

Human Performance

M6X00915

Stress and Performance

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Lecture overview

- Contemporary models of stress
- Real world implications of chronic stress
- Research evidence for the relationship between stress, arousal and performance.

HSE Definition

“Stress is the adverse reaction people have to excessive pressure or other types of demand placed on them.”

Recap: What is stress?

- Natural reaction to excessive pressure.
- Perceived demands exceed ability to cope.
- Not a disease, but if excessive or prolonged can lead to mental & physical ill health.
- No such thing as positive stress (only positive pressure).
- Stress-related disorders a DSM classification.

Recap: Early models of stress

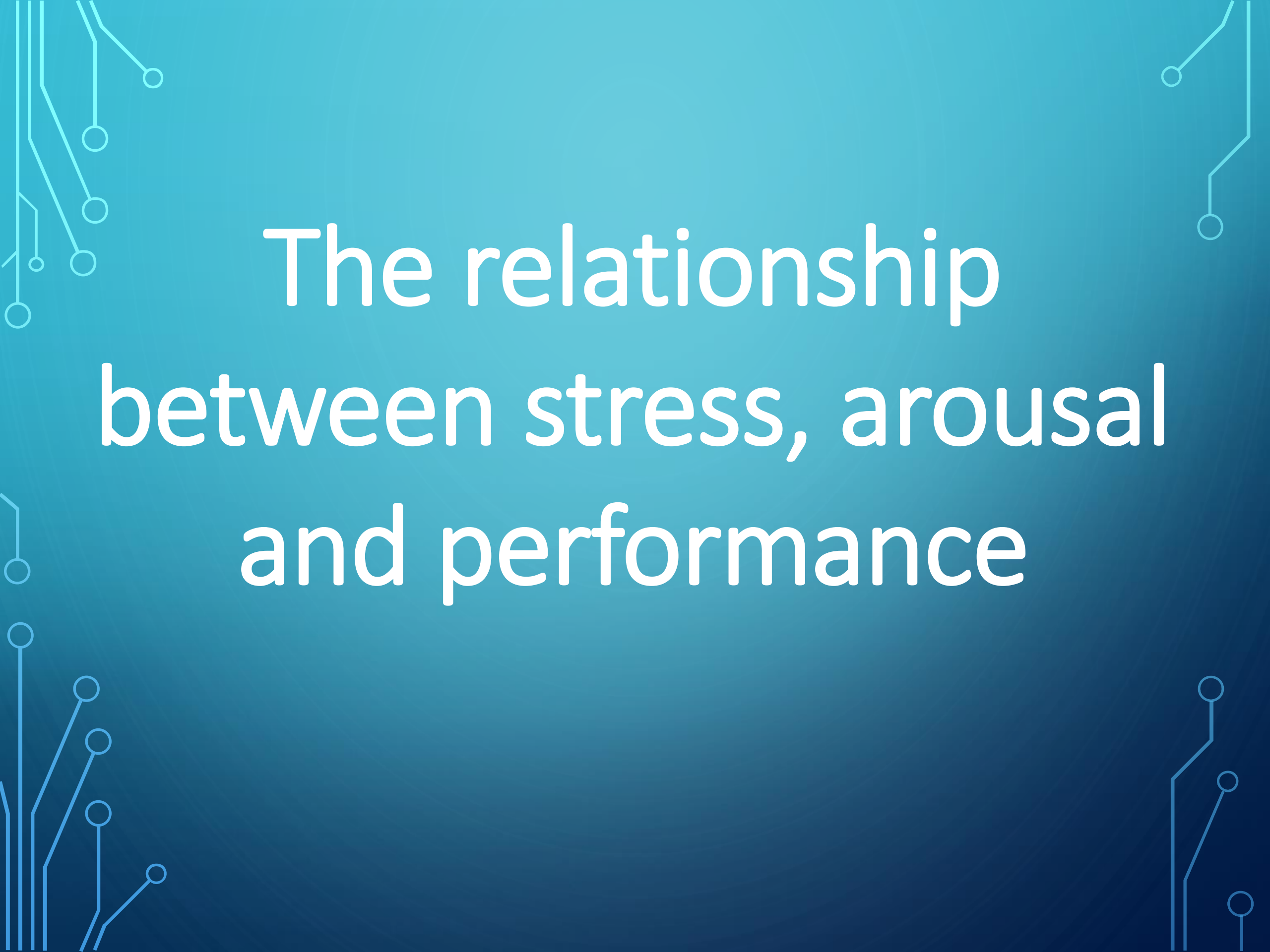
- Pressure caused by external stimulus.
- Reaction of organism to situations of threat to biological survival and responses:
 - Cannon: 'flight or fight' occurs under 'stressful' situation
 - Engineering model (physics)
- External forces exert pressure & produce strain
- Strain = Stress
 - Can measure stress a person is subjected to (Hinkle, 1973)
 - E.g., focus on daily hassles/stressful life events
 - Does not take account of individual differences

Recap: Selye's 1946 General Adaptation Syndrome (GAS)

- **Stress response involves 3 stages:**
 - Alarm reaction: lowered resistance, defence mechanisms activated (E.g., adrenalin)
 - Resistance: return to equilibrium unless stress agent continues
 - Exhaustion: failure of defence/adaptive mechanisms
- <https://www.youtube.com/watch?v=XADIs-A1iiM>

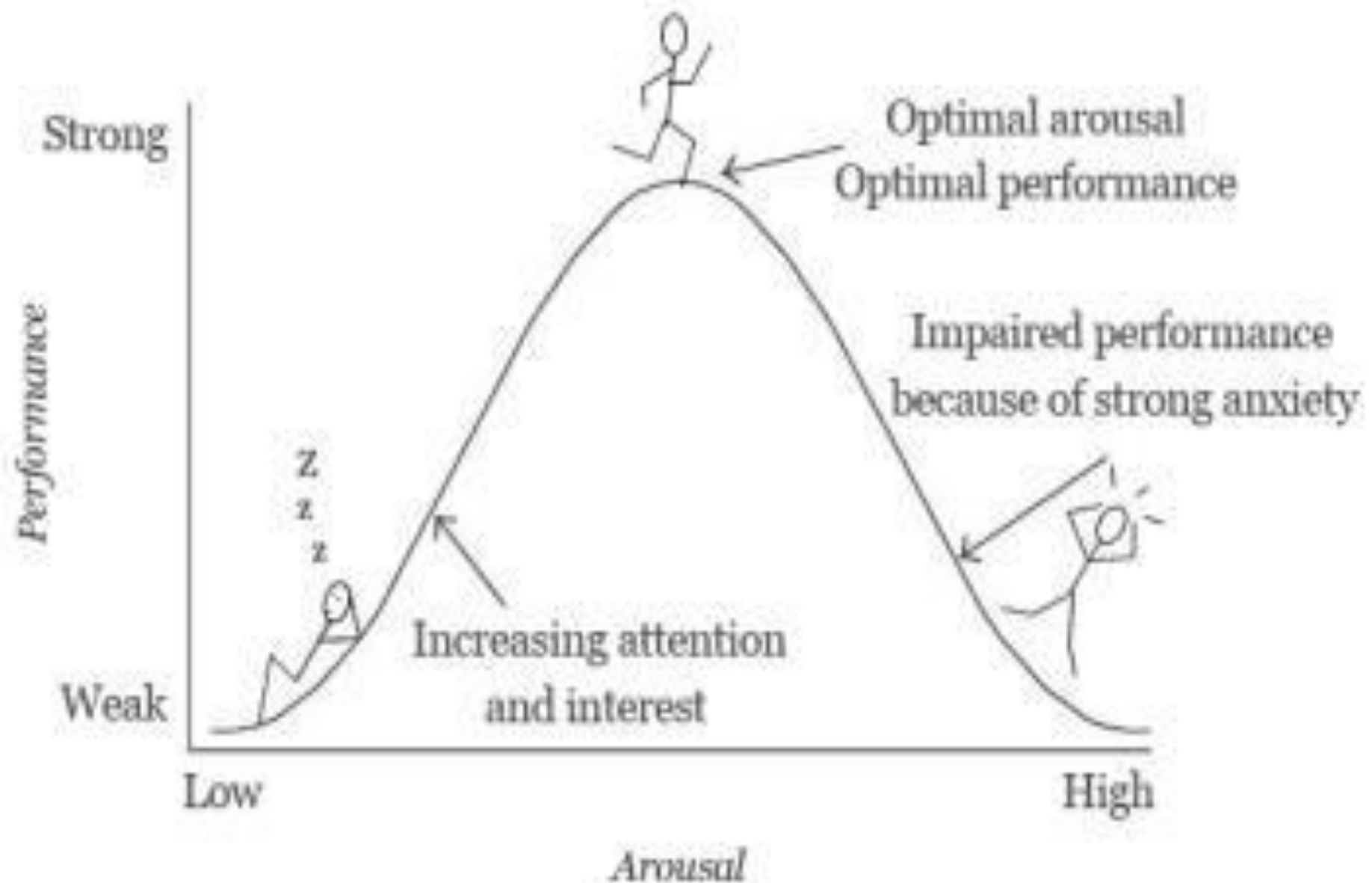
Recap: Stress as a transaction

- Psychological emphasis in definition
- Stress exists when person feels they cannot cope with demands of environment
- Interaction of person and environment
- Importance of *cognitive appraisals*
- Lazarus & Folkman: Transactional theory of stress and coping (1984)
 - Explains why some flourish under certain levels of stress and others don't.

The background is a solid blue gradient. In the corners, there are abstract white line drawings that resemble circuit boards or neural network connections, with lines and small circles at the ends.

The relationship between stress, arousal and performance





Yerkes-Dodson Law: An inverted U Curve

Critique of Yerkes-Dodson Law

- mice-to-man extension of findings
- generalizability of simple laboratory learning paradigm to real- world complex performance issues.
- failure to measure stress/arousal

Critique of Yerkes-Dodson Law

- Landers (1980):

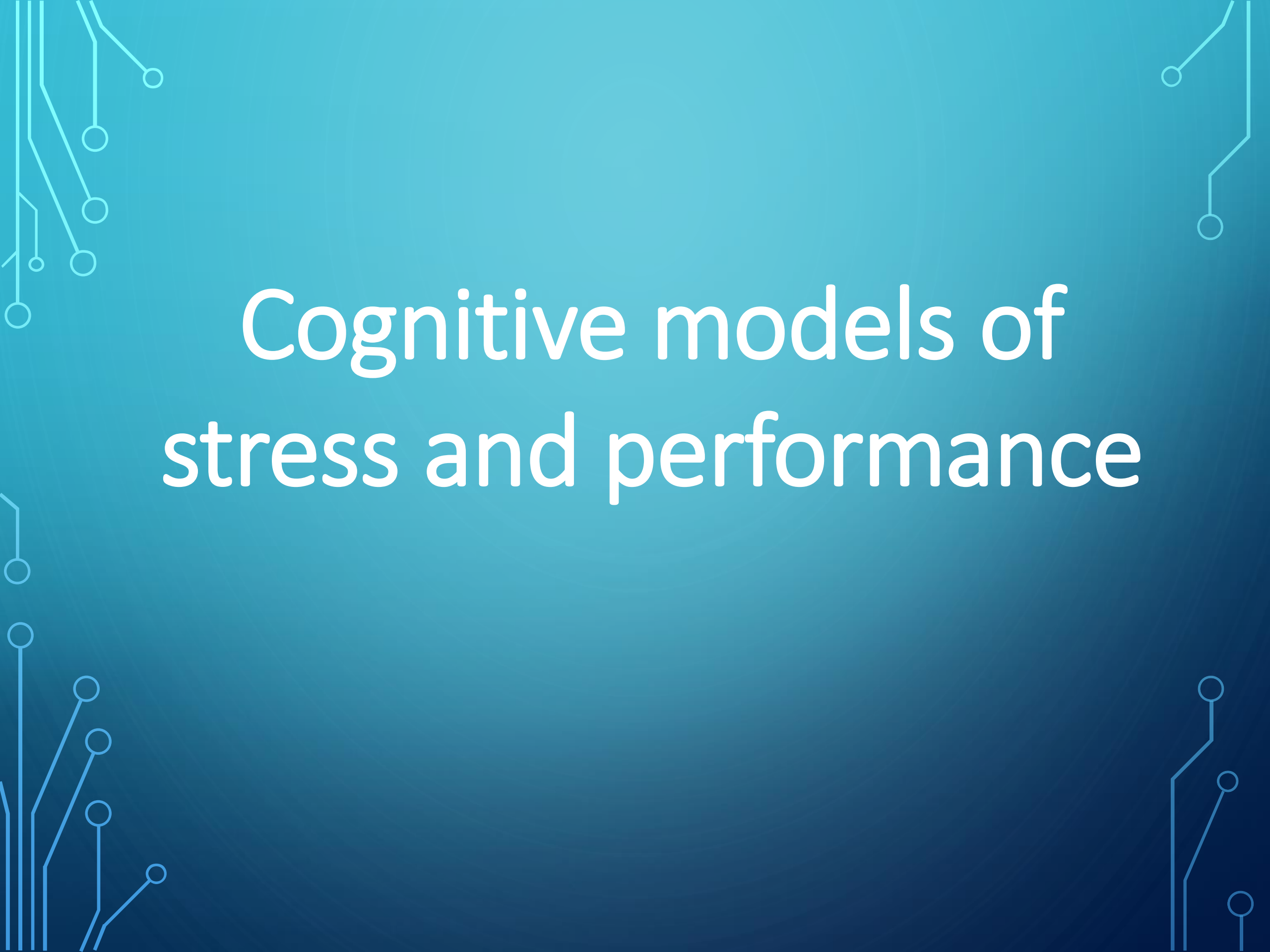
- “In actuality, the inverted-U hypothesis is not an explanation for the arousal performance relationship; it merely posits that the relationship is curvilinear without explaining what internal state or process produces it.” (p. 346)

- Neiss (1988): any investigation of psychobiological states should optimally include measures that have historically been associated with arousal:

- respiration, heart rate, electroencephalography, electromyography, etc.

Critique of Yerkes-Dodson Law

- Hancock & Warm (1989) formulated arousal replacement framework.
- The "trinity of stress": as consisting of...
 1. input features: environmental stress
 2. adaptation features: cognitive appraisal
 3. output features: changes in bodily functions & performance efficiency.
- Every stressor produced a unique array of effects on both cognition and performance.

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Cognitive models of stress and performance

The transactional model of stress (Lazarus & Folkman, 1984)

- Stress and coping process involves two main elements:
 1. an **evaluation** of a situation that produces negative emotions,
 2. **coping** efforts which attempt to reduce these negative emotions.

The transactional model of stress (Lazarus & Folkman, 1984)

- The process of evaluation is known as Cognitive Appraisal
 - An individual's evaluation of the meaning of a particular encounter for well-being.
 - The experience of stress or distress is the result of a transaction between the individual and the situation.

The transactional model of stress (Lazarus & Folkman, 1984)

- It is not the objective situation itself that causes stress, but.....
 - The individual's **evaluation of the threatening nature** of the situation.
- Thus, different people may evaluate a situation differently.
- This would result in different emotional responses and coping strategies.

A Cognitive Theory of Emotion

(Smith & Lazarus, 1990, 1993)

- Primary Appraisal

- “what is at stake in this encounter?”
- Motivational relevance
- Motivational congruence

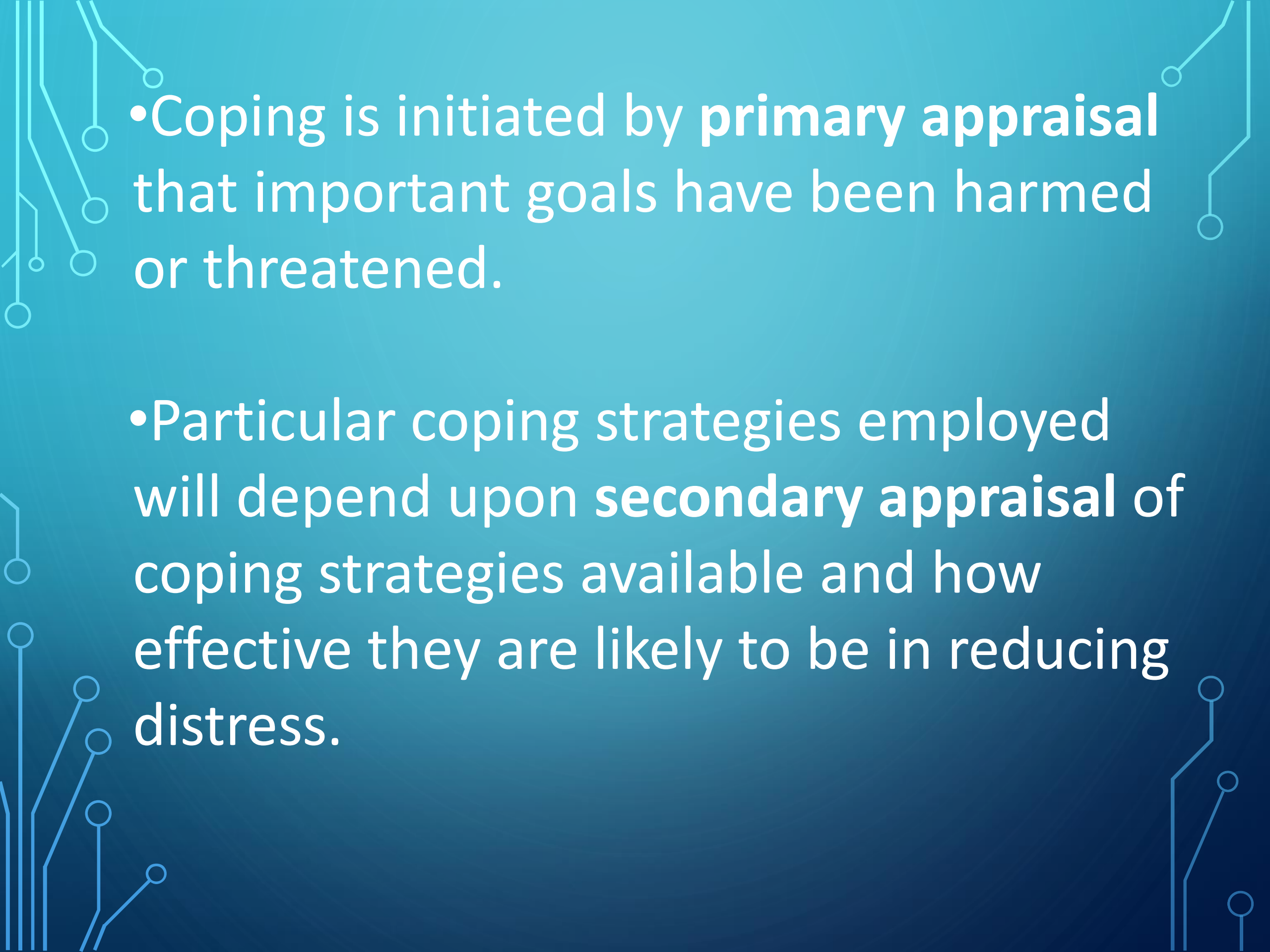
- Secondary Appraisal

- “what can I do to cope and how effective will this be?”

A Cognitive Theory of Emotion

(Smith & Lazarus, 1990, 1993)

- Primary Appraisal
 - Motivational relevance
 - Is this situation important to me?
 - Motivational congruence/incongruence
 - Is this situation consistent with my desires?
- $MR + MC =$ positive emotional response
- $MR + MI =$ negative emotional response
- Low MR = weak emotional response e.g., apathy

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- The background of the slide is a solid blue color. Overlaid on this background are several white, stylized circuit lines. These lines are composed of straight segments connected by small circles, resembling a network or a series of interconnected nodes. They are primarily located along the left and right edges of the slide, with some lines extending towards the center.
- Coping is initiated by **primary appraisal** that important goals have been harmed or threatened.
 - Particular coping strategies employed will depend upon **secondary appraisal** of coping strategies available and how effective they are likely to be in reducing distress.

A Cognitive Theory of Emotion (Smith & Lazarus, 1990, 1993)

- Secondary Appraisals:
 - Emotion-focused coping potential
 - Problem-focused coping potential
 - Future expectancy
 - Self/other accountability

Table 1: Appraisal components, core relational theme and the proposed adaptive function of the four previously modelled emotions (Smith & Lazarus, 1990)

Emotion	Appraisal	Core Relational Theme	Proposed Adaptive Function
Anxiety	•Motivational relevance •Motivational incongruence •Low emotion-focused coping potential	Ambiguous danger/threat	Avoid potential harm
Hope	•Motivational relevance •Motivational congruence •High future expectancy	Possibility of success	Sustain coping efforts
Challenge	•Motivational relevance •Motivational incongruence •High problem-focused coping potential •High future expectancy	Effortful Optimism	Motivate striving towards mastery or gain
Gratitude	•Motivational relevance •Motivational congruence •Other accountability	Other credit	Reinforce pro-social behaviour in others

Stress and real-world performance

- How may these models explain:

1. How people deal with stress in the workplace?
2. Why some people seem less effected by stress than others?
3. Why stress can lead to mistakes at work?

Stress and real-world performance

Critically consider

- Does stress in sport have a positive or negative impact on performance, and why?



Effects of Stress on performance

- INHIBITION:

- Hinders/suppresses performance

- PERFORMANCE OF SKILLS:

- Directly impacts information processing
- Motor elements performed less well
- Muscles tense
- Muscular control is reduced

- CONCENTRATION

- Difficult to maintain
- Span of attention is narrowed

- STRESS

- Awareness of being under stress acts as a stressor

Stress and real-world performance

Critically consider

- How would you plan a research study to explore the impact of stress on performance in sport?



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Coping strategies and performance

Problem-focused Coping

- Involves trying to change the situation to eliminate the cause of the stress.
- There are two main types of problem-focused coping strategies:
 1. Confrontive/interpersonal
 2. Planful problem-solving.

Emotion-focused coping

- Involves strategies aimed at reducing the level of distress experienced, rather than trying to change the actual cause of the stress.
- Includes techniques such as.....
 - Denial,
 - Positive reframing,
 - Emotional expression
 - Seeking social support

Avoidance-oriented coping

- Involves diverting attention away from the source of stress.
 - Person-oriented responses: seeking social diversions
 - Task-oriented responses: engaging in distracting activities.
- Concern over how adaptive/effective avoidant strategies are.



The applicability of self-regulation theories in sport: Goal adjustment capacities, stress appraisals, coping, and well-being among athletes (Nicholls et al., 2016).

Purpose of study: To explore whether goal adjustment capacities and stress appraisals predicted well-being in lead up to and during a competition.



- Ps: 212 athletes from UK ($n = 147$) or Australia ($n = 65$), who played team ($n = 135$) or individual sport ($n = 77$), and competed at international ($n = 7$), national ($n = 11$), county ($n = 67$), club ($n = 84$), or beginner ($n = 43$) levels.
- Completed measure of goal adjustment capacities & stress appraisals 2 days before competing & a coping and well-being questionnaires 3h after competition end.

Nicholls et al., 2016

Way an athlete responded to unattainable goal associated with well-being in period leading up to and including the competition.

Goal reengagement positively predicted well-being, whereas goal disengagement negatively predicted well-being.

Goal reengagement positively associated with challenge appraisals, which in turn linked to task-oriented coping, and task-oriented coping positively associated with well-being.

Monitoring V Blunting (Miller)

- Information-seeking preferences.
- Monitors likely to experience more distress in situations of uncertainty or where no information is available
- Blunters likely to experience more distress when overloaded with information.

Coping Effectiveness....

- Individual is likely to alternate between problem-focused coping and emotion-focused coping as a stressful encounter unfolds (Folkman & Lazarus, 1988).
- Also, rather than one type of coping strategy being superior across every situation, effectiveness of strategy depends on nature and duration of specific stressful situation (Forsythe & Compas, 1987).

Control.....

- Whether or not coping strategy is effective depends on degree to which desired outcome is within individual's control.
- Problem-focused coping most effective in situations that can be changed.
- Emotion-focused coping more appropriate when individual is in situation where it is not possible to change source of stress.

The “goodness of fit hypothesis”

The “goodness of fit” between chosen coping strategy and the changeability of the situation is important factor in degree of psychological distress experienced during stressful encounter

• Role of positive emotions in coping

- positive emotions play adaptational role in helping people cope with stressful situations

- Sustain coping efforts
- positive reappraisal
- problem-focused coping
- Benefit finding

(Antoni et al., 1991; Folkman, 1997; Fredrickson & Levenson, 1998; Folkman & Moskowitz, 2000).

Summary

- Major development & evolution in psychological models of stress, arousal and performance since early models.
- Extreme stress and arousal more likely to be associated with reduced performance than moderate levels of stress or arousal.
- Cognitive mechanisms of attention capacity, coping strategies and appraisal increase our understanding of the relationship between stress, arousal and performance



Video from Professor Susan Folkman

- Coping with stress; research on caregivers

<https://www.youtube.com/watch?v=ggi6dlwneuM>

