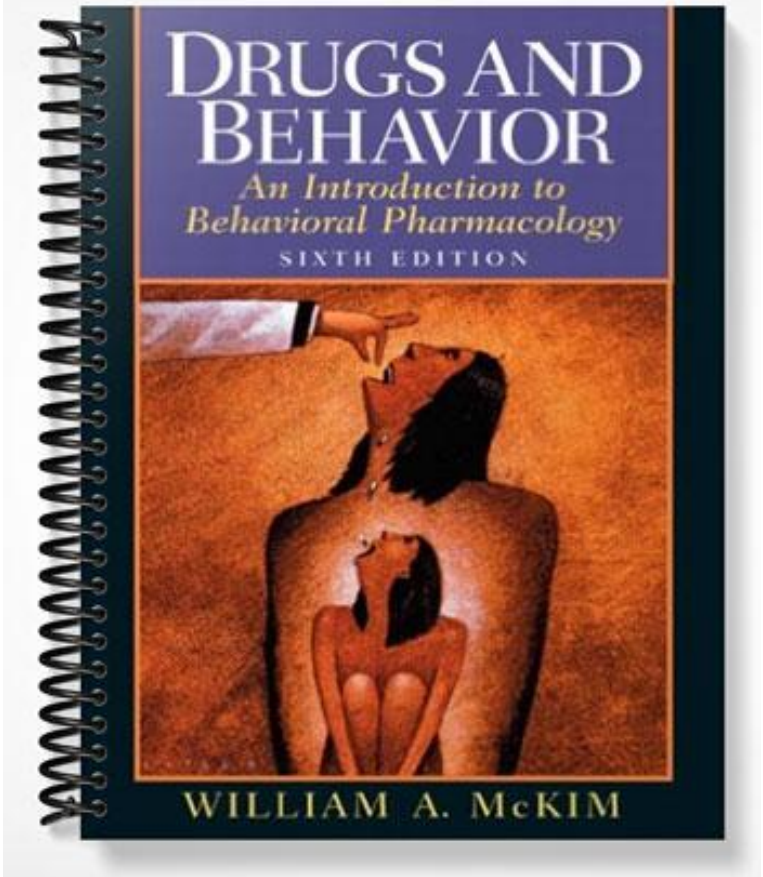
TEST BANK


DRUGS AND BEHAVIOR
An Introduction to Behavioral Pharmacology
SIXTH EDITION
WILLIAM A. McKIM

TEST ITEM FILE

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PREFACE

Here is the Instructor's Manual for the sixth edition of *Drugs and Behavior*. It is basically similar to earlier editions except it has been updated to take into account new developments in the field and include new and expanded discussions of solvents and other inhale substances, newer club drugs like GHB, dextromethorphan, ecstasy, and others.

The test bank questions have also been updated accordingly and will continue to be updated. As before, if you would like to have this test bank in electronic form, please contact me and I can send it to you in any usual word processor format. My email address is: bmckim@play.psych.mun.ca. Although most of these are multiple choice questions, I have also added a section to the end containing matching questions that I have found useful. In addition, we have included two example crosswords that contain questions from multiple chapters. You can create your own crossword test puzzles by visiting http://www.qualint.com/ and downloading a working demo version of Wordsheets v5.5. If you find this format useful, you can purchase the program from the same site at minimal cost.

Users of this material should also know that some of these questions have been used in a self-administered interactive quiz I have made available to my students on the Internet. It can be found at: http://dogsbody.psych.mun.ca/~bmckim/2800. Access to his quiz feature is now restricted so that none of the questions in this book are now freely available to students on the web. You are welcome to direct your students to this site as there is no restriction to access to it, but if you do, they will have access to some of the questions in this test bank. You might also want to check out other features of this page which include a blood alcohol calculator and tutorials on understanding demand curves. Your students are also welcome to use these features.

Thank you for choosing Drugs and Behavior, Sixth Edition, and best wishes.

William A. McKim and Stephanie D. Hancock

INSTRUCTOR'S NOTES

The first chapter introduces some of the basic concepts of pharmacology to the beginning student. It is not meant to turn the student into a pharmacologist, but should supply enough information that the student will be able to understand these concepts when they come across them later in the book. In fact, the chapters later in the book about specific classes of drugs each contain sections that deal with many of these concepts from chapter 1 such as pharmacokinetics. Students therefore should be familiar with the material in this chapter in order to get the most out of the rest of the book. Never-the-less, it has been my experience that many students do not fully understand many of these concepts until they run across them a few times later in the book and they can see more clearly how they relate to the effects of specific drugs. For this reason it is always a good idea to illustrate the material in this chapter with examples. The book provides quite a few examples, but it is often necessary to provide more.

Most students already have some familiarity with recreational drugs and medicines. They have been confused by drug names; they know that the effects of drugs do not last forever and that dose is important, and that different drugs are administered by different routes. As a result, there is always a natural curiosity about the mechanisms in the body responsible for these changes. In addition, most have heard of terminology such as LD50 and half-life and so it is usually not difficult to engage a student's interest in a precise description of what these terms actually mean.

In many cases we often hear and use terms like "side effects", "antagonism" and "potency" without knowing what they really mean. Students are usually eager to understand these concepts and surprised to find out that they did not really understand them. In fact, the distinction between potency and effectiveness is sometimes not fully appreciated by experienced researchers. The acquisition of language is an important goal of this chapter.

I have found that students have the most difficulty with the concept of pKa, and at one point I considered leaving it out of the chapter and substituting a brief statement drugs that are bases are not easily absorbed when taken orally. This is, after all, a major implication of pKa and all that students really have to know. I did not do this because understanding the concept makes it easier to understand many other facts encountered elsewhere in the text, for example, Nesbitt's Paradox in the chapter on Nicotine, and free-basing in Psychomotor Stimulants. The effort, in this case is worth it.

Chapter 2 is designed to be a review of basic Psychology concepts, particularly concerning research designs that are applicable to Behavioral Pharmacology. Most students with a background in Psychology will already be familiar with this material and most of the ideas introduced in this chapter. Never-the-less, it serves as a useful review and draws the students attention to concepts that are particularly relevant to material covered later in the book. Particular attention is drawn to experimental control, particularly the use of placebo controls in drug research.

Chapter 2 is also designed to provide students with the ability to critically assess studies that they may come across in the media. Most of the stories about drug-related research we hear in the popular press concerns nonexperimental research, or involve clinical trials of new drugs. Both these topics are given separate sections in this chapter. It is usually not difficult to find a current news story about drug research that can be used to illustrate these points.

This chapter also contains a discussion of a number of behavioral measures frequently used in behavioral pharmacology both with humans and nonhumans. These include operant schedules of positive and negative reinforcement, EEG, mood scales such as the POMS and the ARCI, tests of perception and cognitive ability and driving. This discussion will serve as a review of these tests. Particular attention has been paid to tests and measures that appear repeatedly later in the text in individual chapters about specific drugs. The behavioral measures introduced in this chapter can serve as a reference when it or its abbreviation is mentioned later.

Finally there is a brief discussion of dissociation and the stimulus properties of drugs. These concepts are not likely to have been encountered in earlier psychology courses and so should be given particular attention. If you skip this chapter, you should at least make sure your students understand drug state discrimination procedures as they will come across them many times later in the text.

In chapter 3, I try to show how mechanisms of traditional learning theory, respondent and operant conditioning, can help us understand concepts such as tolerance and withdrawal which are normally thought of as strictly physiological in nature. The concept of dependence is discussed here, but only in so far as it is related to withdrawal symptoms. A more extensive discussion of dependence will be found in chapter 5. Traditionally the term *dependence* has been used to mean two things, a) the compulsive (addictive) use of a drug, and b) that person will have withdrawal symptoms when they stop using a drug. It is vital that these two ideas be separated. The state of physiological dependence is no longer an explanation of addiction, even though many people still use the terminology as though it is. This point cannot be stressed too much. It is addressed again in Chapter 5.

It is also of importance to make sure that the student understands that tolerance does not occur to a drug, but to the effects of a drug. Understanding this distinction is necessary to understanding the entire chapter.

This chapter demonstrates how the effects of drugs can be conditioned in the same way as any other physiological response, except that we must pay attention to what happens in the body when the drug id given. In many cases, the conditioned stimulus reliable precedes the body's attempt to resist the effect of a drug. In this case, the conditioned response will be a physiological response opposite to that caused by the drug. This can explain both conditioned tolerance and conditioned withdrawal responses.

Chapter 3 also deals with sensitization to drugs and discusses the differences and similarities between tolerance and sensitization. It is important to understand sensitization because the concept is revisited later in Chapter 5 in the discussion of addictive behavior. The

chapter now contains a discussion of opponent process theory, and expectation and context effects

Chapter 4 provides a basic overview of neurophysiology, particularly as it relates to the effects of drugs. Most of what is in this chapter is standard and can be skipped by students who have a course on neuroscience. Students without a background, however, often have some difficulty with some of the concepts and very often are dazzled and confused by the array of technical names and terms that they are encountering for the first time. As a result, it is often necessary to spend extra time discussing these concepts in class.

It is important that the student at least be able to recognize the names of the better known neurotransmitters because they will be encountering them again and again later in the course. These include dopamine, serotonin (stress that serotonin and 5-HT) are the same thing, norepinephrine, glutamate, and GABA. It is also important to get across the concept that the ultimate effect of a neurotransmitter depends on the receptor site at which it operates. Neurotransmitters have many different receptor sites and so that the function of a neurotransmitter can be different in many parts of the nervous system. This also means that drugs that affect different receptor sites of the same neurotransmitter can also have different effects that can last for varying durations.

The tour of the nervous system is very brief and deals mostly with parts of the central and peripheral nervous systems that will be discussed later in the book. Once again, students without a background will find it challenging to keep these centers straight, but later in the course, they may find it helpful to refer back to this chapter when these parts of the nervous system are discussed further.

Finally chapter 4 also contains a brief discussion of the development of the nervous system. This section is designed to show why and how the nervous system is so vulnerable to drugs when it is forming in the unborn child. It concludes with a new section on brain imaging techniques now commonly used to explore the mechanisms of action of drugs and the effects of long term use on the brain. These include EEG and Event Related Potentials, PET, and MRI and fMRI (including BOLD).

The aim of Chapter 5 is to dispel old myths and inaccurate presumptions about the nature of addictive behavior and provide as a substitute a models derived from research started in the 1960s and based on the operant analysis of behavior, respondent conditioning, and more recently, behavioral economics and neuroscience.

Chapters 6, 7 and 8 and the remaining chapters of the book, each deal with a particular class of drugs and it is organized in a similar manner, discussing origins, history, pharmacokinetics, neurophysiology, effects on the body and effects on behavior, self-administration, discriminative stimulus properties, withdrawal and tolerance, harmful effects and treatments.

Chapter 15 has been drastically reorganized. It is now titled *Hallucinogens, Phantasticants and Club Drugs* rather than just Hallucinogens. This is meant to reflect the

increasing use of what are commonly called *club drug*; drugs such as ecstasy, ketamine, and GHB which are often taken more for their entactogenic and phantasticant effects rather than their hallucinogenic effects.

TEST BANK

Chapter 1
Some Basic Pharmacology

1-1. The drug names used in this book are
- A. trade names.
- B. chemical names.
- C. generic names.
- D. proprietary names.
- E. all of the above.

1-2. Which of the following drug names can be patented?
- A. trade names.
- B. chemical names.
- C. generic names.
- D. nonproprietary names.
- E. none of the above.

1-3. Which type of drug name is also known as the proprietary name?
- A. trade name.
- B. chemical name.
- C. generic name.
- D. the formulation .
- E. none of the above.

1-4. The drug name "endital" is most likely a
- A. trade name.
- B. chemical name.
- C. generic name.
- D. proprietary name.
- E. none of the above.

1-5. The drug name "2-3'-dichloro-methphantasticant" is most likely a
- A. trade name.
- B. chemical name.
- C. generic name.
- D. proprietary name.
- E. none of the above.

1-6. Strictly speaking, the trade name of a drug refers to
- A. the active ingredient in a pill.
- B. the formulation.
- C. the excipients.
- D. the drug company.
- E. the medical classification.

1-7. When a drug name such as SKF 10,047 is used, the letters refer to

A. the type of condition the drug is used for.
B. the chemical formula of the active ingredient.
C. the government classification of the drug.
D. the name of the drug company.
E. none of the above.

1-8. The term " formulation" refers to
A. the trade name of a medication.
B. the active ingredient in a medication.
C. the dose that is recommended.
D. the combination of excipients and active ingredients in a medication.
E. the side effects of a medication.

1-9. The effect of a drug is directly related to
A. the concentration of the drug at its site of action.
B. the dose of the drug.
C. the number of pills consumed.
D. the size of the tablet.
E. the concentration of the vehicle.

1-10. A milligram is
A. 1/10 of a gram.
B. 1/100 of a gram.
C. 1/1000 of a gram.
D. 1/10,000 of a gram.
E. 1000 grams.

1-11. Because the effect of a drug often depends on the concentration at its site of action, drugs are often administered in terms of
A. mg of drug.
B. mg of drug /kg body weight.
C. the specific gravity of the drug.
D. the molecular weight of the drug.
E. the concentration in the vehicle.

1-12. To fully describe the effect of a drug, a range of doses is usually given from a dose so low that it has no effect to one so high that
A. the animal dies.
B. the animal ceases to respond.
C. further increases in dose have no effect.
D. the volume of injection causes changes in the animal's behavior.
E. the drug will no longer dissolve in the vehicle.

1-13. The dose scale on a dose response curve is usually in
A. log units.

B. exponents of dose.
C. whole numbers.
D. multiples of 10.
E. percentages of dose.

1-14. When dosage comparisons are made between humans and smaller animals like rats and mice
A. it is necessary to give higher doses to the rats and mice in terms of mg/Kg.
B. it is necessary to give lower doses to the rats and mice in terms of mg/Kg.
C. the same dose can be used if it is in terms of mg/Kg.
D. smaller animals generally metabolize drugs faster than larger animals.
E. smaller animals generally metabolize drugs more slowly than larger animals.

1-15. Dose response curves are often plotted on a log scale
A. because log scales are least sensitive.
B. many physiological effects show up as a straight line when plotted on a log scale.
C. it permits greater precision at the high end of the dosage range.
D. it permits greater precision at the low end of the dosage range.
E. both B. and D.

1-16. The generic name is also known as the
A. proprietary name.
B. nonproprietary name .
C. chemical name.
D. formulation.
E. proper name.

1-17. Which of the following is an excipient?
A. filler.
B. coloring agent.
C. binding agent.
D. coating.
E. all of the above.

1-18. Which of the following is not an excipient?
A. filler.
B. coloring agent.
C. active ingredient.
D. coating.
E. all of the above.

1-19. Drug doses are usually reported in terms of
A. weight.
B. volume.

C. concentration.
D. density.
E. mg.

1-20. When the effect of a drug is measured as a discrete binary variable such as whether an effect occurs or not,
A. DRCs are meaningless.
B. DRCs cannot be plotted.
C. DRCs are difficult to interpret.
D. the effect may be presented as a percent on a DRC.
E. none of the above. DRCs have no effect when taken orally.

1-21. The ED50 is the
A. median lethal dose.
B. the median effective dose.
C. the medium lethal dose.
D. the medium effective dose.
E. none of the above.

1-22. The LD1 of a drug is
A. the dose that will kill 99 percent of subjects.
B. the dose that will kill 1 percent of subjects.
C. the dose that will be effective in 99 percent of subjects.
D. the dose that will be effective in 1 percent of subjects.
E. none of the above. LD1 is the generic name of a nerve gas.

1-23. If the ED50 of a drug is 36 mg/Kg and the LD50 is 360 mg/Kg, the TI is:
A. 0.1
B. 1.0
C. 10.0
D. 100.0
E. none of the above. The TI cannot be determined from these numbers.

1-24. LD50/ED50 is the
A. Lethal Ratio.
B. Therapeutic Ratio.
C. Index of Safety.
D. Therapeutic Index.
E. Ratio of Safety.

1-25. When comparing the TI of two drugs
A. the drug with the lower TI is safer.
B. the drug with the higher TI is safer.
C. the drug with the lower TI is the most therapeutically useful.

D. the drug with the higher TI is the least therapeutically useful.
E. none of the above.

1-26. The dose that kills 50% of the individuals tested is called
A. the lethal dose.
B. the median effective dose.
C. the medium lethal dose.
D. the median lethal dose.
E. the TI.

1-27. Drug A and Drug B both suppress appetite to the same extent, but Drug A has an ED50 of 115 mg/kg and Drug B has an ED50 of 50 mg/kg. Therefore,
A. Drug A is more potent than Drug B.
B. Drug A is more effective than Drug B.
C. Drug A is less potent than Drug B.
D. Drug A is less effective than Drug B.
E. There is not enough information to answer this question.

1-28. Drug A and Drug B are both appetite suppressants, but Drug A will cause rats to reduce food consumption by 50% at its most effective dose and Drug B will cause rats to reduce food consumption by 30% at its most effective dose. The ED50 of Drug A and B is the same. Therefore,
A. Drug A is more potent than Drug B.
B. Drug A is more effective than Drug B.
C. Drug A is less potent than Drug B.
D. Drug A is less effective than Drug B.
E. There is not enough information to answer this question.

1-29. A side effect of a drug is an
A. effect that occurs at the lowest dose.
B. effect that a drug is taken for.
C. effect that is not wanted.
D. effect that causes harm.
E. effect that occurs at doses higher than those that cause the main effect.

1-30. Antagonism is demonstrated when the effect of one drug is to
A. change the effectiveness of another drug.
B. make another drug more potent.
C. reduce the time course of another drug.
D. lower the DRC of another drug.
E. shift the DRC of another drug to the right.

1-31. Which of the following is not a type of drug interaction?
A. additive effect.
B. superadditive effect.
C. antagonism.

D. super antagonism.
E. potentiation.

1-32. If the DRC of one drug is shifted to the left by another drug then this indicates
A. a negative interaction.
B. a super additive effect.
C. an additive effect.
D. antagonism.
E. either B. or C.

1-33. If the DRC of one drug is shifted to the right by another drug then this indicates
A. a negative interaction.
B. a super additive effect.
C. an additive effect.
D. antagonism.
E. either B. or C.

1-34. If you take an aspirin to reduce a fever, which of the following is (are) side effect(s)?
A. a decrease in blood clotting time.
B. decreased inflammation.
C. pain reduction.
D. none of A., B., and C.
E. all of A., B., and C.

1-35. Drugs affect the operation of the body
A. at all tissues that they come in contact with.
B. by altering the functioning of all organs.
C. only at specific places called "sites of action."
D. only at the place where they are administered.
E. only if administered directly at the site of action.

1-36. Which of the following is a parenteral route of administration?
A. transdermal.
B. inhalation.
C. oral.
D. subcutaneous.
E. none of the above.

1-37. The movement of drugs into, around, and out of the body is called
A. pharmacokinetics.
B. absorption.
C. distribution.
D. excretion.
E. none of the above.

1-38. A vehicle is
A. what a drug is dissolved in before it can be injected.
B. the container used to transport a drug.
C. a container used to store an unstable drug.
D. a term used to refer to a syringe and needle.
E. a transport mechanism across a membrane.

1-39. A bolus is
A. another name for a suppository.
B. an apparatus for dissolving drugs in the vehicle.
C. a special hypodermic syringe.
D. a deep breath of a volatile gas or smoke from a burning plant such as marijuana.
E. a small bubble of drug that is left at the site of an injection.

1-40. The high concentration of drug at the site of administration is called
A. a bolus.
B. a concentration bubble.
C. a diffusion gradient.
D. the SOA (source of absorption).
E. the PMC (point of maximum concentration).

1-41. A subcutaneous injection of a drug is sometimes known as
A. skinning.
B. skin popping.
C. S.C.
D. a sub-q injection.
E. all of B., C., and D.

1-42. I.P. injections are more commonly used in
A. pigeons.
B. humans.
C. monkeys.
D. rats and mice.
E. none of the above. I.P. injections are no longer commonly used in any species.

1-43. After an I.M. injection, drugs pass into the blood
A. by active transport.
B. by passive transport.
C. only if they are lipid soluble.
D. if they are not ionized.
E. by diffusion.

1-44. Intrathecal and intraventricular administration of a drug are sometimes used to
A. inject the drug directly into the blood.
B. anesthetize an animal.
C. treat rabies.
D. produce very fast results.
E. isolate the site of action of a drug to the CNS.

1-45. Which type of drug is sometimes given as a depot injection?
A. antidepressant.
B. antipsychotic.
C. antibacterial.
D. hallucinogen.
E. nicotine.

1-46. Which of the following is not a parenteral route of administration?
A. P.O.
B. I.V.
C. I.M.
D. I.P.
E. none of the above. These are all parenteral routes of administration.

1-47. A capillary is
A. a very fine needle used to inject drugs directly into the ventricles.
B. another name for a depot injection.
C. a tiny blood vessel.
D. another name for a suppository.
E. only found in the brain.

1-48. About how many litres of blood are there in the body?
A. 2
B. 4
C. 6
D. 8
E. 10

1-49. Drugs administered by inhalation
A. are not as potent as when they are administered by I.V.
B. can never be eliminated in the breath.
C. must be volatile gases.
D. are delivered to the brain more rapidly than drugs administered by I.V.
E. have a longer duration of action than when administered by I.V.