

patterns either persist into adulthood or emerge again in adult long-term intimate relationships.

The social psychological roots of the anxiety construct can also be traced to William James's hypothesis that an emotional state is the result of an interaction of bodily changes and cognitive life. Stanley Schachter and Jerome Singer's famous two-factor theory of emotion sees an emotional state as the combination of a diffuse physiological arousal coupled with a cognitive interpretation of that arousal. When the source of arousal is easily identified, the emotion is easily labeled. However, when no arousal is expected, people are subject to cues in the environment that would stimulate an emotion. When those cues are vague and ill-defined, the subjective experience may be threatening and may produce anxiety.

The Nature of Anxiety

Anxiety is generally regarded as having a set of component parts that include cognitive functioning, physiological, emotional, and behavioral facets. One cognitive component is the expectation of uncertain danger, of course. Anxiety also uses up attention capacity. One consequence is that people with high test anxiety or high social anxiety become less efficient in their behavior, once anxiety is aroused, and their attention is divided. The disruptive impact of anxiety on behavior is illustrated by the large number of errors on performance-related tasks, such as speech-anxious individuals making more speech errors, stammering more, producing more "um" sounds.

Anxiety also stimulates intense vigilance and attention to threat. Anxious individuals are faster to find threat, even in a word recognition task (i.e., threatening words) that involves reaction times measured in fractions of a second. This shows their threat-focused information processing style.

Anxiety is associated with increases in cardiac reactivity (e.g., heart rate and blood pressure) and with other physiological indices (e.g., blood flow to major muscle groups, sweating, trembling, etc.). Physiological arousal is characterized by heightened activation of the automatic nervous system and serves to energize behavior. Physiological arousal can be interpreted positively (as elation, surprise, or attraction), or negatively (as fear, anger, or anxiety).

Most contemporary brain researchers agree that there are two anatomically distinct pathways that interpret physiological arousal: the behavioral approach

system (BAS) and the behavioral inhibition system (BIS). The BAS is sensitive to positive stimuli and gives rise to a pleasurable emotional state. The BIS is a parallel system associated with danger and punishment, giving rise to unpleasurable interpretations of events. The BIS is associated with the emotional state of anxiety. This association of the BIS to anxiety helps explain why anxiety is connected to attempts to escape or avoid things that are unpleasant (e.g., worry about making mistakes and withholding responses; shy-like behaviors, such as avoiding criticism or rejection; withdrawing affection in anticipation of being rejected). Of course, escape and avoidance are maladaptive when extreme, as in clinically diagnosed anxiety disorders, but are common in everyday life where nonpathological levels of anxiety occur.

Anxiety is often distinguished in terms of its state or trait nature. *State anxiety* is a transitory unpleasant emotional arousal stemming from a cognitive appraisal of a threat of some type. *Trait anxiety* is a stable, personality quality (stable individual difference) in the tendency to respond to threat with state anxiety. One common inventory to identify anxiety is the State-Trait Anxiety Inventory (Charles Spielberger and colleagues); research has also distinguished between a worry (i.e., cognitive) component of anxiety and an emotionality (i.e., arousal) component of anxiety.

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See also Arousal; Intergroup Anxiety; Social Anxiety

Further Readings

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APPARENT MENTAL CAUSATION

Definition

The theory of apparent mental causation outlines the conditions under which people experience a sense of

consciously willing their actions. Although people often feel that their conscious thoughts cause their actions, this feeling is illusory, as both their actions and their experience of willing them arise independently from unconscious sources. People feel apparent mental causation when their thoughts precede their actions (priority), when their thoughts are consistent with their actions (consistency), and when their thoughts are the only plausible cause of their actions (exclusivity).

An Example

Imagine that you're in the park on a summer day and a specific tree branch catches your eyes. You think, "I wish it would move up and down," and lo and behold, it moves. Not only that, it moves in the exact direction you imagined it moving, and when you search for alternative causes for its motion, you find nothing. There is no wind or mischievous tree-climbing kid that can account for the motion. Did your thoughts cause it to move? Given that there is nothing else to account for its motion (exclusivity), and that it moved right after you thought about it (priority) in perfectly the right direction (consistency), you feel as if you caused the branch to move, even though it seems impossible. In the same way, people infer causation between their own thoughts and actions when these principles are in place.

Conscious Thoughts Are Not Causal

Although it feels as though conscious thoughts cause actions, neurological evidence shows that this is highly unlikely. In a series of experiments, Benjamin Libet measured the brain activation of people as they made voluntary finger movements. Specifically, he measured the part of the motor cortex that is responsible for moving one's fingers, while also recording the time at which people said they consciously decided to move their finger. He found that participants' conscious decisions to move came after the time at which their motor cortex had started to activate. This means that their unconscious mind had already started to move their finger when they experienced the conscious decision to move it. As causes must precede effects, the conscious mind must be ruled out as the cause of people's actions. The theory of apparent mental causation suggests why and how it is that people nonetheless feel as though their thoughts cause their actions.

Three Principles of Apparent Mental Causation

Priority

People's thoughts must immediately precede their actions for them to experience mental causation. If thoughts appear after action, there is no experience of willing one's actions. Similarly, if thoughts appear too far in advance, this experience will also be lacking. This is exemplified by those instances in which you decide to grab something from your bedroom, only to find yourself standing beside the bed with no idea why you're there, and no experience of mental causation for your action.

Consistency

To experience mental causation, people's actions must match their thoughts, and although this is usually the case, consistency is often lacking in failures of self-control. Imagine yourself surfing the Web one night when you look up at the clock; you see that it's well past your bedtime and decide to shut down the computer and head to bed. Twenty minutes later, in spite of your intentions, you find yourself still madly clicking links, with no accompanying sense of mental causation.

Exclusivity

People experience mental causation when their thoughts are the only plausible explanation for their actions. While the link between thoughts and actions is usually clear, in some psychological disorders the principle of exclusivity is violated. For instance, one symptom of schizophrenia, called thought insertion, involves believing that another entity (e.g., the CIA) is inserting thoughts into one's head. If one's actions appear to be caused by the thoughts of another, the experience of mental causation will be subsequently undermined.

Evidence

Through a number of studies, Daniel Wegner demonstrated the importance of these principles in determining mental causation. He used a paradigm whereby a participant did a task together with an accomplice, in which it was questionable whether the participant or the accomplice was controlling the action. The task was based on an Ouija board, where it is difficult to tell who is responsible for moving the planchette to convey

messages beyond the grave. In this study, there were a number of pictures on the Ouija board, and at regular intervals the accomplice stopped the planchette at one of these pictures. Although the accomplice was always controlling which picture the planchette pointed to, the participant experienced a sense of mental causation for the action when he or she had a prior thought that was consistent with the action (e.g., by hearing the word *dog* over a pair of headphones just before the planchette stopped at the picture of a dog). This demonstrates that, even in situations in which the participant has no control over the task, the experience of apparent mental causation can be manipulated by varying the three principles that link thoughts to actions.

Implications

If people's experience of free will is not causative and instead results from the same unconscious process that determines their action, then how are people to be held responsible for their actions? This question, traditionally raised by philosophers, is a pressing concern for psychologists and legal theorists. Although the experience of conscious will is only a feeling, not a guarantee that one's thoughts have caused one's actions, this feeling allows people to make a working distinction between those actions that feel free and those that feel forced. The experience of mental causation can be used to provide a readout of how free one was in performing an action. If someone takes your hand and makes you pull the trigger of a gun, you will feel less-apparent mental causation than if you calmly, and after much thought, decided to pull the trigger. As people would not wish to be punished for those actions that lack an accompanying feeling of mental causation, they can use that standard in evaluating others. Legal decisions can be based on one's experience of mental causation, thereby leaving how a person makes judgments of responsibility relatively unchanged.

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See also Consciousness; Free Will, Study of; Nonconscious Processes

Further Readings

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APPLIED SOCIAL PSYCHOLOGY

Definition

Applied social psychology can be defined as using social psychological theories, principles, research findings, and experimental methods to understand social issues and to offer real-world solutions for a variety of social problems. As a discipline, applied social psychology functions on the premise that social problems are, at their heart, caused by human behavior. To understand and change these problem behaviors, applied social psychologists conduct a scientific examination of individuals' thoughts, feelings, and behaviors as they pertain to a variety of social influences. Through their research, applied social psychologists hope to offer practical suggestions for improving human social behavior in areas ranging from workplace productivity to safer sexual activity.

History and Background

While an earlier generation of psychologists had been predominantly interested in the structure and measurement of mental tasks in the laboratory, the 20th century saw a substantial increase in researchers advocating the application of theories outside the laboratory. In 1903, experimental psychologist Walter Dill Scott wrote *The Theory and Practice of Advertising*, suggesting that consumer habits could be influenced by emotional suggestions. In 1908, psychologist Hugo Münsterberg defined applied psychology as research adjusted to fit the problems encountered in everyday life. In works on industrial psychology, advertising, and education, Münsterberg, Scott, and others began exploring the possibilities of an applied psychology. In 1917, psychologist G. S. Hall founded the *Journal of Applied Psychology* to further explore the potential of this new field.

By the 1920s, there was an undeniable enthusiasm for applied research in the psychological community, despite its reputation as an "undignified" pursuit. In addition to the new challenges it presented, applied research was also attractive because private corporations often provided better salaries than did academic institutions. John B. Watson, former American Psychological Association president and one of the founders of modern behaviorism, began a successful career at