Can Reconfiguring Spatial Proximity Between Organizational Members Promote Individual-level Exploration?

Evidence from a natural experiment

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Innovative companies are experimenting with office spaces… why?

PIXAR

Steve Jobs (Former CEO, Pixar):

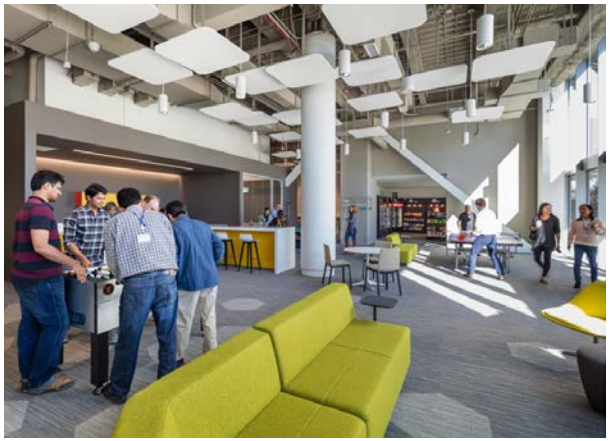
"If a building doesn't encourage collaboration, you'll lose a lot of innovation and the magic that's sparked by serendipity. So we designed the building to make people get out of their offices and mingle in the central atrium with people they might not otherwise see."

facebook

Mark Zuckerberg (CEO, Facebook):

"By having an open floor plan where people work close to each other, it facilitates people sharing and communicating about what they are doing, which enables better collaboration, which we think is key to building the best services for our community."

SAMSUNG



Samsung press release:

"The new US headquarters' design is intended to foster collaboration between employees, enabling those impromptu, spur-of-the-moment interactions that are the genesis of many great ideas."

Increasing spatial proximity between (heterogeneous) organizational members

→ **Increased interactions** →

→ **Individual-level Exploration / New Knowledge Creation**

Has it been actually shown by research that spatial proximity leads to more individual-level exploration? Is the relationship obvious?

What do we know?

- Spatial proximity → Communication frequency (Allen & Fusfeld, 1975)
  Formation of collaborations (Kabo et al.,, 2014)
  Collaboration success (Catalini, 2017)
  Mutual support (Chown & Liu, 2015)

Do we have existing direct evidence of "Spatial proximity → Exploration"?

- In fact, not yet (Catalini (2017) gets closest but does not actually test the relationship)

Why might the relationship not hold, both theoretically and practically?

- (Assuming increased interactions) Information exchanged could be unrelated to tasks (e.g., casual conversations, gossip, etc.) or be common information
- All collaborations are not meant to produce exploratory outcomes; even if they were, exploration endeavors are often unsuccessful
- Not all individuals may be able to take advantage of even the meaningful interactions to explore (e.g., lack of skills or experience)
- Spatial proximity could increase stress, distraction, and lower job satisfaction and productivity (Becker et al., 1983; Coradi et al, 2015, Oldham & Brass, 1979)

Why is it important to study whether there is a "treatment" effect of increased spatial proximity on individual-level exploration?

- Many organizations are interested in and experimenting with space to facilitate exploration and innovation, but the effects are unclear
- There is little understanding on when and how spatial reconfiguration should be implemented
- The strategic implications are different depending on whether there is treatment vs selection effect of spatial proximity

Main Research Question:

- Is there a treatment effect of spatial proximity on individual-level exploration/ knowledge creation?
- What is the boundary condition and what are moderators?

How could my research question be answered effectively?

Do I have the right research design?

- Outcome related to individual-level exploration / new knowledge creation
- Random assignment of individuals into different degrees of spatial proximity
- Manipulable moderators

I have:

- **Natural experiment**
- Organizational setting where individuals make exploitation/exploitation decisions
- Spatial proximity between individuals are reconfigured differently for different individuals (for no reason other than space constraints) due to a HQ relocation event
- Archival data on moderators

Hypotheses

Hypothesis 1

H1: *Increasing the spatial proximity between previously separated individuals will increase the exploration levels of such individuals.*

- Exploration is a learning activity involving the development of new knowledge (March, 1991)
- New knowledge development is facilitated through novel social interactions (Uzzi & Spiro, 2005)
- Spatial proximity increases interaction frequency between individuals (Allen & Fusfeld, 1975)
- Spatial proximity to *previously separated peers* (sources of new knowledge) increases chances of acquiring novel information useful for exploration

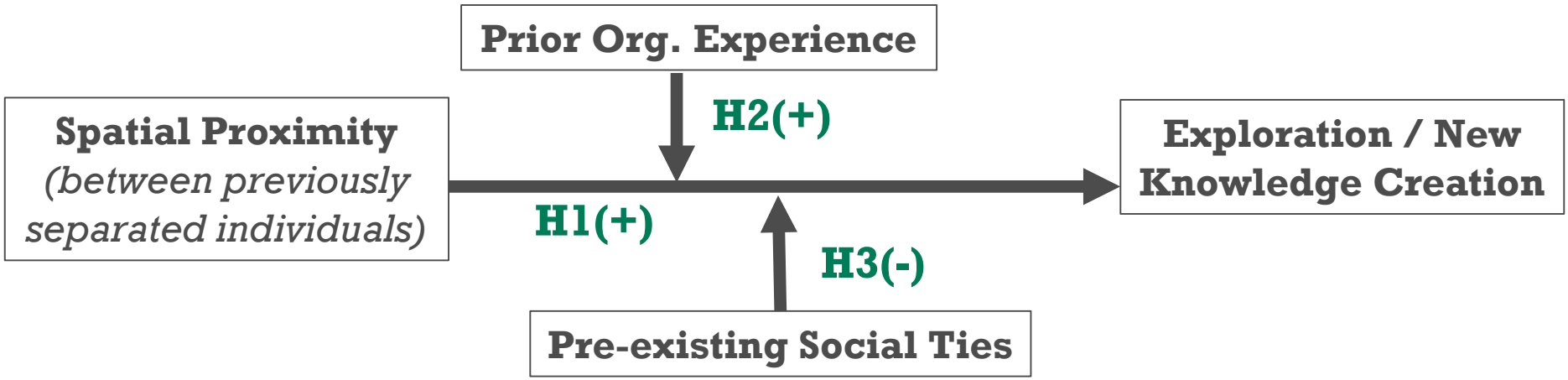
Hypotheses 2 and 3

- Not all individuals benefit from increased spatial proximity to previously separated peers
- One must have the capability to recognize and utilize the new information being acquired (i.e., absorptive capacity) (Cohen & Levinthal, 1991; Obstfeld, 2005)
- The information being acquired due to increased spatial proximity should not have been already acquired through alternative channels (e.g., social ties) (McEvily, Soda, & Tortoriello, 2014)

H2: *The relationship hypothesized in H1 will be strengthened for individuals with more prior organizational experience.*

H3: *The relationship hypothesized in H1 will be weakened for individuals who had pre-existing social ties to their previously separated peers.*

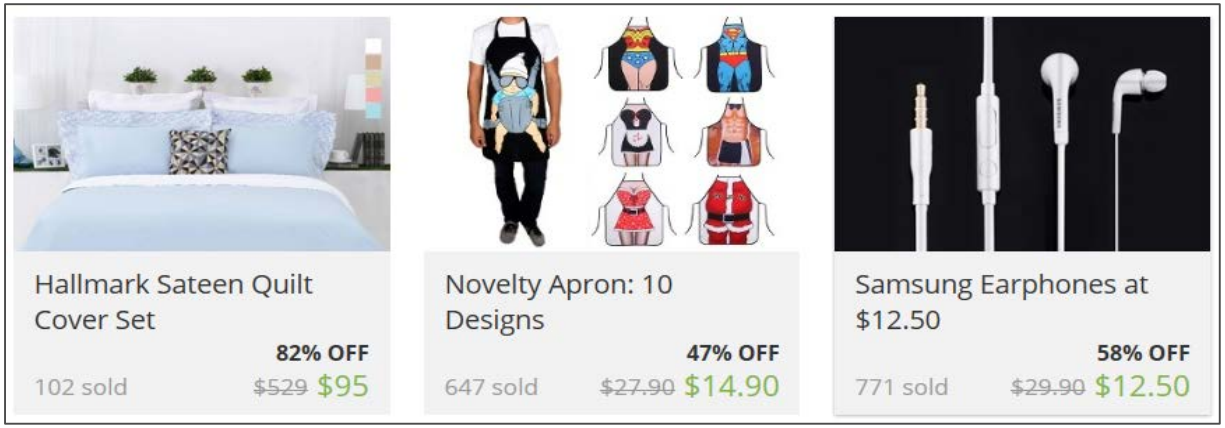
Summary of Model



Empirical Setting, Research Design, and Results

Empirical Setting

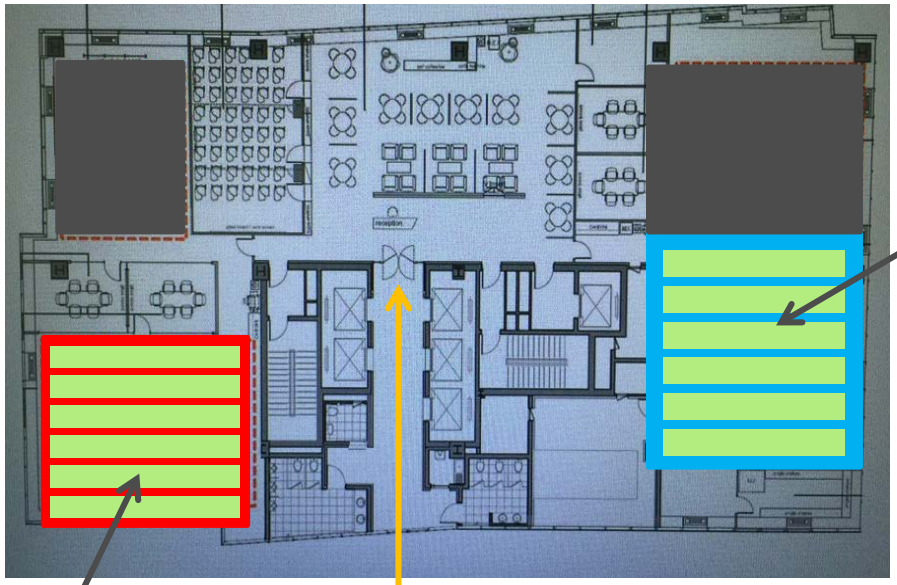
- Flash deal e-commerce company (e.g., Groupon)



- 60 sales employees ("MDs") in 12 teams making daily deal sourcing decisions

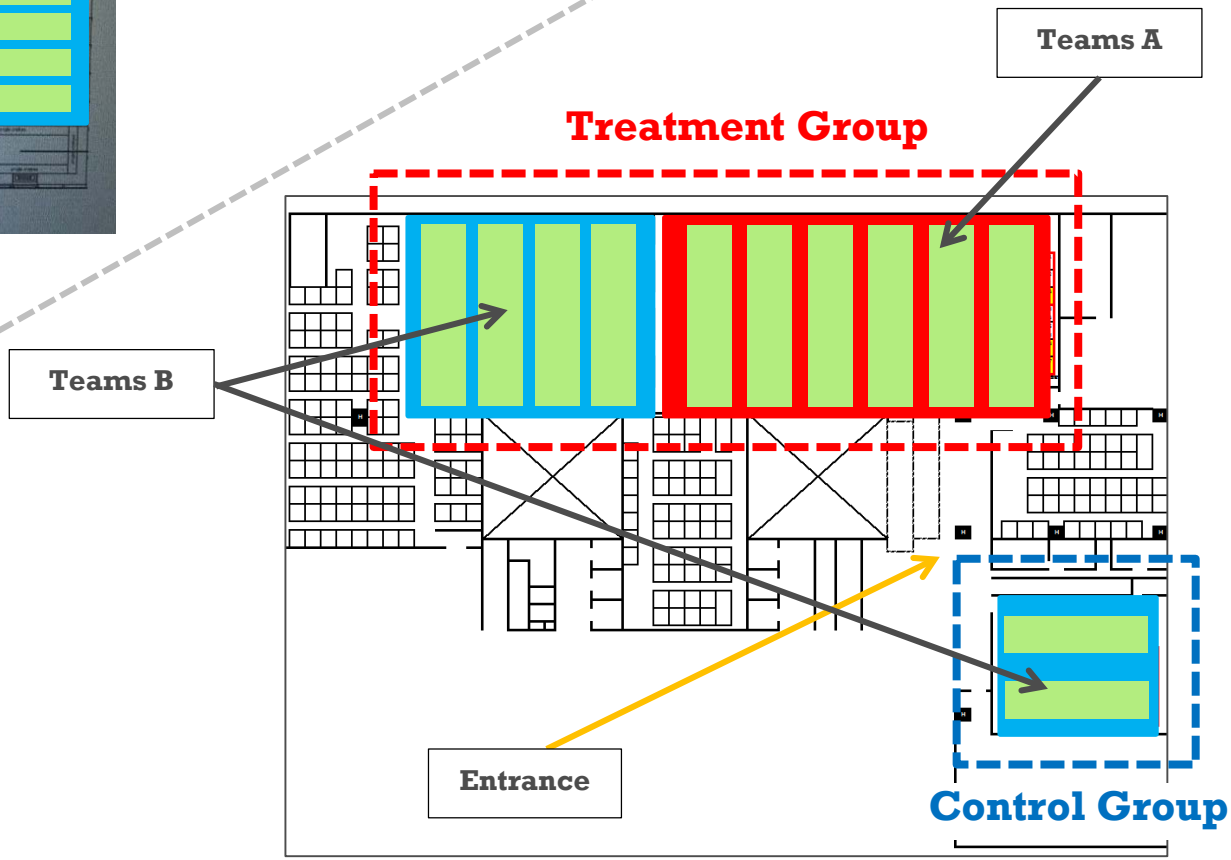
		New Supplier?	
		No	Yes
New Product?	No	Re-use of existing knowledge	Refinement of existing knowledge
	Yes	Aided exploration of new knowledge	**Exploration of new knowledge**

Natural Experiment: Relocation of headquarters



BEFORE

AFTER



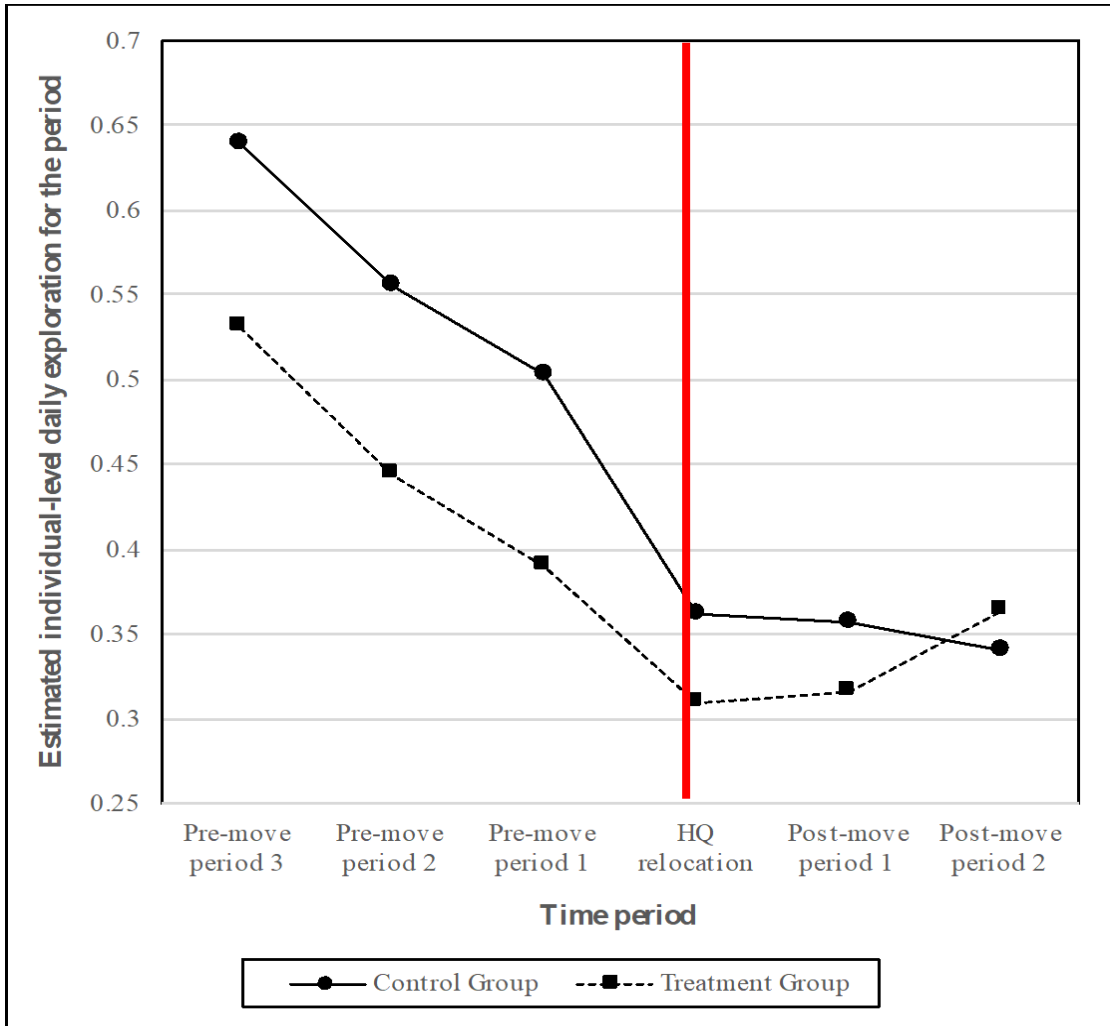
Empirical Design: Difference-in-Difference (DID) approach

Difference-in-Difference (DID) Approach			
DV: Exploratory Search		**Post HQ Move**	
		No	**Yes**
Treatment	**No**	Control	Control'
	Yes	Treatment	Treatment'

$$\boldsymbol{Exploratory\ Search_{tj}} = \beta_0 + \beta_1 Post\ Headquarters\ Change_t + \beta_2 Treatment_j + \boldsymbol{\beta_3 Post\ Headquarters\ Change_t * Treatment_j} + \gamma Controls_{tj} + \varepsilon_{tj}$$

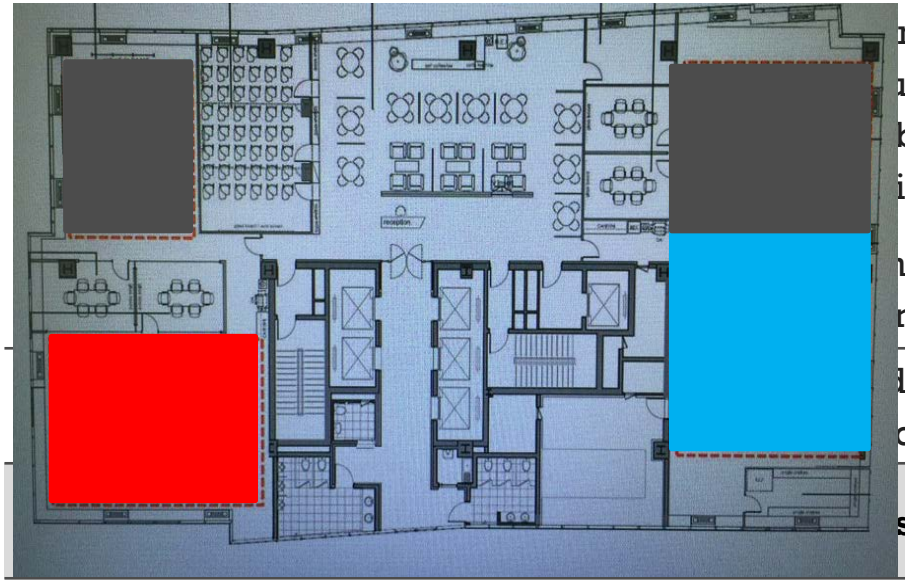
Empirical Design: Difference-in-Difference (DID) approach

Parallel trend assumption



▶ "Parallel trend assumption" holds

Sample, Key Variables, Measures, & Econometric Models

	Variable	Measure
DV	Exploratory Search	Number of completely new products supplied by new suppliers introduced on focal day
	Post x Treatment ("Main IV") (H1)	=1 if post change and MD is treated
IVs	Prior Organizational Experience (H2)	MD's accumulated deal experience [Above/Below Median Split Sample]
	Pre-existing Social Ties (H3)	=1 if MD had a peer in the same cohort on the opposite side of office before the HQ move [=1/=0 Split Sample]
		move dummy; MD's prior organizational experience umulated deal experience); MD's total deals posted on focal day; ber of MD's existing product categories; Number of peers' ing product categories; MD's relative performance to peers
		n size; Team gender diversity; Team education diversity; Team mulated experience diversity
		dummy; Day-of-week dummy; Month-of-new-season-start-month ch, June, September, December) dummy
		son model; Robust standard errors clustered by individual

Final sample: Daily panel dataset with 7,195 observations covering 38,435 deals sold by 60 MDs in 12 product teams over 204 days (4 months before/3 months after the HQ change)

Results (H1-H3; Fixed-effect Poisson model)

DV: Exploratory Search		Model 1	Model 2	Model 3	Model 4	Model 5
Post x Treatment ("Main IV")	H1	0.342*				
Main IV (Above Median Prior Org. Experience Sample)	H2		0.571**			
Main IV (Below Median Prior Org. Experience Sample)				0.145		
Main IV (Pre-existing Social Tie Existing Sample)	H3				-0.017	
Main IV (No Pre-existing Social Tie Sample)						0.737**
Post Dummy		-0.162	-0.256+	-0.015	-0.061	-0.218*
Prior Organizational Experience (deal experience)		-0.001**	-0.000+	-0.001**	-0.000	-0.001**
Total Deals per Day		0.119**	0.105**	0.128**	0.106**	0.127**
MD's Relative Performance to Peers		-0.021**	-0.018**	-0.212*	-0.142+	-0.025**
Education Diversity		-1.260**	-0.613*	-2.239**	-0.968+	-1.798**
Individual and Time Fixed Effects		Included	Included	Included	Included	Included
Number of Individuals		60	30	30	25	35
Observations		7,195	3,941	3,254	3,001	4,194

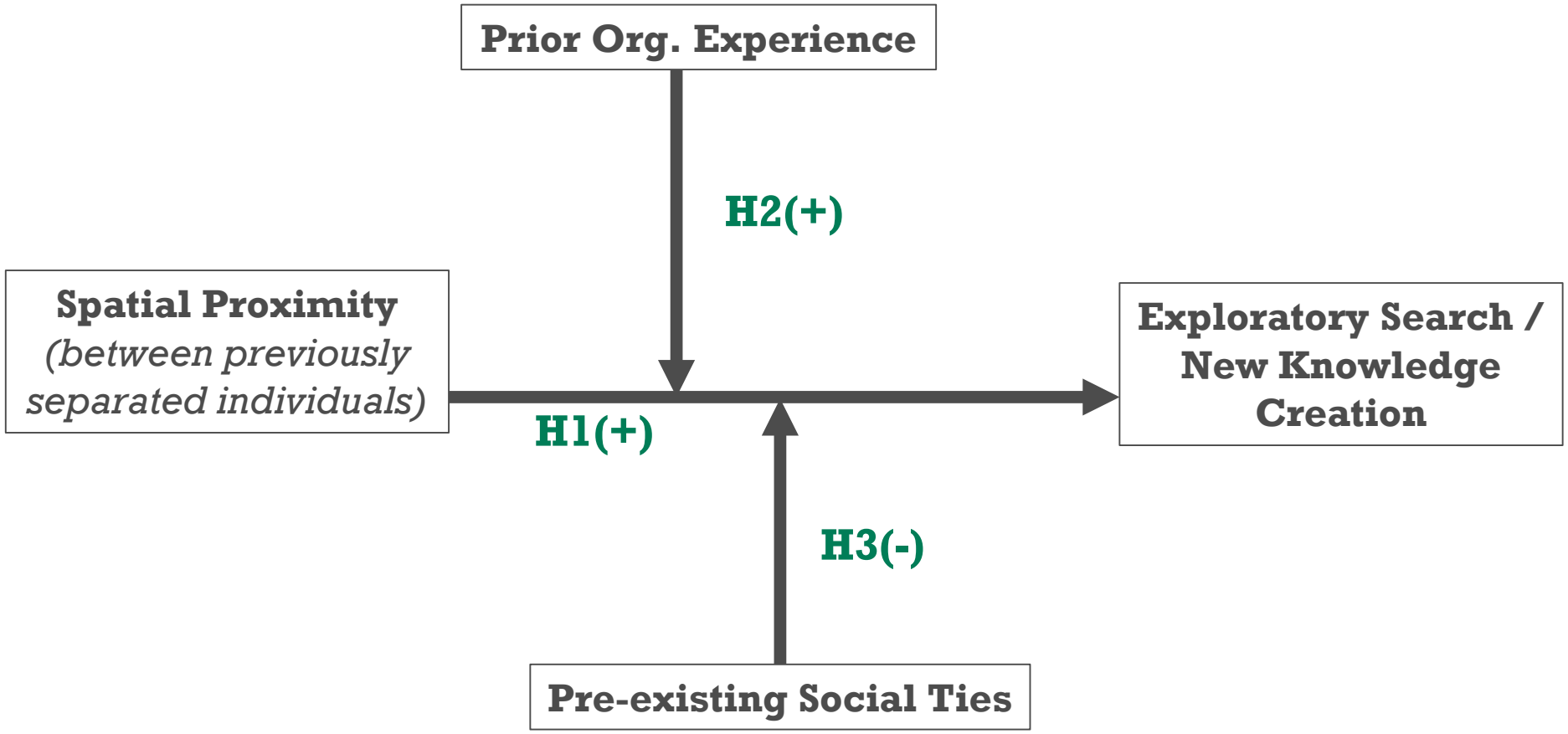
Robust standard errors clustered by MD are in parentheses. ** p<0.01, * p<0.05, + p<0.1

Additional Analysis
- Does performance increase after the change?

DV: Performance (Deal Sales Revenue in USD)	Explorative Deals	All Deals
Post x Treatment ("Main IV")	1085.75*	16,510.06**
Post Dummy	-779.10*	-9,710.56**
Average Duration of Deals	39.49**	563.58**
Prior Organizational Experience (deal experience)	-2.19+	-13.05+
Total Deals per Day	245.23**	7,218.85**
MD's Relative Performance to Peers	-32.89*	-447.67**
Education Diversity	-166.06	22,584.56**
Individual and Time Fixed Effects	Included	Included
Number of Individuals	60	60
Observations	7,195	7,195

Robust standard errors clustered by MD are in parentheses. ** p<0.01, * p<0.05, + p<0.1

Summary of Results



- Spatial proximity (physical organization design) does seem to have a *treatment effect* on individual-level exploration
- However, beware of the boundary condition and moderators!

Contributions

- **Individual-level exploration/exploitation literature** (e.g., Gibson and Birkinshaw 2004, Lee and Meyer-Doyle 2017, Mom et al. 2007, 2009, Rogan and Mors 2014)
  - Addition of important evidence that individuals can indeed switch between exploration/exploitation given the right context
  - Sheds light on an organizational context that enables more individual-level exploration

- **Organization design literature** (e.g., Chown and Liu 2015, Dunbar and Starbuck 2006, Pfeffer 1982, Puranam et al. 2014, Van de Ven et al. 2013)
  - Examines understudied organization design variable, i.e., spatial design, which has important organizational behavioral and performance outcomes
  - Provides evidence for a treatment effect of spatial proximity on individual-level exploration, including mechanisms and boundary conditions

- **Microfoundations of strategy literature** (e.g., Barney et al., 2011; Eisenhardt et al., 2010; Felin & Foss, 2005; Helfat & Peteraf, 2015)
  - Provides evidence that interactions at the individual level can lead to better performance and competitive advantage at the organizational level

THANK YOU