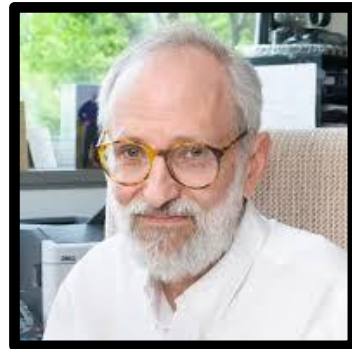
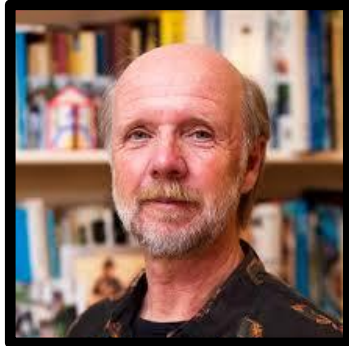


Section 2: Target Systems and Phenomena

A First Step Toward Formal Theory

The Example of Panic Disorder



×

Phenomena: “stable, recurrent, and general features of the world.” The things we want to explain.

×

Does psychology even have phenomena?

Power posing

Social priming

Ego depletion

Social priming

×

Does psychology even have phenomena? **Yes!**

Forgetting Curve

Positive manifold of intelligence

Stroop Effect

Comorbidity between anxiety and depression

Matching phenomenon



What do we **know**
about panic attacks?



Phenomenon 1

Panic Phenomenology



Some people experience surges of intense fear and somatic symptoms that come on “out of the blue.”



Phenomenon 2

Individual Differences



Most people do not
experience these attacks.



Phenomenon 3

Panic Disorder



Some people who experience a panic attack will develop recurrent attacks, persistent concern, and avoidance



Phenomenon 4

Non-clinical panic



Most people who experience a panic attack will ***not*** develop panic disorder.



Phenomenon 5

CBT Efficacy



For those with panic disorder, cognitive behavioral therapy is an effective treatment.



Identify your phenomena of interest



What is the phenomenon
you want to explain?

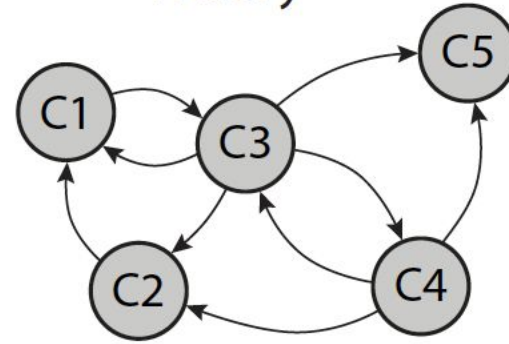
What are 3-5 things we
know about this
phenomenon?



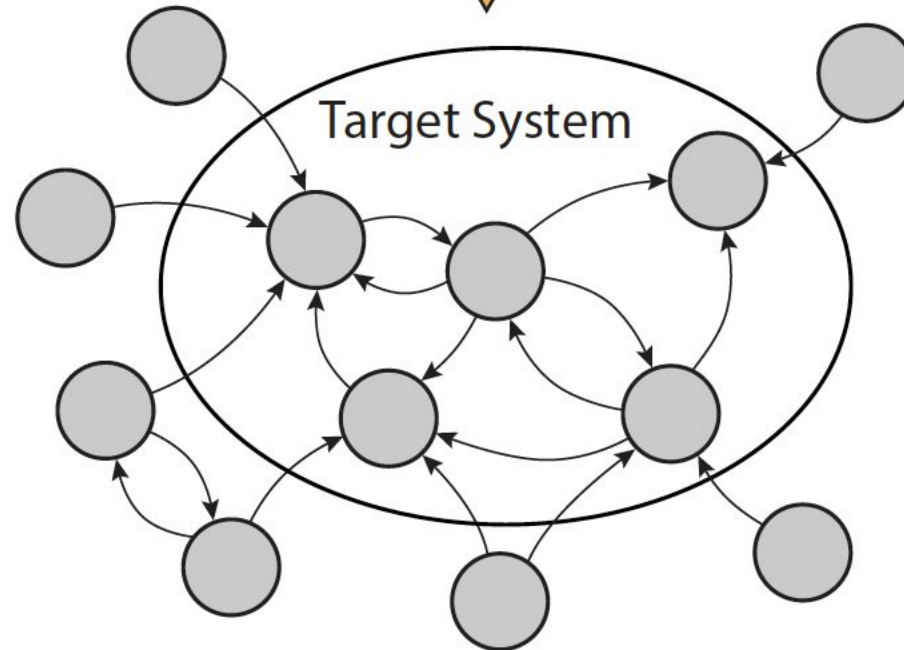
Target System: The parts of the real world that give rise to the phenomena of interest.



Theory



Represents

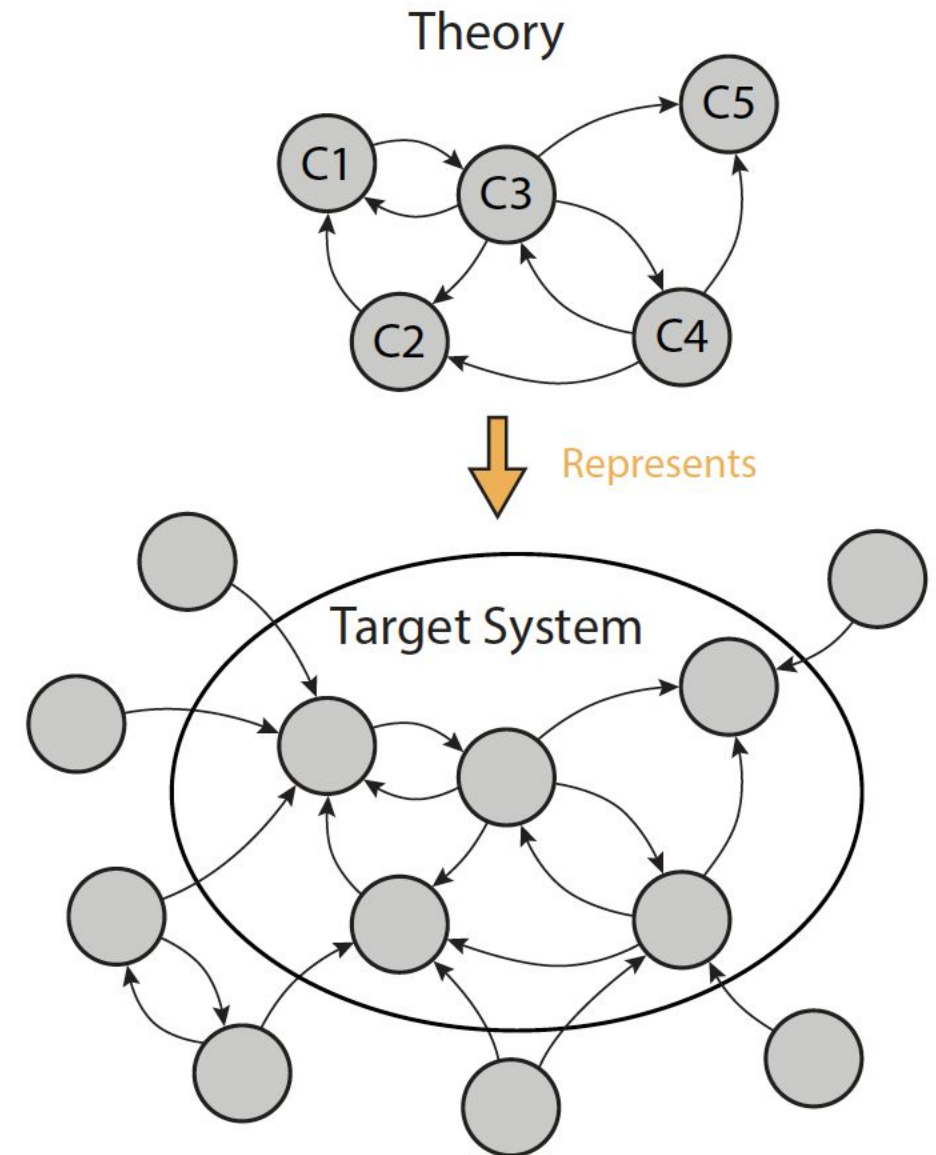


Target System

×

What are the components of the system?

What are the relationships among those components?



Phenomenon: Positive manifold

⊗

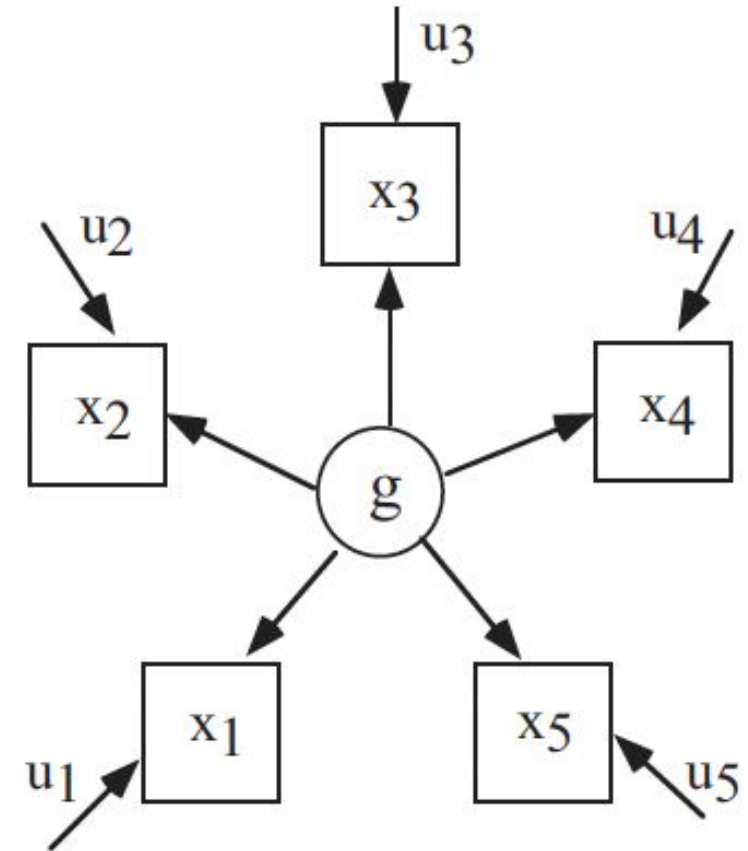
Components:

Cognitive processes (x)

General intelligence (g)

Relationships:

G causes x



Phenomenon: Positive manifold

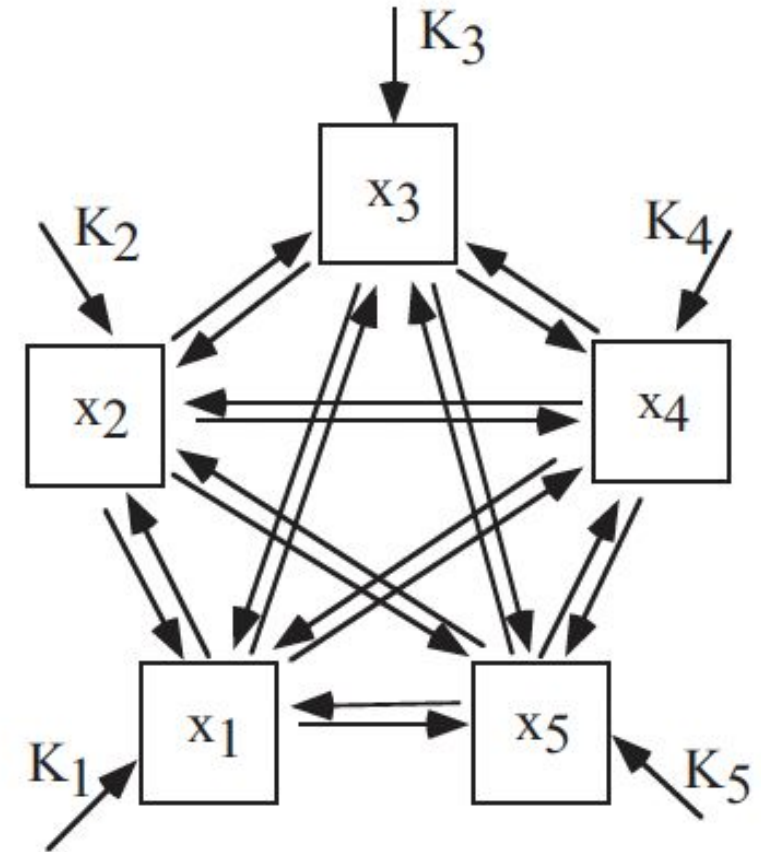
⊗

Components:

Cognitive processes (x)

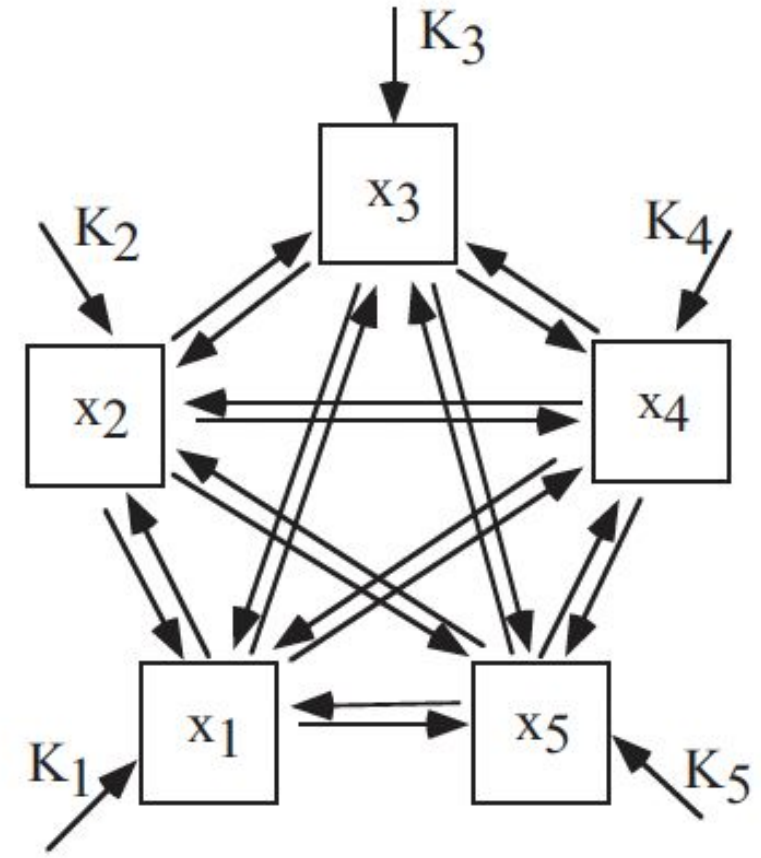
Relationships:

Mutualism



Phenomenon: Positive manifold

⊗
Theory: Mutualism

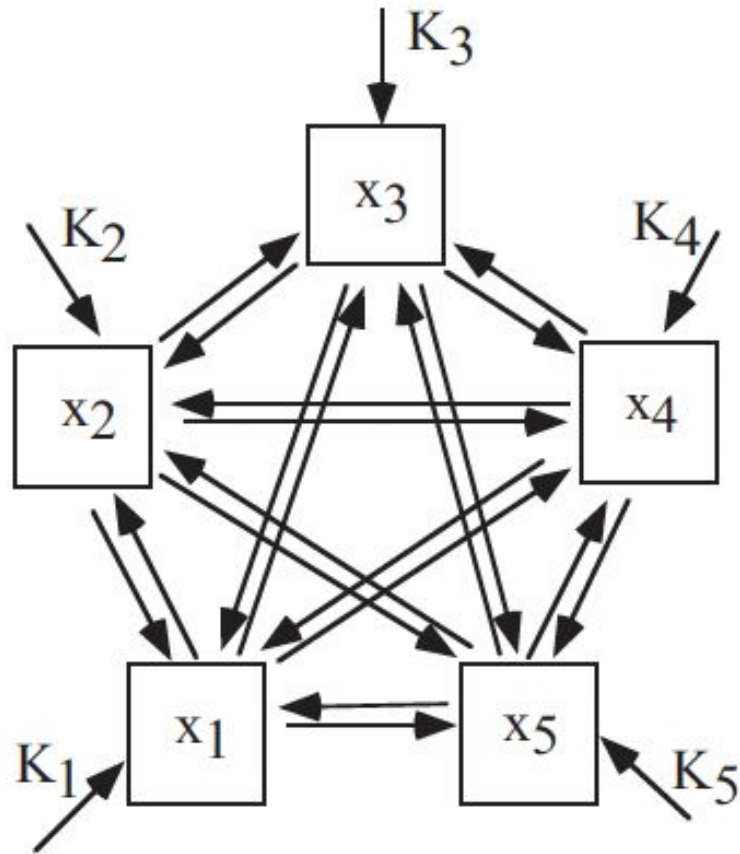




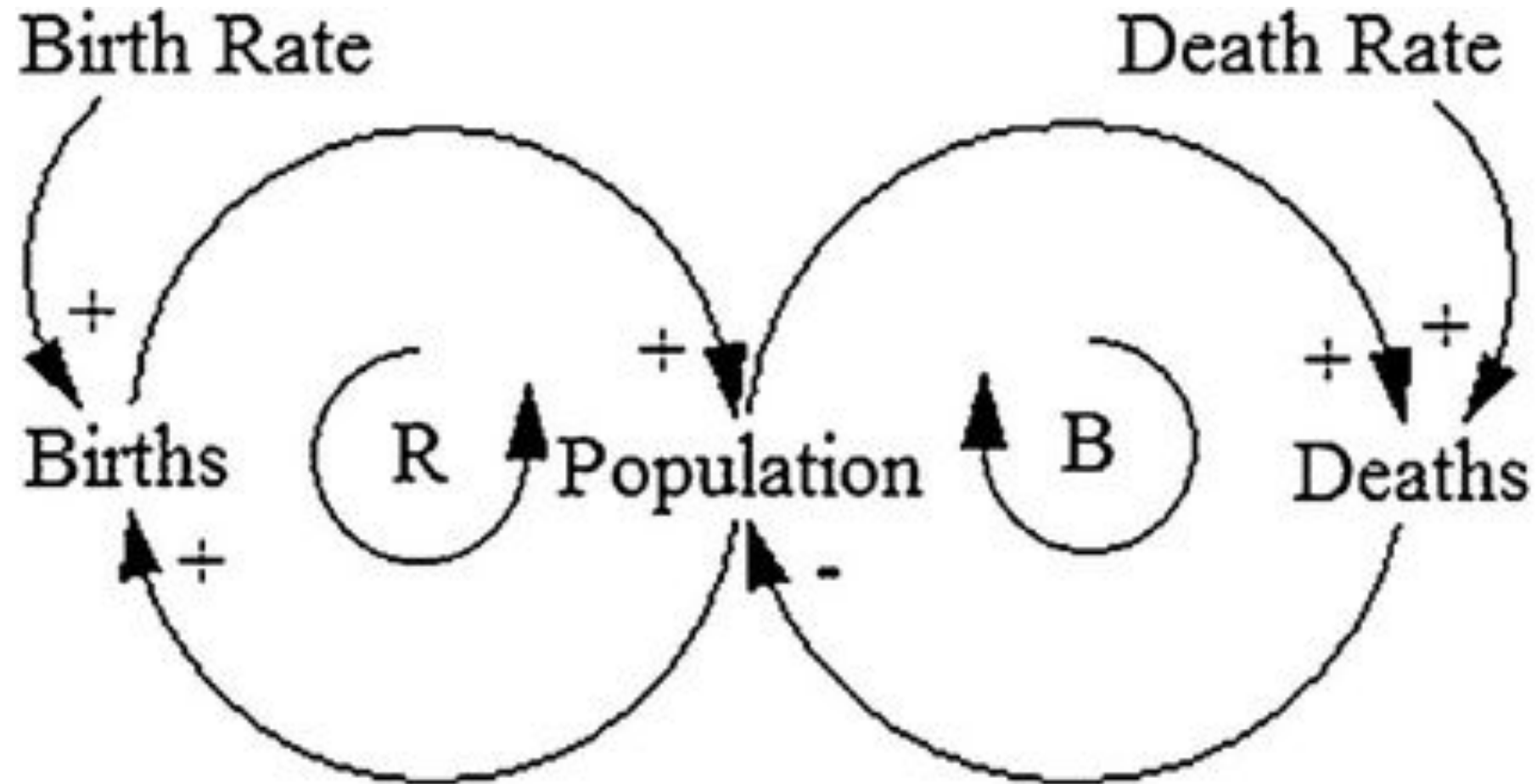
Diagrams: A helpful tool for thinking and communicating about your target system

Causal Diagrams

×

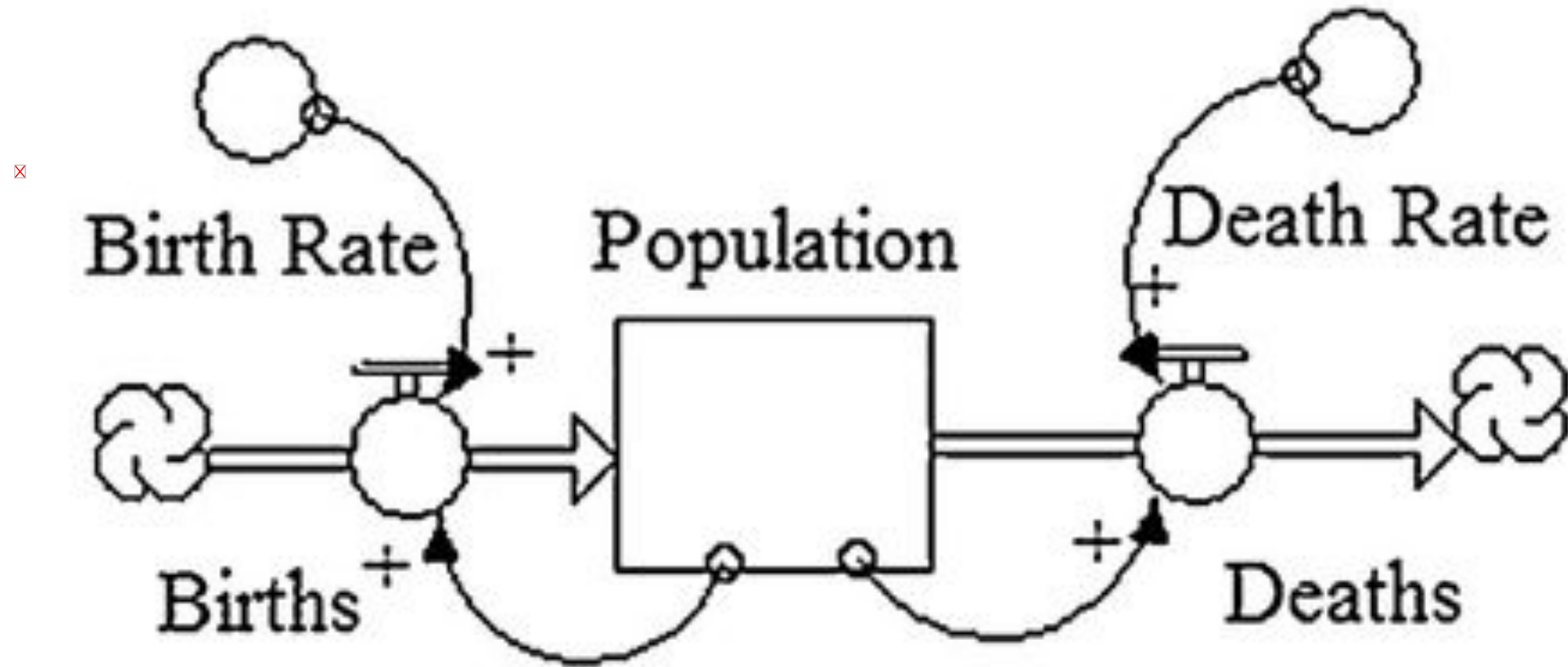


Causal Loop Diagrams

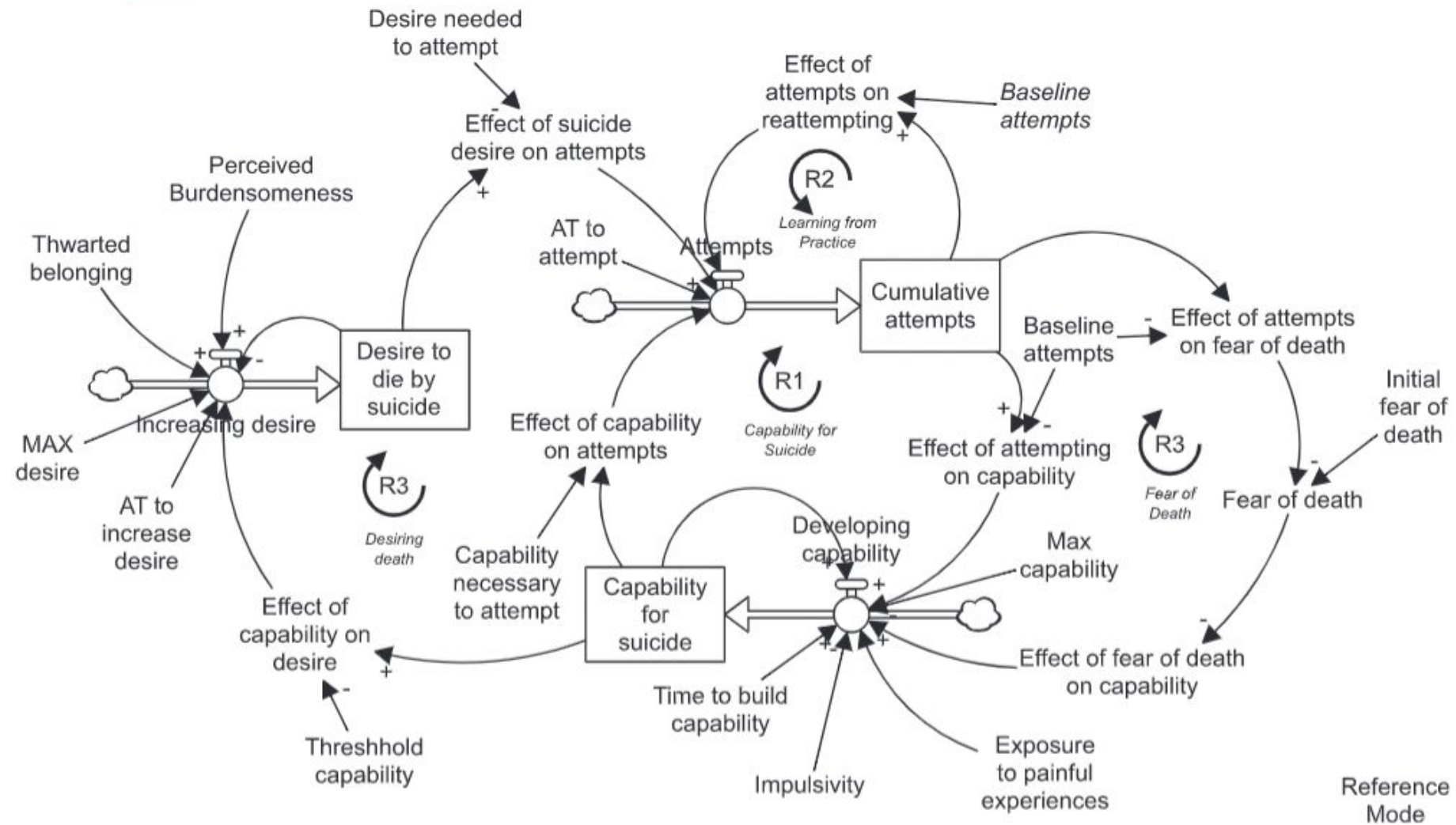


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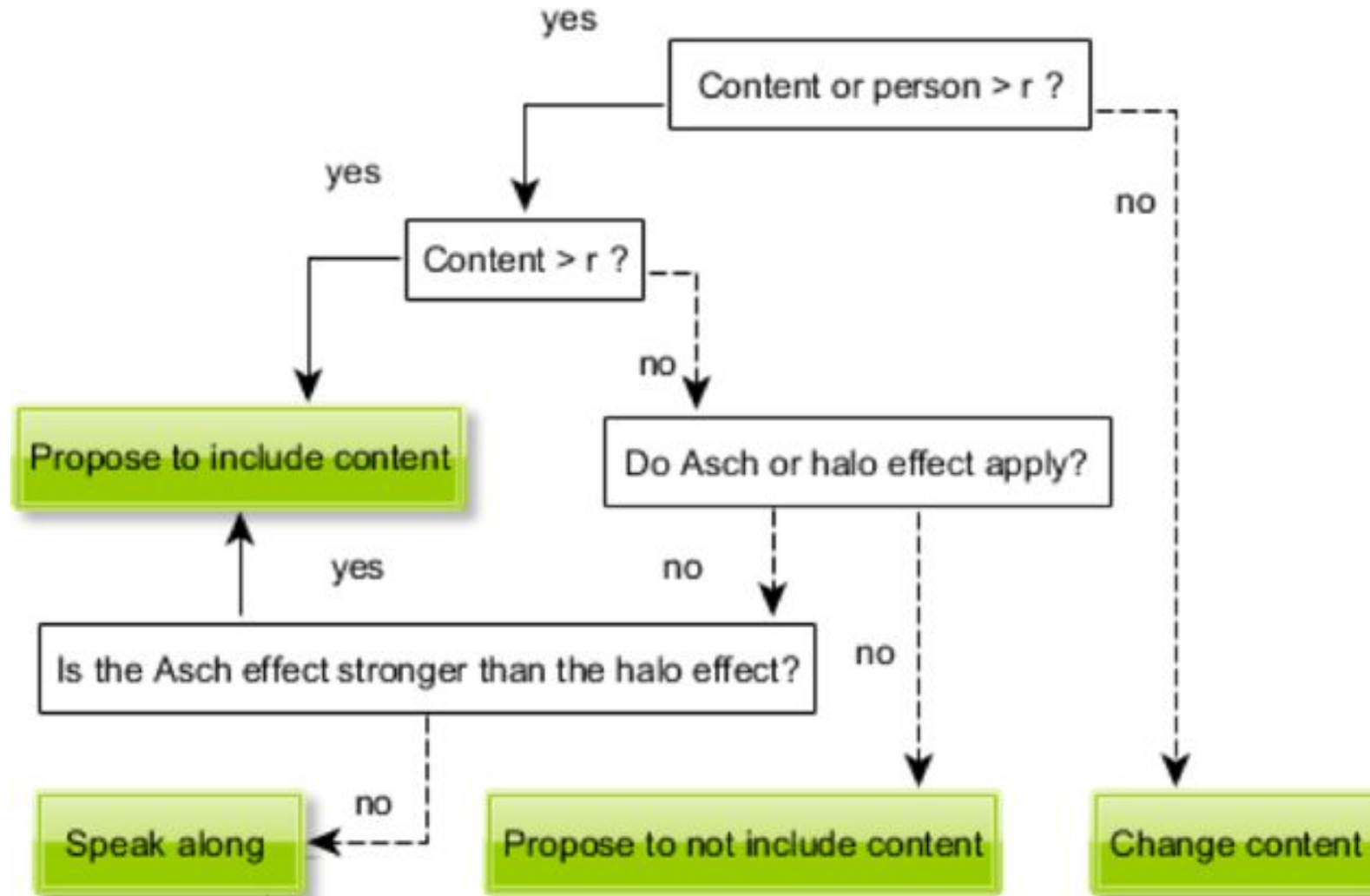
Stock & Flow Diagrams



Stock & Flow Diagrams



Flowcharts



Theory Maps

A — B POSITIVE ASSOC

A + B NEGATIVE ASSOC

A ≈ B EMPIRICAL EQUIV

«A» - B MODERATION

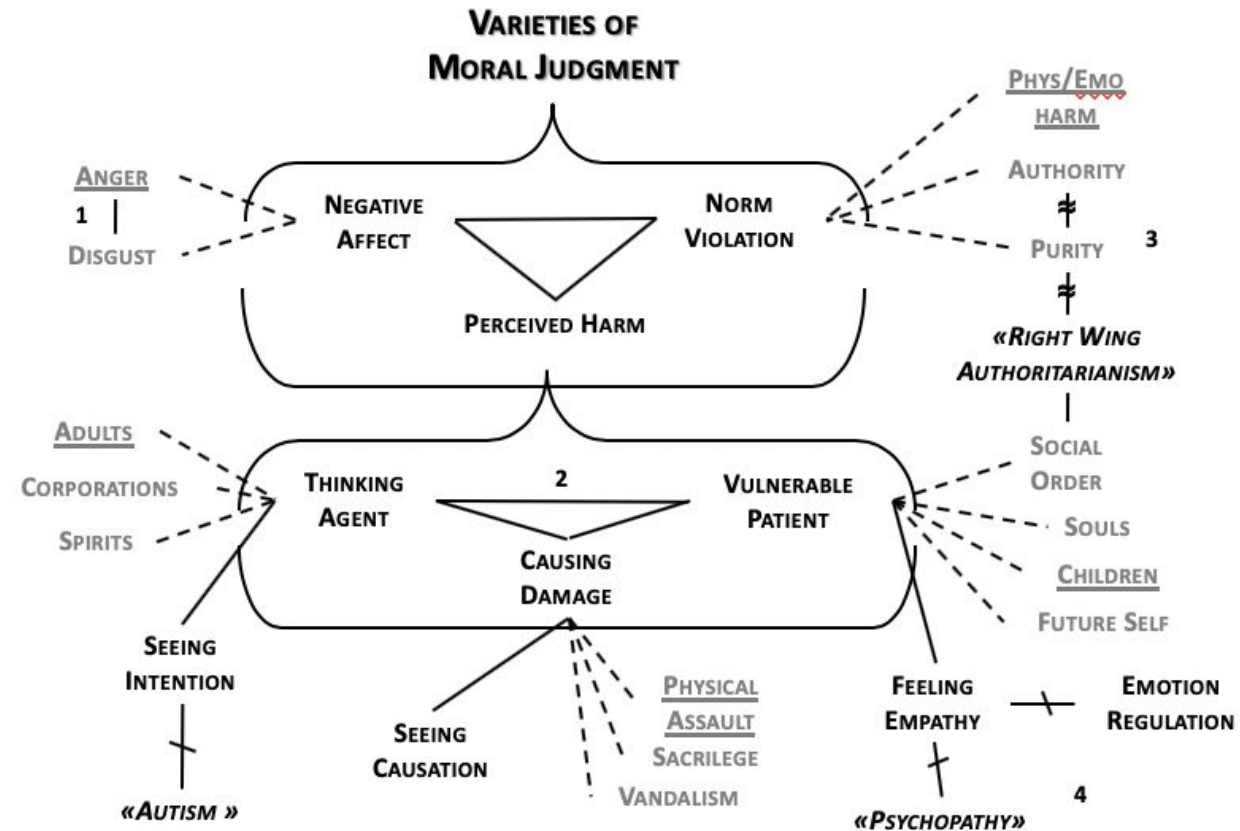
1, 2, 3, ... NOTES



FUNDAMENTAL
ELEMENTS



VARIETIES OR
EXAMPLES



Gray, 2017, *How to Map Theory: Reliable Methods Are Fruitless Without Rigorous Theory*



Key Components of a Theory Diagram

A target system

A visual language for describing it



Diagramming a Theory of Panic Disorder

A target system

A visual language for describing it

A verbal theory: If a stimulus “is perceived as a threat, a state of mild apprehension results. This state is accompanied by a wide range of bodily sensations. If these anxiety-produced sensations are interpreted in a catastrophic fashion, a further increase in apprehension occurs. This produces a further increase in body sensations and so on around in a vicious circle which culminates in a panic attack.”

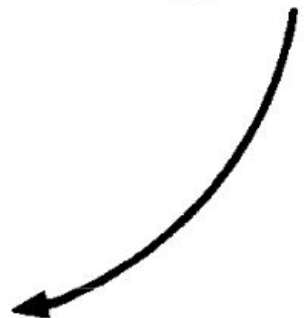
Trigger Stimulus
(internal or external)



Perceived Threat



Apprehension



Body
Sensations



Interpretation of
Sensations as
Catastrophic



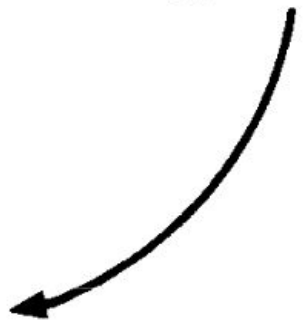
Trigger Stimulus
(internal or external)



Perceived Threat



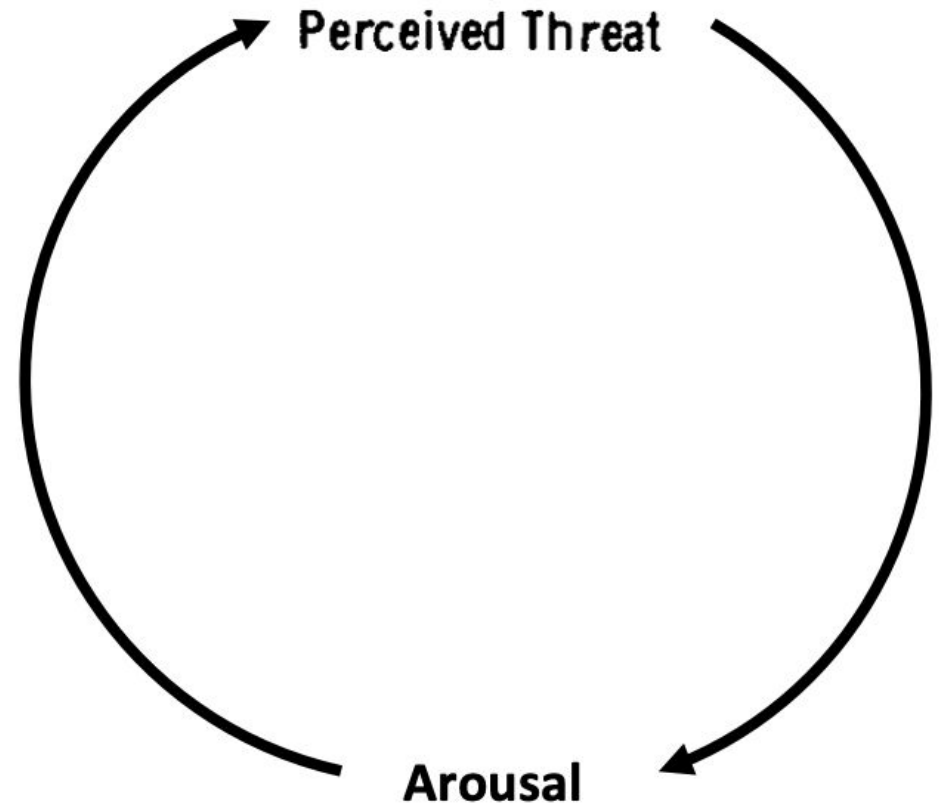
Apprehension

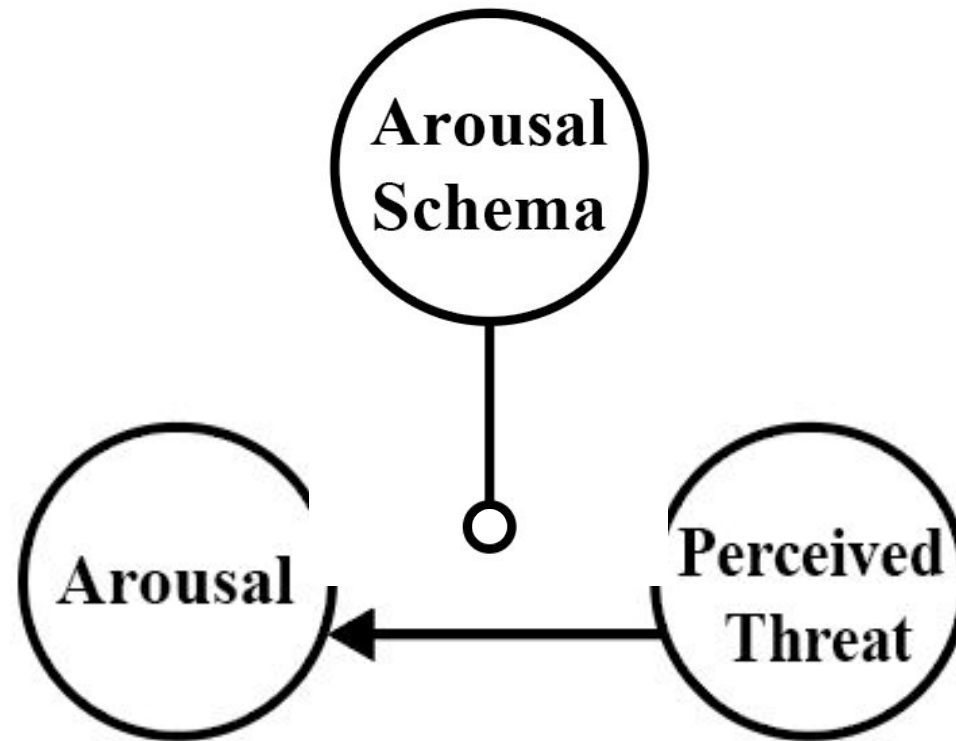


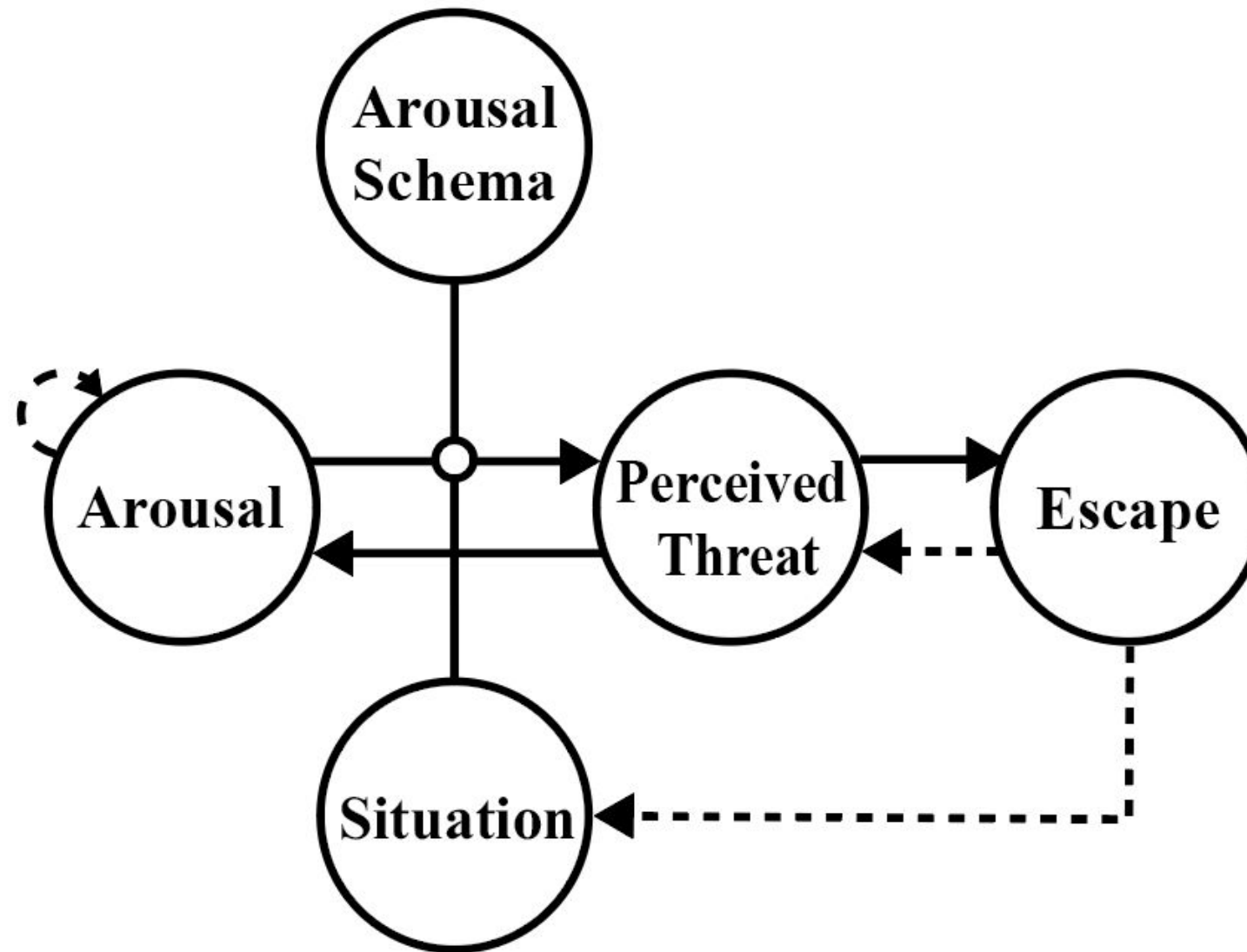
Body
Sensations

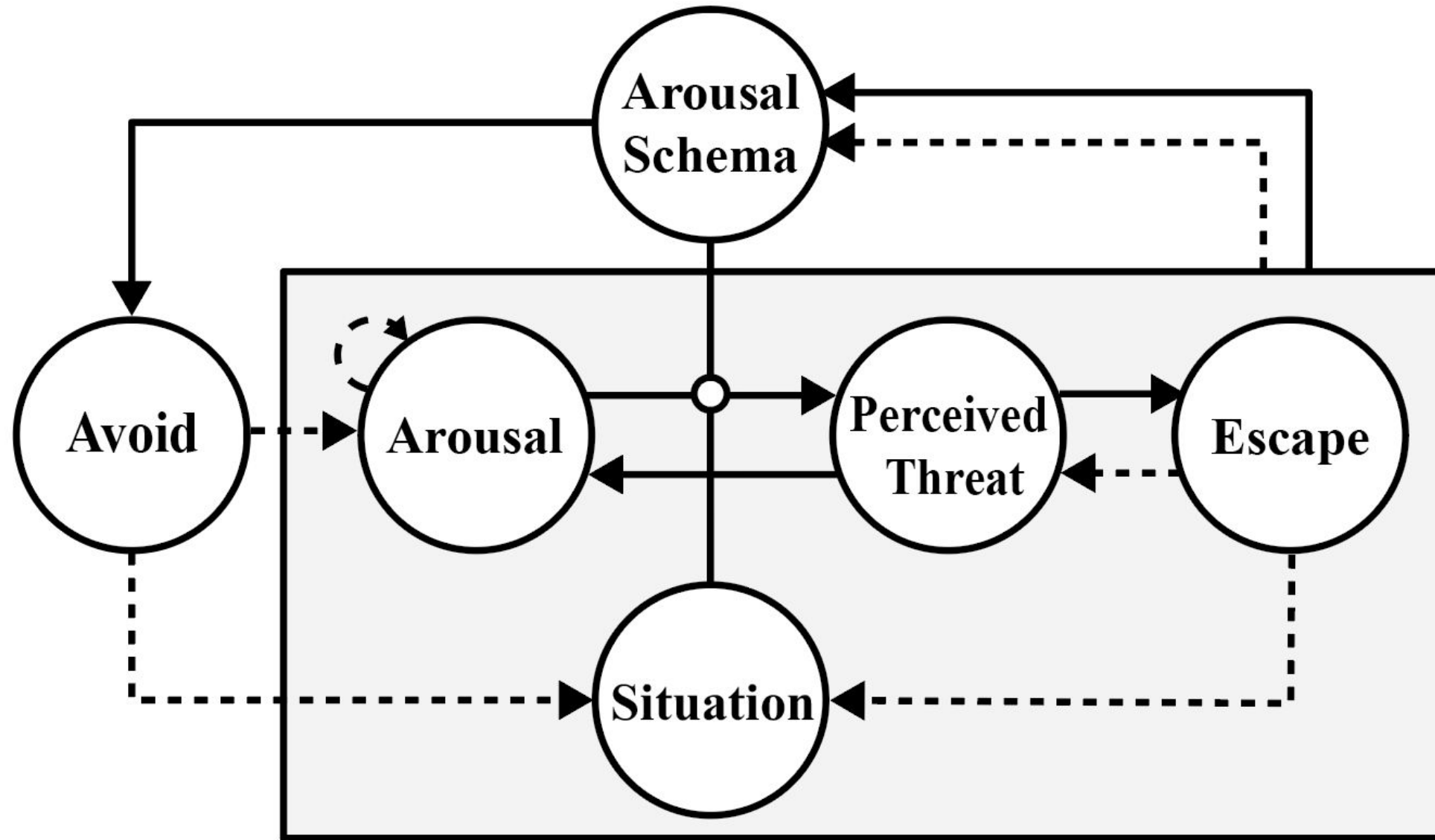


Interpretation of
Sensations as
Catastrophic









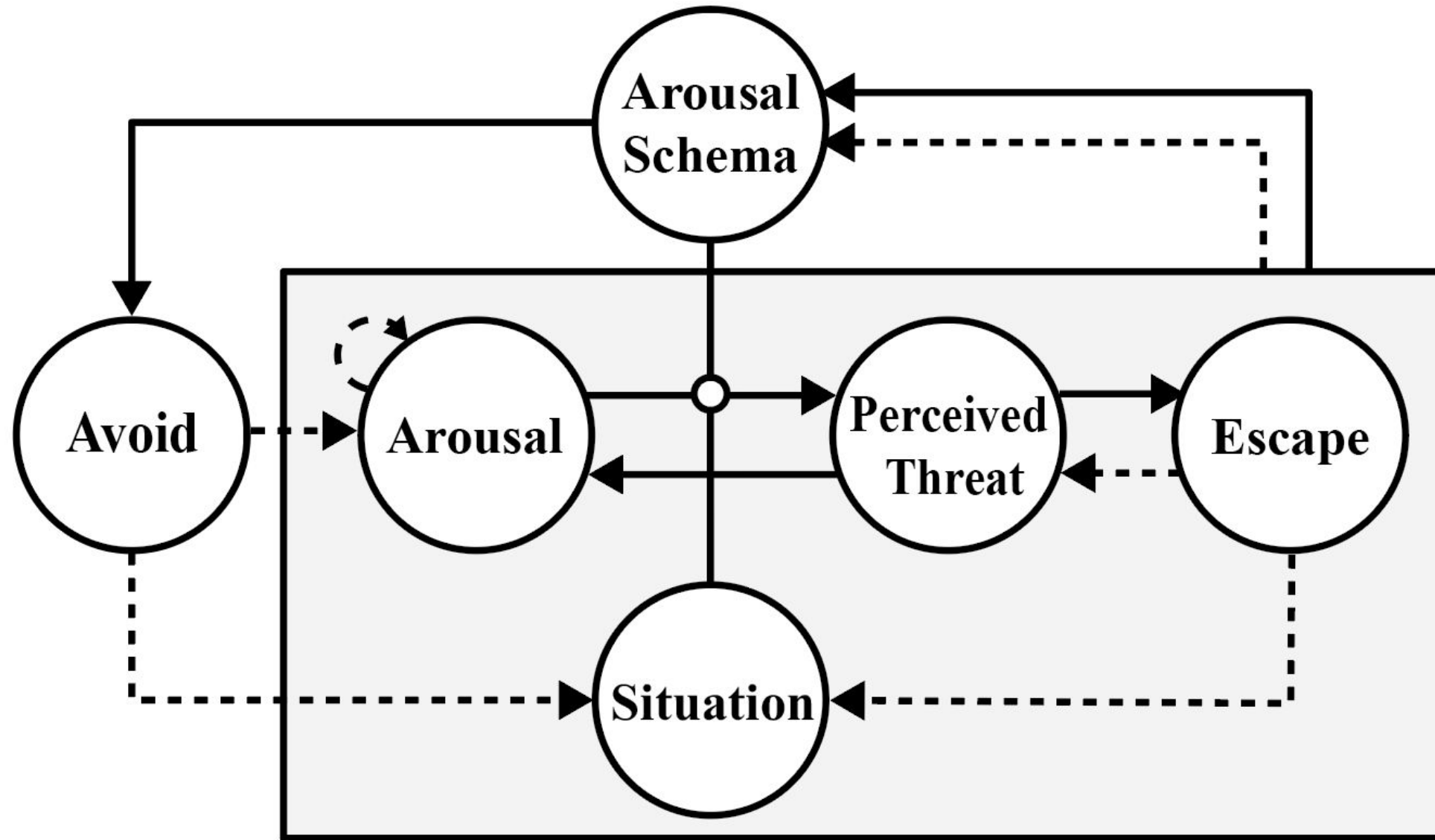


Diagram your theory



What are the
components of your
target system?

What are the
relationships among
those components?

Summary

Theories **explain** phenomena.

Theories **represent** target systems.

The first steps to generating a formal theory are to identify phenomena you want to explain and the target system you believe produces those phenomena.

Causal diagrams provide a step toward the specificity needed to formalize the theory.