

Guts, Nerves, and Zeal

A New Adrenaline Objection to Prinz on Emotion

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the order of topics

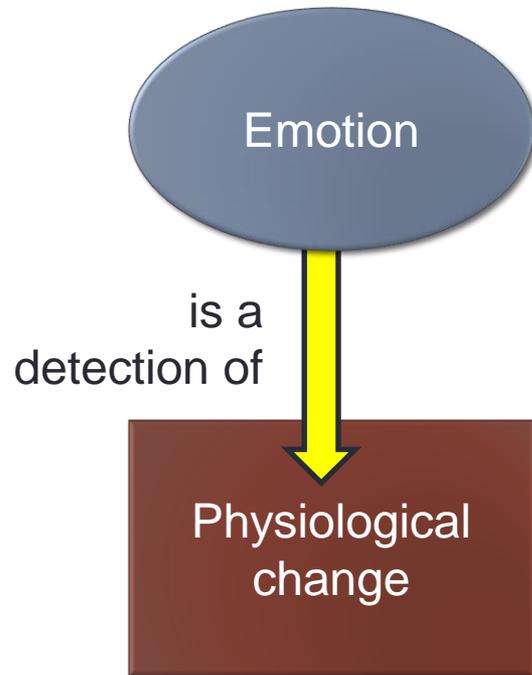
- 1) Prinz's embodied appraisal theory of emotion
- 2) The 'adrenaline objection' and the new adrenaline objection
- 3) Possible replies to the new adrenaline objection on behalf of Prinz.
- 4) Why does this teach us about emotion?

Prinz's Embodied Appraisal Theory of Emotion

theories of emotion

Somatic

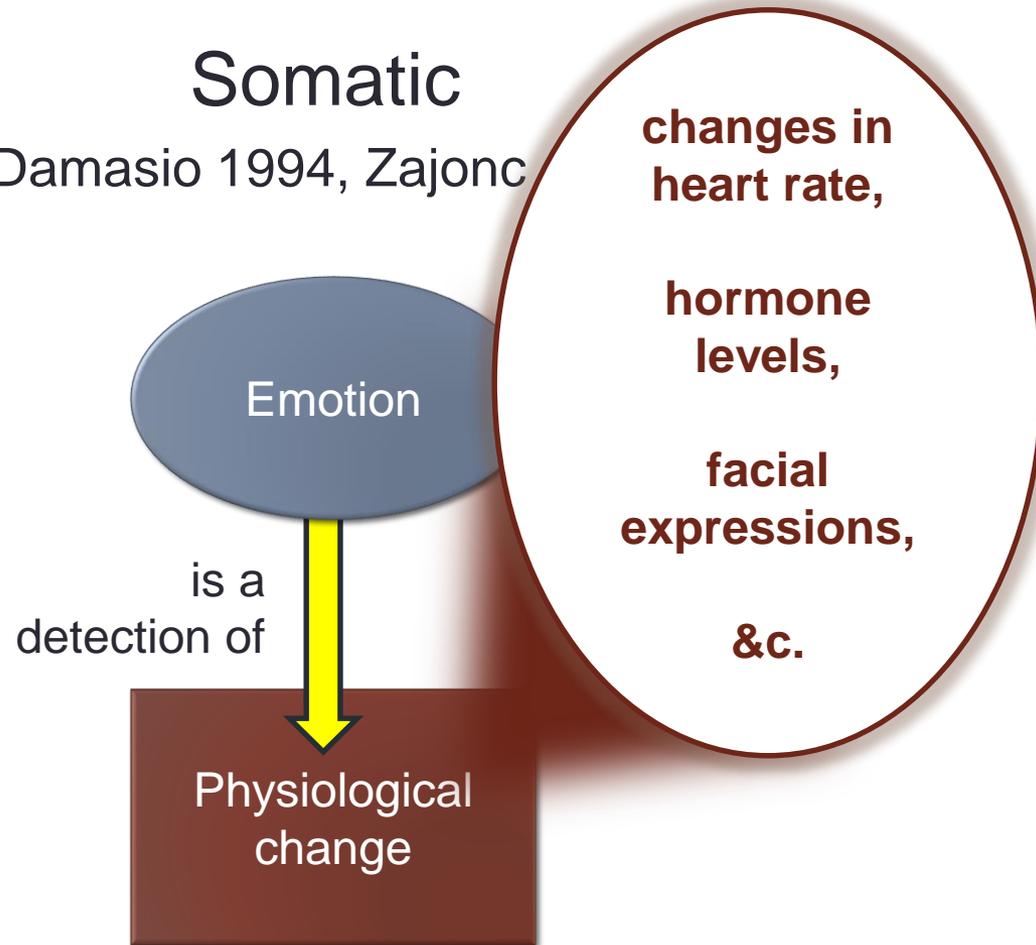
(Damasio 1994, Zajonc 1984)



theories of emotion

Somatic

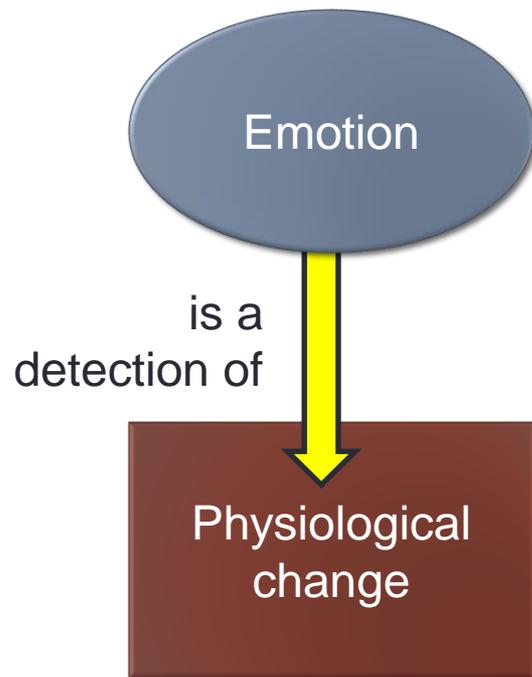
(Damasio 1994, Zajonc)



theories of emotion

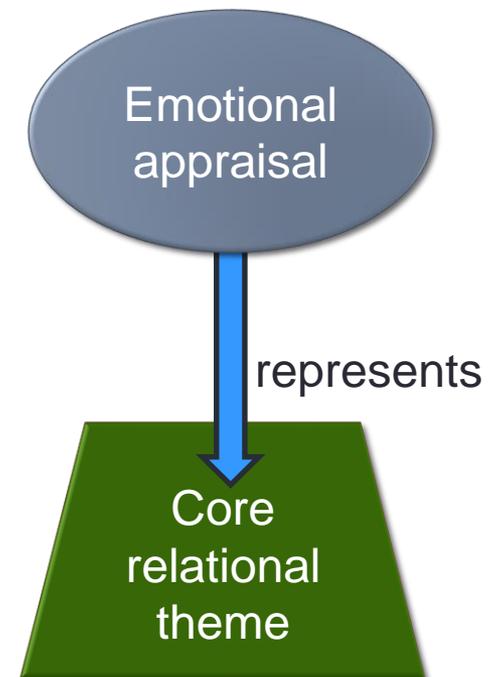
Somatic

(Damasio 1994, Zajonc 1984)



Cognitive appraisal

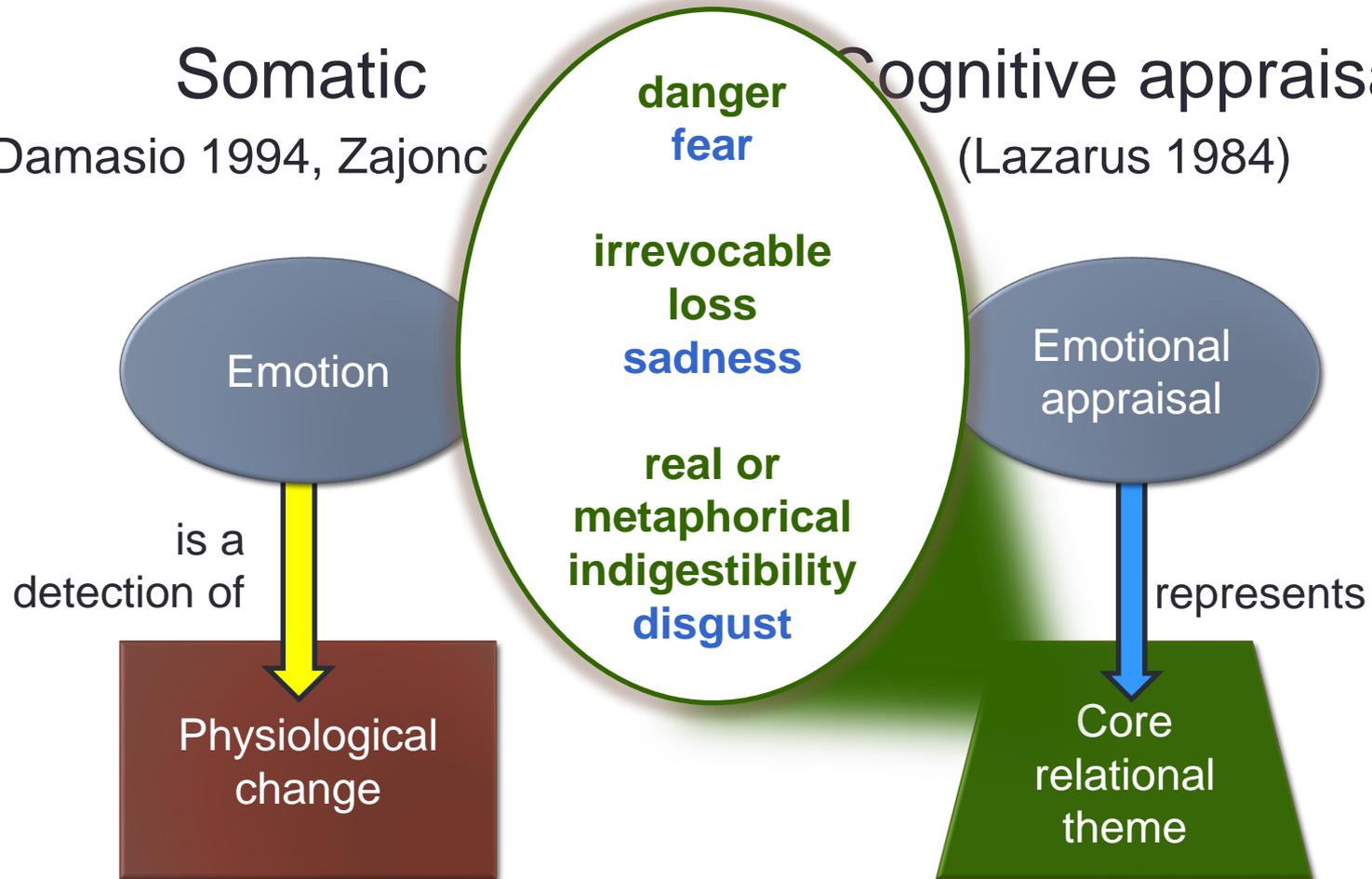
(Lazarus 1984)



theories of emotion

Somatic
(Damasio 1994, Zajonc)

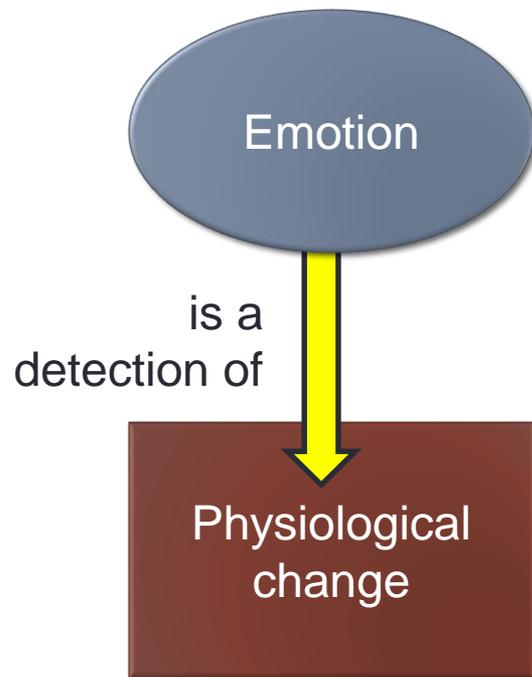
Cognitive appraisal
(Lazarus 1984)



theories of emotion

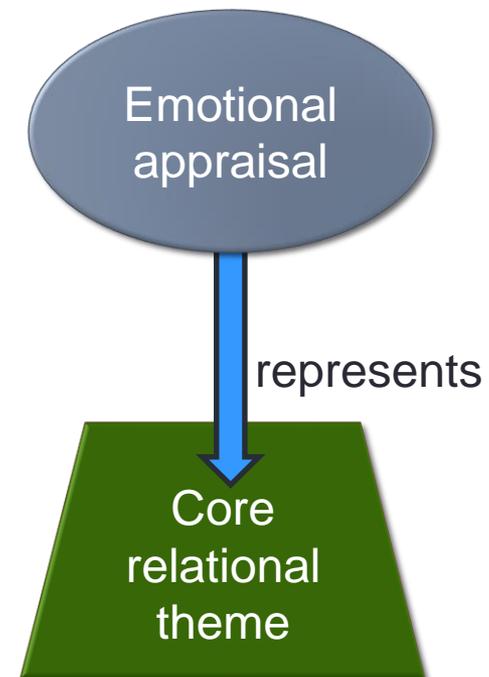
Somatic

(Damasio 1994, Zajonc 1984)

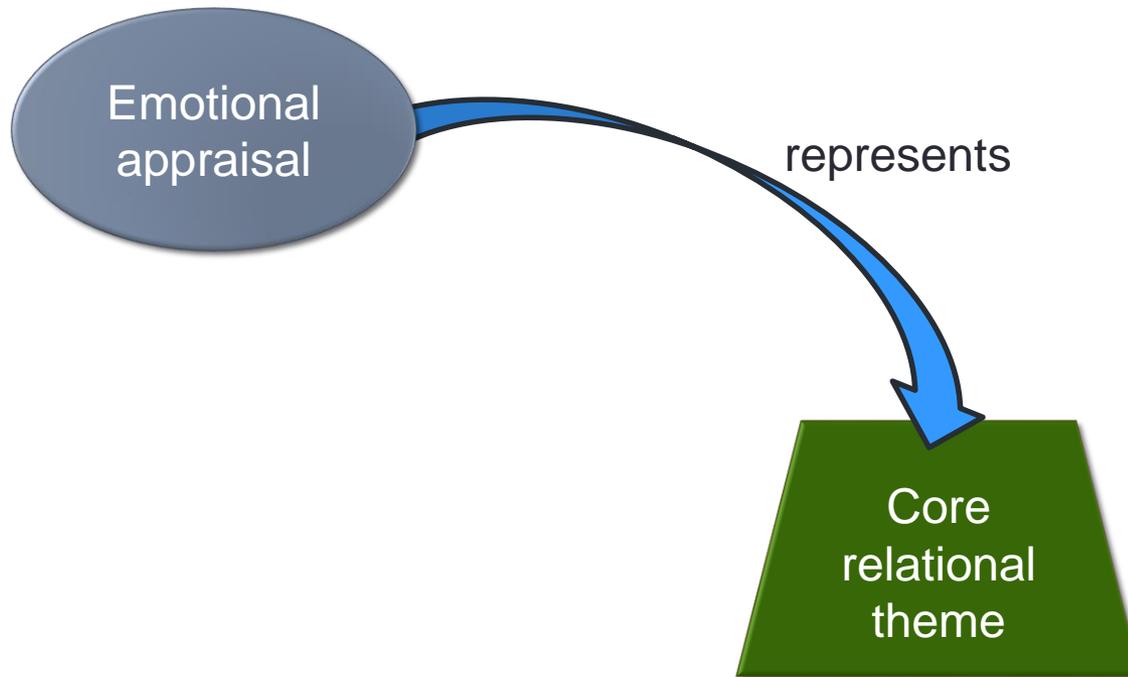


Cognitive appraisal

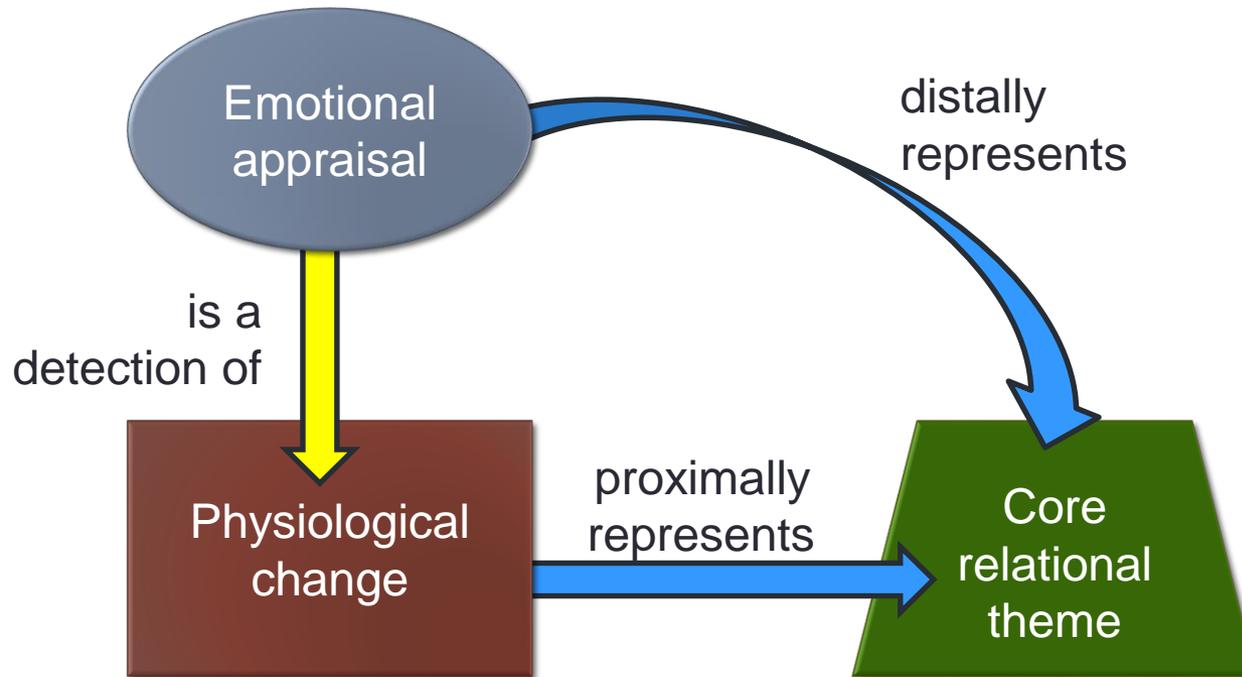
(Lazarus 1984)



embodied appraisal theory

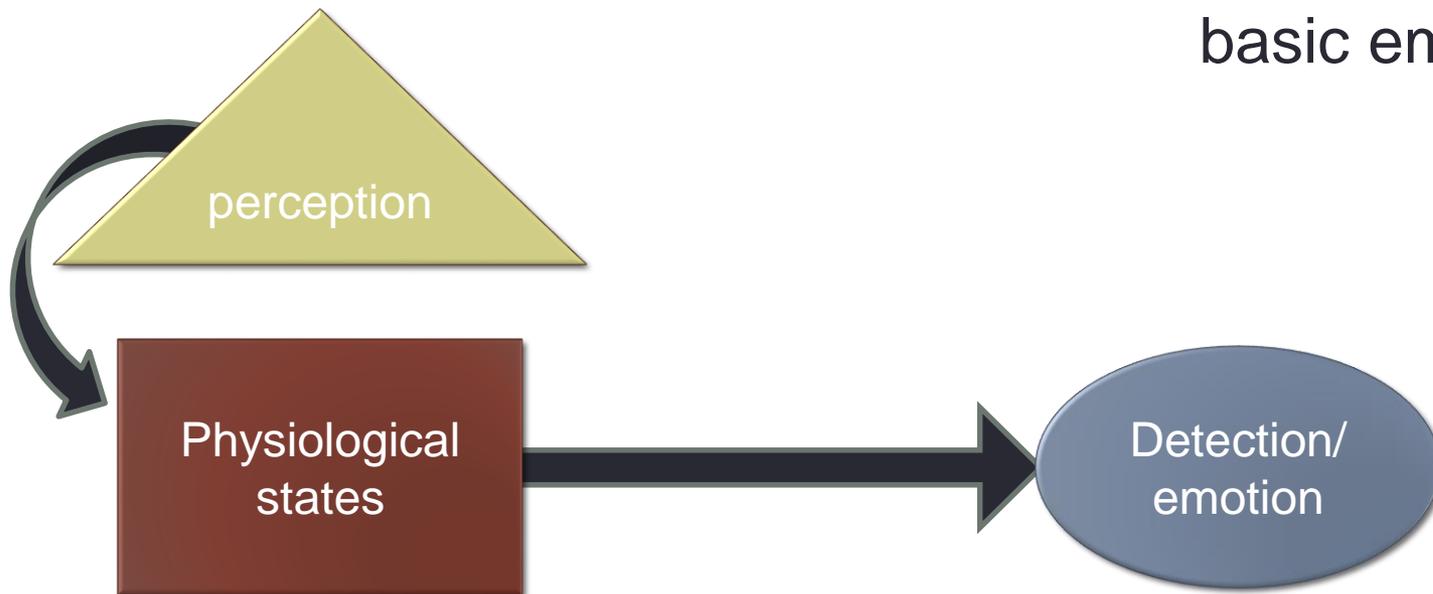


embodied appraisal theory



embodied appraisal theory

basic emotion



embodied appraisal theory

Prinz 2004:

Cognitive representations

“representations that are under the control of the organism rather than the environment.”

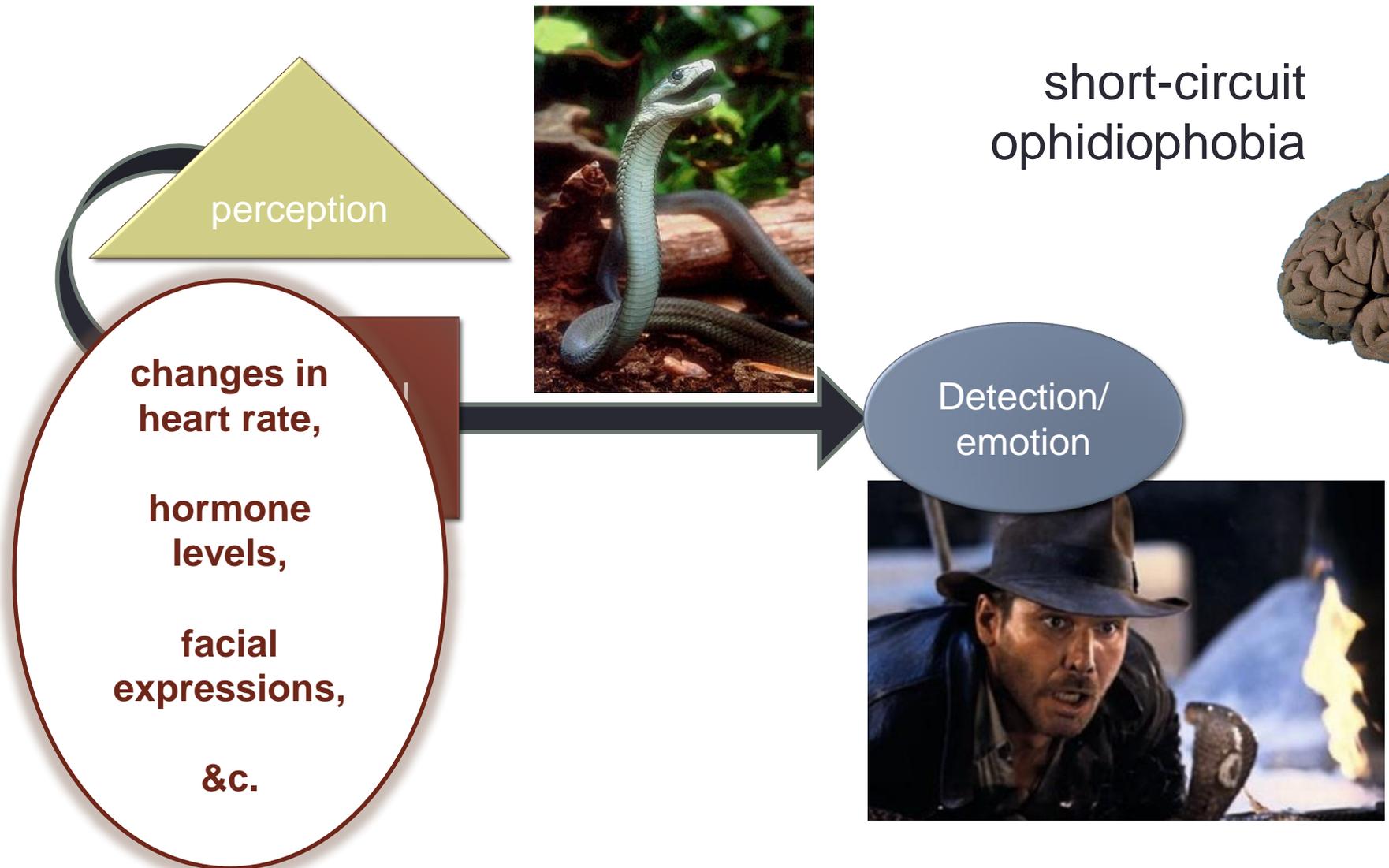
(E.g. mental images, concepts, propositions, but not perceptions.)

Cognitive states

States that exploit or contain cognitive representations.

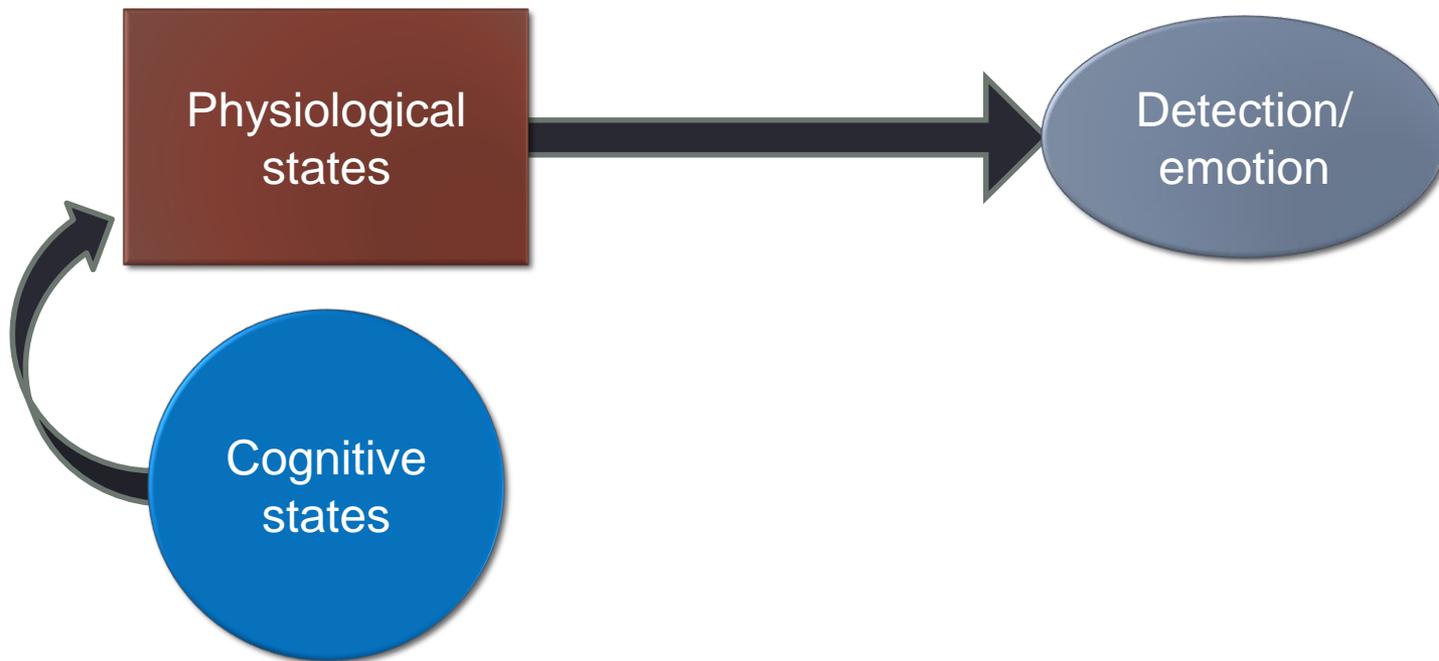
(E.g. beliefs, but according to Prinz *not emotions*.)

embodied appraisal theory

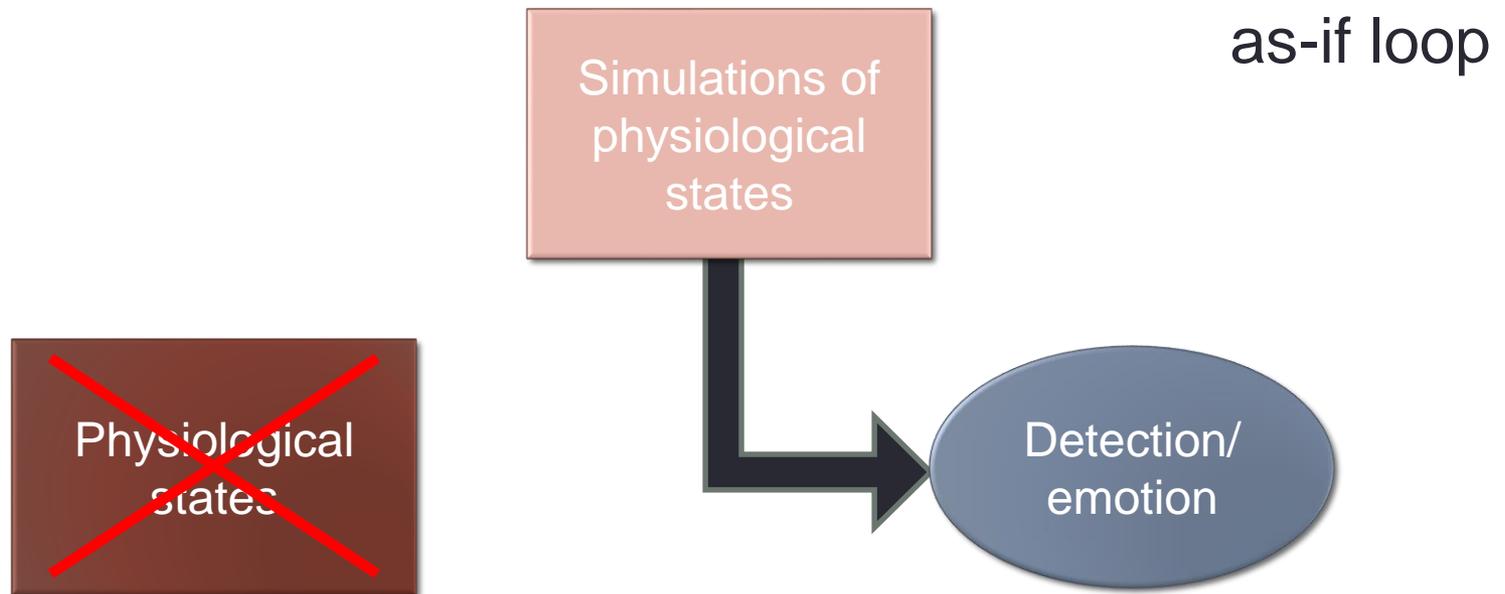


embodied appraisal theory

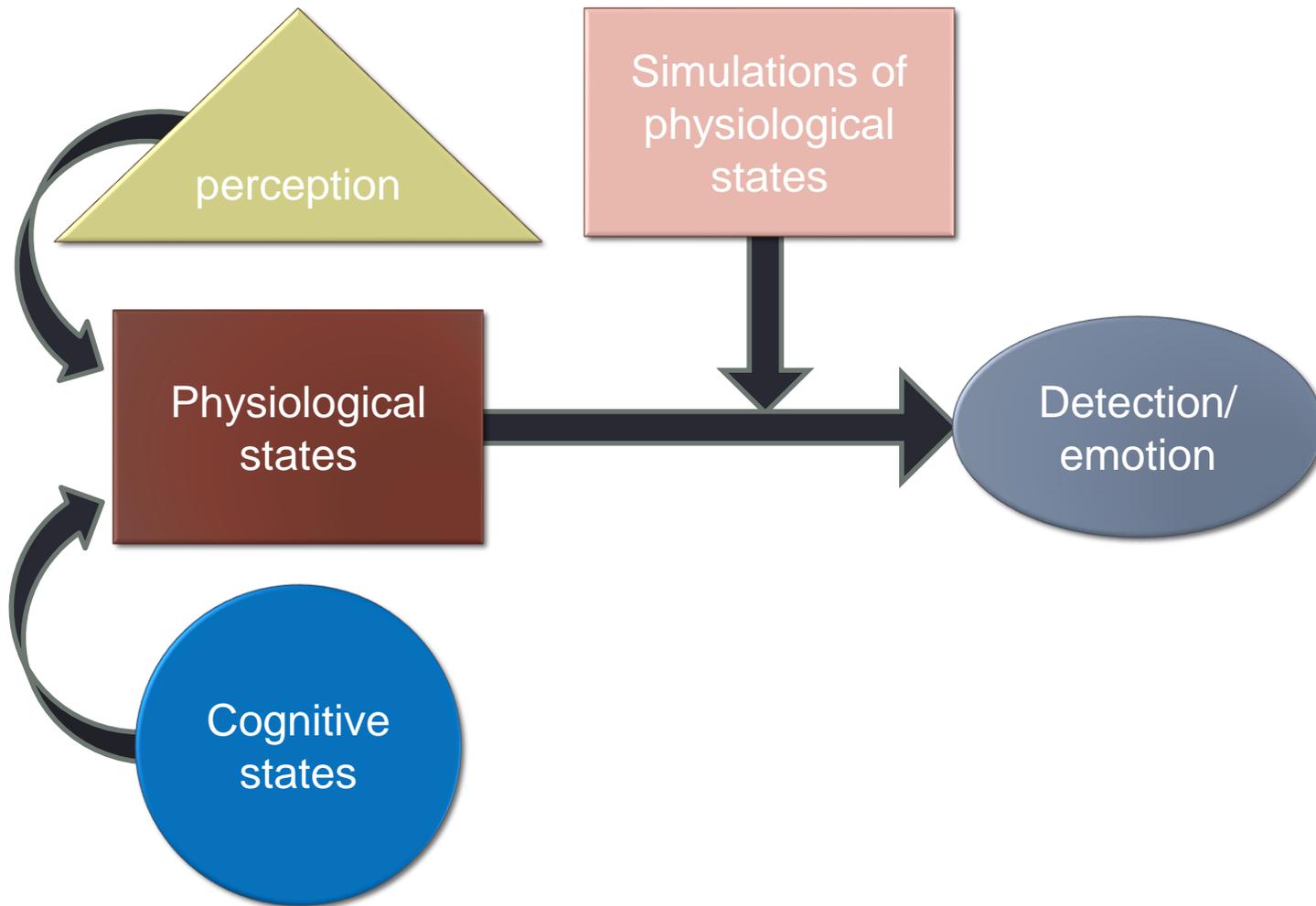
derived emotion



embodied appraisal theory

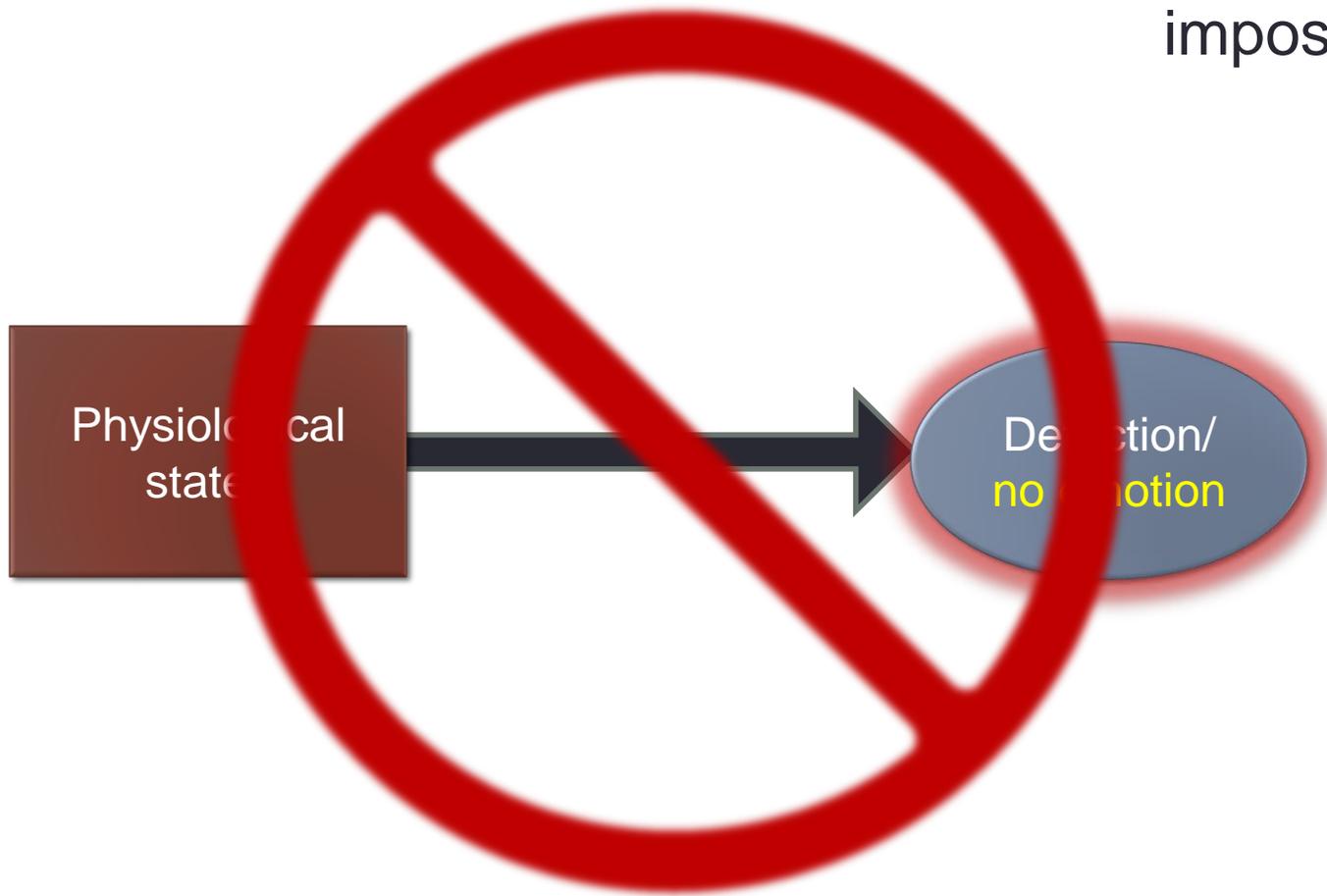


embodied appraisal theory



embodied appraisal theory

impossible



The Adrenaline Objection and the New Adrenaline Objection

the adrenaline objection

Is there emotion-specific physiology?



Yeah,
probably.

the adrenaline objection

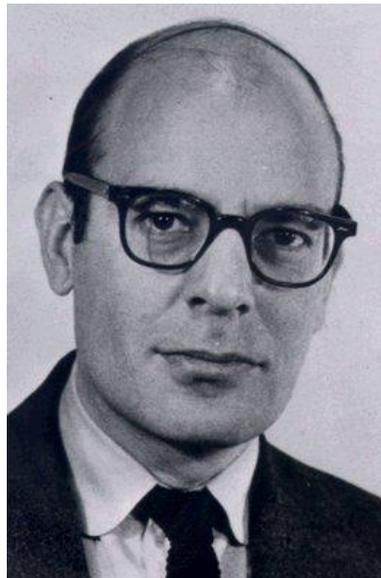
Is there emotion-specific physiology?



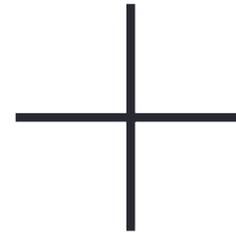
No way.

the adrenaline objection

Schachter “Two-Factor” Theory



Undifferentiated
physiological
arousal



Available
cognitions/
interpretation

Emotion

the adrenaline objection

Schachter & Singer (1962)

“Cognitive, social, and physiological determinants of emotional state”



adrenaline
+ irritating situation
anger

adrenaline
+ fun situation
euphoria

the adrenaline objection

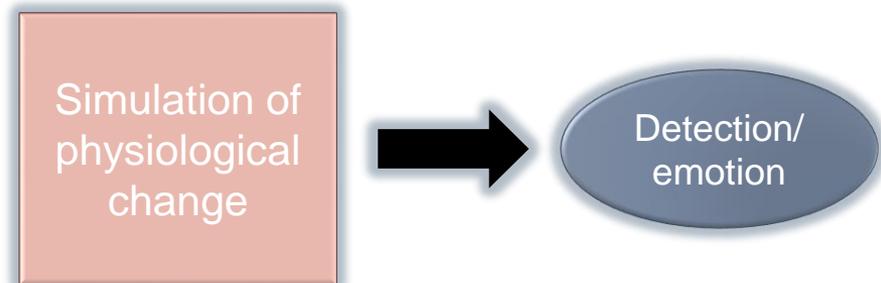
Independent variable { Insulting questionnaire, angry confederate
distractions, happy confederate }

Dependent variable { anger
euphoria }

the adrenaline objection

Prinz's objections:

- (P1) S&S assume that subjects who display distinct behavior are in different emotional states.
- (P2) S&S assume that subjects who display distinct behavior are in the same physiological state.
- (P3) Even if these assumptions are true, there can be false detections.



the adrenaline objection

Independent
variable



Insulting questionnaire, angry confederate
distractions, happy confederate



Dependent
variable



anger
euphoria



the new adrenaline objection

Independent
variable



(Epinephrine misinformed)
epinephrine-ignorant
placebo
epinephrine-informed



Dependent
variable



manifestation of emotion
suppression of emotion



the new adrenaline objection

TABLE 2

SELF-REPORT OF EMOTIONAL STATE IN THE EUPHORIA CONDITIONS

TABLE 4

SELF-REPORT OF EMOTIONAL STATE IN THE ANGER CONDITIONS

TABLE 3

BEHAVIORAL INDICATIONS OF EMOTIONAL STATE IN THE EUPHORIA CONDITIONS

Comparison	<i>p</i> ^a
Epi Mis	<.01
Epi Ign	.02
Placebo	<i>ns</i>

TABLE 1

THE INJECTIONS ON B

TABLE 5

BEHAVIORAL INDICATIONS OF EMOTIONAL STATE IN THE ANGER CONDITIONS

<i>p</i>
.08
<i>ns</i>

TABLE 7

THE EFFECTS OF ATTRIBUTING BODILY STATE TO THE INJECTION ON EUPHORIA IN THE EUPHORIA EPI IGN AND EPI MIS CONDITIONS

two-
88.6
85.6

TABLE 6

THE EFFECTS OF ATTRIBUTING BODILY STATE TO THE INJECTION ON ANGER IN THE ANGER EPI IGN CONDITION

Anger units
-0.18
-2.28
-0.79

TABLE 8

SYMPATHETIC ACTIVATION AND EUPHORIA IN THE EUPHORIA PLACEBO CONDITION

Subjects whose:	N	Activity index	<i>p</i>
Pulse decreased	14	10.67	<i>ns</i>
Pulse increased	12	23.17	<i>ns</i>
Pulse decrease vs. pulse increase or same			.02

Palpitation
1.20
1.83
1.27
0.29

TABLE 9

SYMPATHETIC ACTIVATION AND ANGER IN ANGER PLACEBO CONDITION

Subjects whose:	N ^a	Anger index	<i>p</i>
Pulse decreased	13	+0.15	<i>ns</i>
Pulse increased	8	+1.69	<i>ns</i>
Pulse decrease vs. pulse increase or same			.01

^aN reduced by two cases owing to failure of sound system in one case and experimenter's failure to take pulse in another.

Condition
Epi In
Epi Ign
Epi Mis
Placebo

Co
Epi Inf v
Epi Inf v
Plac vs. I
or Inf

^a Tested subjects in each

Self-informed subjects	5	12.40	<i>ns</i>
Others	20	25.10	<i>ns</i>
Self-informed vs. Others			.10

the new adrenaline objection

given a state of physiological arousal for which an individual has no explanation, he will label this state in terms of the cognitions available to him.

Schachter & Singer 1962, p. 395

(Forget this.)

the new adrenaline objection

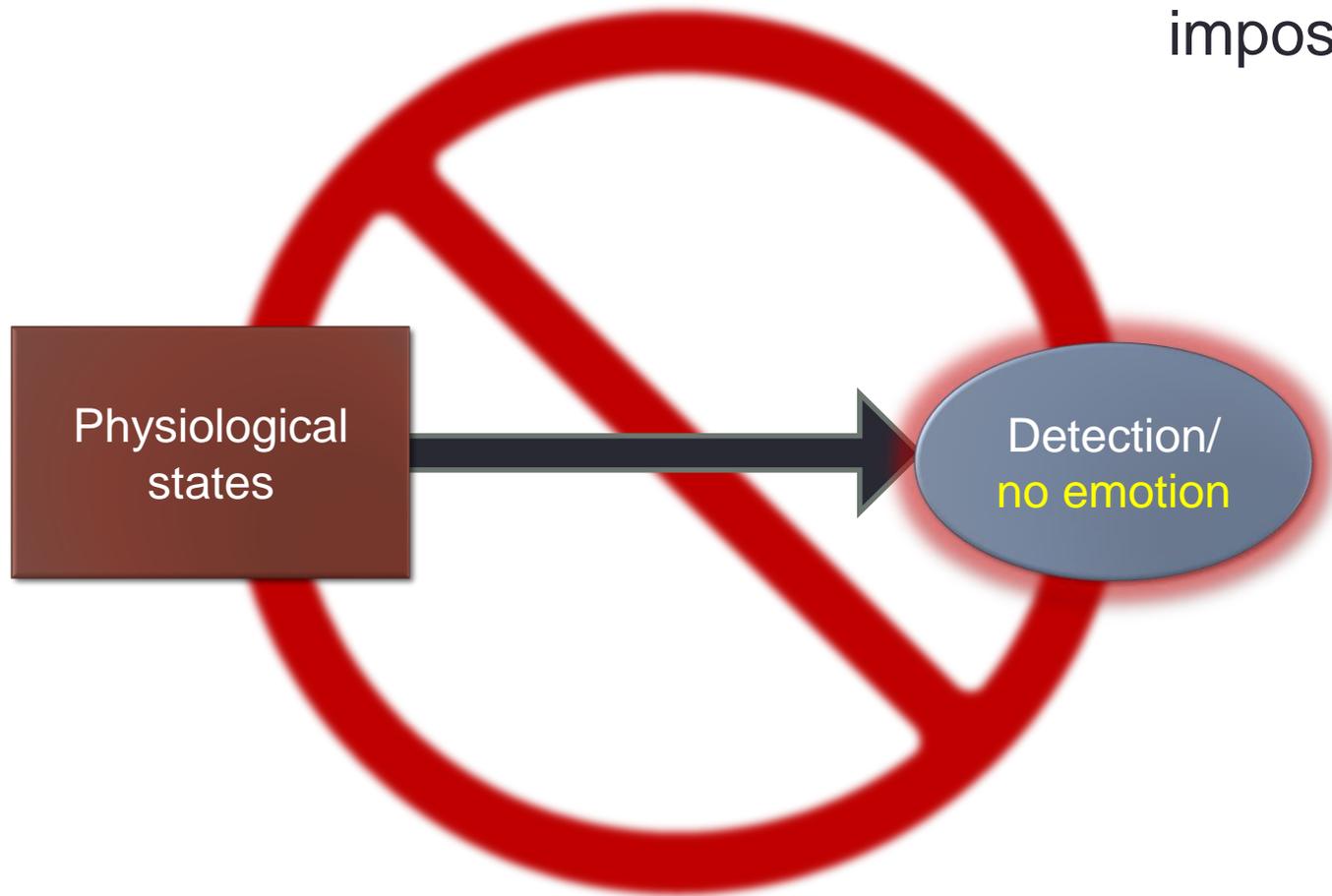
From this first proposition, it must follow that given a state of physiological arousal for which the individual has a completely satisfactory explanation, he will not label this state in terms of the alternative cognitions available.

Schachter & Singer 1962, pp. 395–396

When beliefs and physiological states contradict each other with respect to whether an emotional response is called for, beliefs can trump physiology.

embodied appraisal theory

impossible



Possible replies to the New Adrenaline Objection

replies to NAO

Prinz's objections:

- (P1) S&S assume that subjects who display distinct behavior are in different emotional states.
- (P2) S&S assume that subjects who display distinct behavior are in the same physiological state.
- (P3) Even if these assumptions are true, there can be false detections.

replies to NAO

Prinz's objections:

(P1) S&S assume that subjects who display distinct behavior are in different emotional states.

(P2) S&S assume that subjects who display distinct behavior are in the same physiological state.

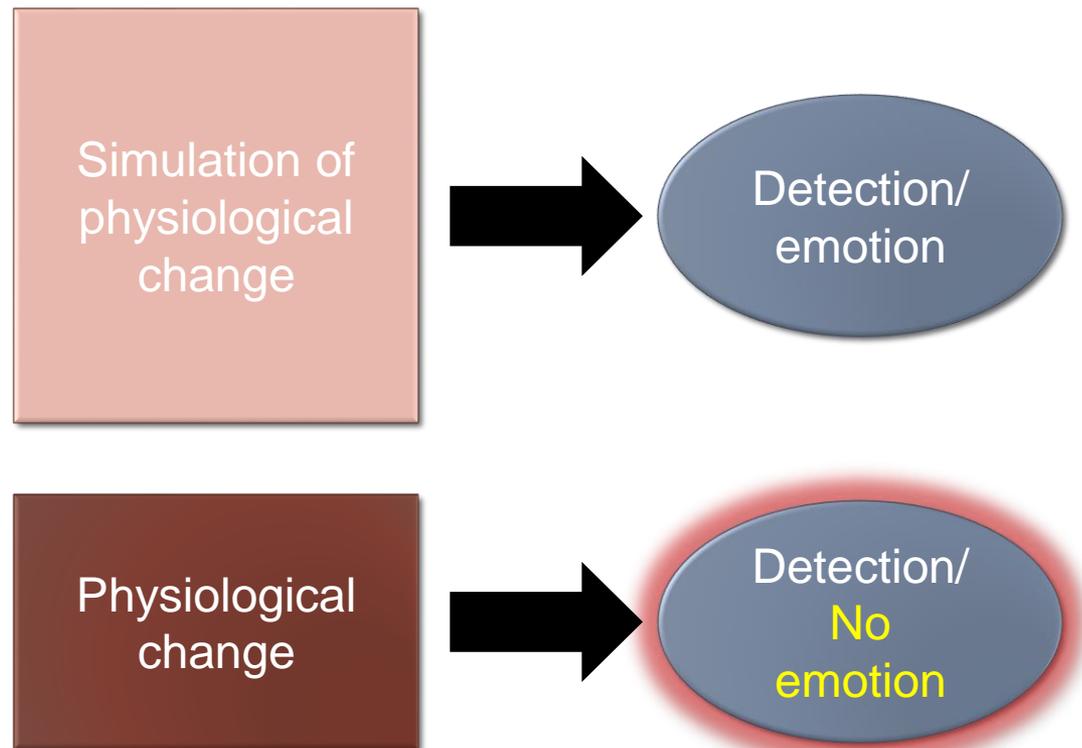
“subjects who display distinct emotional behavior”

=

subjects in anger experiment
subjects in euphoria experiment

replies to NAO

(P3) Even if these assumptions are true, there can be false detections.



replies to NAO

Prinz's objections:

- (P1) S&S assume that subjects who display distinct behavior are in different emotional states.

- (P1') The emotional behavior in S&S's study is not evidence of genuine emotional episodes.

replies to NAO

(P1') The emotional behavior in S&S's study is not evidence of genuine emotional episodes.

Two measures: coded observation
 participant self-report

Prinz: All participants self-reported positive affect, even in the anger experiment.

for the subjects, who had volunteered for the experiment for extra points on their final exam, simply refused to endanger these points by publicly blowing up, admitting their irritation to the experimenter's face or spoiling the questionnaire. Though as the reader will see, the subjects were quite willing to manifest anger when they were alone with the stooge, they hesitated to do so on material (self-ratings of mood and questionnaire) that the experimenter might see and only after the purposes of the experiment had been revealed were many of these subjects willing to admit to the experimenter that they had been irked or irritated.

replies to NAO

Prinz' worry is not decisive, and anyway only applies to the 'anger' experiment.

replies to NAO

Reisenzein (1983)

1. Intensification of emotional reactions through misattribution of extraneous cause,
2. Reduction of emotional reactions through reductions of arousals,
3. Misattribution of emotional arousal to a neutral source.

NAO

Reduction of emotional reactions through correct attribution of increased arousal to extraneous cause.

replies to NAO

No attempted replication of
Schachter & Singer 1962
features the
informed/ignorant contrast.

replies to NAO

Prinz's objections:

(P2) S&S assume that subjects who display distinct behavior are in the same physiological state.

(P2') Sufficiently similar physiological conditions did not obtain between the epinephrine-ignorant and epinephrine-informed conditions.

replies to NAO

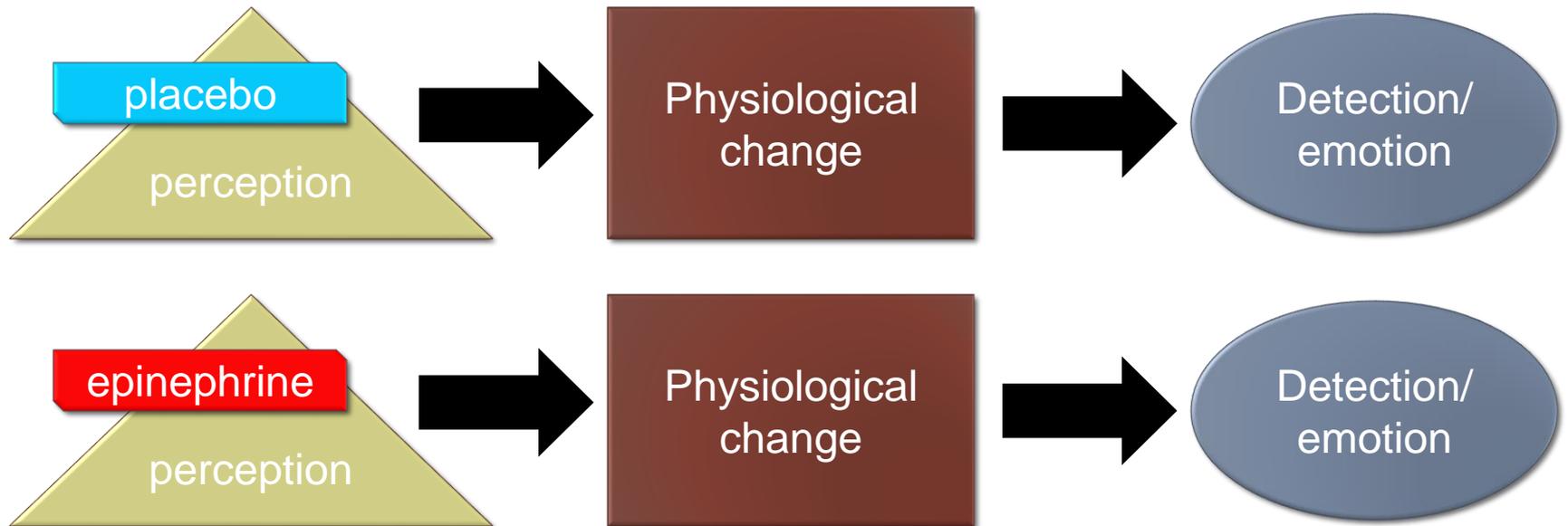
(P2') Sufficiently similar physiological conditions did not obtain between the epinephrine-ignorant and epinephrine-informed conditions.

Even participants in the placebo condition displayed emotional behaviors.

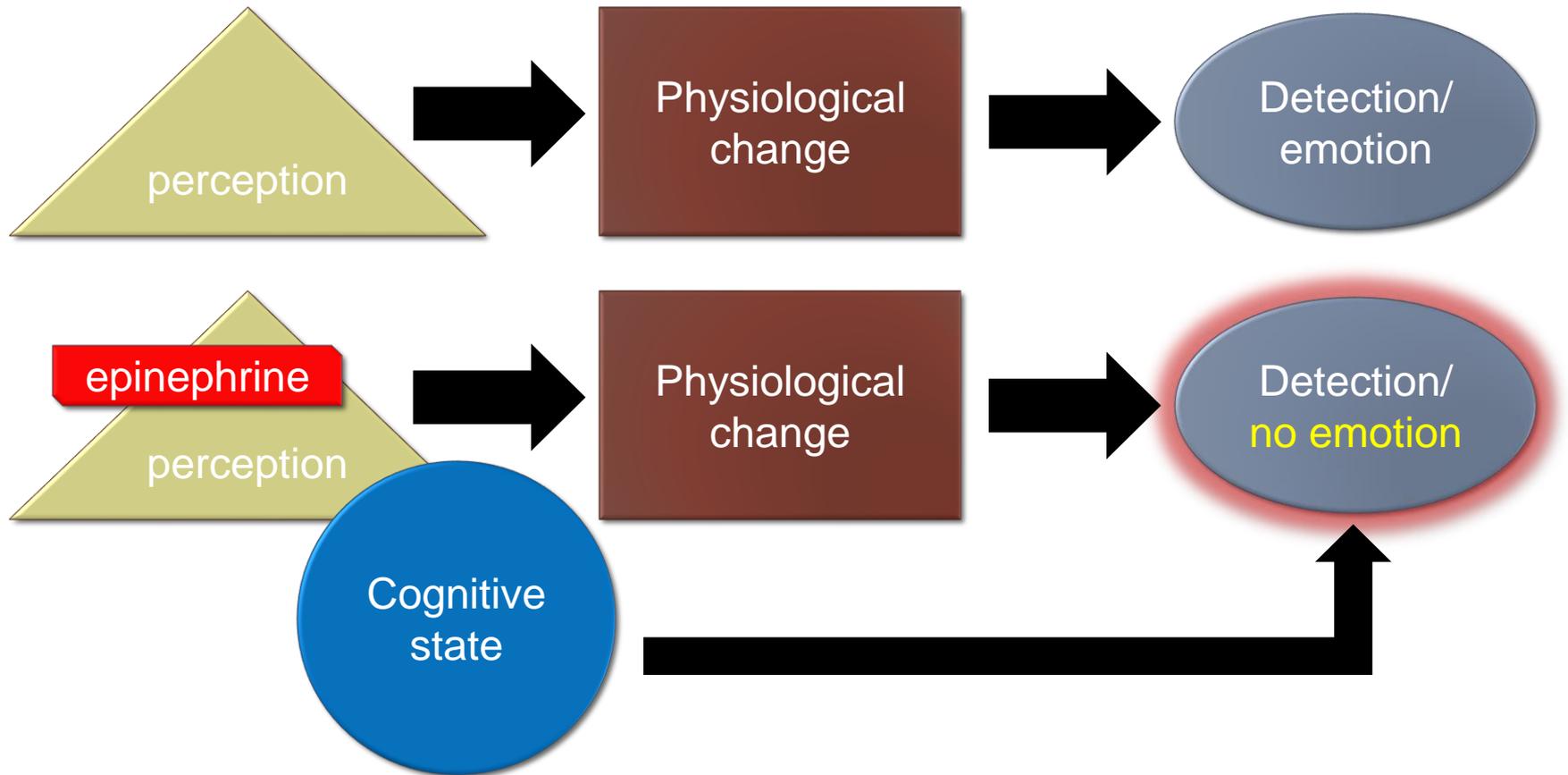
Even if epinephrine-informed participants failed to manifest the relevant physiological changes, this failure must be attributed to a difference in their beliefs.

(Which are cognitive states.)

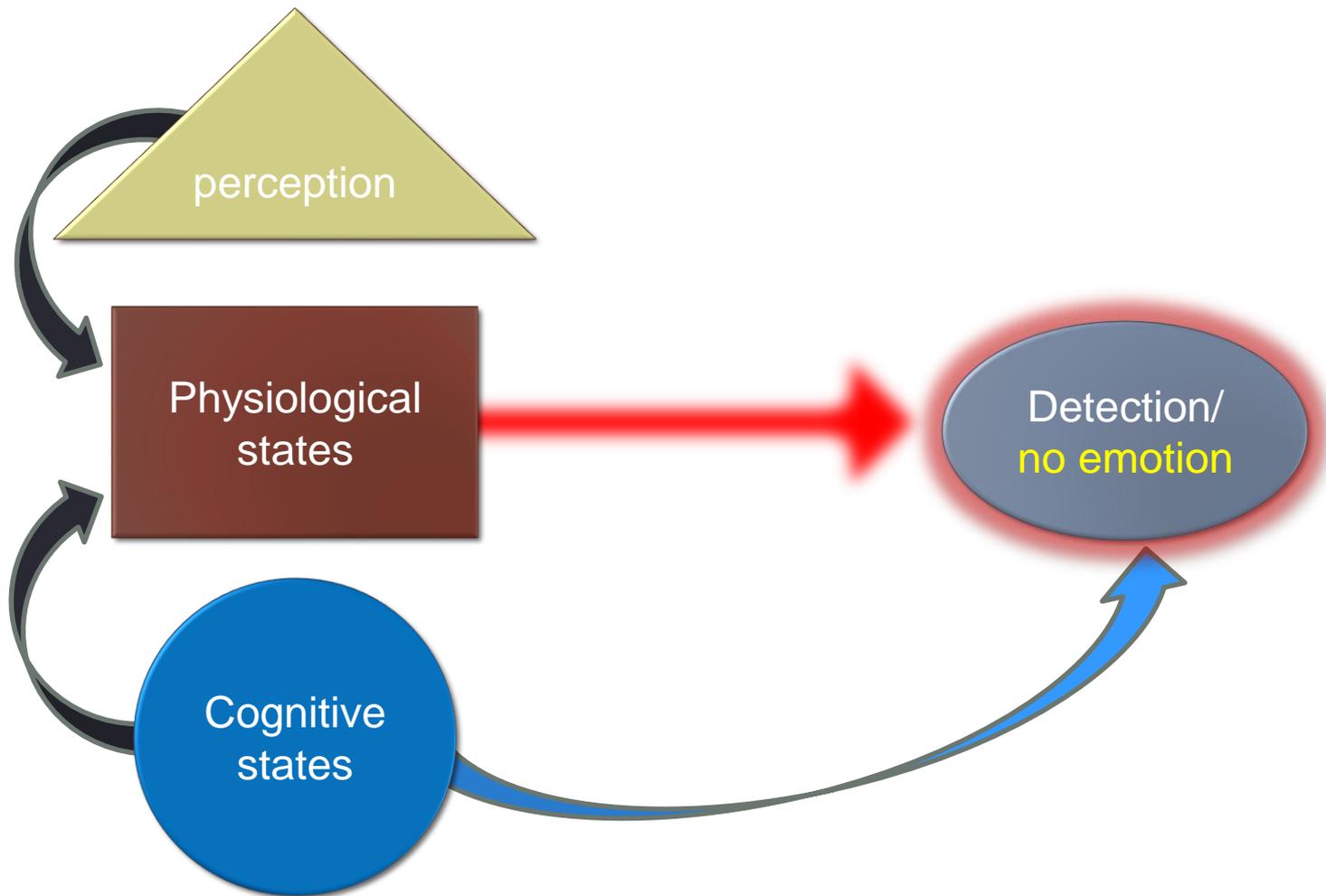
replies to NAO



replies to NAO



replies to NAO



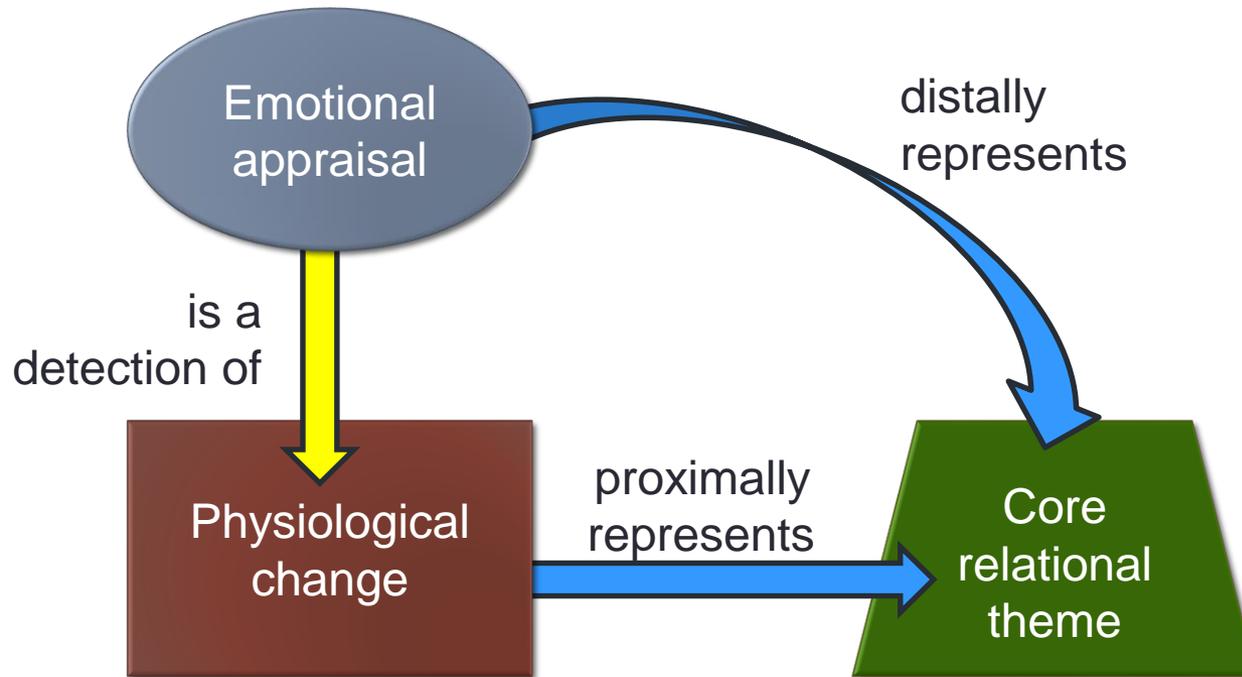
replies to NAO

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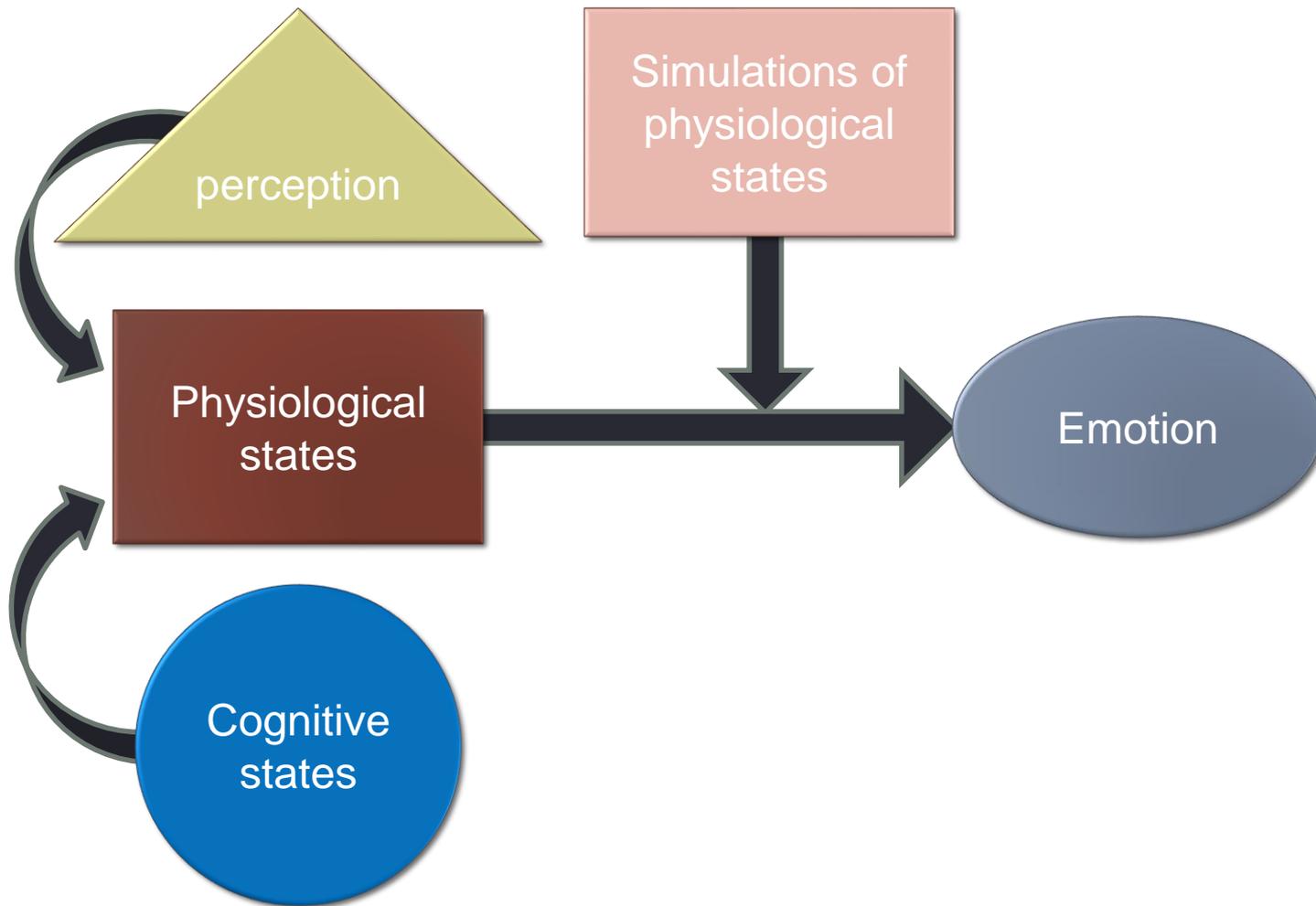
- (P1') The emotional behavior in S&S's study is not evidence of genuine emotional episodes.
- (P2') Sufficiently similar physiological conditions did not obtain between the epinephrine-ignorant and epinephrine-informed conditions.
- (P3) Even if these assumptions are true, there can be false detections.

So What Do We Learn?

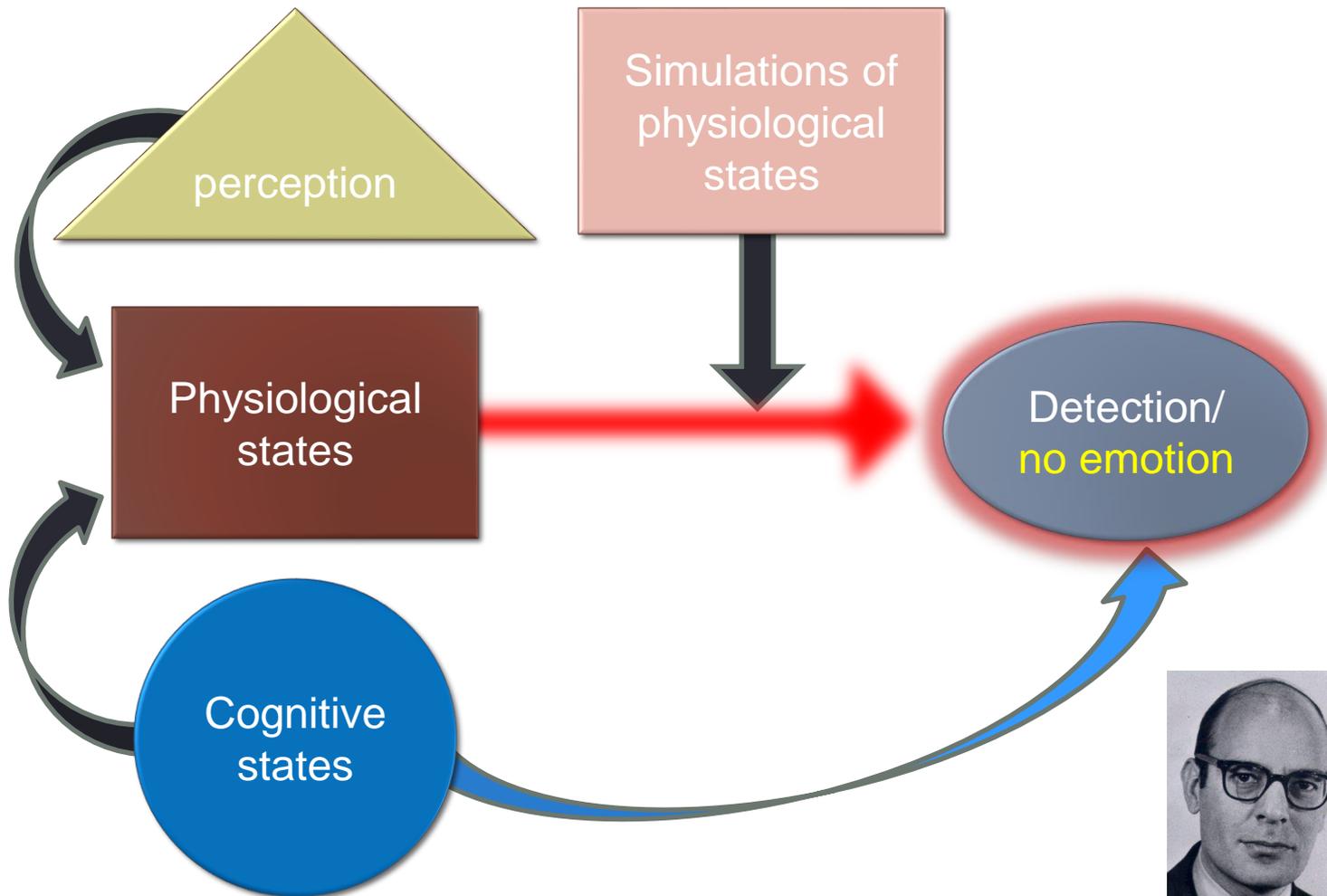
summary



summary



summary



speculative conclusions

Emotion is not just a body-to-brain affair.

Even if high-level cognition is phylogenetically new, it is highly integrated into phylogenetically old systems, including affective and emotional systems.

Emotion can be modulated by manipulating high-level cognition (think of cognitive therapy).

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