

Preferences, Personality Psychology, and Economics: Some New Results EXTRACT

James J. Heckman
University of Chicago

Econ 350, Winter 2023

Personality As A Strategy

- Effort across tasks: vector $e = (e_1, \dots, e_J)$.
- Affect productivity in tasks i $P = (P_1, \dots, P_J)$; Reward R_j .
- Output:

$$\sum_{j=1}^J R_j P_j$$

- X goods, W price

- A utility function over X , P , and e : preference parameter vector $\psi \in \Psi$.
- Preferences capture the psychologists' "goals."
- ψ associated with choices and choice behavior.
- $\theta = (\theta_1, \dots, \theta_J)$: vector of "skill endowments"
- $P = G_p(e_p, X_p, \theta)$: one possible definition of productivity.
- Dig deeper.

- Preferences:

$$U(X, P, e | \psi), \quad (1)$$

- Agent maximizes (1) with respect

$$Y + R'P = W'X, \quad (2)$$

- Y is a flow of unearned income available

$$\sum_{j=1}^J e_j = \bar{e}. \quad (3)$$

- (1) captures notion that
 - a agents have preferences over goods,
 - b agents may value the output of tasks in their own right, and
 - c agents may value the effort devoted to tasks.

- \mathcal{I} is information possessed by the agent.
- Agent can be interpreted as making decisions based on

$$E[U(X, P, e | \psi) | \mathcal{I}]. \quad (4)$$

- General specification: agents can also be uncertain about their preferences (ψ),
- “Traits” (θ),
- The prices they face for goods (W),
- The rewards to productivity (R),
- The outcomes of purchase decisions (X),
- And their endowments of effort (\bar{e}).
- Freudian version: Agents may not act on what they know but rather on what subconscious motives drive them.

An Economic Definition of Personality

- **Personality traits:** components of e , θ and ψ that affect behavior.
- We observe **measured personality—behaviors** generated by incentives, goals, and traits.

How to Characterize Personality?

- Personality as the performance (the P_j) and effort (the e_j) that arise from solutions to the optimization problems just stated.
- Does not capture the full range of behaviors considered by personality psychologists that constitute aspects of personality.
- Actions considered by psychologists include a variety of activities that economists normally do not study, e.g., cajoling, beguiling, bewitching, charming, etc.
- To capture these more general notions: Introduce a set of “actions” broader than what is captured by e .

Personality as Actions

- Actions: behaviors that affect how tasks are accomplished.
- Include aspects of behavior that go beyond effort e .
- Tasks: accomplished by actions.
- The i^{th} possible action to perform task j : $a_{i,j}$, $i \in \{1, \dots, K_j\}$.
- Array actions in a vector $a_j = (a_{1,j}, \dots, a_{K_j,j}) \in \mathcal{A}$.
- The actions may be the same or different across the tasks.
- The actions are strategies agents use in response to situations.

- The productivity of the agent in task j depends on the actions taken in that task:

$$P_j = \tau_j (a_{1,j}, a_{2,j}, \dots, a_{K_j,j}) . \quad (5)$$

- The actions themselves depend on traits θ and “effort” $e_{i,j}$:

$$a_{i,j} = \nu_{i,j} \left(\theta, e_{i,j}, \underbrace{X_j}_{\text{goods used}} \right) \quad (6)$$

where

$$\sum_{i=1}^{K_j} e_{i,j} = e_j \text{ and } \sum_{j=1}^J e_j = \bar{e} .$$

- Actions generalize the notion of effort to a broader class of behavior.

- Agents may have utility over actions beyond the utility they get from consuming the outputs of tasks.
- a : choice of actions applied to all tasks:
($a = (a_1, \dots, a_J)$).
- \mathcal{M} : the set of actions, including actions that do not directly contribute to productivity.

$$a_{i,m} = \nu_{i,m}(\theta, e_{i,m}, x_{i,m}), \quad m \in \mathcal{M}$$

$$\mathcal{A} \subseteq \mathcal{M}.$$

- Keep $X_{i,m}$ implicit as a good.

- The agent solves

$$\max E [U(a, X, P, e | \psi) | \mathcal{I}]$$

with respect to X and e given the stated constraints.

Introducing Situations: Person vs Situation Debate

- Situations indexed by $h \in \mathcal{H}$.
- For a person with traits θ and effort vector e_j with action $a_{i,j}$, using the specification (6)
- The action function can be expanded to be dependent on situation h :

$$a_{i,j,h} = \nu_{i,j}(\theta, e_{i,j,h}, X_{i,j}, h), \quad (7)$$

- Productivity on a task generalized to

$$P_{j,h} = \tau_j(\theta, a_{1,j,h}, \dots, a_{K_j,j,h}, X_{j,h}, h). \quad (8)$$

Framing the Person vs Situation Debate

- Failure to control for situation h , like failure to control for effort, contaminates identification of traits using measures of actions or productivities.
- $T \in \mathcal{T}$: vector of traits (θ, ψ, \bar{e}) .
- The solution to the general constrained maximization problem is to pick goods X , situation h , actions $a_{i,j}$, and effort e_j , $j \in \{1, \dots, J\}$ subject to the constraints.
- h is fixed if the situation is forced on the agent.
- For simplicity, we analyze this case.
- More generally, situations chosen and self control strategies rely on this.
- The situations are (strategic) interactions among agents.
- Can model situations as games (see, e.g., Todd and Wolpin, *JPE*, for classroom games)

- Personalities differ depending on trait endowments, constraints, and situations.
- Actions: the data used to identify “traits.”
- Personality psychologists use actions (e.g., “dispositions”) to infer traits.

- Many personality psychologists define personality as

“enduring patterns of thoughts, feelings and behaviors”

- Tendencies of persons to respond in certain ways under certain circumstances.

Enduring Patterns

- What are enduring patterns of actions?
- “**Enduring actions:**” average of a functions for a person with a given trait vector $T = t$ over situations and efforts.
- History and context dependent concept.
- Endogenously chosen situations?

- Task j and trait vector t
- Average action for information set \mathcal{I} :

$$\bar{a}_{T,j,\mathcal{I}} = \int_{\mathcal{S}_{T,\mathcal{I}}(h,e_{i,j},X_{i,j})} \nu_{i,j}(\theta, e_{i,j}, X_{i,j}, h) g(h, e_{i,j} \mid T = (\theta, \psi, \bar{e}), \mathcal{I}) dh de_{i,j}, dX_{i,j}$$

- $\mathcal{S}_{T,\mathcal{I}}(h, e_{i,j}, X_{i,j})$: support of $(h, e_{i,j})$ given T and \mathcal{I} .

- $g(h, e_{i,j}, X_{i,j} \mid T = (\theta, \psi, \bar{e}), \mathcal{I})$: density of $(h, e_{i,j}, X_{i,j})$ given $T = (\theta, \psi, \bar{e})$ and information set \mathcal{I} .
- $\bar{a}_{T,j,\mathcal{I}}$ is the “enduring action” of agents across situations in task j with information \mathcal{I} , i.e., the average personality.
- If $\nu_{i,j}$ is separable in T , the marginal effect of personality trait vector θ is the same in all situations.
- This is implicit assumption in personality psychology.

- “Enduring traits:” average over tasks, j ? Situations? h ? Both?
- Only under separability in T will one obtain the same marginal effect of θ .
- Epstein (1979) and a subsequent literature present some evidence against nonseparability and in favor of an “enduring trait” that is common across situations.
- An open research topic.