ms. Maalouf:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your protocol has been given exempt approval according to 45 CFR part 46.101(b)(2) as outlined below:

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and
(ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Your application will expire on January 15, 2015. If your research will continue beyond this date, complete the relevant portions of Continuing Review and Closure Form. If you wish to modify the application, complete the Modification of an Approved Protocol Form. When the study closes, complete the appropriate portions of FORM: Continuing Review and Closure.

Should you need to submit any further correspondence regarding this proposal, please include the assigned IRB application number.

Good luck with your research.

Sincerely,



358 Rose Administration Building
Box 870127
Tuscaloosa, Alabama 35487-0127
(205) 348-8461
fax (205) 348-7189
TOLL FREE (877) 820-3066

Carpantano T. Myles, MSM, CIM, CIP
Director & Research Compliance Officer
Office for Research Compliance
The University of Alabama

IRB Project #:

EX-14-CM-007

UNIVERSITY OF ALABAMA

INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS
REQUEST FOR APPROVAL OF RESEARCH INVOLVING HUMAN SUBJECTS

I. Identifying information

| | | |
|-------------|---|---|
| | Principal Investigator | Second Investigator |
| Name: | Jamal Maalouf | Dr. James Combs |
| Department: | Management | Management |
| College: | C&BA | C&BA |
| University: | The University of Alabama | The University of Alabama |
| Address: | P. O. Box, 870225, Tuscaloosa, AL 35487 | P. O. Box, 870225, Tuscaloosa, AL 35487 |
| Telephone: | 205-239-7298 | 205-348-1795 |
| FAX: | 205-348-6695 | 205-348-6695 |
| E-mail: | jmaalouf@crimson.ua.edu | jcombs@cba.ua.edu |

Title of Research Project: Adherence to Organizational Routines: A Microfoundations lens

Date Printed: 11/22/2013 Funding Source: N/A

Type of Proposal: New Revision Renewal Completed Exempt

Attach a renewal application

Attach a continuing review of studies form

Please enter the original IRB # at the top of the page

UA faculty or staff member signature:

II. NOTIFICATION OF IRB ACTION (to be completed by IRB):

Type of Review: Full board Expedited

IRB Action:

Rejected Date: _____

Tabled Pending Revisions Date: _____

Approved Pending Revisions Date: _____

Approved—this proposal complies with University and federal regulations for the protection of human subject

Approval is effective until the following date: 1-15-14

Items approved: Research protocol: dated

Informed consent: dated

Recruitment materials: dated

Other: dated

Approval signature

Date 1/16/2014

APPENDIX B: QUALTRICS SURVEY

Informed Consent

You are being asked to take part in a research study. This study is titled “Adherence to Organizational Routines: A Microfoundations lens”. The purpose of this study is to identify factors that explain why some employees adhere more closely than others to organizational routines. This study is being conducted by Jamal Maalouf (PhD in management student) and Dr. James Combs from the University of Alabama.

There are no direct benefits to you from being in this study. However, your participation will contribute to the overall knowledge provided by this project. If you decide to participate, you will be asked to complete an online survey. We estimate that this survey will take 10-15 minutes to complete. There are no right or wrong answers; we only want your opinions. You will not be paid for being in this study. There will be no cost to you except for your time in completing the survey. The only alternative to this study is not to participate.

Taking part in this study is voluntary—it is your free choice. You may choose not to take part at all. If you start the study, you can stop at any time. Leaving the study will not result in any penalty or loss of any benefits you would have otherwise received. The researchers will be able to view your responses only after you have submitted them.

There are minimal risks to you for being in this study. Your confidentiality will be maintained. Your name will not be asked and the completed surveys will remain in a password

protected computer. Your employer will not know whether you took the survey and won't have access to any identifying information or your responses.

The University of Alabama Institutional Review Board (IRB) is the committee that protects the rights of people in research studies. The IRB may review study records from time to time to be sure that people in research studies are being treated fairly and that the study is being carried out as planned.

If you have questions about this study, please call Jamal Maalouf at 205-239-7298 or email jtmaalouf@crimson.ua.edu, or call Dr. James Combs at 205-348-1795 or email jcombs@cba.ua.edu. If you have questions or complaints about your rights as a research participant, call Ms. Tanta Myles, the Research Compliance Officer of the University of Alabama at 205-348-8461 or toll free at 1-877-820-3066.

You may also ask questions, make suggestions, or file complaints and concerns through the IRB Outreach website at http://osp.ua.edu/site/PRCO_Welcome.html or email us at participantoutreach@bama.ua.edu. After you participate, you are encouraged to complete the survey for research participants that is online at the outreach website or you may ask the investigator for a copy of it and mail it to the University Office for Research Compliance, Box 870127, 358 Rose Administration Building, Tuscaloosa, AL 35487-0127.

If you consent to participate, click "Agree" below.

Agree Disagree

The following questions are used to gather background information concerning the participants surveyed. Please complete the following:

Education: The highest degree that I have attained is

- High School Diploma
- Associate Degree
- Bachelors Degree
- Masters Degree
- PhD or MD

For how long have you been working in your current company? (Please indicate the approximate number of years)

(drop down menu – years)

For how long have you been working in your current job or position? (Please indicate the approximate number of years)

(drop down menu – years)

For how long have you been working full-time? (Please indicate the approximate number of years)

(drop down menu – years)

What year were you born?

 (drop down menu – years)

Please indicate your gender:

Female

Male

Conscientiousness scale (10 items)

I see myself as someone who ..

| | Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |
|---|-----------------------|-----------------------|-----------------------|----------------------------|-----------------------|-----------------------|-----------------------|
| is always prepared. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| pays attention to details. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| gets chores done right away. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| likes order. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| follows a schedule. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| is exact in my work. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| leaves my belongings around. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| makes a mess of things. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| often forgets to put things back in their proper place. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| shirks my duties. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| select Agree for this item. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Openness to experience scale (10 items)

I see myself as someone who ..

| | Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |
|--|-----------------------|-----------------------|-----------------------|----------------------------|-----------------------|-----------------------|-----------------------|
| believes in the importance of art. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| has a vivid imagination. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| tends to vote for liberal political candidates. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| carries the conversation to a higher level. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| enjoys hearing new ideas. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| is not interested in abstract ideas. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| does not like art. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| avoids philosophical discussions. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| does not enjoy going to art museums. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| tends to vote for conservative political candidates. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Need for achievement scale (5 items) and need for affiliation scale (5 items)

The following section includes statements concerning your behavior at the workplace. Please

indicate the frequency to which you engage in the following behaviors:

| | Never | Almost never | Seldom | Sometimes | Usually | Almost always | Always |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| I do my best work when my job assignments are fairly difficult. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I try very hard to improve on my past performance at work. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I take moderate risks and stick my neck out to get ahead at work. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I try to avoid any added responsibilities on my job. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I try to perform better than my co-workers. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| When I have a choice, I try to work in a group instead of by myself. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I pay a good deal of attention to the feelings of others at work. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I prefer to do my own work and let others do theirs. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I express my disagreements with others openly. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I find myself talking to those around me about non-business related matters. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Select Seldom for this item. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Initiating Structure Leadership (10 items)

Think about your direct supervisor. Please read each question and respond as honestly as you can. Please indicate your level of agreement with the following statements:

| | Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |
|--|-----------------------|-----------------------|-----------------------|----------------------------|-----------------------|-----------------------|-----------------------|
| My supervisor tries out his or her ideas in the group. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| My supervisor encourages the use of uniform policies. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| My supervisor makes his or her attitudes clear to the group. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| My supervisor decides what shall be done and how it will be done. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| My supervisor assigns people to particular tasks. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| My supervisor makes sure that employees know his/her responsibilities | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| My supervisor schedules the work to be done. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| My supervisor maintains definite standards of performance. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| My supervisor asks that employees follow standard rules and regulations. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| My supervisor lets group members know what is expected of them. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Individual Entrepreneurial Orientation scale (10 items)

The following section includes general questions about you. Please select the answer that most closely represents your response.

| | Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |
|---|-----------------------|-----------------------|-----------------------|----------------------------|-----------------------|-----------------------|-----------------------|
| I like to take bold action by venturing into the unknown. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am willing to invest a lot of time and/or money on something that might yield a high return. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I tend to act “boldly” in situations where risk is involved. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I often like to try new and unusual activities that are not typical but not necessarily risky. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| In general, I prefer unique, one-of-a-kind approaches rather than revisiting tried and true approaches. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I prefer to try my own unique way when learning new things rather than doing it like everyone else does. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I favor experimentation and original approaches to problem solving rather than using methods others generally used. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I usually act in anticipation of future problems, needs or changes. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I tend to plan ahead on projects. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I prefer to “step-up” and get things going on projects rather than sit and wait for someone else to do it. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Choose Disagree for this row. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Items to measure common method variance (CMV)

Please answer the following questions about yourself:

| | Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |
|---|-----------------------|-----------------------|-----------------------|----------------------------|-----------------------|-----------------------|-----------------------|
| I like to watch NFL games. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I like to watch college football games. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I like to play football. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

To answer the remainder of the questions on the survey, think of a specific routine at your workplace where you have been trained on specific steps that you implement repeatedly at work. An example of a specific routine might be ‘greeting a customer upon arrival’, or ‘executing a sales transaction’ or ‘taking an order from the customer’ or ‘opening the store or restaurant in the morning and preparing it for a working day’.

Important: Please take a minute before you proceed to think about a real routine that you do repeatedly in your job. Please name and/or briefly describe this routine that you just thought of.

With that specific routine that you just named above in mind, answer the following questions about yourself:

Adherence to routines scale (5 items)

| | Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |
|---|-----------------------|-----------------------|-----------------------|----------------------------|-----------------------|-----------------------|-----------------------|
| I always follow all steps of the routine exactly as I was trained. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I sometimes deviate from the routine to accommodate unique situations. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I do not always do the less important steps. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The only way I implement the routine is by applying all the steps in their exact order. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I sometimes do the steps out of order as needs arise. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Causal ambiguity scale (5 items) and Retentive capacity scale (5 items)

With that specific routine you just named above in mind, please answer the following questions:

| | Definitely no | No | No, not really | No opinion | Yes, but | Yes | Definitely yes |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Within the routine, I know why a given step results in a given outcome. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| When a problem surfaces, it is not easy to know whether the routine is at fault. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| It is well known how steps of the routine interact to produce positive outcomes. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Everyone knows why these routines work. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Existing personnel are periodically retrained on the routine. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Managers have ways to detect when the routine is not being followed. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Managers regularly measure performance and correct problems. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can predict how I will be rewarded for good performance on the routine. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| We are given opportunities to commit freely and publicly to these routines. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The limits to this routine are fully known. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Select 'Yes' for this row. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |