

Founding Team Evolution and New Venture Innovation: An Integration of Multiple Paths of Influence

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Pre-entry experience endowments explain variance in innovation across new ventures.

Premise: Pre-entry experiences confer KSAs founders can draw on to innovate (e.g., Marvel & Lumpkin, 2007; Ucbasaran, Westhead, & Wright, 2009; Gruber, MacMillan, & Thompson, 2012).

Supporting evidence: Pre-entry endowments explain variations in innovation (Tzabbar & Margolis, 2017) venture formation (Agarwal & Shah, 2014), and non-technical knowledge that assists commercialization (Chatterji, 2009)

In short: “**What an organization knows at its birth will determine what it searches for, what it experiences, and how it interprets what it encounters.**” (Huber, 1991: 91)





But do these initial experiences continue to shape venture innovation in the presence of membership dynamics?

Membership dynamics

Founding teams are “works in progress” (Forbes et al., 2006; Ucbasaran et al., 2003)

Founding team efficacy is not a linear transposition of the team’s parts:

1. Assets at founding may not be equally beneficial later (Beckman & Burton, 2008)
2. The “parts” (people) can change and enhance or retard innovative potential (Chen & Klimoski, 2003; Chen, 2005)
3. Team reconstitution can facilitate re-combinatory and creative processes (Bedwell et al., 2012; Dineen & Noe, 2003)

How they complicate the story

Insufficient light shed on the evolution of team pre-entry experience

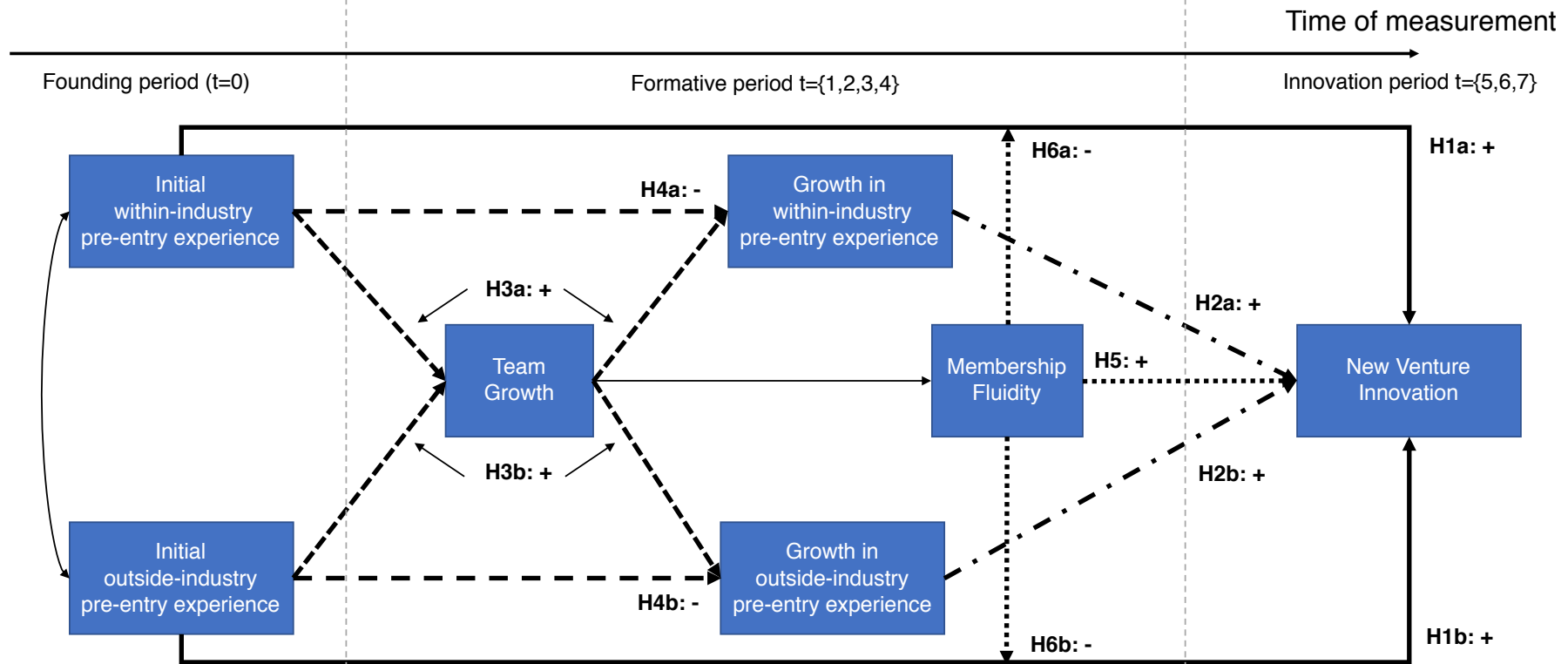
We currently do not have definitive answers regarding whether pre-entry experience:

1. Drives later innovation or becomes “stale”
2. Sets the stage for further experience accrual or serves as a constraint
3. Has its effects modified or conditioned by membership fluidity

Key Question: How do pre-entry experiences shape venture innovation in the presence of the membership dynamics?



We develop a model that specifies three pre-entry experience effects on venture innovation.

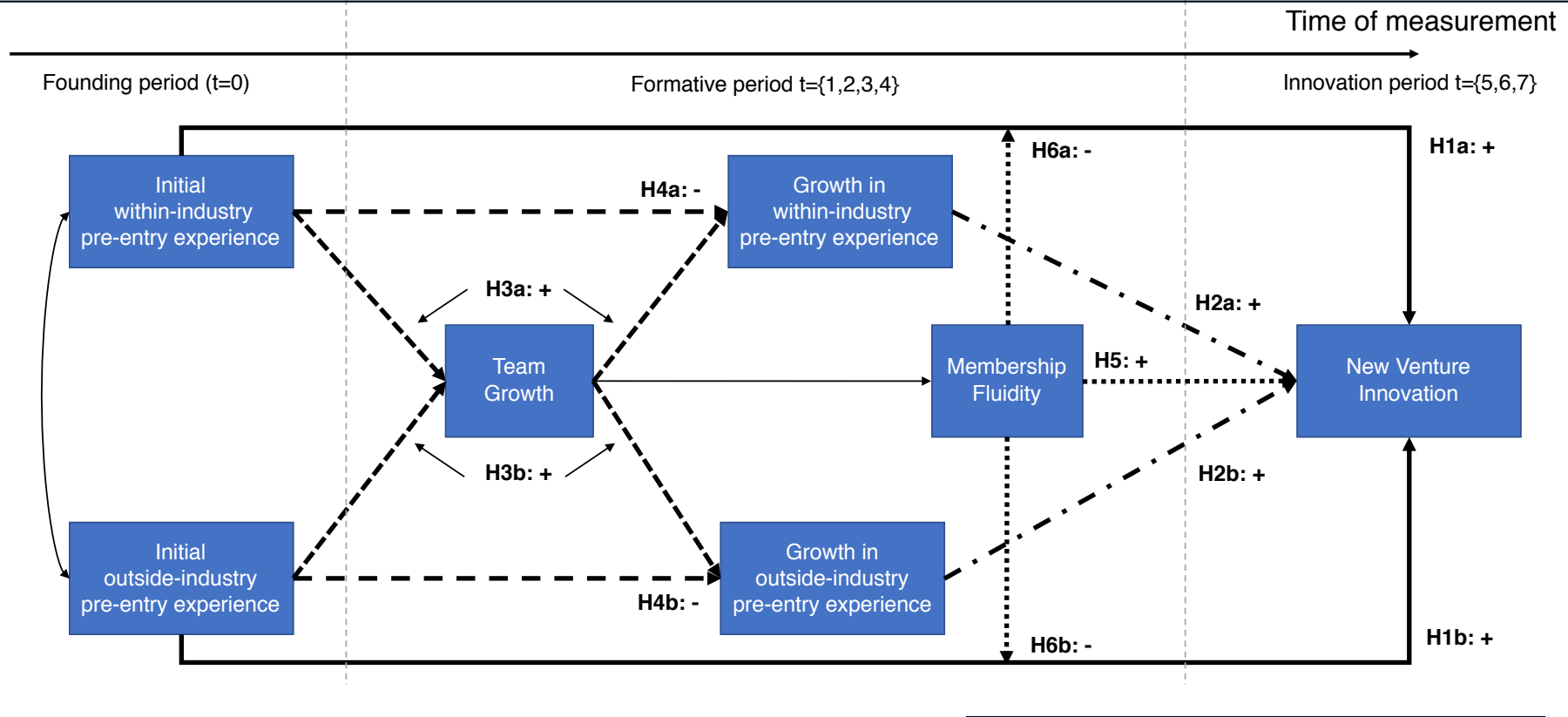


LEGEND

<p>Pre-entry Experience Direct Effects</p> <p>————> Initial Endowments</p> <p>- . - .> Changes in Endowments</p>	<p>Pre-entry Experience Indirect Effects</p> <p>- - -> Complementary Fit</p> <p>- . - .> Supplementary Fit</p>	<p>Membership Dynamics</p> <p>.....> Membership Dynamics Effects</p>
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Note: We purposely select the time windows above in order to establish temporal precedence and allow enough time to pass from founding to later innovation.

Pre-entry experience direct effects



Hypothesis 1: Initial amounts of founder (a) *within-industry*, and (b) *outside-industry* pre-entry experience will be positively associated with venture innovation over time.

Hypothesis 2: Greater (a) within-industry pre-entry experience growth and (b) outside-industry pre-entry experience growth will be associated with higher levels of venture innovation over time.

References: See in-line citations in text.

Pre-entry experience indirect effects (via experience growth)



Supplementary Fit

Founders with pre-entry experience can more quickly establish legitimacy and access needed resources (Chaganti, DeCarolis, & Deeds, 1996; Hsu, 2007; Zimmerman & Zeitz, 2002)

Supplementary experience accrual occurs when teams “duplicate their own qualities, often by identifying / recruiting others with a similar background (e.g., Beckman, 2006; Burton, Sørensen, & Beckman, 2002)

Hypothesis 3: Growth in the size of the founding team partially mediates the relationship between (a) initial pre-entry experience and growth in these endowments for (a) within-industry and (b) outside-industry experiences, respectively.

Complementary Fit

Complementary experience accrual occurs when new members bring unique experience lacking or deficient in the founding team –to plug resource or knowledge gaps (Forbes et al., 2006; Ucbasaran et al., 2003)

The addition of new members is motivated by the need to enhance the team’s present or future inventory of resources (Kamm & Nurick, 1993) which can have an adaptive effect (Burton, Beckman, and O’Reilly, 2007)

Hypothesis 4: Controlling for growth in team size, the greater the initial amount of pre-entry experience, the lower the growth in that endowment for: (a) within-industry and (b) outside-industry experiences, respectively.

The direct and conditioning role of membership fluidity



Creative recombination

Membership change and fluidity can be functional by facilitating the infusion of new ideas and resources into the team (Choi & Thompson, 2005; Forbes et al., 2006; Ziller, Behringer, & Goodchilds, 1962)

This fosters adaptation by stimulating creativity and learning (Levine & Choi, 2004), facilitating alignment with the environment (Tannenbaum et al., 2012) and encouraging team reflection on task processes and routines (Rink et al., 2013)

Hypothesis 5: Controlling for founder within-industry and outside-industry pre-entry experience growth, the greater the level of membership fluidity, the greater the level of venture innovation over time.

Routine disruption

At the same time, membership fluidity can also be disruptive by interrupting routines, behavioral patterns, and coordination processes (Trow, 1960; Ziller, 1965)

This can give rise to conflicts as the team renegotiates strategies, role structures, and mental models (George & Bettenhausen, 1990; Nyberg & Ployhart, 2013), inhibits transfer of insights to the organization (Leung et al., 2013) and autonomous process replication (Simsek, Fox, & Heavey, 2015)

Hypothesis 6ab: Membership fluidity negatively moderates the relationship between initial founder pre-entry endowments and venture innovation. The greater the fluidity, the weaker this relationship.



We use 1,579 ventures canvassed by the Kauffman Firm Survey to test our hypotheses.

Data from Kauffman Firm Survey (KFS)

- Captures a cross section across US regions and industries
- Firms surveyed from 2004 until 2011
- High-tech / women owned businesses oversampled

Missing data and attrition

- Attrition between start and fifth follow-up (n = 4,928 -> 2,408)
- Attrition between fifth and seventh follow-up and missing data (n = 2,408 -> 1,579)

Descriptive statistics

- Median of 403 observations per census region (4)
- Median of 54 observations from each industry sector (20)

The
Kauffman
Firm Survey

Key study measures



Each measure is consolidated to the venture-year or industry-year level of analysis.

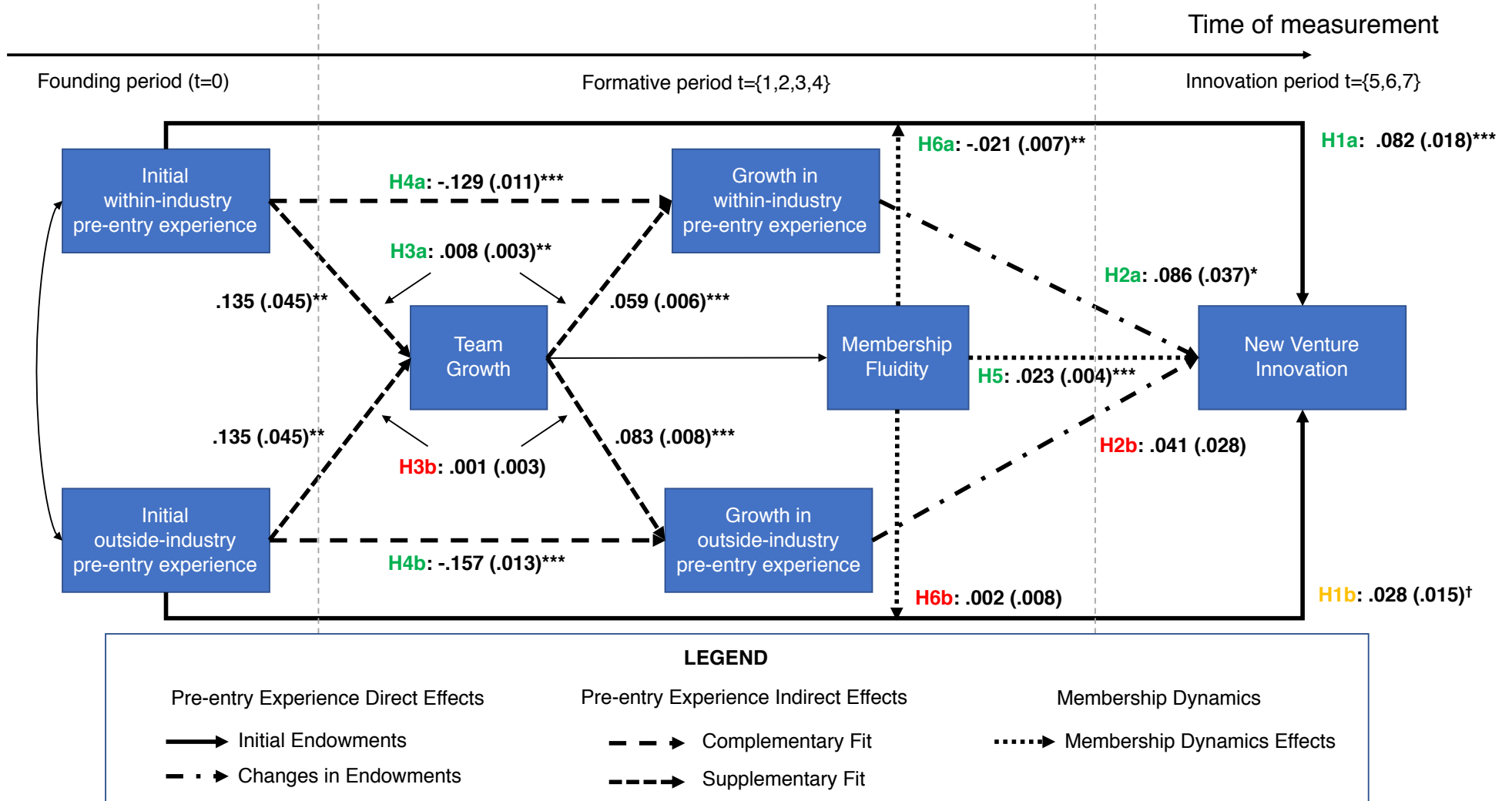
Variable	Operationalization	Mean	SD
Within-industry pre-entry experience (initial and growth)	Sum of indicator variables, each of which takes value one when at least one of the startups founded in the past by a specific founder was in the same industry as the present venture. Recomputed yearly until fourth follow-up with value at founding and overall growth used for analyses	.24	.50
		.00	.23
Outside-industry pre-entry experience (initial and growth)	Sum of indicator variables, each of which takes value one when a founders has started a firm but <i>does not</i> have any startup experience in the focal industry. Recomputed yearly until the fourth follow-up with value at founding and overall growth used for analyses	.33	.59
		.01	.31
Team size (initial and growth)	Sum of active owner-operators in the venture. 65% of ventures were founded by a single individual, 35% by teams. 13% of ventures experience net growth, 9% a net decrease, and 6% change with no net increase/decrease	1.48	.82
		.10	.86
Membership fluidity	Cumulative number of additions and departures to the team from time of founding until the fourth follow-up, consistent with prior work (Dineen & Noe, 2003; Boeker & Wiltbank, 2005; Arrow & McGrath, 1995)	.70	1.74
Venture innovation	The following indicators were measured three times each from the fifth through the seventh follow-up ($\alpha = .76$; $\chi^2(9) = 285.6$; CFI = .88; SRMR = .06; $r_c = .88$): “During calendar year [xxx], did [business name] introduce any products or services that were new or significantly improved?” “During calendar year [xxx], did [business name] introduce any new or significantly improved processes in the production of goods or providing services?”	.22	.41

Notes: Control variables measured at the time at founding include: average founder age, founder education, venture size, high tech status, and a patent indicator. Controls measured at the time of the end of the growth period include revenues and hours worked. Mean and SD for innovation for indicator variable. References: Tesluk & Jacobs, 1998; Boeker & Wiltbank, 2005; Dineen & Noe, 2003; Sources: Data tabulated in 0002 Results.xlsx, Tab: Table 1.



Tested model and summary of results

Takeaway: We find support for the pathways related to within-industry pre-entry experience; results are weaker and more mixed for outside industry pre-entry experience.

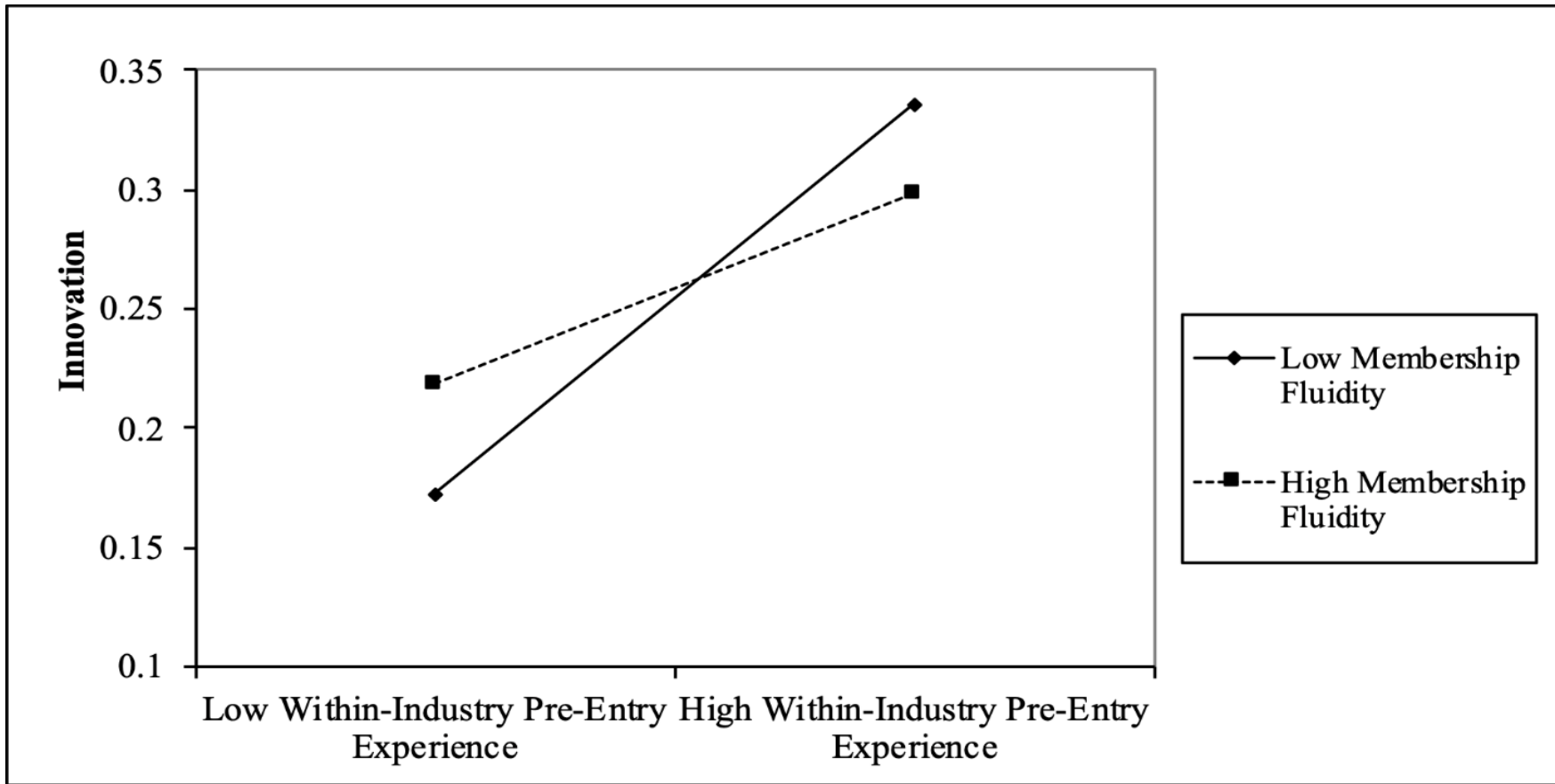


Source: 0002 Results.xlsx, Tab: Figure 1. Reported results based on Model 1 – Hypothesized Model.



The moderating role of member fluidity on pre-entry experience

Takeaway: The relationship between within-industry pre-entry experience and innovation appears to depend on membership fluidity. No effect is found for outside-industry experience.



Note: Interaction graphic based on Model 3, which includes controls held at mean values. A similar pattern is present when looking at the focal variables only.



We find that our primary conclusions are largely robust to a number of alternative model specifications.

Robustness checks:

1. Use of a saturated SEM model
2. Inclusion of relevant control variables
3. Re-estimation using generalized SEM and binomially distributed innovation indicators
4. Use of inverse probability weighting to control for selection and attrition effects
5. Application of cluster robust standard errors
6. Cross validation through random splitting of sample and multiple group comparison
7. Re-estimation as a latent growth model for team and experiential variables

Model	Hypothesis (Y = supported at $p < .05$; M = supported at $p < .10$)										
	Initial Exp. Endowments		Growth in Endowments		Supplementary Fit		Complementary Fit		Fluidity	Fluidity Interactions	
	H1a	H1b	H2a	H2b	H3a	H3b	H4a	H4b	H5	H6a	H6b
Hypothesized Model	Y	M	Y	N	Y	N	Y	Y	Y	Y	N
Saturated Model	Y	M	M	N	Y	N	Y	Y	Y	Y	N
With Controls	Y	Y	Y	N	M	N	Y	Y	Y	Y	N
Generalized SEM	Y	Y	Y	N	M	N	Y	Y	M	M	N
Selection Effects	Y	M	Y	N	N	N	Y	Y	N	Y	N
Attrition Effects	Y	Y	N	N	N	N	Y	Y	Y	N	N
Cluster Robust	Y	Y	N	N	N	N	Y	Y	Y	M	N
Cross-Validation	Y	Y	Y	N	N	N	Y	Y	Y	M	N
Latent Growth	Y	M	N	N	Y	N	Y	Y	Y	Y	N
Support ($p < .05$)	9/9	5/9	3/9	0/9	3/9	0/9	9/9	9/9	7/9	5/9	0/9

Source: KFS Analysis 3.26.19.do: lines 60 – 209. Data tabulated in 0002 Results.xlsx, Tab: Table 2. Models are labeled in serial order.

Implications, open questions and limitations



Initial stocks of pre-entry experience serve as an independent and enduring driver of innovation and a stepping stone for subsequent knowledge accrual.

Moreover, membership fluidity is significantly associated with increased innovation.

These findings indicate multiple processes operate simultaneously to link pre-entry experience to innovation.

Our analyses assume everyone in team has an equal say in the decision-making process and partakes in innovation activities.

But what if the member of the team with the highest percentage of ownership control is also the individual with an extensive portfolio of within-industry startup experience?

The findings of our study might inform organizational imprinting since we find that similar effect sizes for initial levels of pre-entry experience and growth in those stocks, indicating persistence.

The homophilic replication of early teams through supplementary experience accrual represents a further source of ongoing impact.

We drew the inference that membership fluidity shapes team dynamics that facilitate innovation.

But, we lack process-level constructs and data that would allow us to test the specific mechanisms – something future research can examine...