Social Psychology Determinants of VC Investment: A Study Using Video Data and Machine Learning

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**EMPIRICAL DESIGN**
- Two Step Approach
  1. Logit
    - VC decisions on characteristics
    - With FE and other controls
  2. OLS
    - Conditional on VC invested
    - Outcomes on characteristics
    - With FE and other controls

**RESULTS**
- Logit
  - Face/voice: happy (+), arousal (+)
  - Text: ability (-), agency (-)
- OLS
  - Face/voice: happy (-), arousal (-)
  - Text: ability (+), agency (+)

★ Entrepreneur’s social psychological characteristics affect investment decisions by introducing costly bias

**DATA**
- Application Videos
  - 1K videos from 5 accelerators (Y Combinator, Techstars, MassChallenge, 500 Startups, AngelPad)
  - 2012-2019
  - Both succeeded and failed

- Firm-Level Information
  - From Pitchbook, Crunchbase, and VentureXpert
  - Operating status, industry
  - Funding amount and round
  - Number of employees, investors, and patents
  - Size, multiple, web monthly visits, estimated annual revenue

**INTRODUCTION**
- Social psychology affects almost every aspect in life
- VC investment is a place where social psychologies may be particularly important
- Lacks hard information, gut investments, beauty and labor markets, first impression
- Q1: What social psychological characteristics of entrepreneurs affect the investment decision?
- Q2: Does reading social psychological characteristics generate returns or bring costs?

**VIDEO PROCESSING**
- Video to text
  - ML algorithm: punctuation, speech-to-text
  - Merge with Loughran & McDonald’s Dictionary
  - Financial context categories: positive, negative, uncertainty, modal, ...
  - Merge with Nicolas, Bai, and Fiske’s Dictionary
  - Social psychology context categories: ability, agency, sociability, status, morality, ordinariness, ...
- Video to audio
  - Speaker diarization (match voices with faces)
  - Audio feature extraction (spectrum of frequencies, energy, MFCC, …)
  - Vocal emotion recognition (LSTM and CNN)
- Video to image/face
  - Extract faces by Computer Vision
  - Landmark location
  - Eye blink and mouth movement detection
  - Facial emotion recognition
  - Brightness, sharpness, vibrancy, …

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