USE THE RICH: DEVELOPMENT AND VALIDATION OF THE RESOURCE-INDUCED COPING HEURISTIC INVENTORY FOR ENTREPRENEURSHIP

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ABSTRACT

The present research was developed to examine the conceptualization and measurement of the resource-induced coping heuristic (RICH) construct, based on individuals’ dispositions toward three dimensions of resource conservation. Structural equation modeling was utilized to evaluate the dimensionality, reliability, and validity of the 16-item RICH Inventory. Results from two investigations, involving three samples and a total of 813 participants indicated strong reliability, internal validity, and external validity for the theoretically justified, 3-factor measure. Consistent findings across the studies provided evidence of external generalizability. Practical and investigational implications, strengths and limitations, and directions for future research are discussed.

INTRODUCTION

Few would argue against the entrepreneur as the catalyst of venture creation. Yet, entrepreneurship research continues to show inconsistencies in regards to the basic questions of entrepreneurial functions and context, especially when considering aspects of the individual’s involvement (Baron, 2004; Gartner, Shaver, Gatewood, & Katz, 1994). However, new methods, stronger theoretical development, and cross-disciplinary coordination have refined the dynamics of the field (Baron, 2008), creating a fertile milieu for meaningful contributions to elucidation of the individual-entrepreneurship relationship. Recently, entrepreneurship scholars have begun to probe the cognitive functions of the entrepreneur for meaningful relationships with the entrepreneurial process (Baron, 2007; Grégoire, Corbett, & McMullen, 2011; Haynie, Shepherd, Mosakowski, & Earley, 2010). Yet, the advancement of the study of cognition in entrepreneurial environments requires measures focused at the individual-level of analysis (Haynie & Shepherd, 2009).

This study attempts to further inquiry into entrepreneur’s cognitions by developing a measure for investigating individuals’ mindsets toward resource conservation within the entrepreneurial context. Resource conservation is defined as the obtaining, maintaining, and building upon potential resources (Hobfoll, 1989). Conservation of Resources (COR) Theory suggests environmental-individual interaction prompts the attainment, protection, and development of resources such as objects, energies, characteristics, and conditions for coping with the potential (or actual) loss of resources (Hobfoll, 2001). Studies have supported the coping effects of creating such resource stockpiles in many business situations which may befall entrepreneurs, including organization management (Zellars, Hochwarter, Lanivich, Perrewé, & Ferris, 2011), burnout (Halbesleben, 2006), and employee turnover intentions (Wheeler, Halbesleben, & Harris, 2011). However, unlike managers of organizations with pre-determined sets of resources to look out for, entrepreneur’s encounter things in their environment that cannot instantly be processed as useful or valuable for coping, or otherwise. Yet, the stockpile of resources itself is useful to the entrepreneur. As it grows, so does its potential for including resources for coping with uncertain and unknowable entrepreneurial situations.
Although scales for measuring resource conservation do exist (Lanivich, Brees, Hochwarter, & Ferris, 2010; Zellars, et al., 2011), difficulties arise in adapting such measures for use in the entrepreneurship context due to the uncertainty the entrepreneur must endure (Alvarez & Barney, 2005). Therefore, creation of an inventory to facilitate investigation into the effects of individuals’ cognitive dispositions toward resource conservation, across a broad range of entrepreneurial tasks and situations, is needed. Furthermore, by developing an inventory based on heuristic differences for measuring COR in entrepreneurial settings, the stigmatism of cataloging all resources pertinent to the environment, individual, or context is eliminated.

This article is organized as follows. Conservation of resources theory is introduced in the next section as the theoretical perspective for developing a measure of resource-induced coping. Then, the construction and evaluation of a 16-item, Resource-Induced Coping Heuristic (RICH) inventory is described. The article is concluded with a discussion of the intrinsic opportunities and limitations in the measure of the RICH and the methods utilized in its development.

**Theoretical Development**

**Conservation of Resource Theory and Resource-induced Coping**

Conservation of resources theory provides a way to view the relationship between people and the resources in their environment (Hobfoll, 1998). Recently, Hobfoll (2009, p. 95) distinctly and succinctly articulated the foundations of the COR theory, because COR theory is relatively new in the field of entrepreneurship, the passage is offered unabridged:

“COR theory suggests that people are motivated to create, protect, foster, and nurture their resources. People build social, personal, material, and energy resources to sustain well-being, and to protect against future resource loss. This follows because people are loss-sensitive and gain-insensitive on biological (Cacioppo & Gardner, 1999), cognitive (Tversky & Kahneman, 1992) and social (Hobfoll, Freedy, Lane, & Geller, 1990) levels. We are probably loss sensitive because preventing loss was crucial to human survival for evolutionary reasons until fairly recent times. People were always at risk of loss of the very resources that are critical for the integrity and preservation of life and security until recent times... and this fragility of life, safety, and shelter continues for majority world cultures to this day. The possibility of having “extra” that was superfluous is an exception in the human drama. Hence, the building and preserving of resources has a primary motivation in prevention of loss, because future, critical loss is inevitable.”

The COR theory is historically rooted in the stress literature as a framework to explain the causes, effects, and deterrents of stress (Hobfoll, 2001). On this train of thought, stress is the behavioral reaction to an environmental threat of resource loss, actual resource loss, or a failure to realize expected resource gains after specific resource expenditure. Resources are thought to include (but are not limited to) energies, objects, conditions, and personal characteristics that can assist in the procurement, protection, or promotion of other resources (Hobfoll, 2002). Though COR theory can be used to explain both intra – and inter - role outcomes, it should be noted that role theory also explains such phenomena (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964; Katz & Kahn, 1978). Role theory posits that ambiguity and/or conflict, or the inability to cope with demands, in single or multi-role contexts, can cause an undesirable state (Katz & Kahn, 1978). An undertone of the role theory message is that stressors, in the form of ambiguity and/or change, are caused by inadequate knowledge of a situation [ambiguity], or by the inability to adapt to an uncertain environment [change]. Either scenario undoubtedly would cost resources. However, role theory
does not specify moderating variables, such as heuristic reactions to resource encounters, that may buffer the relationship between stressors and strain outcomes (Grandey & Cropanzano, 1999; Jackson & Schuler, 1985).

From an inter-role perspective, resource loss can occur in the process of managing multiple roles at once, causing a negative state of being. According to the COR model, as more demands are experienced in one domain, fewer resources are available to fulfill one’s role in another domain. Such is often the case in venture founding scenarios. It is thought that if the resource depletion is not kept in check, burnout is the inevitable outcome (Hobfoll & Shirom, 1993; Wright & Cropanzano, 1998). However, in conjunction with the COR model, Grandey and Cropanzano (1999, p. 352) proposed that those who have excess resources can use their resource reserves during “problematic” situations to combat the negative effects inherent in resource loss. For entrepreneurship situations where needed resources cannot be known in an a priori manner, the resource reserve, or stockpile, can only be determined by the propensity of the entrepreneur to conserve all objects, energies, conditions, and personal characteristics (i.e., potential resources) as they are encountered. The larger the stockpile of potential resources, the greater the chance that the correct potential resource (or combination of potential resources) will become an actual resource, capable of solving the entrepreneur’s unforeseen problem.

Many past conceptualizations of the COR theory’s central arguments have focused on the importance of the behaviors of saving, protecting, and building particular resources thought to contribute to work outcomes (Gudmunson, Danes, Werbel, & Loy, 2009; Halbesleben, 2006). Others have postulated that the retention, fortification, and creation of perceptions of resources can affect important work outcomes (Harvey, Harris, Harris, & Wheeler, 2007; Hochwarter, Laird, & Brouer, 2008). However, entrepreneurs’ resources are often unknown or unconsidered due to the pioneering nature of new venture creation (Stevenson & Jarillo, 1990). Therefore, the heterogeneity in an entrepreneurs’ coping ability, in regard to resource conservation, may only be measured at the cognitive level. In other words, to measure the potential coping effect of resource conservation in entrepreneurial situations, we must consider the initial reaction to any object, energy, condition, or personal characteristic. Yet, to the best of the author’s knowledge, no work has been done to operationalize the postulations of COR theory as a heuristic mechanism for coping in stressful situations. To accomplish this, the RICH measures the aggregation of the three prominent factors of resource conservation (retaining, protecting, and developing resources) at the cognitive level. The following sections outline the three factors of COR theory in the context of a resource-induced coping heuristic.

Retaining Resources

Retaining resources refers to the act of making objects, energies, conditions, and personal characteristics available for use. However, the concept is not confined to the ownership of potential resources, but instead spans the breadth of procurement. In essence, potential resources need not be physically held by the beholder; the concept extends from acknowledging the whereabouts of something, to sole control of a tangible asset, and encompasses all operationalizations in between. Also, potential resource retaining is not limited to the actual possessions of the individual in question. Resources may come in the form of an individual’s memory of where to find the right person for the job, or knowledge that certain persuasive efforts lead to certain outcomes (e.g., lobbying can persuade voters, where votes are the needed resource).

It is important to note that there are seemingly infinite possibilities for potential resources that may be retained, especially in contexts of uncertainty or instability. Thus, the RICH measures the concept of resource retaining as the initial response to encountering any potential
resource (i.e., the heuristic used to distinguish whether or not the potential resource is retained). Psychometrically, individuals who agree that they behave in the manner depicted by the factor measure items are cognitively disposed to retain resources.

**Protecting Resources**

Once a potential resource is retained, individuals must protect it from actual, or potential, loss. Protecting resources is defined here as the willingness to expend resources to maintain a retained resource, or the willingness to give up one thing (e.g., time, money, energy) to ensure the continuation of another. It is the cognitive disposition toward protecting retained resources that is the distinguishing factor of note (i.e., willingness to safeguard), particularly for individuals that may not yet realize the ends to their means. Therefore, resources in the RICH are described in broad and general terms, often referred to as an individual’s things or stuff. By avoiding the subjectivity that may be connected to decisions regarding protecting specific resources, the unbiased heuristic reaction to resource protection can be assessed. Ultimately, allowing for investigation of resource protection in situations where specific resources are unknown. Thus, the RICH measures the response to items regarding protecting previously retained resources, in general. Individuals who agree that their regular actions are those depicted in the measure are disposed to protecting resources.

**Developing Resources**

As is the case with protecting resources, development of a resource can only occur after a potential resource is retained. The concept of developing resources is defined here as expending effort to cultivate retained potential resources into higher-potential or more useful actual resources. The RICH measures the individual’s disposition toward developing resources (i.e., their willingness to expending effort to transform retained resources into resources of greater value). Since not all retained resources have predetermined end, especially in contexts of uncertainty, the RICH accounts for all resources being developed in order to maintain applicability across different situations.

**Plan of the Research**

Two studies were conducted to investigate the viability of the proposed items relatedness to resource conservation. Replication represents an important step in the scientific process, aiding in the demonstration of generalizability (Eden, 2002). Constructive replications, with changes in subjects, settings, rating sources, and sampling procedures, are particularly influential in helping to establish confidence in the validity of results beyond that reported in single-study designs (Schmidt, 2009). Structural equation modeling techniques were used to estimate reliability and validity of the items and scale across both studies. In Study 1, two samples concurrently address the factor matrices and the goodness-of-fit of the proposed RICH inventory models to the data. Study 2 confirms the reliability and validity of the 16-item RICH Inventory for use in entrepreneurial context.

**STUDY 1: METHOD**

**Participants**

*Sample 1: Students.* Sample 1 was comprised of undergraduate students enrolled in the college of business at a large southeastern university. Students were asked to participate outside of their normal curriculum duties, and were awarded extra credit for their time. The survey was administered via SurveyMonkey.com web-based services. The initial pool of potential participants consisted of 712 individuals enrolled in the business curriculum. Participation in this research was completely voluntary. In total, 344 people responded, of which 12 were eliminated due to incomplete or unverifiable information, resulting in a sample size of 332 (46.7% response rate). The remaining sample of 332 participants was comprised of 182 (55.7%) males, and had a mean age of
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22.63 years (SD = 3.64). Many ethnicities were represented, including African-American (12.7%), Asian, (6.2%), Native American (< 1%), Caucasian (64.5%), and Hispanic (13.3%). Participants reported having an average of GPA of 3.24 (SD = .46). Of those reporting their class rank, 127 were juniors, 136 were seniors, and 19 were graduate students, representing 53 different majors.

Furthermore, a priori steps were taken in the research design stage to combat the occurrence of common methods bias. Specifically, respondents were asked to answer honestly, allowed to respond anonymously, and they were ensured there were no correct or incorrect answers. These procedures are thought to attenuate people’s evaluation apprehension and make them less likely to edit their responses to be more socially desirable, lenient, acquiescent, and consistent with how they believe the researcher wants them to respond (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Also, statement ambiguity was reviewed by pre-testing the survey on non-student individuals (Tourangeau, Rips, & Rasinski, 2000).

Student samples have been noted as a meaningful first step in discerning the psychological foundations of business related phenomena (Audia, Locke, & Smith, 2000), including entrepreneurship related phenomena (Haynie & Shepherd, 2009; Tang, Kacmar, & Busenitz, In press). In many related fields, further precedent exists to validate the use of a student sample, especially when the examined constructs are of a cognitive or psychological nature (e.g., Colquitt, 2001; Hausman, in press; Van der Vegt & Van de Vliert, 2005). Such studies have been accepted for generalization purposes, particularly in the context of item content adequacy assessment (Friede Westring, Oswald, Schmitt, Drzakowski, & Imus, 2009; Kacmar & Carlson, 1997).

Sample 2: Employed individuals. Sample 2 consisted of contractually employed and self-employed alumni of a large southeastern university. A list of recent graduates from the university’s college of business, who had reported some type of gainful employ (self or otherwise), was used to identify participants for this sample. The initial contact letter was distributed to 1,186 people via email. Potential participants were asked to follow a web link embedded at the end of the invitation letter. Participation in this research was completely voluntary. Reminder emails were sent every two weeks for a period of 6 weeks (Armstrong & Overton, 1977). Of the 262 people who responded, 3 were eliminated due to incomplete or unverifiable information, resulting in a sample of 259 individuals; a 22% response rate. The remaining sample of 259 participants was comprised of 146 (56.4%) females, and had a mean age of 26.07 years (SD = 5.61). Many ethnicities were represented, including African-American (10.3%), Asian, (4.9%), Native American (2.0%), Caucasian (62.2%), and Hispanic (14.1%). Participants reported having an average of 1.5 years of experience in their current position (SD = 2.64). Position title examples included manager, teacher, executive, clerk, instructor, consultant, director, officer, attorney, teller, surveyor, baker, banker, analyst, librarian, golfer, president, vice president, administrator, transcriptionist, and physician.

Instrument Development

As mentioned above, the context of entrepreneurship is characterized by innumerable combinations of unforeseeable tasks and potential outcomes. Therefore, a measure of resource conservation designed to address specific objects, energies, conditions, or personal characteristics is inappropriate for many entrepreneurial settings. Proposed here is a 3-factor measure of resource conservation operationalized as heuristic reactions to potential resource encounters at the cognitive level of individual interpretation.

The initial inventory consisted of 48 items generated by examining relevant research, theory, and existing psychometrics of heuristic measures (Ferris et al., 2005; Haynie & Shepherd, 2009;
Kacmar & Carlson, 1997). The 48 items were reviewed by practicing entrepreneurs with over 50 years of experience for content and understandability (Tourangeau, et al., 2000). The measure was constructed on a 7-point Likert type scale, anchored on the left by the statement “Strongly Disagree,” and on the right by the statement “Strongly Agree.” Participants were asked to indicate whether they disagreed or agreed with how well the item statements described them. The survey included a brief set of instructions along with a statement highlighting the protection of participant anonymity and confidentiality. Also, additional scales were contained in the questionnaire to assess nomological validity.

Based on the extensive literature on COR theory provided by Stevan Hobfoll and others, and empirical studies conducted in fields related to entrepreneurship (i.e., Management, Psychology, Economics) outlined above, three dimensions were proposed a priori to represent the RICH. The proposed model shows the dimensions of retaining resources, protecting resources, and developing resources aggregate together to embody the higher-order construct. It is the purpose of this study not only to construct a measure representative of the three dimensions, but also to develop an instrument that captures a unified construct of resource conservation. Confirmatory factor analysis (CFA) item reduction methods for reflective measures were used on both data samples to determine model fit and validate the solution represented in Figure 1 (De Clercq, Dimov, & Thongpapanl, 2010; Haynie & Shepherd, 2009; MacKenzie, Podsakoff, & Jarvis, 2005).

To develop a scale that provided the best representation of the RICH construct, in the most parsimonious way, items from the original pool of 48 were eliminated through a three-step process. First, face and content validity evaluations of the items were conducted by allowing three entrepreneurs, ten students, and two research professionals to assess the initial item pool. This resulted in the elimination of 7 items from the pool. Next, item reduction analysis was conducted using the PASW 18 (formally SPSS 18) statistical program. Items with factor loadings under .40 were eliminated (Nunnally, 1978), resulting in the removal of an additional 16 items. Lastly, items were examined for problematic, high cross loadings by conducting a preliminary factor analysis. The pattern of factor loadings showed that 9 items loaded on two or more factors at a level greater than .40, with the highest loading not corresponding to the intended factor. These 9 items were eliminated resulting in a set of 16 items that were modeled for further analysis as described in the following sections. The 16 items that constitute the RICH inventory are listed in the Appendix.

Historically, CFA parameters are estimated utilizing the maximum likelihood factor extraction technique, which allows for assessment of data fit to the model and testing of the significance of loadings and correlations between factors (Haynie & Shepherd, 2009). Though maximum likelihood estimates require the assumption of multivariate normality (Wegener & Fabrigar, 2000), they are asymptotically unbiased and more efficient than most other estimators. To assess whether the multivariate normality assumption was violated in either sample of Study 1, an independent two-sample t-test was conducted for each sample to examine mean differences between factors. Bernstein (1988) suggested that insignificant mean differences between factors signify that the multivariate normality assumption has not been violated. Sample 1 and Sample 2 both showed no signs of statistically significant differences between factor means (p > .19). Thus, the maximum likelihood extraction method was adopted for this study to determine the initial factor solution.

To assess the structure of the data matrix and determine the suitability for factor analysis, the Bartlett’s Test of Sphericity (BTS) and the Kaiser-Meyer-Olkin measure of sampling adequacy were performed on the data. Nunnally and Bernstein (1994) explained that the BTS is used to test the null hypothesis that items in the population correlation matrix are not correlated (i.e., not an
identity matrix). Low $p$ values (e.g., $p < .05$) signify that an identity matrix does not exist, and that the data is suitable for factor analysis (Nunnally & Bernstein, 1994). The KMO statistic quantifies the intercorrelations among inventory items, wherein values approaching 1.0 indicate high data appropriateness for factor analysis (Hair, Anderson, Tatham, & Black, 1998). For Sample 1, the BTS was significant ($p < .000$), and the KMO approached 1.0 (.888). In Sample 2, the BTS also was significant ($p < .000$), and the KMO approached 1.0 (.880). Both samples showed strong suitability for factor analysis according to both statistics.

An individual's RICH level is defined above as the aggregation of three cognitive dispositions (retaining, protecting, and developing resources), suggesting correlation between the scale dimensions. Given this approach, promax rotation was used to assess the factor patterns. Oblique, promax, rotation identifies the extent to which each of the factors are correlated, and provides greater flexibility for searching out factor patterns (Reis & Judd, 2000). Considering the sample sizes employed in this study and the desired level of significance of less than .05, a minimum standard of .45 was established to distinguish practically significant factor loadings (Hair, et al., 1998, table 3.2, p. 112).

**Study 1: Results**

**Sample 1: CFA**

As predicted by the *a priori* theoretical investigation, restricted analysis employing maximum likelihood extraction and a promax rotation generated a 3-factor solution, determined by eigenvalues greater than 1 and a corresponding scree plot point of inflection. The solution explained 64.63% of the variance over the three dimensions (i.e., retaining resources, protecting resources, and developing resources). Initial goodness-of-fit determined by the maximum likelihood algorithm was significant ($p < .000$), signifying no need to reject the null hypothesis that the discrepancy between the predicted and observed covariance is equal to zero (Haynie & Shepherd, 2009). Table 1 displays the factor loadings, eigenvalues, and variance explained statistics.

Structural equation modeling (SEM) performed with the AMOS 18 program was utilized to determine how the three factors aggregate together, and to investigate the significance level and direction of the correlations between factors. Results show that the three dimensions are significantly and positively correlated ($p < .01$), indicating that they work together to capture the essence of resource conservation. Using SEM, fit statistics were produced for both the 3-factor model and an alternative 1-factor model containing all 16 items. Following the suggestions of Hair, Black, Babin, Anderson, and Tatham (2006), several goodness-of-fit statistics were used to distinguish the prevailing 3-factor model from the worse fitting, 1-factor model, including the chi-square/degrees of freedom ratio ($\chi^2/df$), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA). RMSEA lower than .08, CFI values greater than .90, and $\chi^2/df$ less than 3.00 have been recommended to indicate good model fit (Hair, et al., 2006). All three indicators demonstrated good model fit in the 3-factor model (Hair, et al., 2006). However, the single-factor model failed to fit the data well. Fit statistics for both models are reported in Table 1.

Internal consistency, a type of reliability that describes how consistently a scale measures a construct over time, is frequently used in the social sciences (Straub, 1989). Construct reliability (composite reliability) estimates are commonly used in SEM analysis because they do not assume that the individual items have equal reliability (Garver & Mentzer, 1999). This study utilized Cronbach’s alphas ($\alpha$) and construct reliability ($CR$), with a traditional lower limit benchmark of .70 (Nunnally, 1978), to test the reliability of the RICH Inventory. Results indicate good
reliability for each of the three dimensions of the RICH, resource retaining ($\alpha = .862$, $CR = .859$), resource protecting ($\alpha = .881$, $CR = .883$), and resource developing ($\alpha = .869$, $CR = .870$). Also, the reliability values for the RICH across all 16 items represented a high degree of reliability in the measure ($\alpha = .888$, $CR = .953$). Reliability results appear in the first column of Table 3.

A statistical structure analysis of the scaled items was conducted to test within structural and between structural validity. Within structural (convergent) validity is exhibited when theoretically interrelated measures are demonstrated to be markedly interrelated (Fornell & Larcker, 1981; Nunnally & Bernstein, 1994). Convergent validity is established when all items load more strongly on their associated factors (loading $> .50$) and each factor loads stronger on its associated factor than any other factor (Chau & Tam, 1997; Haynie & Shepherd, 2009). Between structural (discriminant) validity is exhibited when measures that should not be related to each other are not related. This type of validity can be tested by comparing the average variance extracted (AVE) of each construct, a measure of the percentage of variance captured by a construct, to the correlations among the other constructs in the study (Fornell & Larcker, 1981; Staples, Hulland, & Higgins, 1999). Table 3 shows the square-root of the AVE for each construct along the diagonal, correlations among the constructs are shown in the rows and columns. In order to claim discriminant validity, the square-root of each construct’s AVE should be greater than any other corresponding correlation between constructs (Chao & Tam, 1997; Haynie & Shepherd, 2009; Staples, et al., 1999). Average variance extracted for all factors was above .50, and no shared variance for any one factor was found to be greater than its respective squared AVE.

The importance of establishing between measure validity (nomological validity) is well documented, and is an important step in building confidence in a new measure (Cronbach & Meehl, 1955; Ellinger, Bas, Ellinger, Wang, & Bachrach, 2010; Haynie & Shepherd, 2009). Nomological was demonstrated by comparing correlations between the RICH and two scales included in the survey specifically for this purpose, entrepreneurial self-efficacy (McGee, Peterson, Mueller, & Sequeira, 2009) and talkativeness (Hofstee, de Raad, & Goldberg, 1992). In theory, it is expected that RICH scores should be correlated with scores on the entrepreneurial self-efficacy scale and uncorrelated with scores on the talkativeness scale.

Self-efficacy is a cognitive disposition shown to suppress stressors and bolster goal attainment in times of uncertainty (Forbes, 2005; Jex & Bliese, 1999). The entrepreneurial self-efficacy scale measures the extent to which individuals are confident in their ability to overcome deterrents, such as strain, and perform tasks inherent in entrepreneurship, a known milieu of uncertainty (Alvarez & Barney, 2005). By design, the RICH Inventory also measures a cognitive disposition thought to attenuate strain brought on by uncertainty. As expected, a relationship between scales measuring cognitive dispositions that are theoretically positioned to overcome stressors emerged to exhibit nomological validity, as indicated by the correlation between the RICH and entrepreneurial self-efficacy ($r = .41$, $p < .01$). Furthermore, the talkativeness scale, which is not theoretically linked to the RICH, represents an individual’s level of verbal activity in communication situations. Nomological validity was further validated by the low, nonsignificant correlation between the RICH and the talkativeness scale ($r = .07$, $p > .15$).

**Sample 2: Employed Individuals CFA**

As in Sample 1, confirmatory factor analysis was run utilizing a maximum likelihood extraction and a promax rotation. Again, the theoretically proposed 3-factor solution was produced, as determined by eigenvalues greater than 1 and a corresponding scree plot point of inflection. The solution explained 64.84% of the variance over the three dimensions (i.e., retaining resources, protecting resources, and
developing resources). Initial goodness-of-fit determined by the maximum likelihood algorithm was significant \((p < .000)\), signifying no need to reject the null hypothesis that the discrepancy between the predicted and observed covariance is equal to zero (Haynie & Shepherd, 2009). Table 1 displays the factor loadings, eigenvalues, and variance explained statistics for Sample 2.

SEM via the AMOS 18 program was used to determine how the three factors aggregate together, and to investigate the significance level and direction of the correlations between factors. Once again, results indicate that the three dimensions are significantly and positively correlated \((p < .01)\), showing that they work together to capture the essence of resource conservation. Fit statistics were produced for both the 3-factor model and an alternative 1-factor model containing all 16 items. Goodness-of-fit statistics \(\chi^2/df\), CFI, and RMSEA were used to distinguish the prevailing 3-factor model from the worse fitting, 1-factor model. All three indicators demonstrate good model fit in the 3-factor model (Hair, et al., 2006). The 1-factor model did not fit the data. For Sample 2, fit statistics for both models are reported in Table 2.

Cronbach’s alphas and construct reliability statistics, both with a traditional lower limit benchmark of .70 (Nunnally, 1978), were used in the second sample to test the reliability of the RICH Inventory. Concurrent with Sample 1, results indicate good reliability for each of the three dimensions of the RICH, as indicated in Table 3. Also, the Cronbach’s alpha value for the RICH across all 16 items was .882 \((CR = .953)\), representing a high degree of reliability in the measure.

A statistical structure analysis of the scaled items was conducted to test within structural and between structural validity. Table 3 shows the square-root of the AVE for each construct along the diagonal, correlations among the constructs are shown in the rows and columns. Average variance extracted for all factors was above .50, and no shared variance for any one factor was found to be greater than its respective squared AVE, signifying convergent and discriminant validity. As in Sample 1, Sample 2 demonstrated nomological validity by comparing correlations between the RICH and entrepreneurial self-efficacy (McGee, et al., 2009), the RICH and talkativeness (Hofstee, et al., 1992). As expected, a correlation between the RICH and entrepreneurial self-efficacy occurred to exhibit nomological validity \((.26, p < .01)\). Results of the bivariate analysis for the talkativeness scale showed a low, nonsignificant correlation between the RICH and the talkativeness scale \((.06, p > .38)\).

**Study 2: Method**

**Participants**

Study 2 surveyed business founders in the opportunity exploitation phase of their entrepreneurial process. Entrepreneurs in this stage offer a unique perspective to organizational science for a number of reasons. For instance, the perspectives of the founder and the general consensus of the organization are still relatively proximal when compared to diversified, committee managed firms. Also, entrepreneurs in this stage have experienced the market for which their opportunity is thought to exist.

Social networks, including internet-based sites Facebook and LinkedIn, were used to identify business owners (e.g., self-identified as “business owner”). Due to privacy constraints, the search was limited to those business owners found within the network of the principle investigator and his immediate network connections. In total, 1,397 people who through the author’s expertise and contact list had a high probability of being current business owners were identified and emailed the initial participation letter. The initial participation letter asked entrepreneurs to complete a web-based survey for the chance to win a $500 prepaid Discover card. A link to the web-based survey appeared at the end of the letter.
Participation in this research was completely voluntary. Reminder emails were sent to the business owners every two weeks for a period of 6 weeks (Armstrong & Overton, 1977).

At the time the data analysis for this study began, 278 people (19.9% response rate) from 24 states (AK, AL, AR, CA, CO, CT, FL, GA, IL, IN, MA, MI, MO, NC, NY, OH, OR, PA, SC, TN, TX, UT, VA, & VT) and 3 foreign countries (Barbados, Canada, & the United Kingdom) participated in the study. Of the people who responded, 56 were eliminated due to invalid (e.g., non-business owners, responded to marker variable), incomplete, or unverifiable information. The remaining sample of 222 entrepreneurs was comprised of 145 (65.3%) males, and had a mean age of 43.7 years (SD = 12.75). Entrepreneurs reported having an average of 9 years of experience in their industry before starting their business, and 111 (53.4%) stated that they had previously started at least one other business. Generally, participants were educated; 65 (29.3%) held bachelor degrees, 56 (25.2%) held master degrees, and 14 (6.3%) held terminal degrees. The entrepreneurs’ respective businesses averaged 2 founders (SD = 2.34), 132 employees (SD = 1712.28), 12.85 years in existence (SD = 14.22), and $1,995,560.04 in average annual sales (SD = $13,506,233.01).

Design precautions and controls intended to prevent common methods bias were implemented (Podsakoff, et al., 2003). These included using different questionnaire sections, instructions, and response scales for different measures, and protecting respondent anonymity. Multiple response formats (e.g., multiple choice fill-in-the-blank, written text boxes) and a marker variable were used to mitigate programmed responses. Also, multiple survey forms were used to combat cognitive selection biases (e.g., social desirability). In addition, a pilot study was conducted to ensure the interpretability of the scale items.

**Study 2: Results**

In Study 2, a confirmatory factor analysis of the 16-item RICH Inventory was conducted using a maximum likelihood extraction and a promax rotation. A distinct point of inflection corresponded to eigenvalues greater than 1 for the theoretically posited 3-factor solution. The factors of retaining resources, protecting resources, and developing resources accounted for 74.22% of the variance in the model. Initial goodness-of-fit determined by the maximum likelihood algorithm was significant ($p < .000$), indicating no need to reject the null hypothesis that the discrepancy between the predicted and observed covariance is equal to zero (Haynie & Shepherd, 2009). Table 4 displays the factor loadings, eigenvalues, and variance explained statistics for Study 2.

Structural equation modeling demonstrated significant ($p < .01$) and positive correlation between the aggregating 3-factors. Chi square ratio, CFI, and RMSEA fit statistics showed that the 3-factor model was significantly a better fit to the data than a 1-factor model (see Table 2). Reliability estimates were conducted using both Cronbach’s alpha (lower bound) and construct reliability (upper bound) techniques. Results suggest strong reliability for the composite inventory ($\alpha = .929, CR = .970$), and for the three separate factors. Validity tests revealed AVE for all factors was above .50, and no share variance for any one factor exceeded its respective squared AVE, signifying convergent and discriminant validity. Also, nomological validity was demonstrated by a significant correlation with entrepreneurial self-efficacy, a theoretically linked construct. Reliability and validity statistics are displayed in Table 3.

**Discussion**

Scholars of entrepreneurship have recently turned their focus to the cognitive processes of the entrepreneur (Baron, 2007; Gustafsson, 2006; Haynie, et al., 2010; Hmieleski & Baron, 2009;
ENTREPRENEURIAL COGNITION

Mitchell et al., 2002). The importance of investigating the entrepreneurial mind-set (McGrath & MacMillian, 2000), entrepreneurial decision processes (Ireland, Hitt, & Sirmon, 2003), and the cognitive dispositions of entrepreneurs has been documented (Baron, 1998; Grégoire, et al., 2011). Yet, there is a remarkable absence of tools geared toward capturing and quantifying the rudiments of entrepreneurs’ cognitive processes (for notable exceptions, see: Haynie & Shepherd, 2009; Thompson, 2009). It is suggested here that the resource-induced coping heuristic is an important cognitive process in the context of entrepreneurship, and that the RICH inventory can aid researchers in their investigations of the cognitive functions of entrepreneurs.

Directions for Future Research

Though we establish item reliability and validity across different samples and studies, and contribute to the nomological validity of the RICH inventory. Further attempts to broaden the range of generalizability are in order. For instance, nascent entrepreneurs may cope with stress differently than experienced entrepreneurs, or there may be differences between coping styles of habitual and single business entrepreneurs. In fact, there could be differences in coping mechanisms and functions between all or none of the distinguished types of entrepreneurs. It is important to establish the range for which the RICH captures the use of coping with the nuances of entrepreneurship through heuristics regarding resources.

Investigating the interaction effects between the RICH construct and established variables in entrepreneurship also may lead to valuable insights regarding the entrepreneurial process. For example, how might the use of a resource-induced coping heuristic affect the relationship between risk-taking behaviors and entrepreneurial success? It has been suggested that entrepreneurs are not necessarily more or less risk adverse than non-entrepreneurs, but that they may perceive the level of risk, a potential stressor, inherent in situations differently than non-entrepreneurs (Palich & Bagby, 1995). Heuristic coping mechanisms may play an adamant role in distinguishing the reasoning behind these differences. Furthermore, the RICH, like other cognitive constructs in entrepreneurship (Haynie, et al., 2010), is thought to directly affect the entrepreneurial process, including the ultimate success or demise of the business venture. However, empirical studies are needed to validate the functions of the RICH construct in the entrepreneurial context.

Although the RICH was developed with the entrepreneurial process of new venture creation and control in mind, the construct may lend itself to other areas of investigation. Scholars have noted the importance of studying entrepreneurial behaviors within the corporate setting, generally termed intrapreneurship (Antoncic & Hisrich, 2001, 2003; Hisrich, 1990). The RICH may facilitate entrepreneurial behavior among employed individuals insomuch as those individuals recognize their corporate domain as a resource in of itself (Alvarez & Barney, 2007; Alvarez & Busenitz, 2001). Also, the RICH may span the gap between cognitive dispositions and other important outcomes in other scientific disciplines. For example, the scale might be adapted for social and organizational psychology to measure resource-induced coping heuristics of CEOs, general managers, line-employees, teachers, students, parents, or anyone else with the potential to encounter both resources and stressful situations.

Potential Limitations

Critics often denounce of the use of students in behavioral (Copeland, Francia, & Strawser, 1973) and entrepreneurship (Robinson, Huefner, & Hunt, 1991) research. However, it is a relatively common practice to use student samples as the foundation of investigation into basic cognitive and psychological questions (e.g., Colquitt, 2001; Epstein, Pacini, Denes-Raj, & Heier, 1996; Hausman, in press; Van der Vegt & Van de Vliert, 2005). Many disciplines, including manage-
ment (e.g., Ferris, et al., 2005; Kacmar & Carlson, 1997), and now entrepreneurship (Haynie & Shepherd, 2009; Thompson, 2009) utilize student samples. Furthermore, only one of the three samples analyzed in this study, all of which demonstrated acquiescence amongst results, was composed of student responses.

**Conclusion**

The resource-induced coping heuristic was conceptualized here as the degree to which individuals retain, protect, and develop potential resources they encounter. Utilizing existing theory on conservation of resources, a 16-item measure of the RICH was shown to have strong psychometric properties and potential for relationships with constructs in the context of entrepreneurship. As new considerations regarding the cognitions of entrepreneurs continue to raise questions about linkages to the entrepreneurial process, the RICH inventory is poised as a viable solution to measuring a piece of the entrepreneurial mind-set puzzle.

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**SELECT REFERENCES**

*(Full references available from corresponding author)*


**APPENDIX**

**Resource-Induced Coping Heuristic (RICH) Items**

**Retaining Resources**

My initial reaction to things I value is to make them my own.

I instinctively put myself in situations to gain resources.

When I see something of value I go after it without much thought.

Instinctively, I obtain things.

I collect things of potential value without giving it much thought.

**Protecting Resources**

I am quick to protect the things I have.

I instinctively maintain the things I have.

I safeguard the things I have against harm or loss.

It is important to me that I retain the things I have.

I instinctively protect my stuff.

**Building Resources**

Without much thought, I find new ways to use my resources

I increase the value of things I have

I encourage the growth and development of the things I have without much thought

I automatically think to make things stronger or more useful

I instinctively improve the things I have

I develop new resources from old resources

1Responses ranged from 1 (strongly disagree) to 7 (strongly agree).
### TABLE 1 - Factor Loadings, Eigenvalues, & Variance Explained (Samples 1 & 2)

<table>
<thead>
<tr>
<th>Item #</th>
<th>Sample 1</th>
<th>Factor 1 Developing Resources</th>
<th>Factor 2 Protecting Resources</th>
<th>Factor 3 Retaining Resources</th>
<th>Sample 2</th>
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### TABLE 2 - Fit Statistics for All Models

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<tr>
<td>3-Factor Model</td>
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Note: $\chi^2$/df, chi-square/degrees of freedom ratio; CFI, comparative fit index; TLI, Tucker & Lewis index; RMSEA, root mean square error of approximation.

### TABLE 3 - Scale Reliability & Validity

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Note: $\alpha$, Cronbach’s Alpha; CR, construct reliability; AVE, average variance extracted; The square root of the average variance extracted appears in bold along the diagonal for each group of factors. The off-diagonal elements are the correlations between the factors.
TABLE 4 - Study 2 Factor Loadings, Variance, and Eigenvalues

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<th>Item (See: Appendix)</th>
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FIGURE 1 - Conceptual Model of Resource Conservation