

Organizing Entrepreneurial Teams

A Natural Field Experiment of the Autonomy in Choosing Teams and Ideas

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Motivation

Corporate Innovation & Entrepreneurship

- Companies try to spur innovation and entrepreneurship throughout their organizations
(Burgelman, 1983; Kanter, 1985)
- Methods such as:



- Tiger Teams
(Wheelwright & Clark, 1992)
- Skunk works, Bootlegging
(Criscuolo et al., 2014)
- *X% Projects* in companies like 3M, google, Valve, Oticon, github
(Biancani et al., 2014; Lovas & Ghoshal 2000; Puranam & Häakonsson. 2015)
- Agile Development
(e.g. at Spotify in "tribes" and "squads")

The Role of Autonomy

"If You Love Your Employees, Set Them Free: Autonomy Is Key To Employee Engagement."
– Stan Phelps, Forbes, 2019

Advantages

- Creativity
(Amabile & Gitomer, 1984)
- Ideation
(Miner, 1994)
- Invention
(Gambardella et al., 2020)
- Entrepreneurship
(Lumpkin et al., 2009)

Disadvantages

- Opportunistic behavior and agency risks
(Shimizu, 2012)
- Coordination problems & lack of focus
(Van de Ven, 1986)
- Find the right balance with control
(Simon et al., 1999)
- Benefits unfold only in right context
(Criscuolo et al., 2014; Gambardella et al., 2020)

Disentangling Autonomy

- Autonomy has different dimensions:
 - Strategic vs. operational autonomy: what to do vs. how to do it
(Bailyn, 1985)
 - Firm level: HR practices such as delegation of decision making
(Lumpkin et al., 2009, Foss et al., 2011)
 - Individual level: selection of tasks vs. time allocation
(Gambardella et al., 2020)
- This paper:
 - (Entrepreneurial) Team level
(Bailyn, 1985)
 - Organizational design perspective: task division v. task allocation
(e.g. Galbraith, 1967)
 - Managerial assignment vs. Autonomous self-selection or choice
(Puranam et al., 2014)

Practical Relevance

- Different organizational designs of entrepreneurship can be observed:



McKinsey&Company

BCG
THE BOSTON CONSULTING GROUP



Theory

Autonomy in Choosing Teams



Advantages

- Choice based on prior ties leads to cohesion
(Reagans et al., 2004)
- Familiarity improves coordination
(Huckman et al., 2009; Cattani et al. 2013)
- Choice based on complementary skills
(McPherson et al., 2001)
- Sorting based on ambition
(Brannon et al., 2013)

Disadvantages

- Relational interia
(Gulati & Gargiulo, 1999, Seabright et al., 1992)
- Stay inside social comfort zone
(Ingram & Morris, 2007)
- Suffer from "competency discount"
(Ruef et al., 2003)

Hypothesis 1: Autonomy in choice of team members leads to higher entrepreneurial team performance.

Autonomy in Choosing Ideas



Advantages

- Source of intrinsic motivation; procedural utility
(Lovas & Ghoshal 2000; Sauermann & Cohen, 2010, Benz & Frey, 2008)
- Greater sense of ownership
(Thompson, 2000)
- Better match with interests and skills
(Moreland & Argote, 2003; Hackman & Oldham 1975; MacCormack et al., 2012)

Disadvantages

- Psychological ownership can cause a preference for the status quo
(Pierce et al., 2001)

Hypothesis 2: Autonomy in choice of ideas leads to higher entrepreneurial team performance.

Autonomy in Choosing *Both* Teams and Ideas



Complements

- Exploration space of ideas & skills becomes larger
[\(Hackmann, 2002\)](#)
- "Collective ownership" around one's idea more likely to develop among familiar teammates
[\(Gray et al., 2020\)](#)

Substitutes

- Self-selected teams lack cognitive diversity to elaborate novel ideas
[\(Shin et al., 2012\)](#)
- Self-selected teams and ideas as "quick wins" lead to confidence and complacency too early
[\(Gist, 1987, Sitkin 1992, Linsley et al., 1995, Knight et al., 2001, Goncalo et al., 2010, Rapp et al., 2014\)](#)

Hypothesis 3: The autonomy in choice of team and ideas are (a) complementary or (b) substitutes on entrepreneurial team performance.

Methods

Experimental Setting



- 3 cohorts of GBWL students mastering the entrepreneurship project for 11 weeks
 - 937 students in 310 teams
- Procedure (pre-registered and approved by ethics board):
 1. Entry survey
 2. Course with treatments
 3. Exit survey
 4. External evaluation
- "Natural field experiment": non-convenience task, subject not aware of experiment
(Harrison and List, 2004)
- Students vs. employees (not seasoned entrepreneurs): results do not necessarily differ
(Bolton et al., 2012, Frechette, 2016)

Experimental Treatments

Table 1 Treatment overview

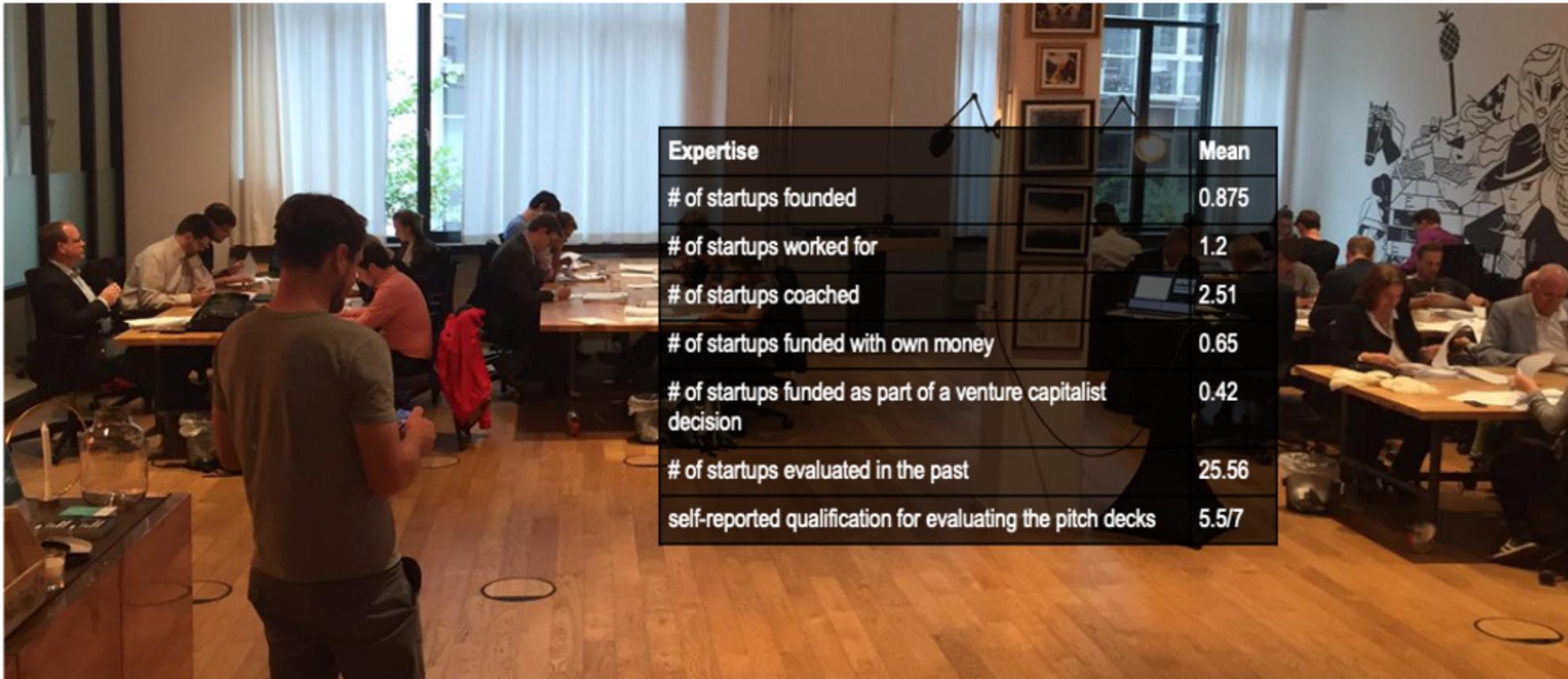
| | | Team | |
|------|--------------|------------------------------------|------------------------------------|
| | | 0 = “Assign” | 1 = “Choose” |
| Idea | 0 = “Assign” | Baseline “Choose neither” | Treatment group 1 “Choose team” |
| | 1 = “Choose” | Treatment group 2 “Choose idea” | Treatment group 3 “Choose both” |

- "Assign" conditions: random (instead of managerial)
 - good benchmark
(Clement & Puranam, 2018)
 - especially for novel tasks where managers lack knowledge about people's specific skills
(Puranam et al., 2014)
 - approximates reality
(Liu et al., 2016)
- "Raw" quality of 15 **pre-defined** ideas does not differ from **self-chosen** ideas
 - Robustness check on "Mechanical turk"

Experimental Treatments



External Evaluation



- 40 external evaluators, who were practicing entrepreneurs, business angels, or venture capitalists
 - each evaluated 23.25 pitch decks on average => 3 evaluation per team
 - Criteria:
[\(Maxwell, 2011; Dean et al., 2006\)](#)
 - Novelty, Feasibility, Market potential, Success potential, Invitation probability
 - Investment: Evaluators could distribute 1 million among the projects they evaluated

Analysis

- Linear regression accounting for non-independence of repeated and cross-nested observations with respect to mentors, experts, evaluation order, and cohorts:

$$y_{ij} = \beta_0 + \beta_1 * (\text{Choose team})_i + \beta_2 * (\text{Choose idea})_i + \beta_3 * (\text{Choose both})_i + \gamma_i + \delta_i + \zeta_{ij} + \eta_j + \epsilon_{ij}$$

Results



Main Results

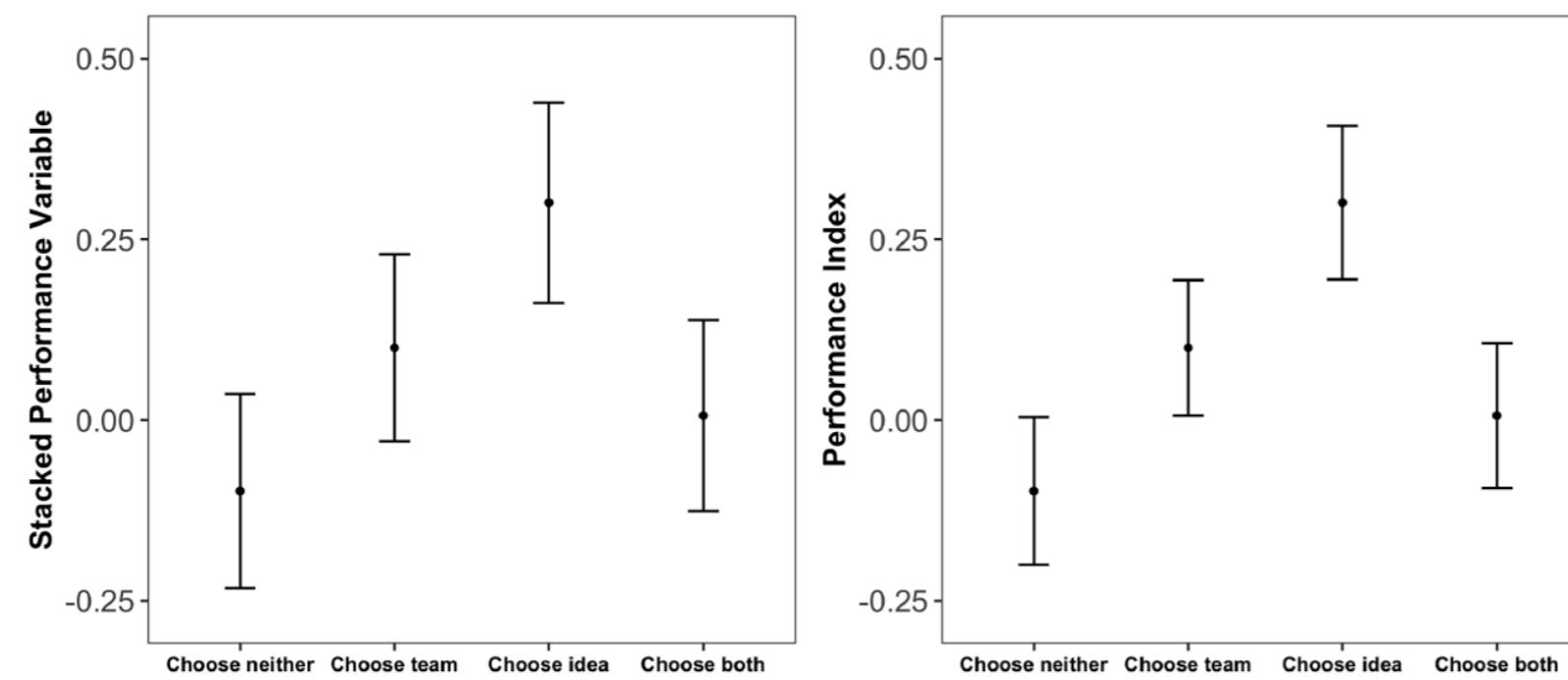


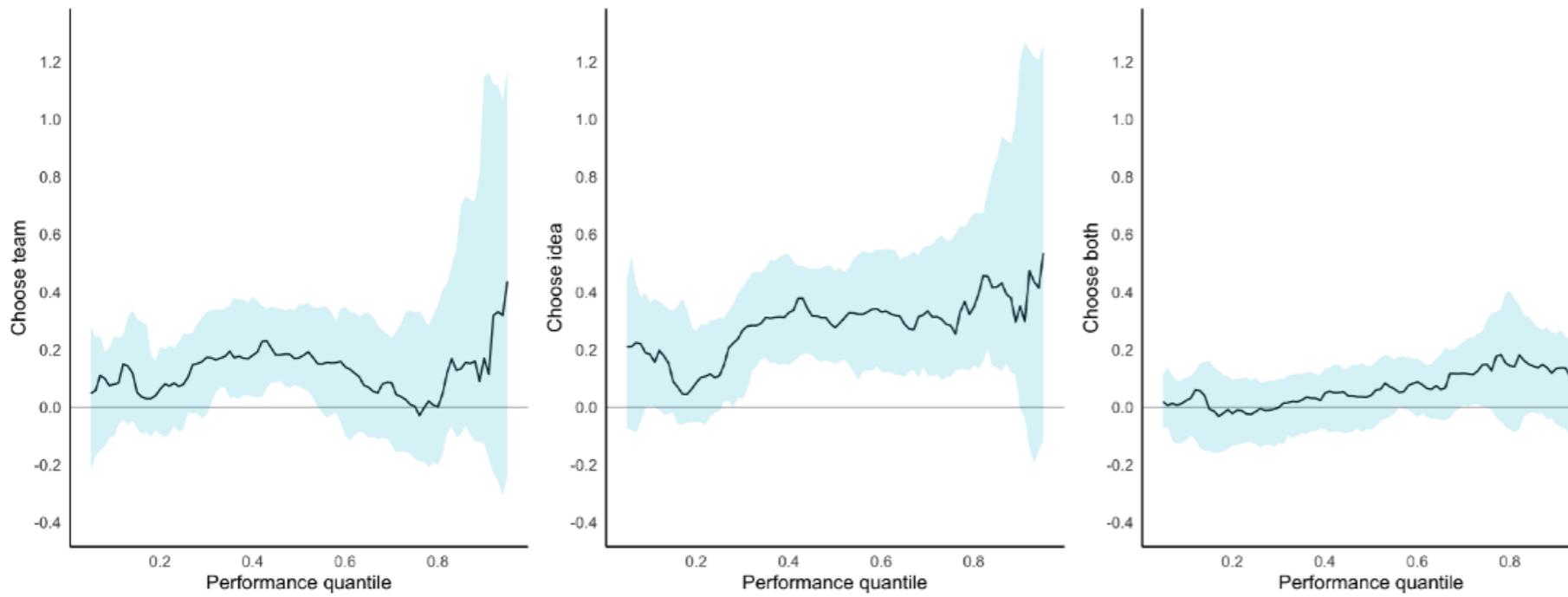
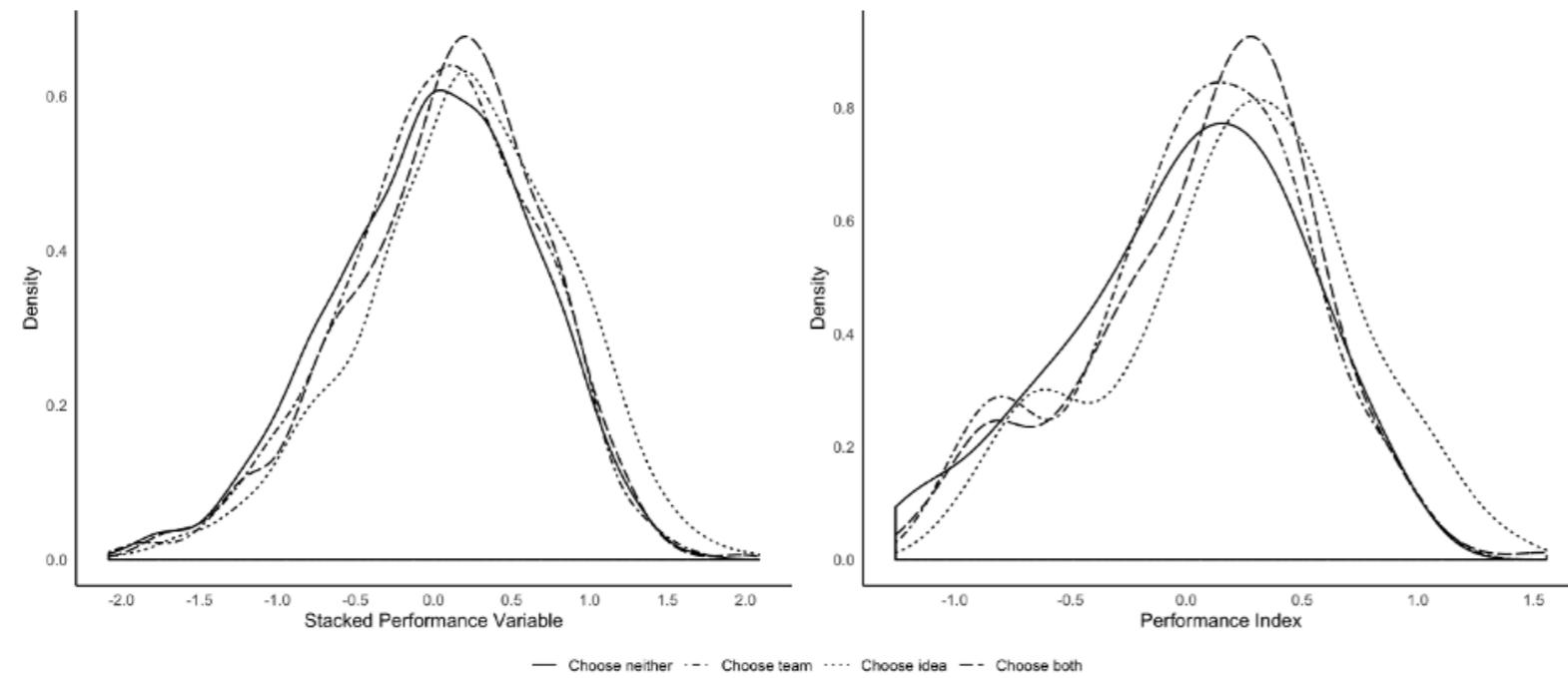
Figure 1 Conditional treatment group means (predicted from Models 7 and 8 with 95% confidence intervals)

Main Results

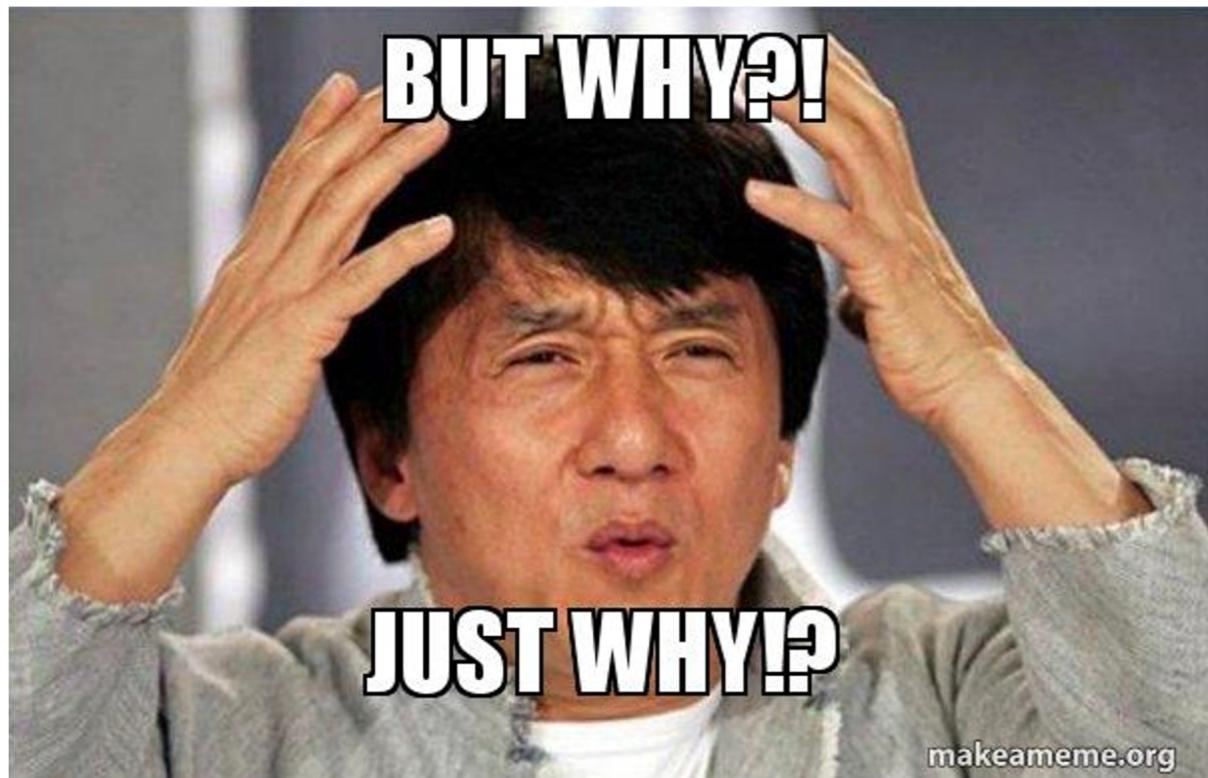
Table 4 Regression results for the treatment effects on performance

| | Dependent variable: | | | | | | | |
|-------------------------------|---------------------|-------------------|---------------------|-------------------------|------------------------------|---------------------|------------------------------|---------------------|
| | Novelty | Feasibility | Market Potential | Success Potential (log) | Invitation Probability (log) | Investment (log) | Stacked Performance Variable | Performance Index |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Choose team (β_1) | 0.088 (0.143) | 0.225 (0.155) | 0.223** (0.111) | 0.205* (0.108) | 0.266*** (0.103) | 0.180 (0.156) | 0.198* (0.118) | 0.198** (0.084) |
| Choose idea (β_2) | 0.507*** (0.152) | 0.213 (0.159) | 0.418*** (0.116) | 0.381*** (0.131) | 0.375*** (0.132) | 0.499*** (0.166) | 0.399*** (0.129) | 0.399*** (0.099) |
| Choose both (β_3) | 0.270** (0.119) | -0.103 (0.092) | 0.115 (0.088) | 0.004 (0.057) | 0.108 (0.079) | 0.233** (0.103) | 0.104 (0.085) | 0.104 (0.068) |
| Perf. Indicator Dummies | No | No | No | No | No | No | Yes | No |
| Cohort FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Mentor FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Evaluation Order FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Evaluator FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 930 | 930 | 930 | 930 | 930 | 930 | 5,580 | 930 |
| R ² | 0.295 | 0.296 | 0.397 | 0.562 | 0.526 | 0.227 | 0.376 | 0.407 |
| p-value: Choose team vs. idea | 0.00*** | 0.89 | 0.04** | 0.02** | 0.12 | 0.00*** | 0.02** | 0.00*** |
| p-value: Choose team vs. both | 0.18 | 0.04** | 0.40 | 0.06* | 0.09* | 0.74 | 0.43 | 0.27 |
| p-value: Choose idea vs. both | 0.09* | 0.03** | 0.01*** | 0.00*** | 0.01** | 0.11 | 0.01** | 0.00*** |

Kernel Densities and Quantile Regression



Channels of Mediation



- Regression of intermediate outcomes on treatments:
 - Homophily
 - Prior ties
 - Team heterogeneity
 - Idea team fit
 - Collaboration quality

Causal Mediation Analysis

- Average Causal Mediation Effects (ACME)
 - control for pre-treatment variables to ensure sequential ignorability (conditional exogeneity of mediator)
 - quasi-Bayesian Monte Carlo method based on normal approximation with 1,000 simulations
(Imai et al, 2010)

Table 5 Results from Causal Mediation Analysis

| Mediator | Performance Indicator | Treatment | ACME | p-Value | Proportion Mediated |
|----------------------|------------------------------|------------------|-------------|----------------|----------------------------|
| Network Ties (Ratio) | Performance Index | Choose team | 0.039 | 0.076 | 0.184 |
| | | Choose both | 0.032 | 0.060 | 0.261 |
| | Success Potential | Choose team | 0.044 | 0.054 | 0.205 |
| | | Choose both | 0.037 | 0.058 | -0.074 |
| Idea Team Fit (Mean) | Investment | Choose team | 0.078 | 0.034 | 0.341 |
| | | Choose both | 0.068 | 0.036 | 0.280 |
| | Performance Index | Choose idea | 0.052 | 0.024 | 0.132 |
| | | Choose both | 0.069 | 0.032 | 0.580 |
| | Market Potential | Choose idea | 0.071 | 0.016 | 0.165 |
| | | Choose both | 0.094 | 0.012 | 0.671 |
| | Success Potential | Choose idea | 0.051 | 0.034 | 0.137 |
| | | Choose both | 0.070 | 0.050 | 0.131 |
| | Invitation Probability | Choose idea | 0.064 | 0.018 | 0.160 |
| | | Choose both | 0.086 | 0.012 | 0.667 |
| | Investment | Choose idea | 0.073 | 0.030 | 0.143 |
| | | Choose both | 0.095 | 0.042 | 0.382 |

- Larger direct effects: changes in unobserved inputs induced by the treatments (e.g. motivation, effort)
(Heckman & Pinto, 2015)

Overconfidence as Mechanism

Table 6 Perceived Performance and Overconfidence

| | <i>Dependent variable:</i> | | | |
|---------------------------|------------------------------------|--|---|---|
| | Evaluator: Performance Index | Evaluator: Success Potential (in %) | Team: Success Potential (in %) | Overconfidence: Share of Team Members Overplacing Own Project |
| | (1) | (2) | (3) | (4) |
| Choose team (β_1) | 0.182** (0.082) | 4.463* (2.574) | -6.594 (4.509) | -0.288 (0.214) |
| Choose idea (β_2) | 0.383*** (0.097) | 9.375*** (2.816) | -1.162 (4.373) | -0.320 (0.213) |
| Choose both (β_3) | 0.103 (0.066) | 2.100 (1.489) | 13.840*** (2.620) | 0.404*** (0.114) |
| Ent. Exposure (Mean) | 0.062 (0.040) | 2.186 (1.407) | 0.606 (1.701) | -0.081 (0.073) |
| Ent. Self Efficacy (Mean) | 0.030 (0.037) | 0.339 (0.950) | 2.325 (1.783) | 0.093 (0.075) |
| Ent. Intent (Mean) | -0.003** (0.001) | -0.090* (0.049) | 0.119 (0.084) | 0.008** (0.003) |
| Pre-Confidence (Mean) | -0.001 (0.032) | -0.324 (1.214) | 3.677** (1.651) | 0.171** (0.081) |
| Cohort FE | Yes | Yes | Yes | Yes |
| Mentor FE | Yes | Yes | Yes | Yes |
| Evaluation Order FE | Yes | Yes | No | Yes |
| Expert FE | Yes | Yes | No | Yes |
| Observations | 930 | 930 | 310 | 930 |
| R ² | 0.411 | 0.506 | 0.287 | 0.391 |

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Standard errors reported in parentheses are clustered at the team and evaluator levels.

Conclusion

Conclusion

Contributions

- **Theoretical:**
 - Organizational design and microfoundations of autonomy
 - Autonomy and entrepreneurial (over-) confidence

 - **Practical:**
 - Professionalization of (corporate) entrepreneurship
 - Understand the design and limits of current practices
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- Field experiment with real organization
 - Managerial assignment
 - Realistic degrees of freedom in choice
 - More or less constraint depending on organizational context (goals, structure)

 - Mechanism studies in more controlled environments

Limitations & outlook

Thank You for Your attention!

Let's keep in touch!

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