Belle (Chaoyi) Zhang

Ph.D. Candidate — Organizational Theory, Strategy and Entrepreneurship
Tepper School of Business — Carnegie Mellon University
chaoyiz@andrew.cmu.edu

Education

Tepper School of Business, Carnegie Mellon University
Ph.D. Candidate, Organizational Theory, Strategy and Entrepreneurship, 2021 Sep -2026 May
Committee: Brandy Aven (Chair), Oliver Hahl, Carrington Motley

Carnegie Mellon University, Tepper Business School, Pittsburgh, PA
Master of Science in Organizational Behavior and Theory, May 2023

University of Chicago, Chicago, IL
Chicago Booth Research Professionals Program, 2019-2021

University of Chicago, Chicago, IL
M.Sc., Quantitative Methods and Social Analysis, 2018-2019

University of Wisconsin-Madison, Madison, WI
B.Sc., Economics
B.A., Sociology (Concentration in Analysis and Research), 2011-2014

Research Interests

Social Network Analysis; Venture Capital; Decision-Making under Uncertainty; Peer Effects; Bayesian Network; Drug Discovery; Search Strategy; Human Capital; Commercialization; Entrepreneurship

Working Papers

Aven, B., Shen, R. & Zhang, C. Complementary Capitalists: Venture Capital Syndication Groups in China.
Prepare for submission
This chapter examines how VCs in China can employ syndication configuration to mitigate financial risk and create network opportunities. We analyze the structural role complementarity within these VC groups and its impact on startup exits, including IPOs and acquisitions. Drawing on panel data from 2000 to 2021 that we triangulated from CVSource and Zero2IPO, two leading consulting and research companies in China, we construct dynamic bipartite network of VC-startup relationship and demonstrate that variation in syndication members' brokerage scores significantly increases the likelihood of successful startup exits. Using Hidden Markov Models (HMM), The findings suggest that VCs strategically replicate structural role complementarity after successful exits, highlighting the potential mechanism of experiential learning of network advantage. We confirmed our main effects and mechanism with 16 semi-structured field interviews with senior VCs, each lasting 30-60 minutes.

Zhang, C. The Problem with Fear of Missing Out (FoMO): Peer Influence on VC Decision-Making
Prepare for submission
This chapter examines the outcome and mechanism when VCs' due-diligence gives way to heuristics strategies during early-stage decision-making. Particularly, this study investigates how, Fear of Missing Out (FoMO), modeled by peer influence and domain knowledge interact to shape VC investment behavior, with a particular focus on impulsivity and investment

quality. Drawing on a sample of 24,220 VC-startup observations from Crunchbase and Venture Source, I use bidirectional encoder representations from transformers (BERT) to capture the domain knowledge of VCs using their existing portfolios. And then I employ exact inference from Bayesian networks to develop a metric that quantifies the impact of peer knowledge on the likelihood of a focal venture capitalist (VC) investing in a startup. This paper finds that VCs with less domain knowledge are more susceptible to impulsive decision-making driven by peer influence, resulting in poorer investment outcomes.

Zhang, C. Innovation Without a Problem: The Antecedents of Solution-Driven Search in Drug Discovery

This chapter investigates under what conditions do firms engage in solution-driven search rather than problem-driven search, and what factors influence this strategic choice? With little attention has been given to the mechanisms, this study proposes that patent ownership and market incentives play a crucial role in shaping search strategies. This study investigates drug repurposing as an ideal context where organizations choose between problem-driven and solution-driven search. To empirically examine these dynamics, I construct a comprehensive dataset integrating information from multiple sources, including drug-disease associations, drug-target interactions, patent ownership and clinical trials. With drug-disease associations sourced from DCh-Miner and drug-target relationships obtained from DrugBank, I operationalize the search space within a heterogeneous biomedical network, with each node representing drugs, diseases, targets and edges capture known drug-target binding, disease-drug associations, and pathway involvements.

Academic Experience

Teaching Assistant (TA) Carnegie Mellon University, Tepper School of Business

- MBA: Managing Organizations and Networks, Prof. Aven, B.(2023-2025)
- MBA: Introduction to Entrepreneurship, Prof. Oh. J. (2024)
- MBA: People Analytics, Prof. Aven, B.(2023-2024)
- MBA: Venture Capital & the Finance of Innovation, Prof.Denes.M.(2024)
- MBA: Organizational Learning, Prof. Argote. L (2023-2024)
- MBA: Strategic Management and Innovation, Prof. Hahl.O.(2023)

Research Assistant (RA)
University of Chicago, Booth School of Business

- Tax Planning Knowledge Diffusion via the Labor Market (Research Professional for Gallemore, J.)
- The Effect of Corporate Taxation on Bank Transparency: Evidence from Loan Loss Provisions (Research Professional for Gallemore, J.)
- Do Conflict of Interests Disclosures Work? Evidence from Citations in Medical Journals (Research Professional for Maximillian, M.)

Related Courseworks

Dynamic Social Network Analysis; Introduction to Deep Learning;Probabilistic Graphic Models; Research Methods and Experiment Design; Machine Learning for Structural Prediction; ML with Large Datasets

Technical Proficiencies

Python (Pandas, Numpy, Pytorch, Scikit-Learn), R, Stata

Presentation

Academy of Management, Boston, Massachusetts, 2023 Summer
Symposium: C̈onstrained or Free? How Networks Enable and Reduce Path-Dependent Behavior¨

Value Creation, Capture & Sharing in Organizational Networks Conference, Tilburg University, Netherlands, 2023 Fall
Replicating Network Advantage: Exits Mechanisms and Formation of Structural Role Complementary Syndicate in Venture Capital Investment.

Duke Strategy Doctoral Conference (Durham, 2024 Summer)
The Problem with Fear of Missing Out: Peer Effects on the Imitation in VC Decision-Making

References

Brandy L. Aven (Dissertation Chair)
Associate Professor of Organization Theory and Entrepreneurship with indefinite tenure
Carnegie Mellon University
aven@cmu.edu

Oliver Hahl
Associate Professor of Organization Theory and Entrepreneurship with indefinite tenure
Carnegie Mellon University
ohahl@andrew.cmu.edu

Carrington Motley
Associate Professor of Organization Theory and Entrepreneurship with indefinite tenure
Carnegie Mellon University
carrington@cmu.edu

Service & Professional Affiliations

Reviewer: Academy of Management (STR: 2025; ENT: 2025)
Member, Strategic Management Society (2023 -present)
Member, Academy of Management (2023 -present)

Carnegie Mellon University
Tepper School of Business

William Larimer Mellon, Founder

Carnegie Mellon University
5000 Forbes Avenue
Pittsburgh, PA 15213

Oliver Hahl
Associate Professor of Organization Theory, Strategy and Entrepreneurship

Associate Dean, Undergraduate Programs

o 412-268-4230
e ohahl@andrew.cmu.edu
w cmu.edu/tepper

Dear Colleagues,

I am writing to recommend in the highest terms, Belle Zhang for the NBER Entrepreneurship Bootcamp. Belle is currently at the dissertation stage of our doctoral program in Organizational Behavior and Theory here at CMU. She primarily works with me (Oliver Hahl) and Brandy Aven on research related to entrepreneurship, venture capital networks, and innovation. We have high hopes for her research potential.

Her dissertation will include three papers. The first paper explores the network dynamics behind venture capital syndication. In work with Brandy Aven, they find that patterns of network complementarity among venture syndicates are associated with more positive entrepreneurial outcomes among those they invest in. A second paper, Belle fascinatingly considers the idea of FOMO (fear of missing out) on the patterns of investment among syndicate partners. She finds patterns of investment that follow reactions to fear rather than simple social influence. This fascinating paper makes a lot of progress in helping explore the social forces behind venture capital investment. Finally, in her third paper, Belle is exploring the ways in which new AI driven technologies influence the repurposing of drugs in the biotech industry. She utilizes interesting theories on patterns of search related to the Behavioral Theory of the Firm that help explain the conditions under which repurposing drugs from their original pattern are driven by solution search processes enabled by new AI-driven technologies. This contrasts from existing theory that would expect search to be problemistic in nature.

I think that being part of the NBER Bootcamp would be great for Belle in two regards. First, most of her research is around economic sociological perspectives on entrepreneurship, with an organizational theory bent. It would be deeply beneficial to her to be exposed to the wider field that NBER speaks to in order to see what types of conversations are currently being had in the field and how to integrate her own developing perspectives with the field. Second, with the type of students and scholars that would attend this bootcamp, I expect it would be a great resource for her to begin to develop her network and exposure to researchers that have similar interests with hers. I hope you agree that Belle would be a wonderful addition. Please feel free to contact me should you have any questions.

Sincerely,

Oliver Hahl
Associate Professor of Organization Theory, Strategy and Entrepreneurship
Associated Dean, Undergraduate Programs
Director, International Partnerships
Carnegie Mellon University, Tepper School of Business
ohahl@andrew.cmu.edu