



EPOS |

Everyone comes from somewhere.

What EPOS Explains

EPOS does not explain behavior by assigning a personality label outside its context. Its object is the choice of action in a specific situation. A complete explanation must show what the person noticed, how that information was understood, which actions appeared possible, what each action meant to the person, and why one action received the highest subjective priority.

Personality classifications can describe long-term tendencies, but they cannot by themselves explain why one behavior occurred here and now. Terms such as caution, exploration, perfectionism, or need for control summarize patterns. They become part of an explanation only when connected to the event, the available actions, and the outcomes the person expected.

EPOS defines motivation as the value relationship that gave one action greater subjective priority at that moment. A motive may involve obtaining an outcome, avoiding a loss, protecting a relationship, preserving control, resolving an unknown, or ending an intolerable state. A source is a condition that makes this ordering of values more likely to arise.

The minimum explanatory structure contains facts, competing explanations, the decisive trade-off, possible sources, a reversal condition, and a future prediction. Counterfactual testing is necessary. If an explanation cannot say how behavior would change when a key condition changes, it remains a description. Even a successful counterfactual does not by itself prove causality; further behavioral evidence is still required.

Four Layers Behind Behavior

EPOS organizes the sources of behavior into stable tendencies, learning history, current state, and event structure. These layers are not mutually exclusive causes. Together they shape what enters attention, what it comes to mean, and how possible actions are ranked.

Stable tendencies

Stable tendencies are relatively consistent sensitivities to stimulation, reward, risk, control, social contact, and pace of action. They may be influenced by genetics, development, and long-term environments, but they cannot be read directly from one biological marker, one physical feature, or one questionnaire. They change the probability that certain cues will be noticed and certain outcomes will receive more weight; they do not predetermine a specific action.

Learning history

Learning history includes past success, failure, reward, punishment, loss of control, relationships, rules, and habits. Experience does not leave behind only a verbal conclusion. It updates the expected relationship among cues, actions, and consequences. One intense success, humiliation, or loss of control may carry more weight than many ordinary events. Similar experiences do not necessarily produce identical outcomes because age, interpretation, social support, and later feedback differ.

Current state

Fatigue, pressure, time limits, emotional arousal, physical discomfort, and available resources can temporarily alter attention, patience, and risk judgment. The same person may therefore choose differently in similar situations. Under heavy pressure, the search for options may narrow and familiar responses may win more quickly. When resources are sufficient, more candidate actions can enter comparison.

Event structure

Event structure includes visible options, the completeness of information, reversibility, the window for action, who is present, social rules, and conflicts among values. Context is not a background. It is part of how behavior is produced. An irreversible submission, a sudden change of plan, public evaluation, and a private conversation create different action structures even when they concern the same underlying matter.

How an Action Is Selected

Behavior generation begins with selective attention. Only part of an event enters further processing. A deadline, tone of voice, opportunity, loss, relationship change, or bodily sensation may be captured first. Information that is not noticed has little chance to influence the immediate action.

Attended information is then given meaning. The same message may be understood as a routine adjustment, a loss of control, coercion, a loss that must be prevented, or a change in one's position within a relationship. Meaning is not determined by the stimulus alone; it is shaped by all four layers.

Once meaning forms, the person generates a subjectively visible set of actions. Continuing, stopping, asking for help, withdrawing, resisting, delaying, hiding, and checking again may all become candidates. An objectively available solution may never enter the subjective action set, especially under pressure, limited time, or limited experience.

Every candidate action carries benefits and costs. EPOS first examines six types of value signal: reward and novelty; threat and loss; control and predictability; relationship and belonging; status and competition; and physical, temporal, and cognitive cost. These are not six personalities. Several can enter the same choice at once.

The selection process can be expressed as follows. A is the set of actions the person could see at that moment; T, L, S, and E represent stable tendencies, learning history, current state, and event structure; u is the subjective outcome of an action on a value dimension; w is the current weight of that value; C is the cost of the action; and epsilon represents influences not yet observed.

$$a^* = \operatorname{argmax} a \text{ in } A [\sum w(k, T, L, S, E) \times u(k, a, E) - C(a, E) + \epsilon]$$

This expression makes the model structure explicit. It is not a fully estimated personal scoring formula. When one option clearly leads, action becomes more likely. When two incompatible options both carry high value and their scores are close, hesitation, freezing, or withdrawal may become a new behavioral outcome. The consequences of the action then enter learning history and alter the weights used in later choices.

Identifying Motivation

EPOS does not jump from a behavior to one conclusion. The same behavior can arise from different motives, and the same motive can produce different actions. The analysis therefore begins with several competing explanations that fit the current facts but make different predictions when key conditions change.

The process distinguishes event facts, immediate experience, and later interpretation. Facts include what happened, what the person did, which alternatives were available, and which consequences were known. Immediate experience includes the first noticed cue, feeling, bodily change, and impulse to act. Later interpretation can provide clues about sources, but it cannot replace evidence about the moment itself.

Two to four candidate explanations are usually retained. Each must identify supporting evidence, contradictory evidence, and unknowns. Explanations that make no different predictions should be merged. Explanations that merely rename the behavior should be removed.

Further questions are chosen for their ability to discriminate. Priority goes to information that would increase support for one explanation while reducing support for another, without imposing unnecessary effort on the person. Each new answer should increase, reduce, or preserve the support for a candidate explanation rather than only lengthen the story.

The process stops not after a fixed number of questions, but when the fact chain, decisive trade-off, major sources, and reversal condition are sufficient to form a testable explanation. When evidence remains weak, competing explanations are retained. Fluent language must never be used to conceal uncertainty.

What a Complete Explanation Contains

A complete explanation first states the best-supported direct reason and then reconstructs the path from attention and meaning to candidate actions and value ranking. The core motive must be written as a concrete trade-off: the state the action sought to obtain, protect, avoid, or end, rather than an abstract personality name.

Stable tendencies and recurring patterns enter the explanation only when evidence exists across events. Possible sources combine learning history, long-term environment, and possible inborn tendencies. Every source claim must state whether it comes from the person's explicit account, repeated behavior, or a hypothesis that still requires testing.

The reversal condition describes which change is most likely to alter the action ranking. A future prediction is derived from that condition and concerns a similar event that has not yet occurred. Predictions must be recorded before the outcome is known so that retrospective explanation cannot replace prediction.

The explanation ends by preserving what remains uncertain: sources with insufficient evidence, competing explanations that still fit, options that were not observed, and conditions that could test the account further. This structure lets an explanation change when new facts arrive instead of turning it into a permanent personality verdict.

Levels of Evidence

The fact level contains the person's direct report, behavioral records, or patterns observed repeatedly. Facts may be stated clearly, but records made at the time must still be distinguished from later recollection.

The inference level contains judgments that explain several facts together and rule out some alternatives. An inference must identify its basis and retain an appropriate degree of confidence.

The hypothesis level contains mechanisms that may explain the pattern but lack sufficient personal evidence. A hypothesis must remain testable and cannot be rewritten as something already known to have happened. Neural mechanisms, biological differences, and developmental sources usually belong at this level unless direct and sufficient individual evidence exists.

Evidence can move up or down as new material appears. One repetition does not turn a hypothesis into fact, and repeated descriptions may share the same memory bias. Repetition across contexts, independent records, and behavior predicted in advance provide stronger evidence than retrospective agreement.

The Questionnaire and Nine Roles

The questionnaire describes a person's default strategies across many situations; it does not directly explain one event. EPOS retains nine functional roles to compress and communicate strategic differences. The roles correspond to exploring a path, acting first, preventing failure, improving quality, planning ahead, organizing action, maintaining cooperation, caring for a system, and passing on experience. They are common ways of solving problems, not a hierarchy of people.

The primary role is the function with the most stable fit under the current item bank and scoring rules. The wing is the adjacent or closely related strategy with the next-highest fit. The boundaries are not proven natural categories. No role can by itself determine behavior in a specific situation or reveal hormone levels, brain structure, medical condition, or the upper limit of ability.

Items use concrete everyday situations so that participants compare their actual responses to opportunity, risk, incomplete information, conflict, and limited resources. Item design must control for social desirability, language difficulty, duplicated meaning, and situational bias. The 40-item and 90-item versions differ mainly in coverage and stability, not in their underlying theory.

The role structure must be tested through internal consistency, retest stability, item discrimination, role boundaries, and external associations. Associations with mature dimensions such as the Big Five should be understandable without becoming complete equivalence; otherwise, the nine roles would only repackage an existing classification.

Modeling Long-Term Sources

A single event can clarify how one action formed, but it rarely identifies the sources of a pattern that recurs across a person's life. Long-term source modeling accumulates behavior patterns, emotional cues, value trade-offs, formative experiences, and self-understanding across sessions to see whether the same ordering repeats in different contexts.

Each long-term record contains a type, time, context, original wording, source session, and confidence level. One statement provides limited support; a pattern repeated across time and context receives more weight. When self-description and observed events conflict, both are kept. The system must not automatically select whichever one better fits an existing profile.

A long-term profile is not a fixed summary. New events may strengthen an earlier judgment, lower its confidence, or make it obsolete. Updates must preserve the evidence chain and version history so that every conclusion remains traceable to specific material.

Personal long-term records and the shared case library remain separate. Personal records serve only the individual. A case can enter shared research, retrieval, or evaluation only after separate consent, de-identification, and review.

Artificial Intelligence System

The EPOS artificial intelligence system combines a foundation language model, an explanation protocol, personal memory, case retrieval, rule versions, and evaluation sets. The foundation model understands natural language, proposes candidate explanations, and organizes the response; it does not automatically possess EPOS's theoretical boundaries.

The explanation protocol constrains fact extraction, competing explanations, information selection, counterfactual testing, evidence levels, and output structure. Its purpose is to reduce premature conclusions, empty labels, unsupported stories about brain regions, and fixed biological or personality determinism.

The case library stores consented and de-identified events, the reasoning process, corrections, and outcome feedback. A new case does not automatically rewrite the foundation model's parameters or directly affect the next answer. Unreviewed real-time learning would amplify misunderstanding, malicious input, privacy failures, and bias together.

A case influences the model through collection, de-identification, review, annotation, addition to retrieval or evaluation, rule revision, comparison with the previous version, and controlled release. Fine-tuning or a locally operated model is considered only when sample size, label quality, and technical resources are sufficient.

Limits of Biological Explanation

EPOS began with an interest in how neural circuits, hormonal states, and differences in brain structure may contribute to behavior. Modern evidence supports a biological contribution to individual differences, but it does not support inferring a person's character or behavior from a single measure. In EPOS, biology is a possible source of stable tendencies and state changes, not a direct output of the questionnaire.

Associations between the brain and behavior are often small at the group level, and reproducible studies may require thousands of participants. The size, activation, or structural difference of one brain region cannot justify a conclusion about an individual's behavior.

Hormonal effects depend on context, timing of measurement, and individual differences.

Testosterone, for example, has only a small overall association with aggression and cannot be simplified into the claim that higher testosterone necessarily causes aggression or risk-taking.

Digit ratio is not a reliable measure of an individual's current testosterone level and is excluded from the questionnaire, role calculation, and personal explanation. Early theories connecting the ascending reticular activating system to introversion and extraversion remain part of the history of biological personality research, not a single modern mechanism for explaining an individual.

Ancient divisions of social labor may provide a narrative source for complementary functions such as exploration, defense, organization, care, and teaching, and may generate research hypotheses.

Current evidence does not establish that ancient social roles directly produced the nine modern EPOS roles, so this idea is not used as an individual causal conclusion.

Validation

EPOS cannot be validated only because a person feels that an explanation is accurate. Broadly applicable and well-written statements can also produce strong recognition. Validation must examine information efficiency, fidelity to evidence, explanatory discrimination, reversal conditions, future prediction, and calibration of confidence.

Information efficiency records how much information is needed to form a useful explanation and how much of the dialogue is ineffective or repetitive. Evidence fidelity checks whether each factual claim is present in the original material and whether the explanation introduces information generated by the model but never supplied by the person.

Explanatory discrimination is tested through shuffled materials, blinded report matching, and comparisons with generic-description baselines. If reports from different people can be exchanged easily, the model is producing universal descriptions rather than individual explanations.

Reversal conditions test whether behavior changes as predicted when a key condition changes. Future predictions must be recorded before outcomes occur and compared with simple personality labels, a general language model, and naive baselines. Explanatory accuracy, predictive accuracy, and confidence are recorded separately and cannot substitute for one another.

Questionnaire validation includes item consistency, retest stability over two to four weeks, role boundaries, and both overlap and distinction from mature personality dimensions. Long-term source modeling must also test the truth of cited evidence, the direction of profile updates, and the added value of cross-time prediction.

Failed cases are stored by type, including errors in reconstructing facts, missing candidate explanations, uninformative questions, unsupported source claims, failed reversal conditions, overconfidence, and misleading wording. Rule updates aim to reduce known failures while checking whether new failures have been introduced.

Privacy and Limits of Use

Behavior explanation can involve personal experience, relationships, emotion, and long-term patterns. Consent for an explanation service and consent for case research must be separate; refusing research use must not reduce access to the basic explanation. Real names, precise addresses, identity documents, and unnecessary contact information are not collected by default.

Before a case enters the shared library, names of people, schools, employers, precise locations, and combinations of identifying details are removed. Personal long-term records and the shared

case library are stored separately with access control. Retention periods, deletion mechanisms, access logs, rate limits, and isolation of secret keys are basic parts of the system.

EPOS supports self-understanding and reflection on ordinary behavior. It does not provide mental-health diagnosis, medication advice, legal advice, or crisis intervention. It must not be used for recruitment, insurance, credit, criminal justice, allocation of educational opportunities, or analysis of third parties without their knowledge. Roles, biological indicators, sex, and group tendencies cannot justify reducing an individual's opportunities.

Conclusion

EPOS grounds behavior explanation in concrete events, value ordering, and testable conditions. Stable tendencies, learning history, current state, and event structure jointly determine which information enters attention, which meaning arises first, which actions become visible, and which option eventually wins.

The model does not treat a classification name, brain region, hormone, or single developmental experience as the endpoint. An explanation must compare competing reasons, identify the decisive trade-off, preserve levels of evidence, and make a prediction about changed conditions or future behavior that can fail.

Every conclusion has a source, every inference has a level, and every hypothesis can be overturned. In this way, EPOS turns the understanding of behavior into a structure that can accumulate evidence, update itself, and be tested.

References

- [1] Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality. *Psychological Review*, 102(2), 246-268. doi:10.1037/0033-295X.102.2.246
- [2] Fleeson, W. (2001). Toward a structure- and process-integrated view of personality: Traits as density distributions of states. *Journal of Personality and Social Psychology*, 80(6), 1011-1027. doi:10.1037/0022-3514.80.6.1011
- [3] Rangel, A., Camerer, C., & Montague, P. R. (2008). A framework for studying the neurobiology of value-based decision making. *Nature Reviews Neuroscience*, 9, 545-556. doi:10.1038/nrn2357
- [4] Cisek, P. (2007). Cortical mechanisms of action selection: The affordance competition hypothesis. *Philosophical Transactions of the Royal Society B*, 362, 1585-1599. doi:10.1098/rstb.2007.2054
- [5] Dolan, R. J., & Dayan, P. (2013). Goals and habits in the brain. *Neuron*, 80(2), 312-325. doi:10.1016/j.neuron.2013.09.007
- [6] Wood, W., & Runger, D. (2016). Psychology of habit. *Annual Review of Psychology*, 67, 289-314. doi:10.1146/annurev-psych-122414-033417
- [7] Schwabe, L., & Wolf, O. T. (2009). Stress prompts habit behavior in humans. *The Journal of Neuroscience*, 29(22), 7191-7198. doi:10.1523/JNEUROSCI.0979-09.2009
- [8] Lerner, J. S., Li, Y., Valdesolo, P., & Kassam, K. S. (2015). Emotion and decision making. *Annual Review of Psychology*, 66, 799-823. doi:10.1146/annurev-psych-010213-115043
- [9] Polderman, T. J. C., et al. (2015). Meta-analysis of the heritability of human traits based on fifty years of twin studies. *Nature Genetics*, 47, 702-709. doi:10.1038/ng.3285
- [10] Marek, S., et al. (2022). Reproducible brain-wide association studies require thousands of individuals. *Nature*, 603, 654-660. doi:10.1038/s41586-022-04492-9
- [11] Eisenegger, C., Haushofer, J., & Fehr, E. (2011). The role of testosterone in social interaction. *Trends in Cognitive Sciences*, 15(6), 263-271. doi:10.1016/j.tics.2011.04.008
- [12] Geniole, S. N., et al. (2020). Is testosterone linked to human aggression? A meta-analytic examination. *Hormones and Behavior*, 123, 104644. doi:10.1016/j.yhbeh.2019.104644
- [13] Honekopp, J., Bartholdt, L., Beier, L., & Liebert, A. (2007). Second to fourth digit length ratio and adult sex hormone levels: New data and a meta-analytic review. *Psychoneuroendocrinology*, 32(4), 313-321. doi:10.1016/j.psyneuen.2007.01.007
- [14] Yarkoni, T., & Westfall, J. (2017). Choosing prediction over explanation in psychology: Lessons from machine learning. *Perspectives on Psychological Science*, 12(6), 1100-1122. doi:10.1177/1745691617693393
- [15] Miller, T. (2019). Explanation in artificial intelligence: Insights from the social sciences. *Artificial Intelligence*, 267, 1-38. doi:10.1016/j.artint.2018.07.007
- [16] Rozenblit, L., & Keil, F. (2002). The misunderstood limits of folk science: An illusion of explanatory depth. *Cognitive Science*, 26(5), 521-562. doi:10.1207/s15516709cog2605_1