PsychSim 5

**Interactive Graphic Simulation
and
Demonstration Activities for Psychology**

THOMAS E. LUDWIG

WORTH PUBLISHERS

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Hope College

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Preface

PsychSim, an award-winning software from Thomas E. Ludwig, returns in a rich new iteration, bringing to life a wide range of psychology's core concepts and methods. This fifth edition, which contains more than twice the number of simulations as before, as well as updated animations and graphics, offers a unique way for students to better understand the major concepts of general psychology. These original interactive activities involve students in the practice of psychological research by having them play the role of an experimenter (conditioning a rat, probing the hypothalamus electrically, working in a sleep lab) or of a subject (responding to visual illusions or tests of memory, interpreting facial expressions). Other simulations provide dynamic tutorials or demonstrations of important principles and processes.

Features
PsychSim 5 contains the following features:

Simulated Experiments allow students to act as subject or experimenter in recreating experiments. The data are drawn from archival sources or collected on the spot from the student's responses. Results are explained after the experiment has been completed.

Interactive Demonstrations highlight key principles with animations, illustrations, and surveys—to reinforce important concepts in memorable ways. These activities emphasize a hands-on approach to learning, and provide coverage for all the major areas of psychology.

Digitized Video Demonstrations are author Thomas Ludwig's pedagogically effective combinations of instructional text, critical thinking questions, and video clips. The digitized video clips are a brief and effective means of bringing these key concepts to life.

Online Assessment Powered by Question Mark allows students to answer periodic critical thinking questions and receive instant feedback. Results are reported to instructors who can easily go into a protected Web site to view results by quiz, student, or question... or can get weekly results via E-mail.

Acknowledgments

Credits

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*Some elements of PsychSim 5 come from PsychOnline as developed by Sumanas, Inc.

System Requirements and Installation Instructions

Minimum System Requirements:

Windows

- Windows 95, 98, ME, NT, 2000, XP Operating System
- Pentium II Processor/266 MHz or faster
- 800x600 screen resolution or above
- 32 MB RAM
- 256 colors
- 4x CD-ROM

Macintosh

- OS 9 or OS X Operating System
- Power Macintosh G3 or G4 recommended/266 MHz or faster
- 800x600 screen resolution or above
- 32 MB RAM
- 256 colors
- 4x CD-ROM

Recommended Settings for *Windows* and *Macintosh*:

- 1024x768 screen resolution or above
- 64 MB RAM
- 8x CD-ROM

Installation Instructions: WINDOWS

1) Put the CD in the CD-ROM drive. Double click the "My Computer" icon on the Windows desktop and then double click the "PsychSim5" CD icon. Double-click on "PsychSim5.exe" to launch the program.

** Although you do not need a live Internet connection to run the program, you will need an Internet connection should you wish to submit your progress to your instructor.

Installation Instructions: MACINTOSH

1) Put the CD in the CD-ROM drive. Double click the "PsychSim5" CD icon that appears on your desktop then double click on "PsychSim5" to launch the program.

** Although you do not need a live Internet connection to run the program, you will need an Internet connection should you wish to submit your progress to your instructor.

***Please note that older Macintosh computers may be running a version of the Flash Player which requires CarbonLib version 1.3.1 or greater. For the program to start, CarbonLib will need to be installed. For more information, please see **http://www.macromedia.com/go/download_carbonlib**.

For technical support, call: 800-936-6899; or E-mail: techsupport@bfwpub.com

PsychSim 5

Contents

The PsychSim5 Activities

Psychology's Timeline

Purpose: To provide a more comprehensive synopsis of the origins of psychology, the early history of psychology as a discipline, and the major themes in twentieth century psychology

Summary: This activity will take you on a tour through the history of psychology. You will learn how psychology grew out of philosophy and medical physiology, and will become acquainted with some of the pioneers of psychology as a scientific discipline.

What's Wrong With This Study?

Purpose: To review some of the major pitfalls in designing a research study

Summary: In this activity you will review the basic methodology used in psychological research, practice applying research methodology to new situations, and consider specific pitfalls that could reduce the value of the research findings.

Descriptive Statistics

Purpose: To describe the common measures of central tendency and variability and demonstrate their use in summarizing a data set

Summary: This activity introduces you to the basic statistics that researchers use to summarize their sets of data. You will learn how to produce a distribution of scores and how to graph the distribution. After descriptions of the measures of central tendency (mode, median, and mean) and variability (range and standard deviation), you will be able to manipulate the scores in a distribution to see how each score affects the descriptive statistics for that distribution.

Correlation

Purpose: To demonstrate the use of scatterplots and to clarify the meaning of the correlation coefficient computed from them

Summary: This activity demonstrates the use of scatterplots to visualize positive and negative relationships. After reviewing the interpretation of positive and negative correlations, we'll test your skill at guessing the approximate value of correlation coefficients for various scatterplots. Then you'll be able to alter the scores in a data set to see the effects on the value of the correlation coefficient.

Neural Messages

Purpose: To describe and simulate the basic principles of axonal conduction and synaptic transmission in the nervous system

Summary: This activity explains the way neurons communicate with each other. You will review the basic types of neurons and the parts of a neuron, and then learn how neurons "fire" (generate impulses) and send messages to neighboring neurons.

Hemispheric Specialization

Purpose: To explain how research on split-brain patients has helped us understand the special abilities of the two halves of the brain

Summary: This activity describes what researchers have learned about the special abilities of the left and right sides of the brain. After a brief review of the way that information is carried from the main sensory channels to the brain, you will test the responses of a simulated "split-brain" patient to demonstrate that, for most right-handers, the main language center is located in the left hemisphere, and the right hemisphere is specialized for spatial tasks. Then you will carry out the same experiments with a simulated "normal" individual to explore the functioning of the hemispheres in an intact brain.

Brain and Behavior

Purpose: To review the major divisions of the brain (brainstem, cerebral cortex), the important structures within each region, and the chief functions of each brain structure or area

Summary: In this activity you will take a tour of the human brain, exploring the major brain regions to discover the functions of each region or area

Dating and Mating

Purpose: To explain evolutionary psychology's explanation of sex differences in mate selection

Summary: In this activity you will explore your own preferences for an "ideal mate," then consider the perspective of evolutionary psychology on this important issue.

Mind-Reading Monkeys

Purpose: To explain an important new research area that bridges the fields of evolutionary psychology, neuroscience, and social psychology

Summary: In this activity you will explore one of the brain mechanisms believed to foster the evolution of human language and culture. The focus of the activity is a simulated experiment in which you will play the role of a researcher who is recording the activity of "mirror neurons" in the premotor cortex of monkeys as they perform various tasks or watch others perform those tasks. The results will demonstrate that mirror neurons are involved in observational learning, and may have played a major role in the evolution of language and culture.

Cognitive Development

Purpose: To describe Piaget's theory on the growth of intelligence and simulate the performance of three children of different ages on some of Piaget's tasks

Summary: After presenting background information on Jean Piaget, this activity explains some of the basic concepts of his theory, including schemas, operations, and assimilation/accommodation. Next, Piaget's stages of cognitive development are described and illustrated with examples. In the last segment, you act as the experimenter, testing 4-, 7-, and 13-year-olds on Piaget's conservation and seriation tasks.

Conception to Birth

Purpose: To review the three phases of prenatal development, from the germinal phase (fertilization to about 2 weeks) through the embryonic phase (3 weeks to about 8 weeks) and the fetal phase (9 weeks to birth)

Summary: This activity will help you understand the sequence of prenatal development. You will take a tour through the three phases of development between conception and birth—with illustrations and animations of each stage of the process.

Who Am I?

Purpose: To review Erikson's perspective on identity formation and Marcia's categories of identity status during adolescence

Summary: This activity will help you understand Erik Erikson's perspective on identity formation, as well as James Marcia's four steps or stages in the identity process. The activity will also help you reflect on your own progress toward achieving a secure and stable identity.

Signs of Aging

Purpose: To explain the physical changes that occur in middle age and late adulthood

Summary: In this activity you will explore the main aspects of physical aging.

The Auditory System

Purpose: To explain how we hear and how the physical nature of the sound wave determines the quality of the sound experience

Summary: This activity covers the characteristics of sound that are important for hearing, and describes the structure of the ear and auditory pathway. You will be asked to locate the parts of the ear on a drawing. The activity simulates the transmission of a sound wave through the outer, middle, and inner ear and shows how the cochlea converts the mechanical energy to neural

impulses. Next, it explains the concepts of frequency, amplitude, and waveform and shows how these aspects of the sound wave are related to the experience of pitch, loudness, and timbre.

Colorful World

Purpose: To review the principles of color sensation; includes a comparison of the trichromatic and opponent-process theories of color vision

Summary: In this activity you will explore the principles of color vision, and will demonstrate some aspects of color sensation with your own eyes.

Visual Illusions

Purpose: To demonstrate and explain four well-known visual illusions

Summary: This activity offers the opportunity to test your susceptibility to four famous visual illusions. In the Müller-Lyer, Ponzo, Horizontal-Vertical, and Poggendorf illusions you will be asked to adjust the length or position of one part of the stimulus to match the apparent length or position of another part. Your results will be displayed and interpreted.

Your Mind on Drugs

Purpose: To describe the basic types of psychoactive drugs and the neural mechanisms of drug action

Summary: In this activity you will explore the behavioral effects of some common drugs that influence the brain—producing changes in our arousal level, our mood, our perception of our environment, and our actions.

EEG and Sleep Stages

Purpose: To describe the five stages of the sleep cycle and the electroencephalograph (EEG)

Summary: This activity provides an explanation of physiological recording of electrical potentials from the scalp and their relationship to levels of consciousness and sleep, and is followed by a simulation of one night of recordings from a sleep laboratory, illustrating the normal sleep cycle, REM sleep, and the relationship between REM sleep and dream reports.

Maze Learning

Purpose: To demonstrate some principles of spatial learning and spatial memory in a way-finding task

Summary: This activity gives you a rat's-eye view of maze learning by allowing you to move and control a simulated rat's movements through a maze.

Classical Conditioning

Purpose: To simulate the acquisition and extinction of conditioned associations

Summary: This activity provides a review of Pavlov's famous experiment on the salivary response in dogs, as well as the basic processes of classical conditioning: acquisition, generalization, discrimination training, and extinction. You will play the role of an experimenter attempting to produce a conditioned eye blink in a human subject.

Operant Conditioning

Purpose: To demonstrate some principles of behavior control through the manipulation of reinforcement

Summary: This activity describes a form of learning called operant conditioning—learning from the consequences that follow our actions. The concept of reinforcement as illustrated with examples from everyday life, while the value of controlled reinforcement schedules is demonstrated in a simulated experiment showing rat bar-pressing behavior under four different schedules of reinforcement.

Monkey See, Monkey Do

Purpose: To introduce Albert Bandura's classic research on observational learning

Summary: In this activity you will learn about Albert Bandura's classic experiment on observational learning, will see some video clips of two children who participated in the experiment, and will be able to practice your skills in observing and labeling specific behaviors performed by these children.

Iconic Memory

Purpose: To demonstrate some aspects of sensory register

Summary: This activity simulates Sperling's classic experiments on the duration of visual sensory memory. You will see nine random letters flashed in a 3 x 3 matrix, and will attempt to recall the letters under three conditions: free-recall, cued-recall, and delayed cued-recall. Your results will be compared to Sperling's finding of rapid decay of the visual "icon."

Forgetting

Purpose: To demonstrate the effect of interference on memory

Summary: This activity will help you understand one of the reasons why we forget information—interference. After some introductory material, you will play the role of a subject in a simulated experiment on paired-associate learning.

Short-Term Memory

Purpose: To explain some basic aspects of short-term memory

Summary: In this activity you will learn about the common model of memory storage, and will be able to test your ability to hold information in short-term memory.

When Memory Fails

Purpose: To explain how memories are stored in the brain, and how damage to certain areas of the brain can impair memory

Summary: This activity explores severe memory loss—how it happens and what impact it has on behavior. In the process, you will learn about the different types of memories we store, as well as the areas of the brain that are involved in forming and retrieving memories.

Trusting Your Memory

Purpose: To explain research by Loftus, Schacter, Roediger, and others about memory errors based on gist memory, source confusion, and suggestibility

Summary: In this activity you'll be able to test the reliability of your memory, and then learn what researchers have discovered about the way that memories are stored and modified by new information.

My Head Is Spinning

Purpose: To demonstrate thinking with verbal concepts and mental images, using the concept of mental rotation

Summary: This activity provides some background information about thinking with verbal concepts versus thinking with mental images. The issue of mental rotation is introduced and explained with reference to the classic studies by Shepard and colleagues. You will participate in a simulated experiment involving mental rotation of the letter "R" in the picture plane. Your results will be graphed and compared with the pattern of results from Cooper and Shepard (1973).

Dueling Brains

Purpose: To examine research on hemispheric specialization and word recognition

Summary: This activity opens with a brief review of research on left-hemisphere specialization for language, and then presents a simulation of a classic word recognition experiment that typically demonstrates a right visual field advantage in identifying words.

Get Smart

Purpose: To explain the multidimensional nature of intelligence and demonstrate some tasks used to measure intelligence

Summary: In this activity you will explore the concept of intelligence and some of the methods of measuring intelligence. Along the way, you will try your hand at performing a few of the tasks and answering some questions typically found on intelligence tests.

Hunger and the Fat Rat

Purpose: To demonstrate the role of the hypothalamus in the control of eating behavior in rats

Summary: This activity provides a simulated experiment on weight regulation in rats. After a brief review of the methods of brain research involving electrical stimulation and destructive surgery, you will examine the effects of stimulating or destroying two different regions of a rat's hypothalamus. The results will be graphed in terms of the rat's daily food intake and body weight, illustrating the role of the hypothalamus in the regulation of eating and weight control.

Expressing Emotion

Purpose: To examine facial expressions and the underlying nonverbal messages they may convey

Summary: In this activity you will learn about the role of facial expressions in the nonverbal communication of emotion. Then we'll put you in control of a cartoon-type face and test your skill in manipulating its facial muscles to form particular emotional expressions. This will help you learn the facial cues associated with each primary emotion.

Catching Liars

Purpose: To explain the relationship between emotional states and physiological arousal, as revealed by nonverbal cues, facial expressions, and polygraph recordings

Summary: In this activity you will explore some of the methods used to detect deception.

All Stressed Out

Purpose: To provide an overview of the bio-psycho-social nature of stress, including its everyday sources, the psychological and physiological impact of stressors, and how cognitive appraisal influences the coping process

Summary: This activity will describe for you the sources of everyday stress. Next, you'll read a description of the impact of stress on the mind and body, focused on the fight-or-flight response (and its possible variant, *tend and befriend*). Then, you will learn about the most influential model describing stress as a process—the *transactional model*. Finally, you will complete an

interactive exercise exploring how differences in cognitive appraisal and coping style alter the stress experience.

Helplessly Hoping

Purpose: To explain the research basis for the concept of learned helplessness

Summary: In this activity you will explore the importance of a sense of personal control over the events in your life. You'll participate in a simulated experiment on learned helplessness in dogs, and then consider how the results might apply to the behavior of people trapped in unpleasant situations.

Mystery Client

Purpose: To review and test understanding of the classification of behavioral disorders

Summary: This activity will be most useful to you after you have read the text material on psychological disorders. In this activity you'll take the role of a consultant called in to provide a second opinion on several clients with disorders, based only on the information contained in the clients' files. You will select the information to be examined for each client, then form a diagnosis according to what you know about the symptoms of the various disorders.

Losing Touch With Reality

Purpose: To explain the symptoms of schizophrenia and the brain changes that accompany schizophrenia

Summary: This activity explores schizophrenia, one of the most severe and bizarre psychological disorders. You will learn about the types of schizophrenia and the main symptoms, view video clips of individuals with schizophrenia, and be asked to identify the symptoms displayed by each individual.

Computer Therapist

Purpose: To demonstrate (in a limited way) some principles of active listening and artificial intelligence by having the computer simulate a Rogerian person-centered therapist

Summary: After learning about the famous ELIZA artificial intelligence program, you will engage in a conversation with a "computer therapist." The "therapist" will respond in a more-or-less realistic fashion, by identifying key words or phrases in your conversation, and then generating a nonjudgmental reply that reflects your feelings, to simulate some principles of active listening from Carl Roger's client-centered therapy.

Mystery Therapist

Purpose: To help students understand the basic goals and techniques of the main forms of psychotherapy

Summary: The activity reviews the major perspectives on psychological disorders and therapy and presents an interactive exercise in which students read brief fragments of case studies and are asked to identify the type of therapy exemplified by each case.

Social Decision-Making

Purpose: To demonstrate the decision-making strategies of persons in zero-sum and non-zero-sum environments

Summary: This activity contains a simulation of two classic "social trap" games used in research on competition and cooperation. You will first play the "Prisoner's Dilemma" game against the computer, and will quickly discover the difference between zero-sum and non-zero-sum environments. Next, you will play the "Trucking Game" against the computer to explore ways to maximize trust and cooperation in situations where people compete for limited resources.

Not My Type

Purpose: To examine the research on attribution and person perception

Summary: In this activity, after reviewing some of the research on the impact of "first impressions," you will explore the process of forming attitudes about other people.

Everybody's Doing It!

Purpose: To help students understand the pressure to conform to the behavior of others

Summary: In this activity you will explore the issue of social influence—how the behavior of other people affects your behavior. We'll take you through simulations of some of the classic experiments on conformity and apply the results to everyday situations.