Strategic Management Journal
Strat. Mgmt. J., **38**: 770–779 (2017)
Published online EarlyView 11 July 2016 in Wiley Online Library (wileyonlinelibrary.com) DOI: 10.1002/smj.2532
Received 2 July 2015; *Final revision received 3 March 2016*

FIRM GROWTH, ADAPTIVE CAPABILITY, AND ENTREPRENEURIAL ORIENTATION

YOSHIHIRO ESHIMA[1] and BRIAN S. ANDERSON[2]*
[1] *Institute of Small Business Research and Business Administration, Faculty of Business Administration, Osaka University of Economics, Osaka, Japan*
[2] *Division of Management and Entrepreneurship, Leeds School of Business, University of Colorado, Boulder, Colorado, U.S.A.*

Research summary: *This paper posits adaptive capability as a mechanism through which a firm's prior growth influences the exhibition of future entrepreneurial action. Defined as the firm's proficiency in altering its understanding of market expectations, increased adaptive capability is a consequence of the new resource combinations that result from expanding organizational boundaries. Increased adaptive capability in turn corresponds to expansion of entrepreneurial activity, as firms increase their entrepreneurial orientation as the strategic mechanism to capitalize on their improved understanding of market conditions. We find support for our research model in a two-study series conducted in South Korea and the United Kingdom.*

Managerial summary: *Most would agree that entrepreneurially oriented firms—being innovative, entering new markets, and taking risk—grow faster. But how a firm becomes entrepreneurial is a complicated question. In this study, we flipped the growth relationship around and found support for growth contributing to a firm's entrepreneurial orientation. But between growth and being more entrepreneurial is the firm's ability to recognize changes in market expectations. We argue that as a firm grows, it acquires new resources and new knowledge of how to use those resources. These new resource combinations increase its ability to recognize changes in market expectations—its adaptive capability. This capability uncovers new entrepreneurial opportunities for value creation. To capture this potential value, firms expand their entrepreneurial orientation.*

INTRODUCTION

Prior growth is a weak correlate with future growth (Shepherd and Wiklund, 2009). Ample constraints exist on a firm's ability to maintain growth, including managerial desire, competitive pressure, resource acquisition, and market changes (Fombrun and Wally, 1989). Nonetheless, once growing, firms tend to seek ways to perpetuate growth (Penrose, 1959). The principal mechanism to do so is entrepreneurial orientation (EO) (Miller, 1983). EO is the joint exhibition of innovative and proactive entrepreneurial behaviors, and a managerial willingness to pursue opportunities with uncertain outcomes (Anderson *et al.*, 2015). A popular construct in strategic entrepreneurship research, EO is important because consistent findings show that entrepreneurial firms grow faster (Rauch *et al.*, 2009).

Following Penrose (1959), we argue that being entrepreneurial is as much a contributor of growth as it is a consequence. When firms grow they acquire new resources, and with it, the possibility to combine new and existing resources in new

Keywords: firm growth; adaptive capability; entrepreneurial orientation; structural equation modeling; endogeneity
*Correspondence to: Brian S. Anderson, Bloch Executive Hall 5108 Cherry St., Ste. 321 Kansas City MO 64110-2446 816-235-2316. E-mail: brian.s.andersonbri@umkc.edu

value-creating ways (Fombrun and Wally, 1989; Penrose, 1959). Firms exploit these new opportunities by expanding their entrepreneurial activity (Covin & Slevin, 1997). The mechanism through which this process occurs is the firm's adaptive capability.

Adaptive capability—the firm's proficiency at altering its understanding of market expectations—increases as a result of increasing firm boundaries (Lockett *et al.*, 2011). Increased understanding and the corresponding exposure to new entrepreneurial opportunities is the critical antecedent to the tangible entrepreneurial activities undertaken to capture opportunity value (Hitt *et al.*, 2001). In our approach, the presence of a valuable new opportunity—although under uncertainty (Shane, 2000)—comes before EO's expansion. As such, opportunity recognition is not inherent to EO's conceptual domain, but it is a necessary condition for EO's emergence.

The principal contribution of our study is unpacking the growth–EO relationship. We argue that increased adaptive capability is a proximal outcome of growth that enables future entrepreneurial activity. Adaptive capability reveals new entrepreneurial opportunities resulting from growth, and precedes EO's expansion. We thus cast EO as a value-capture mechanism, not a value-discovery mechanism. This perspective challenges the assumption that firms use EO just to explore new opportunities (e.g., Patel *et al.*, 2014).

THEORETICAL DEVELOPMENT

Modeling EO's antecedent relationships

While its conceptual domain is broad, EO has come to define what it means for a firm to be entrepreneurial (Anderson *et al.*, 2015). As mentioned, EO's most significant consequence is firm growth; behaving entrepreneurially places the firm in new domains that facilitate expansion (Miller, 1983). Additional consequences include knowledge generation (Kreiser, 2011), strategic learning (Anderson, Covin, and Slevin, 2009), and improvement in competitive positioning (Hitt *et al.*, 2001). It short, it pays to be entrepreneurial. How a firm becomes entrepreneurial, however, is a question without a simple answer.

The Miller (1983); Covin and Slevin (1989, 1991) EO conceptualization, by far the most popular (e.g., Rauch *et al.*, 2009; Rosenbusch, Rauch, and Bausch, 2013), views EO as the shared variance between three lower order dimensions of innovativeness, proactiveness, and risk-taking. When modeled reflectively by averaging EO's indicators, as is commonly done, and placing EO as the criterion, the researcher presupposes that the predictor is causally adjacent to each dimension equally. Recognizing that the preceding is conceptually tenuous, and empirically rarely true (e.g., Kreiser, Marino, and Weaver, 2002), Anderson *et al.* (2015) reconceptualized EO into two lower order dimensions. The entrepreneurial behaviors dimension, constructed by collapsing innovativeness and proactiveness, reflects the firm's commercialization of their innovations. Managerial attitude toward risk—previously the risk-taking element—reflects senior managers' willingness to pursue opportunities with uncertain outcomes. Entrepreneurial behaviors and managerial attitude toward risk—both necessary and required elements—define EO's conceptual domain under a constructivist perspective (Anderson *et al.*, 2015). An advantage of this approach is to allow a potential antecedent to relate differentially to EO's lower order dimensions, while still allowing the researcher to place the antecedent within EO's broader nomological network (Anderson *et al.*, 2015).

Firm growth, adaptive capability, and EO

In this study, we adopt the perspective of Penrose (1959) and define growth as the firm's change in revenue and assets. Our construction does not diminish the theoretical value of other growth indicators (e.g., Wiklund and Shepherd, 2011). Rather, we wish to focus on the firm's organizational boundaries as represented by its collective stock of resources (Penrose, 1959). Capturing the shared variance between revenue and asset growth reflects the perspective of Josefy *et al.* (2015), who noted that in today's economy a firm may not experience a change in assets along with a change in revenue. The shared variance between revenue and asset growth, however, reflects the collective change in the firm's resource base (Achtenhagen, Naldi, and Melin, 2010).

A changing resource base is a key antecedent to adaptive capability. Inherent to adaptive capability is active scanning of market conditions (Lockett *et al.*, 2011). Increasing adaptive capability

DOI: 10.1002/smj

depends on a change in product/market assumptions (McKee, Varadarajan, and Pride, 1989), and the firm's ability to meet those assumptions with its existing resources (Penrose, 1959). An expanding portfolio of new resource combinations enables the firm to see an equally expanded range of potential ways to satisfy changing market expectations (Shane, 2000). Hence, a change to the firm's resource base and new resource combinations correlate with a change in its adaptability (McKee *et al.*, 1989). The new resource combinations exposed by firm growth, which enhance the ability to recognize ways to satisfy changing market needs, expose specific new opportunities for value creation. Taking the form of new entrepreneurial opportunities—albeit under uncertainty—the presence of an exploitable opportunity is a necessary precondition for a change in the firm's EO (Slevin and Covin, 1997).

The argument that EO is the strategic mechanism through which firm's capture value in new and uncertain opportunities—and hence opportunity recognition precedes EO—is novel in the EO literature, but consistent with its conceptual development. Consider that unlike a start-up, established business units, the appropriate organizational setting for EO (Covin and Lumpkin, 2011), have path dependencies, resource constraints, and a well formed (though fluid) understanding of its existing product/market domains (Sørensen and Stuart, 2000). Pursuing new entrepreneurial opportunities then, particularly among small to medium-sized businesses, necessitates shifting managerial attention and organizational resources from existing opportunities toward the new (Hitt *et al.*, 2001).

A rational manager minimizes downside loss, but a shift in attention and resources increases risk (March and Shapira, 1987). As such, managers prefer pursuing opportunities that they perceive are most likely to improve the firm's competitive position without imperiling firm survival (Ireland, Hitt, and Sirmon, 2003). These opportunities are not likely to be 'gambles', often depicted in the EO literature (Patel *et al.*, 2014; Wiklund and Shepherd, 2011). Rather, increasing EO in response to greater understanding of changing market conditions is a purposeful and deliberate strategic action where managers balance uncertainty with the expectation of capturing value from new opportunities (Anderson *et al.*, 2009; Sørensen and Stuart, 2000). Greater understanding of market expectations through increased adaptive capability promotes EO by lowering uncertainty; managers may experiment less and exploit more (Ireland *et al.*, 2003).

Senior managers' tolerance for pursuing opportunities with uncertain outcomes, however constrains the expansion of the firm's entrepreneurial behaviors (Anderson *et al.*, 2015). We expect then adaptive capability to influence both entrepreneurial behaviors and managerial attitude toward risk, but with different magnitudes. The firm's understanding of its existing product/market domain bounds its adaptive capability (McKee *et al.*, 1989). Hence, new value-creating resource combinations tend to relate to the firm's knowledge base (Shane, 2000), congruent with McKelvie and Wiklund's (2010: 273) observation that '[o]rganic growth will lead to the development of new resources that are similar, not complimentary, to resources already existing in the firm's productive opportunity set'. Because these new opportunities likely represent extensions, rather than departures, from the firm's current offerings (Ireland *et al.*, 2003), EO expansion requires only a modest increase in managerial attitude toward risk (March and Shapira, 1987). As such, we expect only marginal positive change in senior managers' attitudes toward risk stemming from increased adaptability, but a larger positive change in entrepreneurial behaviors (Sørensen and Stuart, 2000). Expressed formally:

> *Hypothesis 1: Adaptive capability mediates the relationship between: (a) firm growth and entrepreneurial behaviors and (b) firm growth and managerial attitude toward risk, which collectively represent the firm's entrepreneurial orientation.*

METHOD AND RESULTS—STUDY 1: SOUTH KOREA

Sample

We collected data from the most senior executives of small to medium-sized South Korean businesses randomly selected from the membership of the Korean Venture Business Association (KOVA), a Korean trade organization. Our budget allowed the collection of approximately 600 responses from KOVA's 11,248 members, for a response rate of ≈five percent. Comparisons of firm age and firm size between the responding and nonresponding firms revealed no significant differences; neither did

DOI: 10.1002/smj

comparisons between early and late respondents. We employed a double-back translation procedure to convert the English survey instrument to Korean (Brislin, 1980). Because our focus is on small to medium-sized businesses, we constrained our sample to firms with between 5 and 250 employees (Anderson and Eshima, 2013). Employing listwise deletion for missing data, the final sample contained 535 observations.

Measures

Firm growth

We measured firm growth using two, 5-point likert-style indicators for the respondent's estimate of the firm's average revenue and asset growth relative to industry peers over the preceding three years (Wall *et al.*, 2004). A higher reported score indicates higher growth. We report the summary statistics and correlation matrix for firm growth and our other latent constructs for Study 1 in Appendix S2, and provide a list of all indicators in Appendix S1.

Adaptive capability

We measured adaptive capability using three, 7-point likert-style indicators modified from Jansen, Van Den Bosch, and Volberda (2005). Higher reported scores correspond to higher adaptive capability. We evaluated the internal response consistency of the adaptive capability construct with a separate set of indicators measuring the firm's strategic learning capability following Anderson *et al.* (2009). As expected, we observed a positive correlation between adaptive capability and strategic learning capability (Study 1 $r = 0.54$, $p < 0.001$; Study 2 $r = 0.75$, $p < 0.001$).

Entrepreneurial orientation

We measured entrepreneurial behaviors and managerial attitude toward risk—EO's independent lower order dimensions—using the Covin and Slevin (1989) entrepreneurial orientation scale and the Anderson *et al.* (2015) measurement model. We eliminated four EO indicators (INN1, INN2, PRO7, RISK9) because of poor loading on their intended construct and/or cross-loading with other constructs, resulting in three indicators for entrepreneurial behaviors and two for managerial attitude toward risk. Deviating from Anderson *et al.* (2015), we chose not to model EO's lower order dimensions to a second-order formative EO construct. The reason for this is endogeneity in the structural paths between the lower order dimensions and the higher order EO. However, we freed the disturbance term covariance between the dimensions, reflecting their joint definition of EO's conceptual domain.

Control variables

As controls we included the log of the firm's age and sales, and a single 7-point Likert style indicator for hostility and dynamism ('Competitive intensity is high in my industry'; and 'My industry is generally very stable with very little change resulting from major economic, technological, social, or political forces', respectively) (Anderson *et al.*, 2009).

Measurement model

Our initial confirmatory factor analysis revealed a poor fit for our measurement model ($\chi^2_{71} = 277.42$, $p < 0.001$). We estimated all models using Stata 13.1 (Stata Corporation, 2013). In evaluating model fit we employed only the Chi-square statistic in keeping with the growing consensus that the Chi-squared statistic is the only necessary metric to determine rejection of a specified model (see Antonakis *et al.*, 2010, 2014). Scholars may address sensitivities of the Chi-squared statistic to sample size and model complexity with the SWAIN correction, which we report (Antonakis and Bastardoz, 2013). After freeing a measurement error covariance between two indicators of entrepreneurial behaviors (EB2 and EB3; see Bollen (1989)), our final measurement model fits the data well ($\chi^2_{28} = 28.98$, $p > 0.1$). We report the full results from our confirmatory factor models and a discussion of our discriminant validity analysis in Appendix S2.

Instruments and endogeneity

We adopted an instrumental variable approach following Antonakis *et al.* (2014) to address endogeneity theoretically expected in our model, which includes common methods variance (a form of omitted variable bias; see Antonakis *et al.* [2010]). We required two instruments for firm growth and another two for adaptive capability, allowing us to overidentify the model and evaluate instrument validity (Semadeni, Withers, and Trevis Certo,

DOI: 10.1002/smj

Table 1. Model estimation results[a]

Structural parameter	Study 1: *N* = 535		Study 2: *N* = 107	
	β	s.e.	β	s.e.
Hypothesized paths				
Growth → AC	0.298**	0.089		
AGR → AC			0.234**	0.084
SGR → AC			−0.048	0.097
AC → Ent. Behaviors	0.540***	0.124	0.542***	0.150
AC → MATR	0.317**	0.113	0.489***	0.082
Nonhypothesized paths				
Growth → Ent. Behaviors	0.147	0.119		
Growth → AC	0.070	0.107		
AGR → Ent. Behaviors			0.182	0.094
AGR → MATR			−0.136	0.082
SGR → Ent. Behaviors			−0.187*	0.094
SGR → MATR			−0.046	0.100
Instruments				
$I_{1\text{-}1}$ → firm growth	0.361***	0.060		
$I_{2\text{-}1}$ → firm growth	0.200**	0.064		
$I_{3\text{-}1}$ → AC	−0.158**	0.050		
$I_{4\text{-}1}$ → AC	0.405***	0.043		
$I_{1\text{-}2}$ → AC			−0.485***	0.083
$I_{1\text{-}2}$ → AC			0.330**	0.101
σ^2 Adaptive capability	0.277		0.548	
σ^2 Ent. Behaviors	0.397		0.626	
σ^2 MATR	0.210		0.224	
χ^2 (df)	$100.53_{(83;\ p>0.05)}$		$64.75_{(57;\ p>0.1)}$	
Corrected χ^2 (df)	$99.03_{(83;\ p>0.1)}$		$60.29_{(57;\ p>0.1)}$	
RMSEA	0.020		0.036	
CFI	0.994		0.983	
SRMR	0.020		0.041	

[a] Standardized coefficients reported. σ^2 = amount of explained variance, or equivalently, the R^2; AC = adaptive capability; MATR = managerial attitude toward risk; Ent. Behaviors = entrepreneurial behaviors; AGR = asset growth rate; SGR = sales growth rate. Robust standard errors reported.
*$p < .05$; **$p < .01$; ***$p < .001$.

2014). For firm growth, we asked respondents his/her satisfaction—weighted by importance—of the firm's total sales and cash flow. For adaptive capability, we collected two, 7-point likert-style indicators: (1) Employees [of my business unit] hardly ever share practical experiences with each other; and (2) My business unit has a clear division of roles and responsibilities. To improve their predictive validity in the model, we squared the two adaptive capability instruments.

Employing instruments in SEM is similar in its assumptions as the Two-Stage Least Squares (2SLS) estimator (Antonakis *et al.*, 2014). We estimated structural paths between the instruments for firm growth and for adaptive capability respectively to their focal constructs. We then freed the covariances between firm growth and adaptive capability, between firm growth and EO's lower order dimensions, and between adaptive capability and EO's dimensions. As reported in Table 1, each instrument was a significant predictor of its intended construct, and the *F* test of the first stage equation showed that the instruments were jointly valid predictors of firm growth and adaptive capability, respectively ($F = 83.19$, $p < 0.001$; $F = 14.6$, $p < 0.001$). The nonsignificant Chi-squared statistic—equivalent to a Sargan-Hansen test of overidentifying restrictions (Antonakis *et al.*, 2014)—indicates that our instruments met the exclusion restriction.

Structural model

We report our structural and measurement model for Study 1 in Figure 1, and our model results in the Study 1 column of Table 1.

DOI: 10.1002/smj

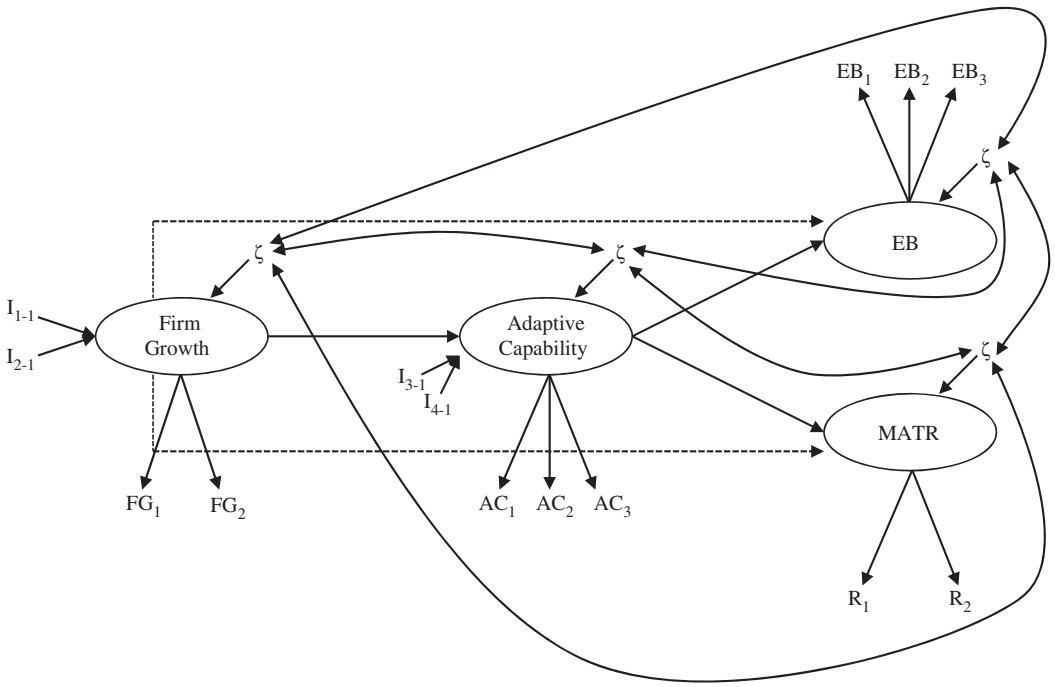

Figure 1. Study 1 measurement and structural model.
[a]Control variables. Dynamism, hostility, firm age, annual turnover. FG = firm growth; AC = adaptive capability; EB = entrepreneurial behaviors; MATR = managerial attitude toward risk; EO = entrepreneurial orientation; I = instrument. Measurement errors omitted for parsimony. Dotted line indicates freed, but not hypothesized, structural paths between firm growth and EO's lower order dimensions. Curved lines indicate freed disturbance term and hypothesized covariances.
[b]Structural paths from control variables to all latent constructs omitted for parsimony. Firm age annual turnover log transformed

Our hypothesized model fits the data well ($\chi^2_{83} = 100.53$, $p > 0.05$), and we report all coefficients with robust standard errors. As posited, firm growth has a positive and significant relationship to adaptive capability ($\beta = 0.298$, $p < 0.01$). Similarly, adaptive capability relates positively and significantly—although at different magnitudes—with entrepreneurial behaviors versus managerial attitude toward risk ($\beta = 0.540$, $p < 0.001$; and $\beta = 0.317$, $p < 0.01$, respectively). A comparison test of the parameters, however, revealed no significant difference between adaptive capacity and EO's lower order dimensions. Further, we observed insignificant paths between firm growth and entrepreneurial behaviors and managerial attitude toward risk ($p > 0.1$).

We determined support for Hypotheses 1a and 1b if a significant indirect effect between firm growth and EO's lower order dimensions exists (Preacher and Hayes, 2004). The indirect effect of firm growth on entrepreneurial behaviors and between firm growth and risk is strongly significant using the Sobel method with delta-corrected standard errors ($\theta = 0.148$, $p < 0.001$; $\theta = 0.095$, $p < 0.001$, respectively, nonstandardized coefficients). Employing a secondary bootstrapping procedure (Preacher and Hayes, 2004), neither of the bias corrected confidence intervals for the two indirect effects contained zero (0.040–0.722; 0.008–0.522, respectively). We thus found general support for Hypotheses 1a and 1b, but not for a differential effect.

METHOD AND RESULTS—STUDY 2: UNITED KINGDOM

Sample

We collected data from the senior-most executives at 134 small to medium-sized (SME) businesses drawn from an initial sample of 6,000 SMEs randomly selected from the FAME database in the United Kingdom (Souitaris and Maestro, 2010), for a response rate of ≈two percent.

DOI: 10.1002/smj

Budget restrictions prohibited multiple contacts of nonrespondents. However, comparisons of industry sector, employees, and total assets of responding and nonresponding firms revealed no significant differences. Consistent with Study 1, we constrained our sample to firms with between 5 and 250 employees. Employing listwise deletion to account for missing data, the final sample contained 107 observations.

Measures

We used the same indicators for our focal latent constructs and control variables in Study 2 as in Study 1, with the exception of firm growth. Using the FAME database, we constructed financial measures of sales growth rate and of asset growth rate using sales and asset data from the two full fiscal years preceding data collection. As is common with archival data, we winsorized both growth indicators to address skewness and kurtosis. However, estimating our model with nontransformed values yielded demonstrably similar results in size and significance. We report the summary statistics and correlation matrix for Study 2 in Appendix S2.

Measurement model

Our confirmatory factor model replicating the measurement model from Study 1 fit the data well ($\chi^2_{16} = 15.95$, $p > 0.1$). Subsequent analysis with our structural parameters revealed that freeing a measurement error covariance between two adaptive capability indicators (AC1 and AC2) substantially improved overall fit. The resulting measurement model fit the data exceptionally well ($\chi^2_{15} = 7.97$, $p > 0.1$), as reported in Appendix S2.

Instruments and endogeneity

Unfortunately, given the archival nature of the two firm growth indicators, we were unable to find temporally appropriate instruments for firm growth. Further, using the same instruments in Study 1x for adaptive capability in Study 1 proved infeasible. As such, we used two different 7-point Likert style instruments for adaptive capability in Study 2: (1) My business unit is not responsive to customer complaints; and (2) Employees of my business unit have a common language regarding our products and services. As reported in Table 1, each instrument was a significant predictor of adaptive capability, and the corresponding F test of the first-stage equation showed that the instruments were jointly valid predictors ($F = 22.49$, $p < 0.001$). Further, the nonsignificant Chi-squared statistic of the structural model indicates that we properly excluded the instruments from directly predicting EO's lower order dimensions.

Structural model

The structural model for Study 2 is demonstrably similar to that of Study 1, with the substitution of the observed financial indicators for firm growth, and we report our results in the Study 2 column of Table 1. Our hypothesized model fits the data well ($\chi^2_{57} = 64.75$, $p > 0.1$). However, in Study 2 only asset growth rate related significantly to adaptive capability ($\beta = 0.234$, $p < 0.01$), a finding that we explore further in the discussion section. Adaptive capability related positively to entrepreneurial behaviors and to managerial attitude toward risk ($\beta = 0.542$, $p < 0.001$; and $\beta = 0.489$, $p < 0.001$, respectively), although as with Study 1, there was no statistically significant difference between the two parameter estimates. We observed no significant relationship between asset growth rate and either of EO's lower order dimensions. We did find a slightly negative relationship between sales growth rate and entrepreneurial behaviors, although this relationship did not hold during bootstrap analysis. Supporting Hypotheses 1a and 1b, although only for the asset growth rate relationship, we found a significant indirect effect of growth on both entrepreneurial behaviors and on risk ($\theta = 0.005$, $p < 0.05$; $\theta = 0.006$, $p < 0.05$, respectively). Bootstrapped results of the indirect effects supported our primary results (bias-corrected confidence intervals 0.001–0.015; 0.002–0.015, respectively).

DISCUSSION AND IMPLICATIONS

Scholars have criticized the growth-as-antecedent literature as overlooking meaningful intervening mechanisms that enable continued growth (McKelvie and Wiklund, 2010). Modeling complex processes is challenging; in the entrepreneurship literature, the outcome of growth often involves complex exponential and spiral-like relationships that complicate theoretical development (Shepherd, Patzelt, and Haynie, 2010). To understand growth

DOI: 10.1002/smj

better then, we must consider proximal phenomena that translate expanding firm boundaries to new entrepreneurial opportunities. Across two separate studies, we find support for adaptive capability in this role.

As a distinct organizational competency, adaptive capability is independent of its critical antecedent—exposure to changing environmental exigencies. We suggest that rapidly growing firms experience changing market conditions at a faster rate, which enhances the firm's ability to alter its understanding of market expectations. Hence, adaptability increases as growth increases. The finding in Study 2 that asset growth rate drives adaptability supports our argument that increasing adaptive capability depends on a corresponding increase in the firm's resource base, which is likely closer aligned with an increase in the firm's total assets.

Considering the broader firm growth literature, we concur with Achtenhagen *et al.* (2010) that a fruitful approach to building an integrative model of firm growth is to consider growth's proximal consequences in smaller, more manageable studies. As Achtenhagen *et al.* (2010: 310) noted, '[a] crucial challenge for the future study of growth lies in how to capture this complexity and multidimensionality, e.g., by not treating growth as [a] dependent variable but as intermediary variables while studying other outcomes . . . .' An increase in adaptive capability is a positive outcome of the firm's expanding resource base, and with it, an expansion in possible resource combinations that may better serve the firm's existing markets.

As McKelvie and Wiklund (2010: 273) noted, summarizing Penrose (1959), 'One important facet of Penrose's work is that new knowledge generated by organic growth . . . is path dependent and generally closely intertwined with the firm's existing knowledge base.' A key contribution of this study, building from the preceding, is to redirect the EO conversation away from the perspective that EO involves only exploratory search activities (e.g., Patel *et al.*, 2014; Wiklund and Shepherd, 2011). To illustrate, consider that EO is a resource consuming strategic posture (Covin and Slevin, 1991). Further, EO increases when employed in a disciplined, focused manner as part of the firm's intended strategy (Anderson *et al.*, 2009). The preceding suggests that EO's value-creation potential depends on senior managers having some sense of the potential value of an entrepreneurial opportunity before expending critical resources to capture that value. This does not imply the absence of uncertainty surrounding the opportunity (Shane, 2000). Rather, we argue that firms engage in entrepreneurial activity to capture value in perceived opportunities with varying degrees of uncertainty, under the premise that higher levels of opportunity uncertainty necessitate higher levels of EO.

Lastly, in our study we adopted the Anderson *et al.* (2015) measurement model for EO, but found no significant difference in the parameter estimates for the paths between adaptive capability and EO's lower order dimensions. One explanation for this finding is that an increase in the firm's proficiency to alter its understanding of market expectations encourages an increase in entrepreneurial activity and with it a similar increase in manager's tolerance for the uncertainty inherent in new entrepreneurial behaviors. In this case, adaptive capability influences EO's dimensions with no discernible difference in size; a possibility under Anderson *et al.* (2015) but argued to be uncommon. Another explanation is that the Anderson *et al.* (2015) perspective imposes a stricter assumption about the behavioral versus attitudinal distinction than warranted. Without question, the Covin and Slevin (1989) measurement instrument includes behavioral and dispositional elements (Covin and Lumpkin, 2011). The oft-repeated call then (one that we share) for a new EO measurement instrument may best serve the field with a focus on entrepreneurial behaviors supported by those elements of managerial risk-taking construed in a predominately behavioral, first-order reflective specification.

Limitations

While the two study locations are substantially different in their business environment, we cannot rule out that studies in other geographic locations may yield different results. Further, we are concerned with the statistical power of Study 2; additional replication of our model will better establish the population value of the parameters. Environmental factors—including market size and competition—impose additional, long-term constraints on firm growth. In our model, we employ a 2SLS approach to account for unobserved variables that may influence our focal structural relationships. However, this same variance may also represent valuable extensions to our model, and we encourage future research on boundary conditions.

DOI: 10.1002/smj

Conclusion

In this study, we sought to demonstrate the reciprocal nature of EO and firm growth. Growth is as much an outcome of EO as it is a predictor. But the firm's adaptive capability is a central intervening mechanism translating that growth to future entrepreneurial action. Our hope is that EO scholars may leverage our model in the future discovery of EO's contributing factors.

ACKNOWLEDGEMENTS

The authors would like to thank Don Kuratko, Jeff Covin, Will Mitchell and two anonymous reviewers for their helpful suggestions for improvement. This study was first presented at the 2015 Babson College Entrepreneurship Research Conference and published in the 2015 edition of Frontiers of Entrepreneurship Research BCERC Proceedings. This study was partially supported by Grant-in-Aid for Scientific Research(C) 15 K03700, and by the Institute of Small Business Research and Business Administration at the Osaka University of Economics, Japan.

REFERENCES

Achtenhagen L, Naldi L, Melin L. 2010. 'Business growth': do practitioners and scholars really talk about the same thing? *Entrepreneurship: Theory and Practice* **34**: 289–316.

Anderson BS, Covin JG, Slevin DP. 2009. Understanding the relationship between entrepreneurial orientation and strategic learning: an empirical investigation. *Strategic Entrepreneurship Journal* **3**: 219–241.

Anderson BS, Eshima Y. 2013. The influence of firm age and intangible resources on the relationship between entrepreneurial orientation and firm growth among Japanese SMEs. *Journal of Business Venturing* **28**: 413–429.

Anderson BS, Kreiser PM, Kuratko DF, Hornsby JS, Eshima Y. 2015. Reconceptualizing entrepreneurial orientation. *Strategic Management Journal* **36**: 1579–1596.

Antonakis J, Bastardoz N. 2013. Swain: stata module to correct the SEM chi-square overidentification test in small sample sizes or complex models. Available at: http://econpapers.repec.org/software/bocbocode/s457617.htm (accessed 15 November).

Antonakis J, Bendahan S, Jacquart P, Lalive R. 2010. On making causal claims: a review and recommendations. *Leadership Quarterly* **21**: 1086–1120.

Antonakis J, Bendahan S, Lalive R. 2014. Causality and endogeneity: problems and solutions. In *The Oxford Handbook of Leadership and Organizations*, Day DV (ed). Oxford University Press: New York; 93–117.

Bollen KA. 1989. *Structural Equations with Latent Variables*. Wiley: New York.

Brislin RW. 1980. Translation and content analysis of oral and written materials. In *Handbook of Cross-Cultural Psychology*, Triandis HC, Berry JW (eds). Allyn & Bacon: Boston, MA.

Covin JG, Lumpkin GT. 2011. Entrepreneurial orientation theory and research: reflections on a needed construct. *Entrepreneurship: Theory and Practice* **35**: 855–872.

Covin JG, Slevin DP. 1989. Strategic management of small firms in hostile and benign environments. *Strategic Management Journal* **10**: 75–87.

Covin JG, Slevin DP. 1991. A conceptual model of entrepreneurship as firm behavior. *Entrepreneurship: Theory and Practice* **16**: 7–25.

Fombrun CJ, Wally S. 1989. Structuring small firms for rapid growth. *Journal of Business Venturing* **4**: 107–122.

Hitt MA, Ireland RD, Camp SM, Sexton DL. 2001. Strategic entrepreneurship: entrepreneurial strategies for wealth creation. *Strategic Management Journal* **22**: 479–491.

Ireland RD, Hitt MA, Sirmon DG. 2003. A model of strategic entrepreneurship: the construct and its dimensions. *Journal of Management* **29**: 963–989.

Jansen JJ, Van Den Bosch FA, Volberda HW. 2005. Managing potential and realized absorptive capacity. *Academy of Management Journal* **48**: 999–1015.

Josefy M, Kuban S, Ireland RD, Hitt MA. 2015. All things great and small. *Academy of Management Annals* **9**: 715–802.

Kreiser PM. 2011. Entrepreneurial orientation and organizational learning: the impact of network range and network closure. *Entrepreneurship: Theory and Practice* **35**: 1025–1050.

Kreiser PM, Marino LD, Weaver KM. 2002. Assessing the psychometric properties of the entrepreneurial orientation scale. *Entrepreneurship: Theory and Practice* **26**: 71–95.

Lockett A, Wiklund J, Davidsson P, Girma S. 2011. Organic and acquisitive growth. *Journal of Management Studies* **48**: 48–74.

March JG, Shapira Z. 1987. Managerial perspectives on risk and risk-taking. *Management Science* **33**: 1404–1418.

McKee DO, Varadarajan PR, Pride WM. 1989. Strategic adaptability and firm performance: a market-contingent perspective. *Journal of Marketing* **53**: 21–35.

McKelvie A, Wiklund J. 2010. Advancing firm growth research: a focus on growth mode instead of growth rate. *Entrepreneurship: Theory and Practice* **34**: 261–288.

Miller D. 1983. The correlates of entrepreneurship in three types of firms. *Management Science* **29**: 770–791.

Patel PC, Kohtamäki M, Parida V, Wincent J. 2014. Entrepreneurial orientation-as-experimentation and firm performance: the enabling role of absorptive capacity. *Strategic Management Journal*, DOI: 10.1002/smj.2310.

Penrose ET. 1959. *The Theory of Growth of the Firm*. Blackwell: Oxford, UK.
Preacher KJ, Hayes AF. 2004. SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods* **36**: 717–731.
Rauch A, Wiklund J, Lumpkin GT, Frese M. 2009. Entrepreneurial orientation and business performance. *Entrepreneurship: Theory and Practice* **33**: 761–787.
Rosenbusch N, Rauch A, Bausch A. 2013. The mediating role of entrepreneurial orientation in the task environment–performance relationship. *Journal of Management* **39**: 633–659.
Semadeni M, Withers MC, Trevis Certo S. 2014. The perils of endogeneity and instrumental variables in strategy research. *Strategic Management Journal*, DOI: 10.1002/smj.2136.
Shane S. 2000. Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science* **11**: 448–469.
Shepherd DA, Patzelt H, Haynie JM. 2010. Entrepreneurial spirals: deviation-amplifying loops of an entrepreneurial mindset and organizational culture. *Entrepreneurship: Theory and Practice* **34**: 59–82.
Shepherd D, Wiklund J. 2009. Are we comparing apples with apples or apples with oranges? *Entrepreneurship: Theory and Practice* **33**: 105–123.
Slevin DP, Covin JG. 1997. Time, growth, complexity, and transitions: entrepreneurial challenges for the future. *Entrepreneurship: Theory and Practice* **22**: 53–68.
Sørensen JB, Stuart TE. 2000. Aging, obsolescence, and organizational innovation. *Administrative Science Quarterly* **45**: 81–112.
Souitaris V, Maestro BM. 2010. Polychronicity in top management teams: the impact on strategic decision processes and performance of new technology ventures. *Strategic Management Journal* **31**: 652–678.
Stata Corporation. 2013. *SEM Reference Manual*. Stata Press: College Station, TX.
Wall TD, Michie J, Patterson M, Wood SJ, Sheehan M, Clegg CW, West M. 2004. On the validity of subjective measures of company performance. *Personnel Psychology* **57**: 95–118.
Wiklund J, Shepherd DA. 2011. Where to from here? EO-as-experimentation, failure, and distribution of outcomes. *Entrepreneurship: Theory and Practice* **35**: 925–946.

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendix S1. Measures.
Appendix S2. Measurement model analysis.