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Epidemiology of Anxiety Disorders

William W. Eaton, PhD
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The nature of anxiety

- ★ *Tripartite model*
 - Cognition
 - Behavior
 - Physiology
- ★ *Temporality*
- ★ *Group Response*

Diagnostic criteria

- ★ *Panic*
- ★ *Agoraphobia*
- ★ *Social Phobia*
- ★ *Specific Phobia*
- ★ *Generalized Anxiety Disorder*

Panic and panic disorder

- ★ *Prevalence*
- ★ *Symptoms accompanying panic attacks*
- ★ *Prevalence correlates of panic*
- ★ *Incidence of panic*
- ★ *Natural history of panic*

Phobias

- ★ *Prevalence*
- ★ *Prevalence correlates*
- ★ *Prevalence of fears and phobias*

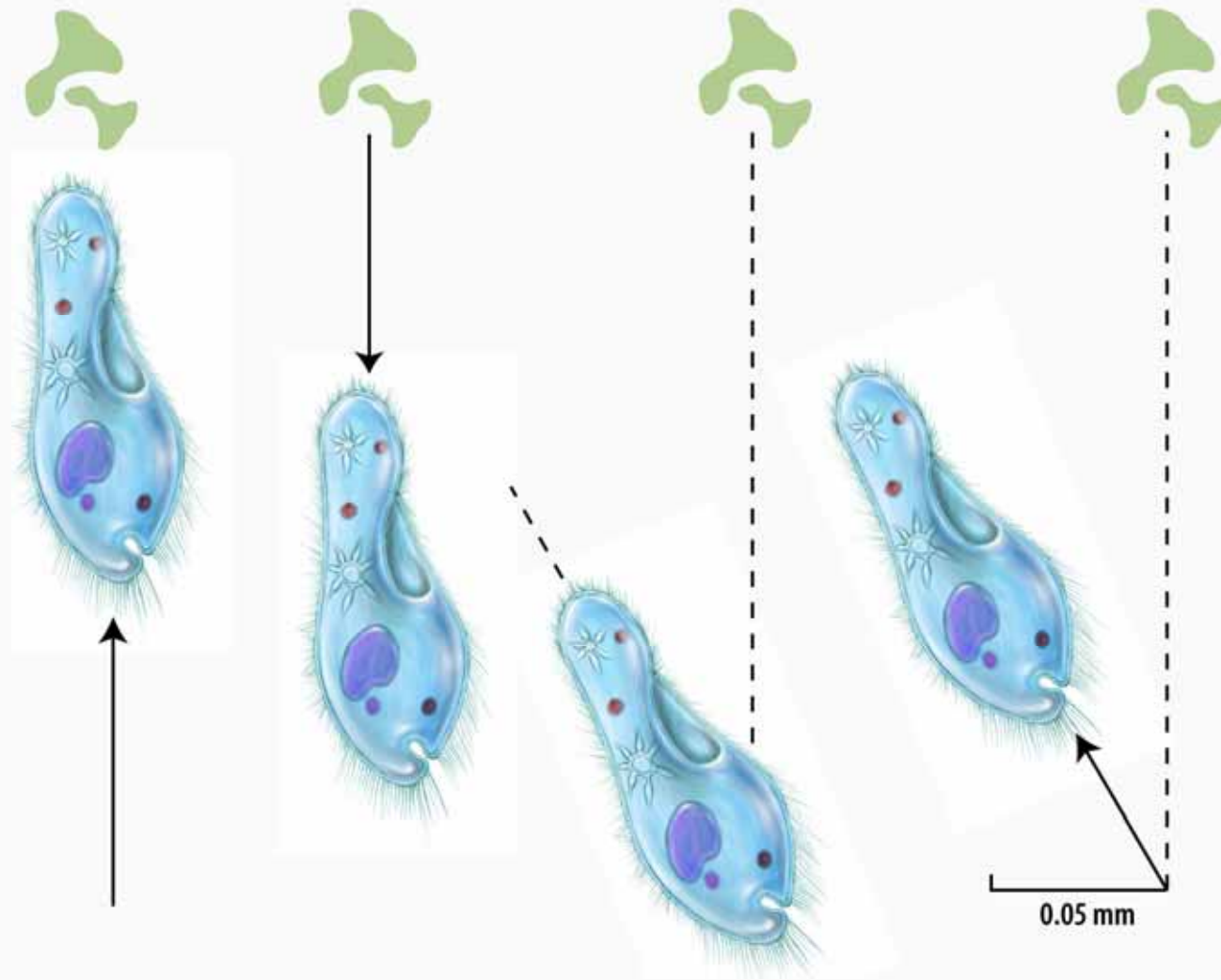


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Section A

The Nature of Anxiety

Avoidance Behavior in Paramecium



Four or more symptoms developed and peaked within 10 minutes

- ★ *Palpitations, pounding heart*
- ★ *Sweating*
- ★ *Trembling or shaking*
- ★ *Shortness of breath or smothering*
- ★ *Feeling of choking*
- ★ *Chest pain*
- ★ *Nausea*
- ★ *Feeling dizzy or faint*
- ★ *De-realization or depersonalization*
- ★ *Numbing or tingling sensation*
- ★ *Chills or hot flashes*

DSM-IV Criteria for Panic Disorder

Both (1) and (2)

(1) Recurrent unexpected Panic Attacks

(2) One month or more of the following:

(a) Concern about additional attacks

(b) Worry about consequences

(c) Change in behavior related to attacks

DSM-IV Criteria for Generalized Anxiety Disorder (GAD)

- A. Excessive anxiety and worry, occurring more days than not for at least six months
- B. The person finds it difficult to control the worry
- C. The anxiety and worry are associated with three or more of the following:
 - ★ *Restlessness or feeling keyed up*
 - ★ *Being easily fatigued*
 - ★ *Difficulty concentrating*
 - ★ *Irritability*
 - ★ *Muscle tension*
 - ★ *Sleep disturbance*

DSM-IV Criteria for Agoraphobia

- A. Anxiety about being in places or situations from which escape might be difficult
- B. The situations are avoided or are endured with marked distress
- C. The anxiety or phobic avoidance is not better accounted for by another mental disorder

DSM-IV Criteria for Social Phobia

- A. A fear of social or performance situations
- B. Exposure invariably provokes anxiety
- C. The fear is recognized as unreasonable
- D. The feared situations are avoided
- E. The avoidance, anxious anticipation, or distress interferes with the person's normal routine

DSM-IV Criteria for Specific Phobia

- A. Unexpected fear cued by the presence or anticipation of a specific object or situation
- B. Exposure always provokes anxiety
- C. The fear is recognized as unreasonable
- D. The situation is avoided or is endured with intense anxiety
- E. The avoidance or distress interferes with the person's normal routine

Anxiety disorders are differentiated by different patterns of the following:

- ★ *Cognition*
- ★ *Behavior*
- ★ *Physiology*
- ★ *Temporal aspects of symptoms*



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Section B

Descriptive Epidemiology of Panic and Panic Disorder

Diagnostic Interview Schedule (DIS)—Panic Disorder

1
2
3
4

62. Have you ever had a spell or attack when all of a sudden you felt frightened, anxious or very uneasy in situations when most people would not be afraid?

MD: _____ SELF: _____

INTERVIEWER: DID R TELL MD (CAUSE WRITTEN ON MD LINE IN Q. 62)?
NO ☐ YES ☐

INTERVIEWER: IF Q. 62 IS CODED "1," SKIP TO Q. 68.
ALL OTHERS, ASK Qs. 63-67

63. During one of your worst spells of suddenly feeling frightened or anxious or uneasy, did you ever notice that you had any of the following problems? During this spell, (READ EACH SYMPTOM AND CODE "YES" OR "NO" FOR EACH, REPEAT THE PHRASE "DURING THIS SPELL" FOR EACH.)

	NO	YES
A. were you short of breath—having trouble catching your breath?	<input type="radio"/>	<input type="radio"/>
B. did your heart pound?	<input type="radio"/>	<input type="radio"/>
C. were you dizzy or light-headed?	<input type="radio"/>	<input type="radio"/>
D. did your fingers or feet tingle?	<input type="radio"/>	<input type="radio"/>
E. did you have tightness or pain in your chest?	<input type="radio"/>	<input type="radio"/>
F. did you feel like you were choking or smothering?	<input type="radio"/>	<input type="radio"/>
G. did you feel faint?	<input type="radio"/>	<input type="radio"/>
H. did you sweat?	<input type="radio"/>	<input type="radio"/>
I. did you tremble or shake?	<input type="radio"/>	<input type="radio"/>
J. did you feel hot or cold flashes?	<input type="radio"/>	<input type="radio"/>
K. did things around you seem unreal?	<input type="radio"/>	<input type="radio"/>
L. were you afraid either that you might die or that you might act in a crazy way?	<input type="radio"/>	<input type="radio"/>

64. How old were you the first time you had one of these sudden spells of feeling frightened or anxious?
(IF R SAYS "WHOLE LIFE" CODE 02)

ENTER AGE & GO TO Q. 65

INTERVIEWER: IF "DK" AND R IS UNDER 40, CODE 01.
IF "DK" AND R IS 40 OR MORE, ASK A.

A. Would you say it was before or after you were 40?

Before 40 (RECORD 01)
After 40 (RECORD 95)
Still DK (RECORD 98)

65. Have you ever had 3 spells like this close together—say within a 3-week period?

No ☐ Yes ☐

66. Have spells like this occurred during at least 6 different weeks of your life?

No ☐ Yes ☐

New Cases of Panic Disorders with SCAN/Psychiatric Examination

Baltimore ECA Follow-Up

		SCAN Psychiatric Examination		
DIS Interview	Negative Positive	Negative	Positive	Total
		305	18	323
		1	7	8
		306	25	331

Prevalence of Panic and Panic Disorder

The U.S. National Comorbidity Survey

N = 8098

	Lifetime		Previous Month	
	%	SE	%	SE
Fearful spell	15.6	0.7	3.8	0.3
Intense fearful spell	11.3	0.5	3.0	0.3
Panic attack	7.3	0.3	2.2	0.2
Recurrent panic attack	4.2	0.3	1.7	0.2
DSM-III-R panic disorder	3.5	0.3	1.5	0.2
Four attacks in one month	2.3	0.2	1.3	0.2
Worry for one month	1.2	0.2	0.2	0.1
With agoraphobia	1.5	0.2	0.7	0.1

Cumulative Incidence of Panic Disorder

Baltimore ECA Follow-Up

Age in 1981	Total Followed	Total at Risk	Number of New Cases		Cumulative Incidence	
			With Agoraphobia	Without Agoraphobia	Proportion	Confidence Interval
18-29	604	591	12	6	0.027	0.013-0.410
30-44	544	531	9	6	0.028	0.012-0.044
45-64	440	426	1	1	0.006	0.000-0.014
65+	183	183	0	0	0.000	-
All age	1771	1731	22	13	0.020	0.012-0.027

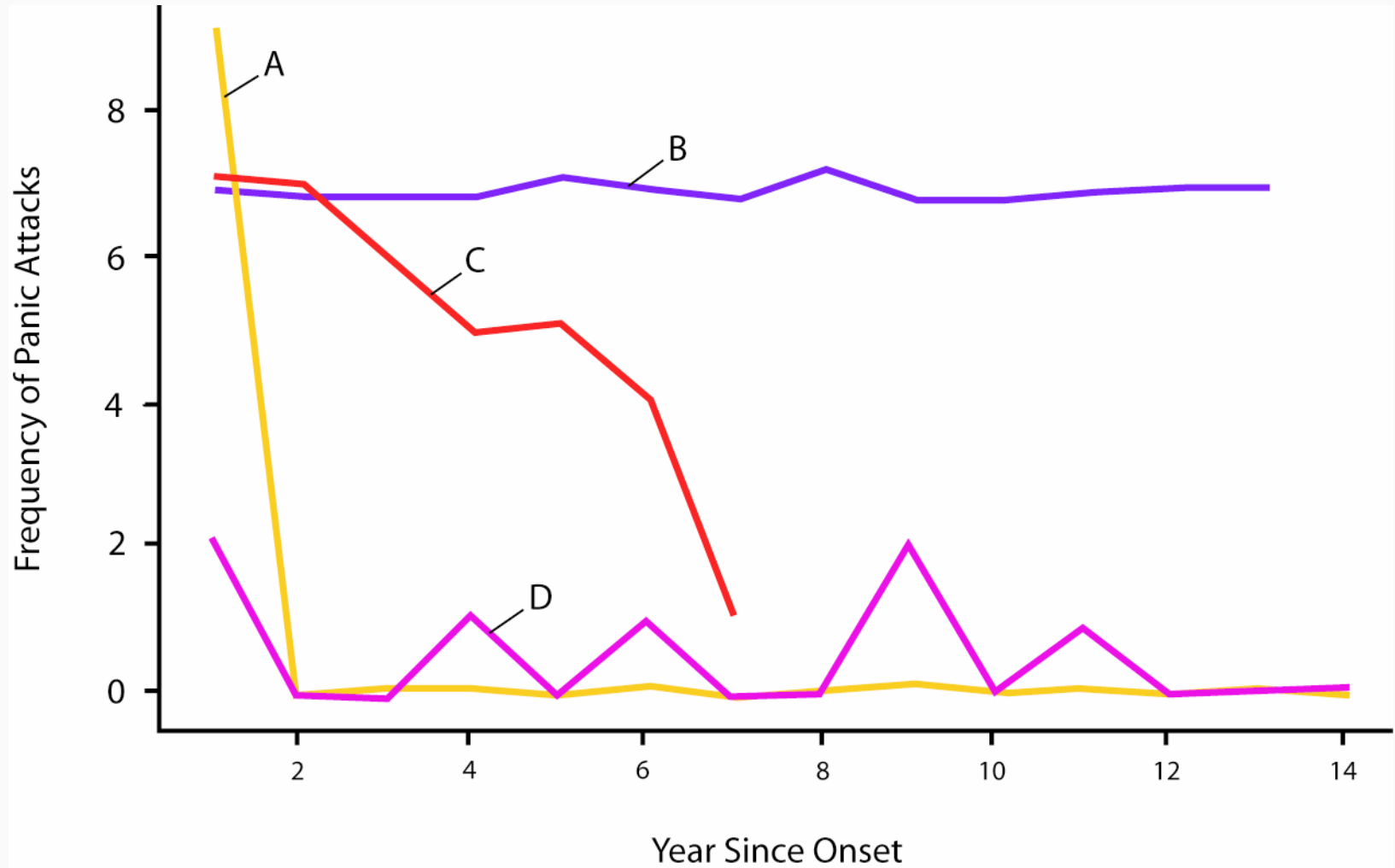
Annual Incidence of Panic Disorder

Baltimore ECA Follow-Up

	Annual Rate per 1,000*
Males	0.44
Females	1.93
18-29	3.43
30-44	2.32
45-64	0.61
65+	0.00
Total	1.43

35 new cases in 24,475 person-years of exposure over 13 years

Frequency of Attacks after Onset



Source: Adapted by DED from Eaton, et al. (1998), *Br J Psychiatry*; Course of panic disorder in new cases.
A, B, C, and D represent specific subjects discussed in the text;

Prevalence depends on threshold of definition of panic

Fearful attacks are common

Panic disorder is rare

Prior anxiety predicts more chronic course of panic disorder



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Section C

Correlates and Consequences of Panic

Correlates and Consequences of Panic National Comorbidity Survey

Unadjusted Odds Ratios	Panic Attacks N = 136	Panic Disorder N = 77	With Agoraphobia N = 31
Female	2.9	2.5	2.6
Male	1.0	1.0	1.0
15–24	1.4	1.3	3.1
25–34	1.0	0.8	3.2
35–44	1.2	0.9	5.1
45–54	1.0	1.0	1.0
White	0.8	1.3	0.8
Black	0.6	0.8	1.0
Other	0.9	1.8	1.2
Hispanic	1.0	1.0	1.0
< 12 years school	4.9	10.4	7.6
12 years school	4.7	8.6	5.8
13–15 years school	3.5	4.8	1.0
> 15 years school	1.0	1.0	1.0
> \$70,000 income	0.7	0.7	0.6
\$35,000–\$69,000 income	0.6	0.5	0.5
\$20,000–\$34,000	0.8	0.8	1.0
< \$20,000	1.0	1.0	1.0

Source: Data from Eaton, et al. (1994), *Am J Psychiatry*

Correlates and Consequences of Panic

Epidemiologic Catchment Area Program, 1980–1983

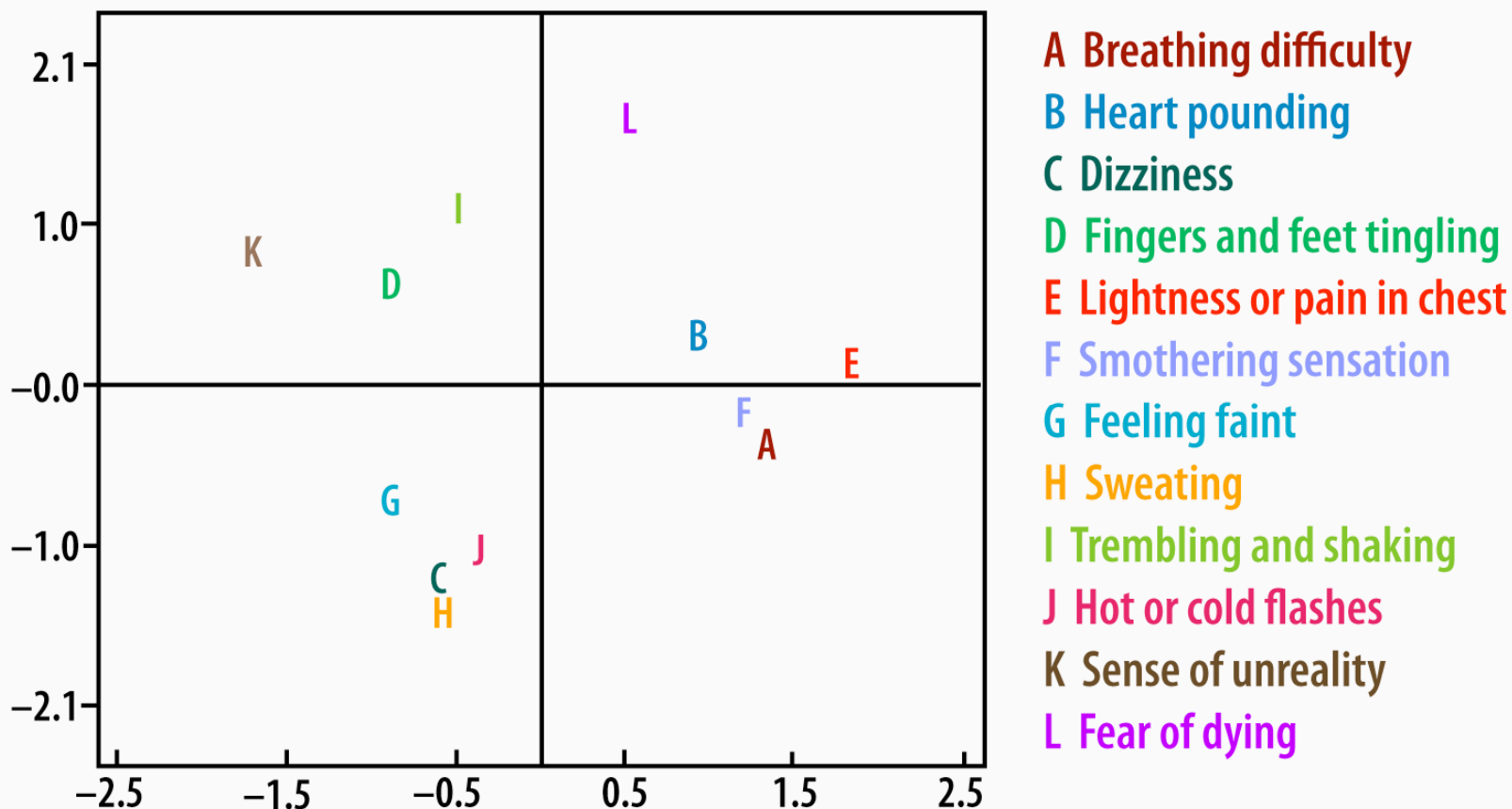
Relative Odds of Incident Panic Attacks and Disorders

Variable Age (years)	Relative Odds	
	Panic Attacks	Panic Disorder
18–29	0.87	1.52
30–44	1.00	1.00
45–64	0.94	1.86
65+	0.48	0.39
Male	1.00	1.00
Female	1.46	2.14
White	1.00	1.00
Black	0.68	0.75
Other Nonwhite	0.32	0.69
Married	1.00	1.00
Not Married	1.17	0.93
Occupational Prestige	0.95	0.80

Source: Data from Keyl and Eaton (1990), *Am J Epidemiol*.

Correlates and Consequences of Panic

Multi-Dimensional Scaling of Symptoms with Panic Attacks



Correlates and Consequences of Panic

Adjusted Relative Odds of Panic Attacks with Cardiovascular versus Psychologic Symptoms

Epidemiologic Catchment Area Program, 1980–1983

Condition	Relative Odds	
	Cardiovascular Symptoms	Psychologic Symptoms
Cardiac symptoms	8.36	2.23
Shortness of breath	5.88	3.06
Depression or major grief episode	9.88	10.84
Drug abuse/dependence	5.28	4.91
Alcohol abuse/dependence	4.82	4.59
Seizures	1.58	5.21

Correlates and Consequences of Panic

Adjusted Relative Odds of Panic Attack Onset

and Persistence with Treated Asthma

Epidemiologic Catchment Area Program, 1980–1983

	No Panic Attacks (1981)	Incident Panic Attacks (1982) aOR (95%CI)	Panic Attacks in 1981 and 1982 aOR (95%CI)
Treated Asthma in 1981	1.0	2.65 (1.11–6.34)	5.28 (2.21–15.62)
Treated Asthma in 1982	1.0	1.63 (0.64–4.14)	4.46 (1.69–11.77)
Treated Asthma in 1981 and 1982	1.0	3.11 (1.19–8.11)	8.61 (3.17–23.42)

Correlates and Consequences of Panic—Summary

Sociodemographic correlates:

- Female

- Low Socioeconomic Position

Various Somatic correlates, including:

- Heart conditions

- Seizures

- Asthma



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Section D

Phobias

Prevalence of Phobias by Sex

The U.S. National Comorbidity Survey

N = 8098

Prevalence in Percent

	Agoraphobia		Simple Phobia		Social Phobia	
	Lifetime	30-Day	Lifetime	30-Day	Lifetime	30-Day
Males	4.1	1.4	6.7	2.3	11.1	3.8
Females	9.0	3.1	15.7	8.7	15.5	5.2
Total	6.7	2.3	11.3	5.5	13.3	4.5

Lifetime Prevalence of Fears and Phobia

National Comorbidity Survey and Epidemiologic Catchment Area (ECA) Program

	Unreasonable Fear		Phobia
	NCS	ECA-4 sites 1980-1983	ECA
Height	20	14	5
Closed Spaces	12	6	2
Storms	9	6	3
Water	9	9	3
Animals	22	3	1
Bugs, Mice, Snakes, Bats	-	16	6
Other Fears	-	4	2
Blood	14		4
Flying	13	-	-
Being Alone	7	-	-
Any	50	35	15

Source: Data from Magee, et al. (1996), *Arch Gen Psychiatry*; Eaton et al.,
Psychiatric Disorders in America; Bienvenu and Eaton (1998), *Psychol Med.*,

Continued

Lifetime Prevalence of Fears and Phobia

National Comorbidity Survey and Epidemiologic Catchment Area (ECA) Program

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Other Fears	-	4	2
Blood	14		4
Flying	13	-	-
Being Alone	7	-	-
Any	50	35	15

Source: Data from Magee, et al. (1996), *Arch Gen Psychiatry*; Eaton et al.,
Psychiatric Disorders in America; Bienvenu and Eaton (1998), *Psychol Med.*,

Prevalence Correlates of Phobias

National Comorbidity Survey

	Agoraphobia	Simple Phobia	Social Phobia
Unadjusted Odds Ratios			
Education (Years of School)			
0–11	9.0	3.1	3.0
12	4.9	2.3	1.7
13–15	2.7	1.9	1.9
16+	1.0	1.0	1.0
Income			
<\$20,000	7.7	2.2	2.2
\$20,000–\$34,000	3.5	1.7	1.6
\$34,001–\$69,000	2.5	1.8	1.4
\$69,001 or more	1.0	1.0	1.0

Sociodemographic Risk Factors for Two Types of Agoraphobia

	Situational Agoraphobia	Classic Agoraphobia
Age		
18–29	0.93	0.74
45–64	0.78	0.44
65+	1.07	0.04
Gender		
Female	2.97	1.93
Race		
Black	1.14	0.55
Other Non-White	1.12	0.70
Marital Status		
Never Married	1.09	0.82
Divorced, Widowed, Separated	1.03	1.74
Living Situation		
Alone	1.12	1.15
With Two or More	0.99	0.93
Years of Education		
1–9	1.13	1.77
16+	0.59	0.92
Occupational Rank		
Each Decile Higher	1.00	0.86

Source: Data from Eaton and Keyl (1990), *Arch Gen Psychiatry*,

A form of specific phobia

Slowing of the heart during fearful spell

Very little epidemiologic data

Possible implications for health care

Lifetime prevalence about 3% (Baltimore ECA)

More common among females, those with low education

History of fainting and seizures more common

Unreasonable fears are quite common

Prevalence of phobias common

More common among . . .

- Females

- Low Socioeconomic position

Prevalence of Generalized Anxiety Disorder in the ECA Program

One Year Prevalence in percent– three sites (Panic or Depression excludes GAD)	
Males	1.86
Females	3.37
Less than 30	3.51
30-44	2.12
45-64	2.81
65+	1.90

Source: Blazer, Dan G., Hughes, Dana, George, Linda K.; Swartz, Marvin, Boyer, Richard, Generalized Anxiety Disorder, in Robins, Lee N., and Regier, Darrel A., *Psychiatric Disorders in America: The Epidemiologic Catchment Area Study*, New York, The Free Press, 1991, pages 181-203 (Table 8-3, page 187).

Continued

Prevalence of Generalized Anxiety Disorder in the ECA Program

One year prevalence in percent in Durham, By Occupational level in Quintiles	
Lowest	8.5
Low Middle	5.0
Middle	3.4
High Middle	3.9
High	1.6

Source: Blazer, Dan G., Hughes, Dana, George, Linda K.; Swartz, Marvin, Boyer, Richard, Generalized Anxiety Disorder, in Robins, Lee N., and Regier, Darrel A., *Psychiatric Disorders in America: The Epidemiologic Catchment Area Study*, New York, The Free Press, 1991, pages 181-203 (Table 8-7, page 195).

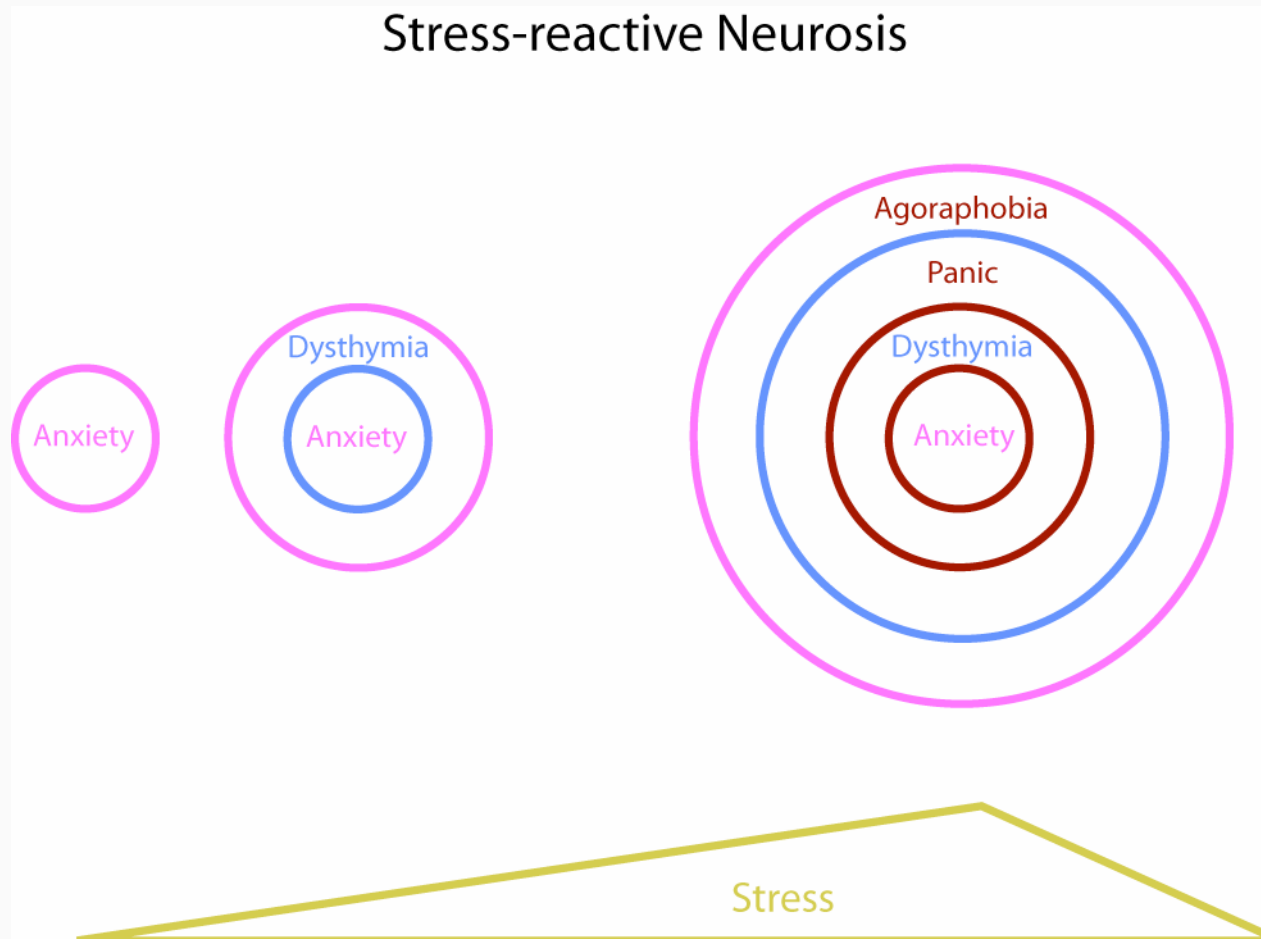


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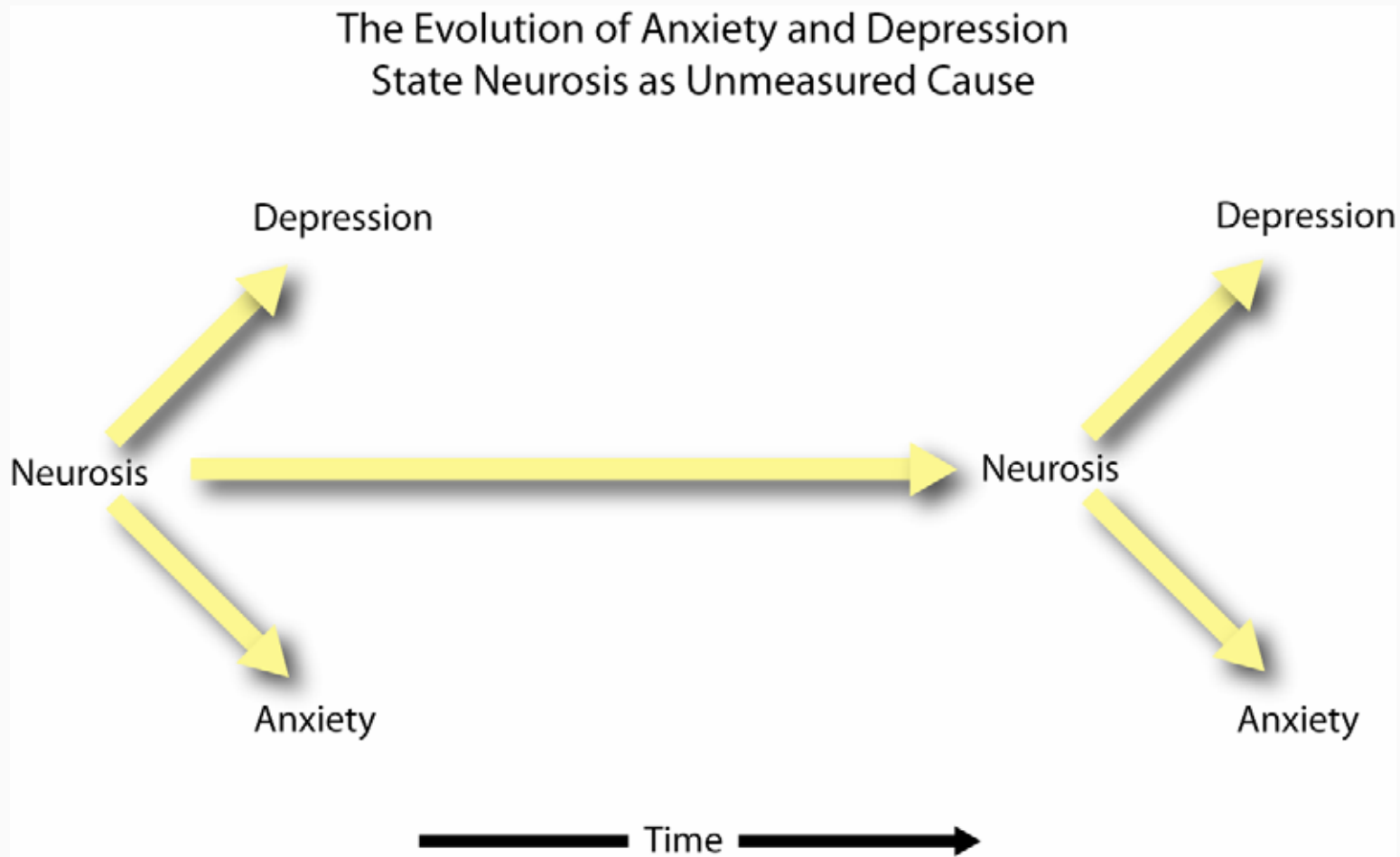
Section E

Comorbidity of Anxiety and Depression

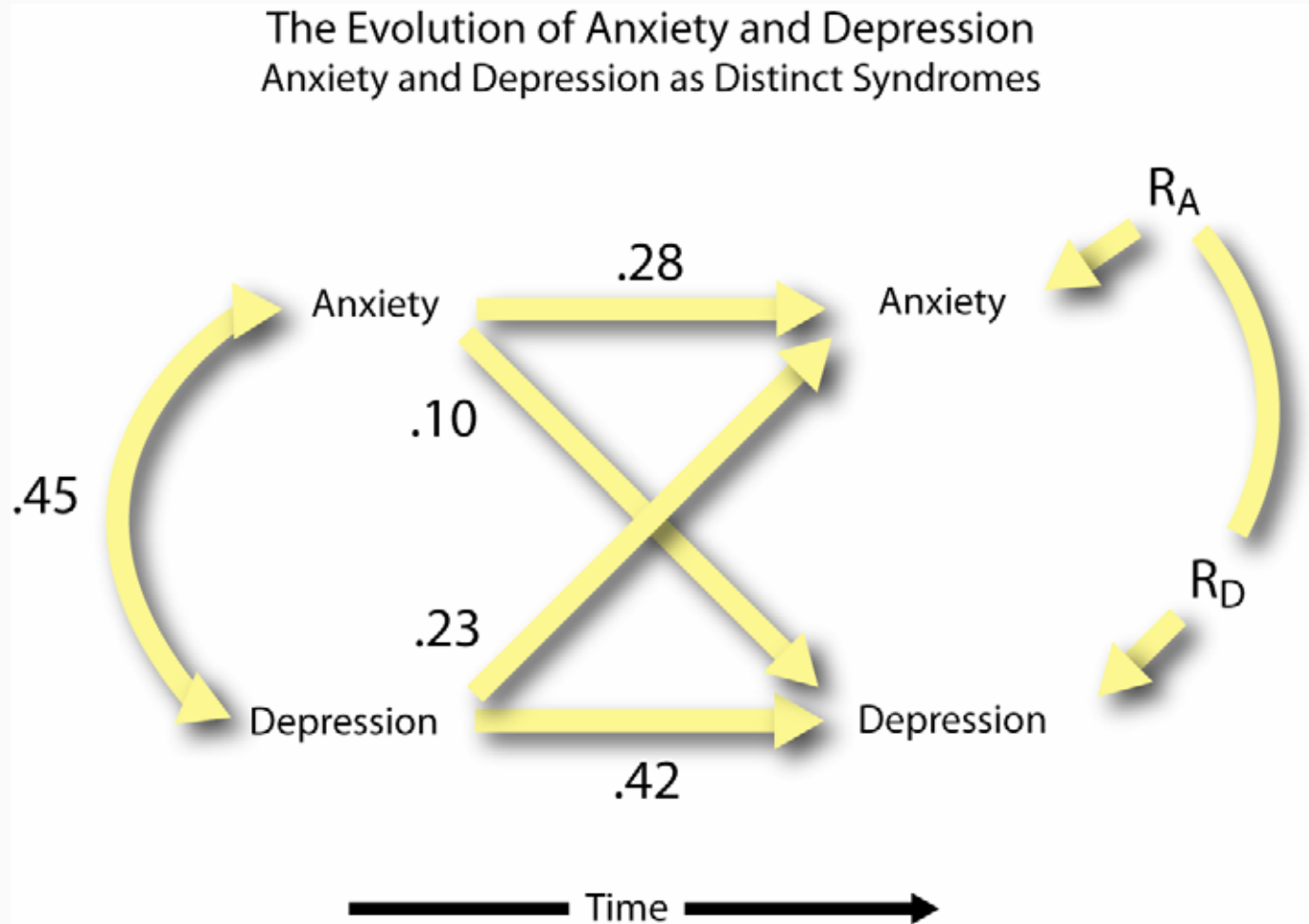
Stress-Reactive Neurosis



The Evolution of Anxiety and Depression

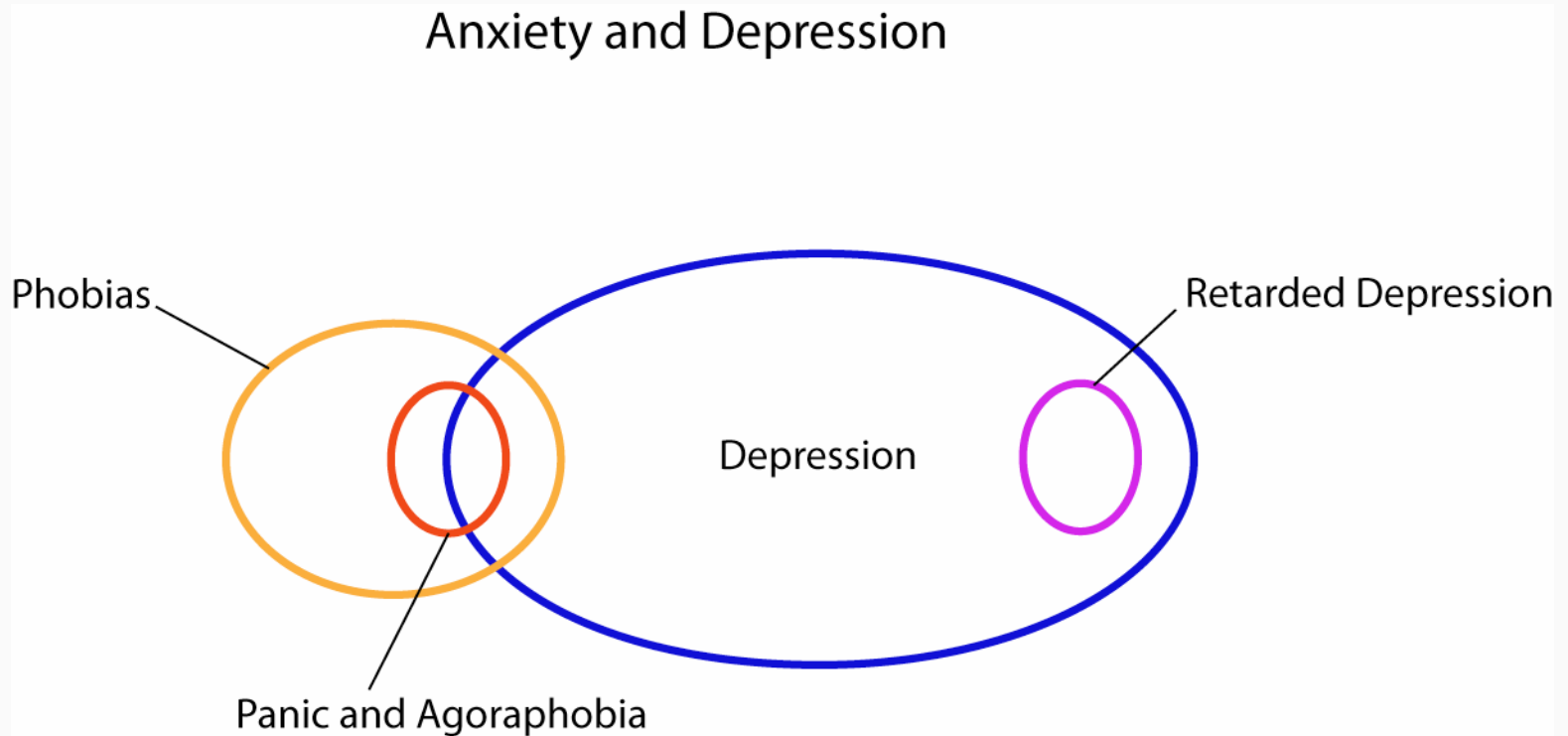


The Evolution of Anxiety and Depression



Source: Adapted from *Eaton and Ritter (1988). Distinguishing anxiety and depression with field survey data.*
Psychological Medicine, 18, 155-166.

Anxiety and Depression

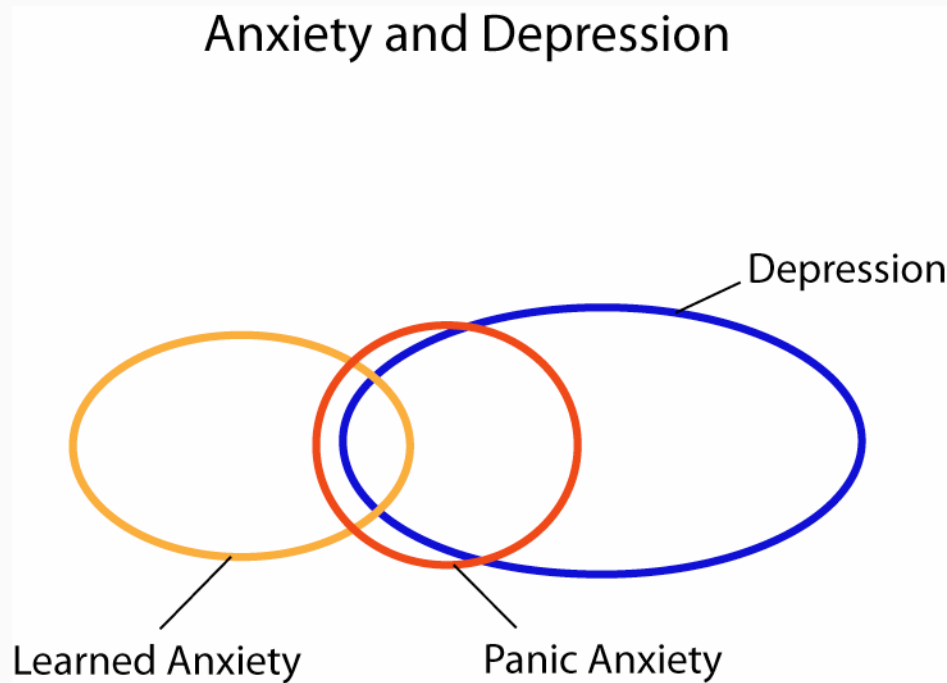


Factor Analysis

Selected Symptoms of Anxiety and Depression

	Factor Loadings	
	I	II
Dysphoria	.89	-.09
Appetite/Sleep/Concentration/Tired	.33 - .79	-.06 - .24
Psychomotor	.51 - .62	.23
Suicide	.63 - 1.01	-.24 - .07
Fainting/SOB/Dizzy/Weak	.35 - .55	-.06 - .30
Phobias	-.26 - .36	.44 - .92
Nervousness	.52	.14
Panic	.58	.27

Source: Muthen, Sociological Methods and Research, 1989.



Comorbidity of Anxiety and Depression

Summary

Cross sectional and prospective overlap

Genetic overlap

Similar biochemical treatments

Similar stress triggers

Similar protective effects of social supports

Both panic and depressive disorder predict suicide

Distinct relationships to socioeconomic position?

Descriptive Epidemiology of Twelve Psychiatric Disorders

Diagnosis	Lifetime prevalence	Inter-quartile range	Number of studies	Annual incidence per 1000
Autism	0.05	0.04-0.10	23	NA
Attention Deficit	6.2	2.2-6.7	6	NA
Conduct Disorder	5.4	NA	1	NA
Eating Disorders	1.2	1.0-2.8	7	0.18
Agoraphobic Disorder	5.3	3.6-5.7	7	22.0
Panic Disorder	1.6	1.1-2.2	11	1.4
Social Phobic Disorder	1.7	1.7-2.7	6	4.0
Alcohol Disorder	13.0	10.7-15.9	15	17.9
Major Depression	9.0	8.4-16.0	15	3.0
Schizophrenia	0.3	0.16-0.56	25	0.2
Bipolar Disorder	0.6	0.4-0.8	9	0.3
Dementia	4.9	3.6-7.2	23	6.0

Summary of Risk Factors and Correlates

For all anxiety disorders . . .

- ★ *Being female raises risk*
- ★ *Low socioeconomic position is a risk factor*
- ★ *Marriage is probably protective*
- ★ *Depression is risk and consequence*