Context: Situational differences

John & Bea Lacey identified several factors affecting arousal in their groundbreaking research, most notably situation stereotypy, which is the effect of the type of challenge or stimulus on the stress response. The Laceys mostly concentrated on the difference between situations that posed mental challenges (like puzzles) and situations posing physical challenges (balancing, aiming, lifting, etc). These ideas were taken further by Joseph B Oxendine. Oxendine is a Native American who was a professional baseball player before he completed his doctorate at Boston University, so he perhaps has more first-hand experience than most sport psychologists. He based his theory on the Yerkes-Dodson Law, taking into account situation stereotype.


Oxendine starts off considering the Yerkes-Dodson Law, but points out that different tasks require different optimum levels of arousal to produce the best performance. For example, complex tasks are performed better when arousal is low, but simple tasks benefit from high arousal. He proposes three additions to the Yerkes-Dodson Law:

- High arousal produces optimal performance in “gross motor activities” (meaning acts of strength, endurance and speed)
- High arousal interferes with complex skills and fine muscle movements (coordination, precision, concentration)
- Slightly above-average arousal is better than normal or below-average for all motor tasks

To back up his ideas, Oxendine cites studies by the great biologist Walter Cannon. Cannon (1929) injected fatigued and rested animals with adrenalin. This had a huge effect on the fatigued animals, improving their response times in tasks, but didn’t benefit the rested animals. This shows the benefit of above-average arousal in fighting fatigue.

He goes on to suggest that the inverted-u curve has a different optimal level for different sports and cites several earlier studies in support of this. Carron (1965) investigated balance and found that while highly-aroused players did better at easy tasks, low-arousal was best for complex tasks. This leads Oxendine to argue that golf, gymnastics and diving all require low arousal and players will need firmer control to maintain optimal performance. Bergstrom (1967) found that experience helps reduce the effect of stress, so Oxendine argues that more experienced players should have higher optimal levels than beginners.

Finally, Oxendine suggests different levels of optimal arousal for different sports:

1. [Slight arousal] Archery, bowling, basketball free throw, golf (putting)
2. Baseball (pitching & batting), fencing, tennis, golf (driving)
3. Basketball, boxing, high jump, gymnastics, soccer
4. Running long jump, middle/long-distance running, swimming, judo
5. [Extreme excitation] Rugby tackle & scrum, sprint, weight-lifting
**Contribution to sport psychology**

Joseph Oxendine drew together various strands of research into arousal and produced a very persuasive theory of how these fit together in sporting situations. Unfortunately, his theories have not been validated by research. There are several reasons for this. Firstly, Oxendine is discussing “general arousal”, but after Lacey’s theory of Somatic Response Patterning, researchers were more interested in studying and measuring specific types of arousal. Secondly, Oxendine is rather vague about what he means by “complex skills” and “simple skills”, making it hard to operationalise his ideas for future research hypotheses. Finally, the “Cognitive Revolution” meant that by the 1980s Cognitive Psychology became the dominant perspective and researchers became more interested in looking at how players’ attitudes and expectations of a game affect their arousal, rather than situation stereotypy.

**Evaluation**

Joseph Oxendine is presenting his own ideas as a hypothesis about how optimal arousal is affected by sporting situations. He cites earlier studies to back up his ideas but he didn’t carry out any scientific research himself. This makes his paper a **review study**. Unfortunately, the research he cites was carried out on lab animals or on human volunteers under lab conditions, which isn’t easy to generalise to athletes.

Some of Oxendine’s terms are very vague. This creates a problem whereby, now matter how an athlete performs, his performance can be fitted into Oxendine’s theory. This means Oxendine’s theory lacks **predictive validity**, since it doesn’t help us decide which athlete will perform best in any given situation.

Oxendine seems to be aware that it would be difficult to back up his theories with empirical testing. He suggests that it should be easy to test the effects of arousal on strength and endurance, but more difficult on speed. The most realistic test would be to compare the speed of frightened people against non-frightened people. Oxendine suggests a child running away from a bully or a ghost will run faster than a child being told by a PE teacher to run faster! This is, of course, difficult (and unethical) to operationalise.

**Comprehension**

1. What is meant by situation stereotypy?
2. What is meant by optimal arousal?
3. Give sporting examples of gross motor activities and fine motor skills.
4. What research is the basis for Oxendine arguing that different sports have different optimal levels of arousal?
5. Suggest 5 more sports, one for each of Oxendine’s 5 arousal stages.
6. What is vague about Oxendine’s terminology?
7. Why does Oxendine’s theory lack predictive validity?
8. Why do you suppose this study is included in the syllabus?

**Exam Question**

(a) Outline research into factors affecting arousal in sport. [8 marks]

(b) Evaluate the usefulness of psychological research into arousal for sports. [14 marks]