SESSION XXII

OVERVIEW OF SIGNS AND SYMPTOMS

SESSION XXII OVERVIEW OF SIGNS AND SYMPTOMS

Upon successfully completing this session the student will be able to:

- Describe the possible effects that may be observed in each major indicator of drug impairment.
- Identify the effects that will most likely be observed with subjects under the influence of each drug category.

Summarizing What We've Learned About The Effects of Each Category:
An Exercise For The Student

We have now completed a detailed review of all seven drug categories. In this session, we will summarize what we've learned about the major indicators of drug impairment that DREs rely upon to form their opinions. We will also summarize how each drug category usually "discloses itself" on those major indicators.

The major indicators of impairment consist of nine items:

- Horizontal Gaze Nystagmus
- Vertical Gaze Nystagmus
- Lack of Convergence
- Pupil Size
- Reaction to Light
- Pulse Rate
- Blood Pressure
- Body Temperature
- Muscle Tone

As a DRE, you will evaluate each of these indicators for every subject you examine. What are the possible things that you may observe for each indicator? For example, what are the possible things that you may observe when you check a subject for Horizontal Gaze Nystagmus? What are the possible things that you may observe when you check the subject's blood pressure?

With HGN, there are only two possibilities: either it will be **Present** (i.e. the eyes will jerk) or **Not Present** (i.e. the eyes will move smoothly). Some drugs cause nystagmus, others do not; there is no drug that "cures" nystagmus. With blood pressure, there are three different things we might observe: it may be up, down, or it may be normal. Some drug categories elevate the blood pressure, others lower it; if a person is under the influence of two different drug categories, one that raises blood pressure and one that lowers it, it is possible that the two drugs will partly off-set each other, and the blood pressure may be normal.

What about the other seven major indicators? What are the possible things we may find with each of them? **Before you answer**, try to complete the list of possibilities we've started on the following chart:

Horizontal Gaze Nystagmus?	**PRESENT or NONE**
Vertical Gaze Nystagmus?	
Lack of Convergence?	
Pupil Size?	
Reaction to Light?	
Pulse Rate?	
Blood Pressure?	**UP, DOWN, or NORMAL**
Body Temperature?	
Muscle Tone?	

How did you do? Your completed list, on the previous page, should look something like this:

Indicator	Possible Effects
Horizontal Gaze Nystagmus?	**PRESENT or NONE**
Vertical Gaze Nystagmus?	**PRESENT or NONE**
Lack of Convergence?	**PRESENT or NONE**
Pupil Size?	**DILATED or NORMAL or CONSTRICTED**
Reaction to Light?	**NORMAL, SLOW, or LITTLE OR NONE VISIBLE**
Pulse Rate?	**UP or DOWN or NORMAL**
Blood Pressure?	**UP or DOWN or NORMAL**
Body Temperature?	**UP, DOWN, or NORMAL**
Muscle Tone?	**FLACCID, RIGID OR NORMAL**

Next, your instructors will expect you to be able to state how each category of drugs usually affects each of the eight major indicators. This is information that was first covered in your Pre-School, and covered in even greater detail earlier in this school. In the table on the next page, we've listed what we can usually expect to see in subjects who are under the influence of CNS Depressants. Try to fill in the rest of the table before Session XXII is given in class.

WHAT WILL WE USUALLY SEE IN OUR SUBJECTS?

	Depressants	Stims	Halluc	D/A	Narc	Inhalant	Cannabis
HGN	Present						
VGN	Present *(high dose)						
Lack Conv	Present						
Pupil Size	Normal (1)						
React Light	Slow						
Pulse Rate	Down (2)						
Blood Press	Down						
Body Temp	Normal						
Muscle Tone	Flaccid						

* high dose for that individual

(1)Soma, Quaaludes and possibly some anti-depressants usually dilate pupils
(2)Quaaludes, ETOH and possibly some anti-depressants may elevate
(3)Certain psychedelic amphetamines may cause slowing
(4)Normal, but may be dilated
(5)Down with anesthetic gases, up with volatile solvents and aerosols
(6)Pupil size possibly normal

The following attachment, Comparison of DRE Symptomatology With Cross Section of Drug Symptomatology Sources, is a small portion of the available scientific literature addressing drug influence. The Synopsis is consistent with the DRE training.

COMPARISON OF DRE SYMPTOMATOLOGY WITH CROSS SECTION OF DRUG SYMPTOMATOLOGY SOURCES

CNS DEPRESSANTS:

DRE Symptomatology:

Nystagmus	decreased pulse
decreased blood pressure	uncoordinated
disoriented	sluggish
thick slurred speech	drunk-like appearance

The Pharmacological Basis of Therapeutics, Seventh Edition, Gilman, A,; Goodman, I.; MacMillan Publishing Co. 1985, Barbiturates, pages 546-547:

Nystagmus	Strabismus
difficulty in visual accommodation	
vertigo	ataxia gait
positive Romberg sign	Hypotonia
Dysmetria	Diplopia
sluggishness	difficulty in thinking
slowness, slurring of speech	poor comprehension
poor memory	faulty judgement
emotional lability	

A Primer of Drug Action, Julien, Robert M. W.H. Freeman and Company, New York, 8 Ed. 1997.

Drug and Alcohol Abuse, A Clinical Guide to Diagnosis and Treatment, (3rd Ed. , Schuckit, M.D., Mark A. Plenum Medical Book Co, New York 1989. p.19.

Encyclopedia of Drug Abuse, O'Brien, Robert; Cohen, Sydney. M.D. Facts on File, INC New York (1984), page 36: barbiturates effects like alcohol (staggering, poor motor control).

Drug Abuse and Dependence, Grinspoon, Lester,MD; Bakalar,James B., Harvard Medical School Mental Health Review No. 1 (1990), page 11: sedative hypnotics same as alcohol and other depressants

Drugs of Abuse, Giannini, A. James, M.D.; Slaby, Andrew E. M.D., Ph.D. Medical Economics Books, Oradell, New Jersey (1989), page 72: Benzodiazepines same as barbiturate effects; pages 247; 292): Barbiturates:

Nystagmus	depressed pulse
depressed blood pressure	diminished concentration
incoordination	decreased reaction time

Manual of Drug and Alcohol Abuse, Guidelines for Teaching in Medical and Health Institutions, ed Arif, Awni. M.D., Westermeyer, Joseph, M.D.. Ph.D..D Plenum Medical

Book Company, New York (1988), p. 135.

Diagnostic and Statistical Manual of Mental Disorders (Third Ed, Revised), American Psychiatric Association (1987), p. 159

Maladaptive behavioral changes, e.g., disinhibition of sexual or aggressive impulses, mood lability, impaired judgment, impaired social or occupational functioning.

slurred speech
unsteady gait
incoordination
impairment in attention or memory

CNS STIMULANTS:

DRE Symptomatology:
dilated pupils
increased temperature
body tremors
excited
talkative
anxiety
redness to nasal area
loss of appetite
increased alertness
increased pulse rate
increased blood pressure
restlessness
euphoric
exaggerated reflexes
grinding teeth
runny nose
insomnia

The Pharmacological Basis of Therapeutics, Seventh Edition,

Gilman, A,; Goodman, I.; MacMillan Publishing Co. 1985, Cocaine 551-554

Medical Toxicology-Diagnosis and Treatment of Human Poisoning, Ellenhorn, Matthew J., Barceloux, Donald G. Elsevier Science Pub. Co. 1988, Amphetamines, Page 634:

Mild influence:
Mydriasis
restlessness
irritability
tremor
Diaphoresis
nausea
pallor
hyperreflexia
talkativeness
insomnia
flushing
combativeness
vomiting
dry mucous membranes

Moderate:
hyperactivity
hypertension
Tachycardia
chest discomfort
abdominal pain
mild temperature
elevation
repetitive behavior
panic reactions
confusion
Tachypnea
premature ventricular contraction
vomiting
Profuser Diaphoresis
impulsivity
hallucinations

Serious:

delirium	marked Hypertension/Tachycardia
Hyperreflexia	convulsions
Hypotension	coma

Cocaine, page 650-659

Early Stimulation:

euphoria	Garrulity
excitement	apprehension
irritable behavior	Mydriasis
sudden headache	nausea
vomiting	dizziness
twitching of small muscles	tics
tremor	jerks
Cocaine Psychosis	hallucinations
elevation of pulse	increased respiration

Advanced:

convulsions	Hyperreflexia
decreased consciousness	increased pulse and blood pressure

Later Stages:

Hypotension	Hypothermia
Dyspnea et al	

A Primer of Drug Action, Julien, Robert M. W.H. Freeman and Company, New York, 1992, pages 120-123: Amphetamines and cocaine (CNSS):

dilation of pupils	increased blood pressure
slight tremor	restlessness
agitation	possibly hallucinations

Drug and Alcohol Abuse, A Clinical Guide to Diagnosis and Treatment, (3rd Ed. , Schuckit, M.D., Mark A. Plenum Medical Book Co, New York 1989, page 99: CNSS cause:

dilation of pupils	rapid heart rate
elevation of blood pressure	tremor in hands
increased body temperature	restlessness

Encyclopedia of Drug Abuse, O'Brien, Robert; Cohen, Sydney. M.D. Facts on File, INC New York (1984), pages 25, 121: Amphetamine:

dilation of pupils	increase heart rate
blood pressure	flushing
teeth grinding	dry mouth
tremors	lack of coordination

pages 64, 100, 121:

dilation of pupils	increased heartbeat
increased temperature	similar to Amphetamine

Drug Abuse and Dependence, Grinspoon, Lester,MD; Bakalar,James B., Harvard Medical School Mental Health Review No. 1 (1990), pages 8 and 10 Cocaine and Amphetamine:

dilated pupils	increased pulse
increased blood pressure	vasoconstriction
agitation tremors	increased temperature

Drugs of Abuse, Giannini, A. James, M.D.; Slaby, Andrew E. M.D., Ph.D. Medical Economics Books, Oradell, New Jersey(1989), page 29 Amphetamines:

pupil dilation (Mydriasis)	increased pulse rate
elevated blood pressure	hyperactive
talkative	irritable
restless	Anorexia
tremors	urinary retention
teeth grinding (Bruxism)	fidgety, jerky, random motions
illogical, loose thoughts	

Page 295: Cocaine:

dilated pupils	Tachycardia
increased blood pressure	vasoconstriction
Hyperpyrexia	

Manual of Drug and Alcohol Abuse, Guidelines for Teaching in Medical and Health Institutions, ed Arif, Awni. M.D., Westermeyer, Joseph, M.D.. Ph.D..D Plenum Medical Book Company, New York (1988) page 142: Amphetamine:

increased pulse
possibly increased temperature
general increase in psychomotor activity
increased blood pressure
increased wakefulness

page 145: Cocaine

Mydriasis (dilated pupils);
euphoria
may cause psychosis
agitation

Diagnostic and Statistical Manual of Mental Disorders (Third Ed, Revised), American Psychiatric Association (1987), p. 142.

COCAINE:
Maladaptive behavioral changes, e.g., euphoria, fighting, grandiosity, hyper-vigilance, psychomotor agitation, impaired judgment, impaired social or occupational functioning.

pupillary dilation
elevated blood pressure
nausea or vomiting
Tachycardia
perspiration or chills
visual or tactile hallucinations

AMPHETAMINE:
Maladaptive behavioral changes, e.g., fighting, grandiosity, hyper-vigilance, psychomotor agitation, impaired judgment, impaired social or occupational functioning.

pupillary dilation
elevated blood pressure
nausea or vomiting
Tachycardia
perspiration or chills

HALLUCINOGENS:

DRE Symptomatology:
dilated pupils
increased blood pressure
dazed appearance
Synesthesia
paranoia
nausea
difficulty in speech
poor perception of time/distance
increased pulse rate
increased temperature
body tremors
hallucinations
uncoordinated
disoriented
perspiring

The Pharmacological Basis of Therapeutics, Seventh Edition, Gilman, A,; Goodman, I.; MacMillan Publishing Co. 1985, LSD and Related Drugs, page 564

pupillary dilation
Tachycardia
tremor
Piloerection
increased body temperature
Hyper vigilance
loss of boundaries
increased blood pressure
Hyperreflexia
nausea
muscular weakness
hallucinations
Synesthesia

Medical Toxicology-Diagnosis and Treatment of Human Poisoning, Ellenhorn, Matthew J., Barceloux, Donald G. Elsevier Science Pub. Co. 1988, LSD, pages 667-669:

pupillary dilation
increased body temperature
weakness
Hyperreflexia
hallucinations
poor judgment
increased heart rate
Piloerection
tremor
Ataxia
depersonalization
mood swings

A Primer of Drug Action, Julien, Robert M.; W. H. Freeman & Company, NY, 1992
Drug and Alcohol Abuse, A Clinical Guide to Diagnosis and Treatment, (3rd Ed.), Schuckit, M.D., Mark A. Plenum Medical Book Co, New York 1989 page 160:

dilated pupils
increased awareness
sensory input
flushed face
increased blood pressure
faltered body images
fine tremor
increased body temperature

Encyclopedia of Drug Abuse, O'Brien, Robert; Cohen, Sydney. M.D. Facts on File, Inc New York (1984), pages 100; 115 120, 153): Hallucinogens:

dilated pupils
increased blood pressure
profuse perspiration
hallucinations
increased heart rate
increased temperature
loss of appetite

Drug Abuse and Dependence, Grinspoon, Lester,MD; Bakalar,James B., Harvard Medical School Mental Health Review No. 1 (1990)

Drugs of Abuse, Giannini, A. James, M.D.; Slaby, Andrew E. M.D., Ph.D. Medical Economics Books, Oradell, New Jersey (1989), page 218: LSD:

Ataxia
Hyperreflexia
Tachycardia
high blood pressure
incoordination

Manual of Drug and Alcohol Abuse, Guidelines for Teaching in Medical and Health Institutions, ed Arif, Awni. M.D., Westermeyer, Plenum Medical Book Company, New York (1988)

Diagnostic and Statistical Manual of Mental Disorders (Third Ed, Revised), American Psychiatric Association (1987), p. 145.

Maladaptive behavioral changes, e.g., marked anxiety or depression, ideas of reference, fear of losing one's mind, paranoid ideation, impaired judgment, impaired social or occupational functioning.

Perceptual changes occurring in a state of full wakefulness and alertness, e.g., subjective intensification of perceptions, depersonalization, derealization, illusions, hallucinations, Synesthesia

pupillary dilation
sweating
blurring of vision
incoordination
Tachycardia
palpitations
tremors

DISSOCIATIVE ANESTHETICS (PHENCYCLIDINE)

DRE Symptomatology:

Nystagmus
increased blood pressure
perspiring
blank stare
"moon walking"
incomplete responses
repetitive speech
cyclic behavior
hallucinations
increased pulse
increased temperature
warm to the touch
early onset of nystagmus
difficulty in speech
repetitive response
increased pain threshold
confused, agitated
possibly violent and combative

The Pharmacological Basis of Therapeutics, Seventh Edition, Gilman, A,; Goodman, I.; MacMillan Publishing Co. 1985, PCP, page 565-567

Nystagmus
elevated blood pressure
staggering gait
numbness of extremities
muscular rigidity
drowsiness
repetitive movements
elevated heart rate
feeling of intoxication
slurred speech
sweaty
blank stare
hostile behavior

Medical Toxicology-Diagnosis and Treatment of Human Poisoning, Ellenhorn, Matthew J., Barceloux, Donald G. Elsevier Science Pub. Co. 1988, PCP 768-777:

Nystagmus	Miosis
depressed light reflexes	blurred vision
diminished pain	Ataxia
tremors	muscle weakness
slurred speech	drowsiness
increased pulse rate	increased blood pressure
Amnesia	anxiety/agitation
body image distortion	euphoria
depersonalization	disordered thought processes
hallucinations	

A Primer of Drug Action, Julien, Robert M. W.H. Freeman and Company, New York, 1997, page 262: PCP:

increased blood pressure	blank stare
disinhibition	mood swings
muscle rigidity	agitation
delirium excitement	disorientation
hallucinations	analgesia
speech difficulty	pain tolerance
elevated blood pressure	

Drug and Alcohol Abuse, A Clinical Guide to Diagnosis and Treatment, (3rd Ed.), Schuckit, M.D., Mark A. Plenum Medical Book Co, New York 1989 p. 178

sweating	muscle rigidity
fever convulsions	increased blood pressure

Encyclopedia of Drug Abuse, O'Brien, Robert; Cohen, Sydney. M.D. Facts on File, INC New York (1984), page 100, 208: PCP:

Nystagmus	increased blood pressure
increased pulse rate	flushing
mood swings	hallucinations
changes in body awareness	speech difficulties
violent behavior	decreased responsiveness

Drug Abuse and Dependence, Grinspoon, Lester, M.D.; Bakalar, James B., Harvard Medical School Mental Health Review No. 1 (1990), page 25: PCP:

body image distortions	increased blood pressure
Nystagmus	muscle rigidity
loss of muscle control	incoherent speech
memory loss drooling	blank stare

Drugs of Abuse, Giannini, A. James, M.D.; Slaby, Andrew E. M.D., Ph.D. Medical Economics Books, Oradell, New Jersey(1989) page 296: PCP:

Nystagmus	disorientation
hallucination	extreme agitation

loss of motor control
automated speech
Nystagmus at rest
disassociation from environment

Manual of Drug and Alcohol Abuse, Guidelines for Teaching in Medical and Health Institutions, ed Arif, Awni. M.D., Westermeyer, Joseph, M.D. Ph.D.D Plenum Medical Book Company, New York (1988), page 156: PCP:

Ataxia
muscular hypertonicity
Ptosis
Horizontal Gaze, Vertical Gaze and Rotary Nystagmus
elevated blood pressure
mood swings
tremors
Hyperreflexia
Tachycardia

Diagnostic and Statistical Manual of Mental Disorders (Third Ed, Revised), American Psychiatric Association (1987), p. 155.

Maladaptive behavioral changes, e.g., belligerence, assaultiveness, impulsiveness, unpredictability, psychomotor agitation, impaired judgment, impaired social or occupational functioning.

Vertical or Horizontal Gaze Nystagmus
increased blood pressure or heart rate
numbness or diminished responsiveness to pain.
Ataxia
Dysarthria (slurred speech)
muscle rigidity
seizures
Hyperacusis

NARCOTICS:

DRE Symptomatology:
constricted pupils
decreased blood pressure
Ptosis (droopy eyelids)
drowsiness
low, raspy speech
facial itching
fresh puncture marks
decreased pulse rate
decreased temperature
"on the nod"
depressed reflexes
dry mouth
euphoria

The Pharmacological Basis of Therapeutics, Seventh Edition, Gilman, A,; Goodman, I.; MacMillan Publishing Co. 1985, Opiods page 541-545

Medical Toxicology-Diagnosis and Treatment of Human Poisoning, Ellenhorn, Matthew J., Barceloux, Donald G. Elsevier Science Pub. Co. 1988; Heroin, pages 702-703. See also Methadone, Demerol, etc.:

A Primer of Drug Action, Julien, Robert M. W.H. Freeman and Company, New York, 1997: Morphine:

constructed pupils
drowsiness
mental clouding
depressed respiration
euphoria
decreased blood pressure
Dysphoria
sedation
Analgesia

Drug and Alcohol Abuse, A Clinical Guide to Diagnosis and Treatment, (3rd Ed., Schuckit, M.D., Mark A. Plenum Medical Book Co, New York 1989

Decrease pain (p.6)

Encyclopedia of Drug Abuse, O'Brien, Robert,Cohen, Sydney. M.D. Facts on File, INC New York (1984) page 100, 120, 123, 124: Narcotics:

constricted pupils
Analgesia
euphoria
reduced heart rate
depressed appetite
going "on the nod"

Drug Abuse and Dependence, Grinspoon, Lester,MD; Bakalar,James B., Harvard Medical School Mental Health Review No. 1 (1990), page 14: Narcotics:

constricted pupils
dreamy state
euphoria
"nodding off"
pain suppression

Drugs of Abuse, Giannini, A. James, M.D.; Slaby, Andrew E. M.D., Ph.D. Medical Economics Books, Oradell, New Jersey (1989) page 293 - 294:

Miosis (constricted pupils)
Hypothermia
decreased temperature)
drowsiness lethargy
flaccid muscle tone
Analgesia
Bradycardia
(decreased heart beat)
euphoria/dysphoria
confusion
depressed respiration

Manual of Drug and Alcohol Abuse, Guidelines for Teaching in Medical and Health Institutions, ed Arif, Awni. M.D., Westermeyer, Joseph, M.D.. Ph.D..D Plenum Medical Book Company, New York (1988), page 132

Miosis (constricted pupils)
itching
low blood pressure
flushing sweating

Diagnostic and Statistical Manual of Mental Disorders (Third Ed, Revised), American Psychiatric Association (1987), p. 152.

Maladaptive behavioral changes, e.g., initial euphoria followed by apathy, dysphoria, psychomotor retardation, impaired judgment, impaired social or occupational functioning.

pupillary constriction
slurred speech
drowsiness
impairment in attention or memory

INHALANTS: (Toluene)

DRE Symptomatology:
Nystagmus
increased blood pressure
odor on mouth
slurred speech
increased pulse rate
residue around nose
nausea disorientation
confusion

The Pharmacological Basis of Therapeutics, Seventh Edition, Gilman, A,; Goodman, I.; MacMillan Publishing Co. 1985, Inhalants, page 567

Drug and Alcohol Abuse, A Clinical Guide to Diagnosis and Treatment, (3rd Ed. , Schuckit, M.D., Mark A. Plenum Medical Book Co, New York 1989. p. 185

decreased inhibitions
drowsiness
sneezing runny nose
floating sensation
light sensitivity

Encyclopedia of Drug Abuse, O'Brien, Robert; Cohen, Sydney. M.D. Facts on File, INC New York (1984)

lowered inhibitions
incoordination confusion
nausea
restlessness
disorientation
impaired judgment

Drug Abuse and Dependence, Grinspoon, Lester,MD; Bakalar,James B., Harvard Medical School Mental Health Review No. 1 (1990)

Drugs of Abuse, Giannini, A. James, M.D.; Slaby, Andrew E. M.D., Ph.D. Medical Economics Books, Oradell, New Jersey(1989), pages 265, 272, 297: Toluene:

Nystagmus
tremors cerebellar
rambling speech
light headedness
CNS depression that mimics Ataxia
Narcotic Analgesics
blank stare
euphoric mood
mental dulling
Ataxia
irritability
tremors

Manual of Drug and Alcohol Abuse, Guidelines for Teaching in Medical and Health Institutions, ed Arif, Awni. M.D., Westermeyer, Joseph, M.D.. Ph.D..D Plenum Medical Book Company, New York (1988)

brief euphoria
giddy intoxication, similar to alcohol
CNS depression (volatile solvents/toluene)
dizziness
Vertigo

Diagnostic and Statistical Manual of Mental Disorders (Third Ed, Revised), American Psychiatric Association (1987), p. 149.

Maladaptive behavioral changes, e.g., belligerence, assaultiveness, apathy, impaired judgment, impaired social or occupational functioning.

Nystagmus
incoordination
unsteady gait
depressed reflexes
tremor generalized muscle
stupor or coma
euphoria
dizziness
slurred speech
lethargy
psychomotor retardation
blurred vision or diplopia
weakness

CANNABIS:

DRE Symptomatology:
dilated pupils
odor of Marijuana
body tremors
relaxed inhibitions
paranoia
impaired perception of time and distance
marked reddening of conjunctivae
debris in mouth
eyelid tremors
increased appetite
disorientation

The Pharmacological Basis of Therapeutics, Seventh Edition, Gilman, A,; Goodman, I.; MacMillan Publishing Co. 1985, Cannabis, pages 559-561

euphoria
temporal disintegration
information processing impairment
dry mouth
short term memory impairment
balance and stance impairment
increased hunger
additive to alcohol

Lower doses affect perception, impairing well beyond when subject subjectively feels effects; alters all information processing; relatively simple motor skills unaffected

High doses:

- anxiety
- increased heart rate
- marked reddening of Conjunctiva
- hallucinations
- increased systolic blood pressure
- simple motor skills affected

Medical Toxicology-Diagnosis and Treatment of Human Poisoning, Ellenhorn, Matthew J., Barceloux, Donald G. Elsevier Science Pub. Co. 1988; Cannabis, page 678-681

- reddening of Conjunctiva
- motor coordination impairment
- relaxation
- temporal distortion (time slows)
- impairment of motor tasks and reaction times requires higher dosages
- loss of short term memory
- systematic thinking impaired
- dry mouth
- alteration in mood
- euphoria
- sleepiness
- decrease in balance, steadiness and muscle strength
- elective attention
- stimulated appetite

A Primer of Drug Action, Julien, Robert M. W.H. Freeman and Company, New York, 1997, Marijuana

- reddening of Conjunctiva
- increased blood pressure
- dry mouth
- altered sensory perception

Drug and Alcohol Abuse, A Clinical Guide to Diagnosis and Treatment, (3rd Ed. , Schuckit, M.D., Mark A. Plenum Medical Book Co, New York 1989, page 145: Cannabis:

- red Conjunctiva
- relaxation
- increased heart rate
- time distortion
- impairment in ability to do multi-step tasks
- decrease level of motor coordination
- euphoria
- dry mouth
- possibly Nystagmus
- short term memory
- tremors

Encyclopedia of Drug Abuse, O'Brien, Robert; Cohen, Sydney. M.D. Facts on File, INC New York (1984), pages 100, 120: Marijuana:

- red eye
- increased heart beat
- dryness of mouth and throat
- increased pulse rate
- increased appetite
- time and space distortions
- increased heart rate
- lack of coordination

Drug Abuse and Dependence, Grinspoon, Lester,MD; Bakalar,James B., Harvard Medical School Mental Health Review No. 1 (1990).page 19: Marijuana:

increased appetite	faster heartbeat
bloodshot eyes	confusion
agitation	incoordination
hallucinations	

Drugs of Abuse, Giannini, A. James, M.D.; Slaby, Andrew E. M.D., Ph.D. Medical Economics Books, Oradell, New Jersey(1989), page 296: Cannabis:

red Conjunctiva	increased appetite
pleasant relaxation	intensification of sensations
slowed time	passivity
apathy	Tachycardia (increased heart rate)
problems with motor coordination	

Manual of Drug and Alcohol Abuse, Guidelines for Teaching in Medical and Health Institutions, ed Arif, Awni. M.D., Westermeyer, Joseph, M.D.. Ph.D..D Plenum Medical Book Company, New York (1988), page 147: Cannabis:

red Conjunctiva	increased hunger
changes in time sense	short-term memory loss
memory	dry mouth
coordination	Tachycardia (rapid heart beat)
balance and stance	elevated systolic pressure affected

Diagnostic and Statistical Manual of Mental Disorders (Third Ed, Revised), American Psychiatric Association (1987), p. 140.

Maladaptive behavioral changes, e.g., euphoria anxiety, suspiciousness, or paranoid ideation, sensation of slowed time, impaired judgment, social withdrawal.

red Conjunctiva	increased appetite
Tachycardia (rapid heart)	dry mouth

Lack of Convergence:

Clinical Procedures for Ocular Examination, Kurtz and Carlson; McGraw-Hill Medical, 3rd Edition, September 26, 2003.

A Recognized Clinical Trial of Treatment for Convergence Insufficiency in Children, Scheiman, Cotter, Cooper, et al, Arch Ophthalmology, Jan 2005.