Psychoactive Drugs

Psychoactive drug: A drug that alters consciousness, perception, mood, and behavior (page 146).

Your textbook uses four broad categories of psychoactive drugs

- Depressants: Drugs that depress, or inhibit, brain activity.

- Opioids: Drugs that are chemically similar to morphine and relieve pain and produce euphoria.

- Stimulants: Drugs that stimulate, or excite, brain activity.

- Psychedelic Drugs: Drugs that distort sensory perception.

Image source: Carpenter and Huffman

1. What are the neurotransmitters from chapter 2?
2. Which class of drugs probably affects these neurotransmitters?

Drug Effects

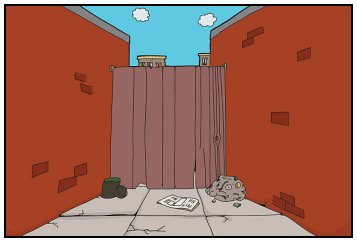
Compensatory responses can help explain phenomena that most people are familiar with and explain

Drug tolerance: A tendency for larger doses of a drug to be required over time to achieve the same effect.

Drug withdrawal: The experience of strong reactions opposite to those produced by the drug when a person stops taking the drug.

In addition, compensatory responses can explain an unexpected observation that

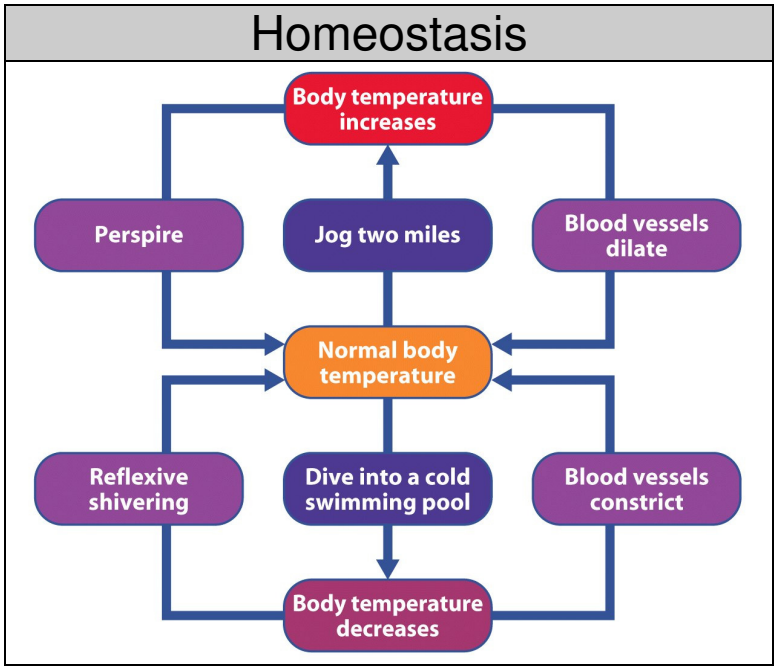
- experienced drug users die of an accidental drug overdose
- without increasing their normal dose
- while consuming drugs in a different location like a park, bathroom, or alleyway.



Compensatory Responses

When people use drugs, the body and brain attempt to maintain homeostasis by reducing the effects of the drug and produces reactions that are opposite to that of the drug.

Compensatory responses: A reaction by the body to drugs in an attempt to maintain a state of homeostasis.



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Compensatory Responses

This biological effect to reduce the effect of the drug is called the compensatory response. Compensatory response can be triggered biologically by taking the drug or triggered psychologically through environmental cues that signal that drug taking behavior is about to take place.

Drug effect

Compensatory Response

	Drug effect	Compensatory Responses
	Slows the body down	Stimulates the body to restore homeostasis
	Stimulates the body	Slows the body down to restore homeostasis

Image source: Carpenter and Huffman

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Image source: Carpenter and Huffman

Drug Tolerance

Tolerance: A decrease in responsiveness to a drug (usually you need to increase the dosage to get the same effects)

	Tolerance	
	Drug Dosage	**Effect**
January		
February		
March		
April		

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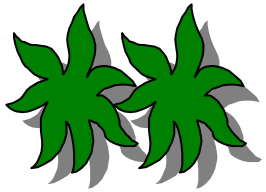
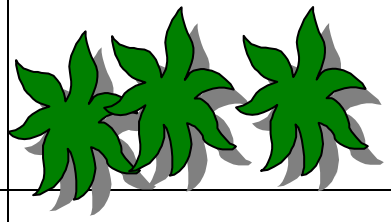
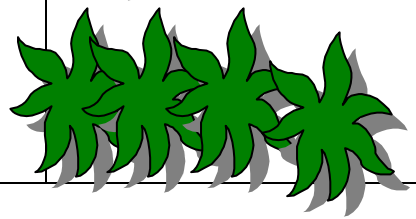
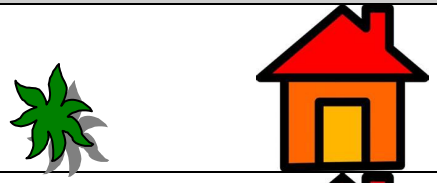
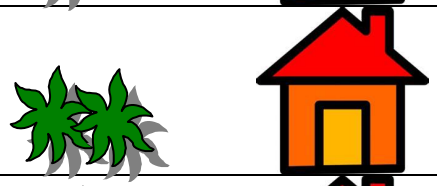
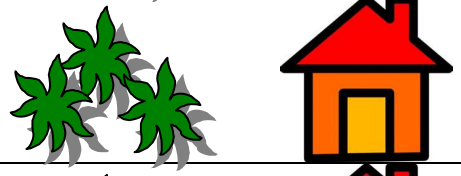
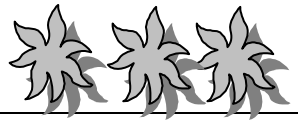
	Tolerance		
	Drug Dosage		Effect
January			
February			
March			
April			

Compensatory Responses

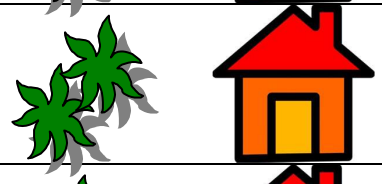
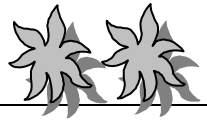
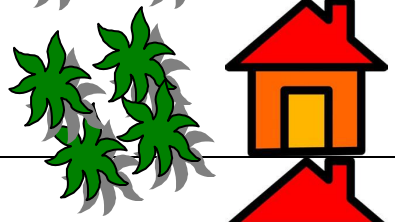
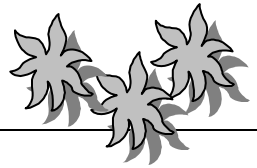
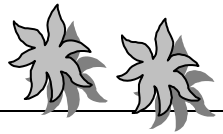
Compensatory responses: A reaction by the body to drugs in an attempt to maintain a state of homeostasis.

When people use drugs, the body and brain attempts to reduce the effects of the drug and produces reactions that are opposite to that of the drug.

	Dosage +	Compensatory Response	= Drug Effect
January	↑ 		↑ 
February	↑ ↑ 	↓ 	↑ 
March	↑ ↑ ↑ 	↓ ↓ 	↑ 
April	↑ ↑ ↑ ↑ 	↓ ↓ ↓ 	↑ 

Withdrawal Effects

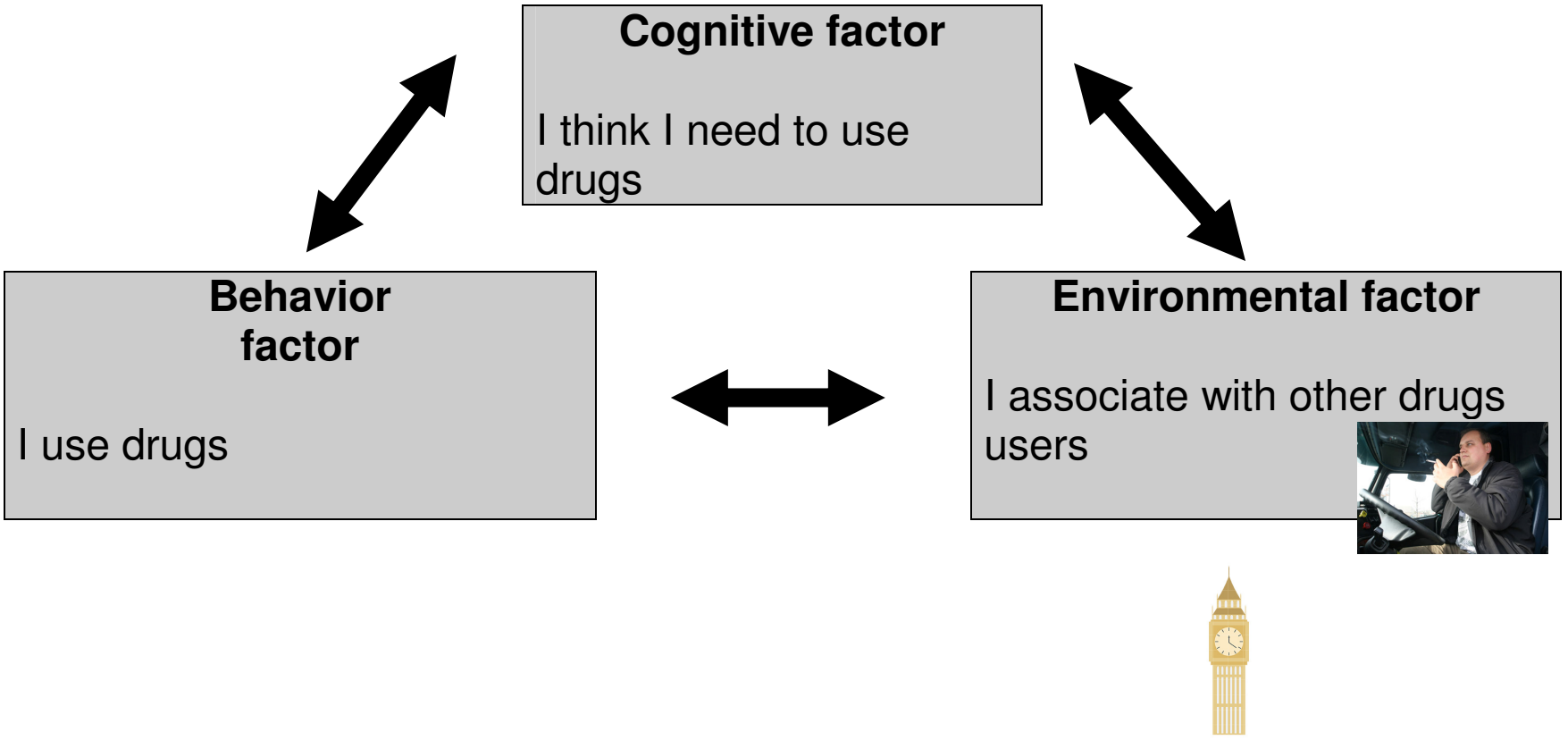
Withdrawal: The experience of strong reactions opposite to those produced by the drug. The withdrawal symptoms may be thought of the body's compensating response still becoming active in the absence of the drug.

	Drug Dosage +	Compensatory Response	= Drug Effect	Withdrawal
January				
February				
March				
April				
May				**Withdrawal effects** 

Withdrawal Effects

Not only can the compensatory response become triggered biologically through the use of a drug, it can be triggered by environmental cues.

If you want to reduce drug use, you may need to change environments. According to the principle of reciprocal determinism, beliefs, environment and behavior are intertwined.

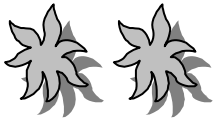
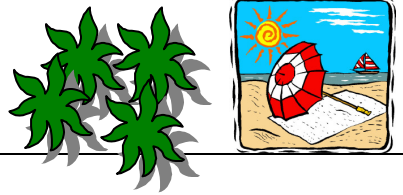


In order to understand the problems of drug abuse, you need to understand

- the process of reciprocal determinism,
- as well as the neurochemical basis of addiction (the neurotransmitter dopamine) and
- learning (classical conditioning and operant conditioning).

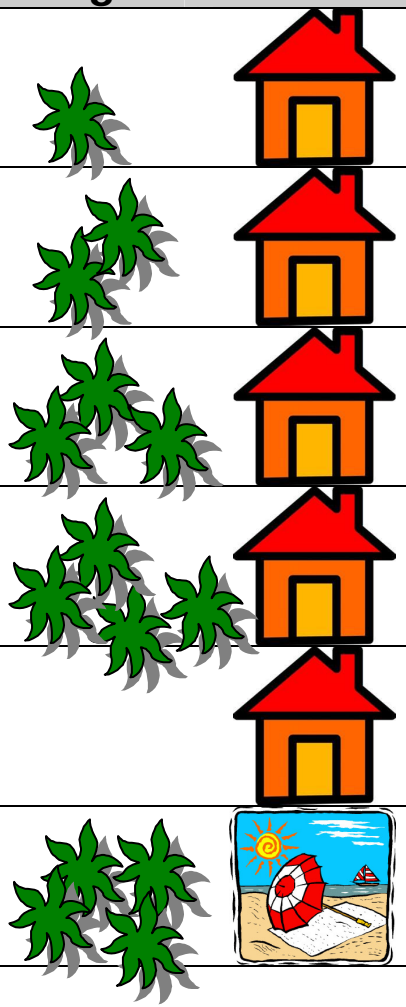
You can easily replace this with criminal behavior. This helps explain some programs to help disrupt the cycle of criminal behavior and drug use.

Classically Conditioned Compensatory Responses

	Drug Dosage +	Compensatory Response	= Drug Effect	Withdrawal
January				
February				
March				
April				
May				**Withdrawal effects** 
June			Drug over dose 	

Classically Conditioned Compensatory Responses

	Drug Dosage +	Compensatory Response	= Drug Effect	Withdrawal
January				
February				
March				
April				
May				Withdrawal effects
June			Drug over dose	



Summary / What does this Mean?

Compensatory response act in the opposite direction of a drug to maintain homeostasis. The compensatory response can explain

- Drug tolerance
- Drug withdrawals
- and accidental drug overdoses by experienced users, using their normal amount, but using in a new geographical location (such as a bathroom, park, or alleyway).

In addition,

- it can explain why anti-anxiety medications can make your anxiety worse. Whatever triggers your anxiety can trigger the compensatory response as well.
- Drug use and abuse is complex and involves environmental factors and biological factors—just saying no is unlikely to work.
- When learning something new, start slow and gradually add information.
    - Interleaving information facilitates long-term retention.