Presenting Anxiety Disorders From an Evolutionary Perspective

Michael L. Raulin
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Presented at the 1999 Annual Convention
of the Eastern Psychological Association
(Providence, RI; April 16, 1999)

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Teaching Psychopathology

- Subject matter is inherently interesting
- A delicate balance
  - Identify interesting phenomena
  - Sensitive portrayal of psychopathology
  - Recognizing that some students or their family members will suffer from psychopathology
- Evolution helps with this balance

Anxiety and Evolution

- Nature of Anxiety Disorders
- Using an Evolutionary Perspective
- Specific Disorders and Their Evolutionary Elements
- Advantages and Disadvantages
- Dealing with Objections

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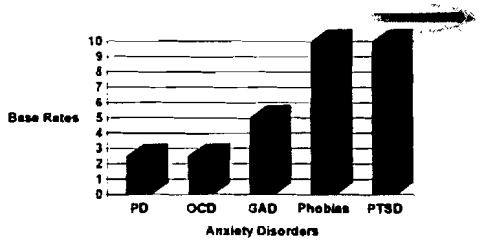
Anxiety Disorders

- Often covered first in textbooks
  - Easiest to understand
  - Relatively common
- Introduce psychopathology that is less stigmatizing generally
- Gets students thinking about distinction between symptom and disorder

Frequency of Anxiety Disorders



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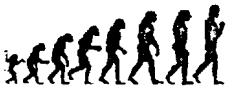
Evolution



- Unique perspective
- Integrates other perspectives (biological, behavioral, cognitive, sociocultural, etc.)
- Broadens the students' perspective on anxiety

World that Shaped Our Evolution

- Most of our evolution occurred in the simplified world of the hunter/gatherer
- Anxiety and Fear routinely were responses to life and death situations

World We Live in Today

- The world today is vastly different from the world in which we evolved
- More changes in a decade than occurred previously in a millennium

Issues in Evolution

- Have we outpaced our evolution?
  - Rapidly changing world
  - Bodies and minds that evolve slowly
- Evolution is driven by natural selection
  - Does not reward the most secure, happy, or satisfied organism
  - Rewards the one the survives and has offspring that survive

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Arguments Vary by Disorder

- Generalized Anxiety Disorder
- Panic Disorder and Agoraphobia
- Phobias
- Obsessive-Compulsive Disorder
- Posttraumatic Stress Disorder

Generalized Anxiety Disorder

- Anxiety as the Shadow of Intelligence
  - Ability to think hypothetically about the future
  - Anxiety motivates preparatory behavior
- Issue is not why we worry, but rather why some people cannot stop
- Worrying too little worse than worrying too much

Panic Disorder and Agoraphobia

- Fight or flight response
  - Instantaneous response that prepares us to flee danger
  - Symptoms are understandable
  - False alarm (low cost compared to miss)
- Agoraphobic response to
  - Crowded settings (e.g., malls)
  - Open spaces

Specific Phobias

- Not all phobic objects are created equal
- Concept of preparedness (Seligman)
- A preparedness will evolve if
  - objects are dangerous
  - objects are around during the course of evolution
- Demonstrated in multiple species

Blood-Injection-Injury Phobias

- Unique specific phobia
- A reflex (vasovagal syncope)
  - Drops blood pressure dramatically in response to puncture wounds
  - Humans capable of responding to images
  - Delicate balance
    - too little and one could bleed to death
    - too much and one is an easy victim of predators

Social Phobias

- Social creatures by nature
  - Success as species depends on it
  - Individual success depends on social facility and standing
- Also competitive by nature
  - Compete for resources of all kinds
  - Complex world where anxiety interferes
  - Social demands go well beyond instincts

Obsessive-Compulsive Disorder

- Important to remember and act on critical information
  - Obsessing about critical material aids memory
  - Appropriate behavioral compulsions to those memories increase survival
- Why does this normal mechanism not shut off in OCD?

PTSD

- Symptoms appear devastating
  - Reminders (nightmares, flashbacks)
  - Excessive autonomic arousal
  - Depression and alcoholism
- Behaviors rewarded by natural selection if they increase survivability
- Modern world's complexity probably contributes to decreased effectiveness

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Advantages

- Changes the way students think about anxiety and anxiety disorders
- Highlights key concepts
  - Dysfunction
  - Interaction of personal characteristics and the environment
- Focuses students on why the pathology exists rather than why the patients are pathological

Disadvantages

- Many students are ill prepared to understand evolutionary perspectives
- Tendency for students to take the story too seriously
- Can be controversial for some
  - Religious objections
  - Humanist objections

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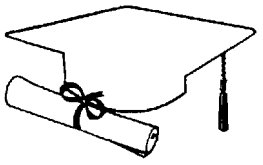
Religious Objections

- Evolution accepted by scientists
  - Links diverse scientific disciplines
  - Shaped much of current psychology
- Don't have to accept evolution
  - An explanatory concept
  - Organizes and provides insight
- Many religions once opposed are now accepting evolutionary theory

Want Should Students Remember

- Certainly not the list of disorders or diagnostic criteria for each
- Should Remember
  - Principles that define psychopathology
  - How to conceptualize and search for causes
  - Sympathetic perspective on those who suffer from psychopathology



Summary

- Much to contribute to our understanding of anxiety disorder
- Broadens students' perspectives
- Integrates other theoretical perspectives (biological, behavioral, cognitive)
- Highlights importance of environment

PRESENTING ANXIETY DISORDERS FROM AN EVOLUTIONARY PERSPECTIVE

Michael L. Raulin
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An evolutionary perspective integrates psychological material by focusing students on both the functional significance of behavior as well as its biological and genetic underpinnings. In abnormal psychology, the evolutionary perspective stretches the student's perspective beyond the pathology to such critical issues as (1) the role of environment in determining what is pathological, (2) the functional significance of psychopathologies, and (3) why specific symptoms develop. Examples of each of these issues for anxiety disorders are presented.

There are few areas in psychology that produce as much fascination, puzzlement, and trepidation than abnormal psychology. Students are intrigued by the unusual behavior of psychiatric patients at the same time that they wonder whether they or a love one might someday succumb to such pathologies. It is a delicate balance for the instructor to capitalize on students' inherent interest in psychopathology, which is often a bit voyeuristic, while at the same time instilling a sense of empathy for those who suffer from psychopathology.

Students tend to find it easier to identify with anxiety disorders. Students understand anxiety because they have experienced it, although most have not experienced anxiety to the point that they would qualify for an anxiety disorders diagnosis. But since the base rates for various anxiety disorders range from 2 to 10% (APA, 1994), it is likely that many students have either first or second hand knowledge of these disorders. Perhaps for this reason, the majority of abnormal psychology texts cover anxiety disorders early in the text. The manner in which anxiety disorders is presented to students will likely affect how students view many psychopathologies.

Psychopathology and Evolution

Students naturally want to know what is wrong with psychiatric patients. But this question is too narrow if students are to truly grasp the complexity of psychopathology. Students also need to understand how disorders develop, how they are maintained, what impact they have on day-to-day activities, what impact they would have had in the past, and what advantages pathologies might provide. An evolutionary perspective raises each of these questions. It also has the advantage of reducing students' focus on pathology and increasing their focus on functional adaptation. As a consequence of this change in focus, they often begin to appreciate that the pathology is separate from the person who experiences it. Therefore, they are able to empathize more readily with patients.

Unfortunately, students often are ill prepared to understand evolutionary argument because they do not appreciate some of the most fundamental aspects of evolution. Two points are particularly important. Students must understand that the process of evolution is slow. Our own evolution occurred over millions of years. The complex behavior patterns and physiological structures that support those behavior patterns are shared by many other species. But even if we look at the evolutionary period during which own most immediate evolutionary ancestors developed (the last million years or so), the pace of evolutionary change has been gradual. However, in the last few thousand years, especially the last two hundred years, human being have entirely reshaped the environment in which they live. We see more change now in any given 10-year period than our evolutionary ancestors may have seen in a millenium. This leads to a critical question: Could we have outpaced our own evolution by changing the world and the demand of the environment faster than we can adapt to those changes? Once a student starts to entertain this question, it is easy to get them to appreciate that psychopathology is not something that a person possesses, but rather is defined by the interaction of the behavioral patterns of the individual and the environment that they live in. A person well suited to a particular environment could be ill equipped to handle a different environmental situation.

There is a second issue that students need to understand about evolution if they are to appreciate possible evolutionary contributions to

psychopathology. Evolution is driven by the process of natural selection (Darwin, 1859), and natural selection is driven by survival and reproduction. It does not matter whether the person is happy or fulfilled. If they survive while others do not, by definition they have superior genes. Since the time of Freud, we have considered personal distress as a sufficient criterion for defining psychopathology, even when there may be little or no indication of dysfunction. This is now more a popular notion of psychopathology than what is represented by the current DSM (APA, 1994). Nevertheless, it is the notion that many students bring into our classes. By challenging this concept, students are forced to confront the concept of dysfunction as distinct from displeasure. Dysfunction is always defined in the context of what is expected. Therefore, once again, the student is confronted with the person-environment interaction that is critical in the understanding of psychopathology.

The Specific Disorders

Each of the anxiety disorders (generalized anxiety disorder, panic disorder, phobic disorders, obsessive-compulsive disorder, and stress disorders) lend themselves to an evolutionary perspective. Furthermore, with many of these disorders there are available data relevant to an evolutionary analysis. Listed below are brief summaries of evolutionary issues for the various anxiety disorders.

Generalized Anxiety Disorder (GAD)

Liddell (1949) referred to anxiety as the shadow of intelligence. His point was that most of the time when we are anxious, what we are anxious about is not in front of us. We may face it in an hour or a week or a year, but at the moment it is in our head. Our intellect—our ability to think hypothetically about the future—is the source of most of our anxiety. The anxiety we experience when we consider what might go wrong in the future motivates our behavior today to be prepared for what might happen. This process has tremendous survival value and is one of the reasons that we have been so successful as a species. With GAD then, the question is not why people worry so much. The evolutionary advantage of worrying is clear. Rather, the question is why a small group of people worry excessively, thus distracting themselves from the immediate demands of everyday functioning.

Panic Disorder

Panic Attacks. The panic attack is essentially the body's fight or flight reflex (Barlow, 1988). This critical reflex prepares us to respond to life-threatening danger by mobilizing all of our resources to the task of escape. Most of the symptoms of a panic attack are easily understood when one recognizes the intended purpose of the fight or flight reflex. Nevertheless, when no danger is present, a panic attack can feel as if the body and mind are out of control. The occasional false alarm that is a panic attack is much less costly than failing to respond to a real danger—a failure that could easily lead to death. Still, the cognitive capacity of human beings and our tendency to want to understand what is happening around us may well cause us to over-respond to panic attacks.

Agoraphobic Avoidance. The popular press tends to define agoraphobia in two ways—fear of the marketplace or fear of open spaces. Students often want to know which one is correct. The definition of agoraphobia in the DSM is much closer to the concept of the fear of the marketplace. Panic patients are likely to fear shopping malls, grocery stores, restaurants and theaters, trains, planes, and roadways that they could get trapped on (e.g., long bridges, limited access highways, etc.). These are situations where escape is difficult if the person were to have a panic attack or where they might be embarrassed by their efforts to escape. But a surprising number of panic patients also experience a puzzling fear of open spaces. Why should they fear these two very different situations? An evolutionary perspective can give us some insight into this question. The fight or flight reflex was critical to our survival during a period of evolutionary history when attacks by predators was common, so it would not be surprising to expect that this fight or flight response is implicitly associated with risk from predators. When are organisms most at risk from predators? They would be most at risk when (1) they are easily spotted (as they would be in an open space) or (2) when they are trapped with few escape routes (Neese & Williams, 1994). So it should not be surprising that both of these situation create anxiety and motivate avoidance in panic patients, for whom the periodic panic attacks hearken to a time when our survival depended on avoiding attacks by predators.

Phobic Disorders

Specific Phobias. Learning to fear dangerous objects or situations quickly is critical to survival. Seligman (1971) first suggested that the brain may

be prepared to learn to fear certain objects or situations more readily than other objects or situations and that this preparedness evolved in both human beings and other animals. The objects that we are prepared to fear should be dangerous and should have been around long enough for evolutionary pressures to respond to them. For example, many snakes are dangerous and snakes have been around for millions of years. In contrast, guns are dangerous but have been around only a few generations, and flowers have been around for millions of years but are generally not dangerous. If the concept of preparedness is accurate, we should learn to fear snakes quickly, whereas a more dangerous item like a gun will take longer to fear. Research generally supports this expectation (Cook, Hodes, & Lang, 1986).

Blood-Injection-Injury Phobias. The blood-injection-injury phobia is an interesting specific phobia with its own evolutionary significance. People with this phobia often will faint when given an injection or when blood is drawn. Sometimes just the sight of blood or the thought of bleeding will trigger this response. The fainting is due to a reflex called vasovagal syncope, which triggers a drop in blood pressure usually in response to a puncture wound. This reaction can have tremendous survival value in that it reduces the chance that we will bleed to death from such a wound. In the population, there is tremendous variability in the strength of this syncope response. From an evolutionary perspective, whenever we see such wide variability in a characteristic we should suspect that the characteristic is at times adaptive and at other times maladaptive. If most of our puncture wounds in our evolutionary history were the result of a fall, a brief period of unconsciousness due to low blood pressure would be a low cost way of decreasing our chance of bleeding to death. If, on the other hand, most of our puncture wounds were the result of a predator attack, fainting would pretty well seal our fate. So the adaptability of this trait depends on the probability of predator attacks in our environment, which varies dramatically across the planet.

Social Phobias. Social phobias present a different evolutionary problem. We are social creatures by nature. Our great success as a species is largely the result of our cooperation with others. However, we are also competitive creatures. We compete for resources, territory, and access to potential mates, often with the same people that we must cooperate with in other contexts. This dual nature can create considerable tension. It is not surprising that performance anxiety is intense given the consequences of many of our actions. Furthermore, the complexity of what is expected of us is constantly changing. In today's modern world we are often asked to accomplish emotionally and intellectually demanding tasks and to do those tasks in a manner that makes them appear to be easy. Given the interference that intense anxiety has on performance of complex tasks, it is not surprising that this social performance anxiety can spiral out of control in some individuals.

Obsessive-Compulsive Disorder (OCD)

Our need to remember and act on critical information that we come across, whether it is a thought, an observation, or a communication from someone else, can be critical to survival. Today we can write a note to ourselves, but written language is a very recent evolutionary accomplishment. Long before reminder notes, the brain evolved mechanisms for coding critical thoughts as too important to forget. We obsess about such thoughts, repeating them in our mind and thus increasing the chance that we will remember them. Appropriate action turns off the obsessions. This process is obvious in our day-to-day functioning. But the brain mechanisms that control this process normally (primarily the basal ganglia and the orbitofrontal lobes) appear to be dysfunctional in OCD. The system works, it just does not turn off the way it should.

Stress Disorders

The debilitating intensity of PTSD symptoms may lead one to suspect that natural selection could not possibly favor such a response to stress, even life-threatening stress (Neese & Williams, 1995). Two things must be remembered, however. The first is that natural selection is not influenced by the comfort of the organism; it is influenced only by the viability of the organism (does it survive and reproduce). A miserably unhappy organism that survives and reproduces is genetically superior to a happy organism that dies before reproducing. The second is that the debilitating aspects of PTSD may have been much less debilitating in a far simpler world of several million years ago. The hyperarousal and constant reminders of a dangerous encounter may have considerable value in a world where danger is frequent, but may have little survival value in a world where most people face life-or-death situations infrequently.

Dealing with Objections

It is common to have individual students question the validity of an evolutionary perspective. This may occur in the classroom or in individual meetings

with students after class. This situation can be uncomfortable for many faculty, who want to avoid offending students by challenging their religious beliefs and principles. Since this is a common issue, faculty have to be prepared to deal with it if it is raised.

There are three arguments that can be presented to address this issue. The first is that even though some question evolution on religious grounds, there is no scientific theory that is more widely accepted or that integrates findings from such a wide diversity of scientific disciplines than evolution. Although scientists argue vigorously about the details of evolutionary development, few scientists would question the basic concept of evolution. This argument is important, but it almost never convinces students to change their religious objects.

A second argument is that you do not have to believe in the concept of evolution to use it as an organizational principle. If the student wants, they can think of evolution as an explanatory fiction—a good story—that helps them to remember a diverse set of facts about psychopathology. This argument often takes naïve students by surprise because they have never been exposed to the values of science, where theories are considered tentative and subject to change as new data challenge them.

A third argument is that many religions that were once opposed to the concept of evolution, such as the Catholic church, now accept the concept as not inherently contrary to church teachings. Now of course, this argument does not negate the stand of other religions, but it does suggest that religions, just like science, may change their position on important issues when faced with contradictory data or persuasive arguments.

I make a fourth argument that most instructors cannot make. I was taught evolutionary theory in my high school biology course by an outstanding instructor, who happened to also be a Catholic nun. Although deeply religious, she was far too good a scholar to teach anything but the best biology class that she could. I give her and the leadership of the Catholic High School I attended credit for teaching something that was quite controversial at the time.

Summary

An evolutionary perspective is unique in that no other perspective on psychopathology integrates other perspectives so effectively. Not only is the biological and genetic perspectives highlighted, but also environmental issues (e.g., the sociocultural perspective) and our adaptability (e.g., the behavioral and cognitive perspectives). Furthermore, an evolutionary perspective broadens the focus of students beyond the simple cataloging of symptoms to questions of how pathologies develop and how they are maintained. Thus, students tend to see pathology less as a characteristic of the patient and more as an interaction between the characteristics of patients and the environment in which they live. Among other things, this fosters a more empathic view of patients while still allowing the instructor to capitalize on the inherent interest that most students have in psychopathology.

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