Depressive disorders and ADHD

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Outline

1. Early onset depressive disorders: definition
2. Key risk factor of inattention for early onset depressive disorders
3. Implications for assessment and treatment

1. Diagnosis-some comments:

DSM-IV definition of a mental disorder-

a clinically significant
behavioural or psychological syndrome or *pattern* that occurs in an individual

and

is associated with *present distress* or *disability* (impairment in one or more areas of functioning) or significantly increased risk of suffering, death, pain or disability or an important loss of freedom

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1. Diagnosis-some comments

in children and adolescents-

clinically significant, that is developmentally inappropriate, pattern of symptoms has to be associated with clinically significant impairment in social, academic, occupational or other important areas of functioning

clinically significant impairment has to be judged relative to children of the same age, gender and IQ

1. Diagnosis-some comments

within a developmental context

symptom patterns and associated impairment
in social, academic, occupational or other important areas of functioning

need to be monitored longitudinally so the clinician can accurately assess the child
[1] within their current developmental phase and
[2] across developmental phases as each child develops

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1. Diagnosis-some comments

multi-informant report: category and dimension

parent,
teacher
child

low agreement rate repeatedly shown

varys between externalising and internalising disorders
externalising: parent-teacher: increased agreement
internalising: child-teacher: increased agreement

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1. Diagnosis- some comments

a dimensional description of symptoms used to make a diagnosis can provide additional evidence that the symptoms are indeed in the clinical range

normally distributed dimension:

mean, median, mode-equal

within 1 standard deviation:	68% values lie
within 1.5 standard deviations:	81.8% values
within 2 standard deviations:	95.5% values lie
within 3 standard deviations:	99.7% values lie

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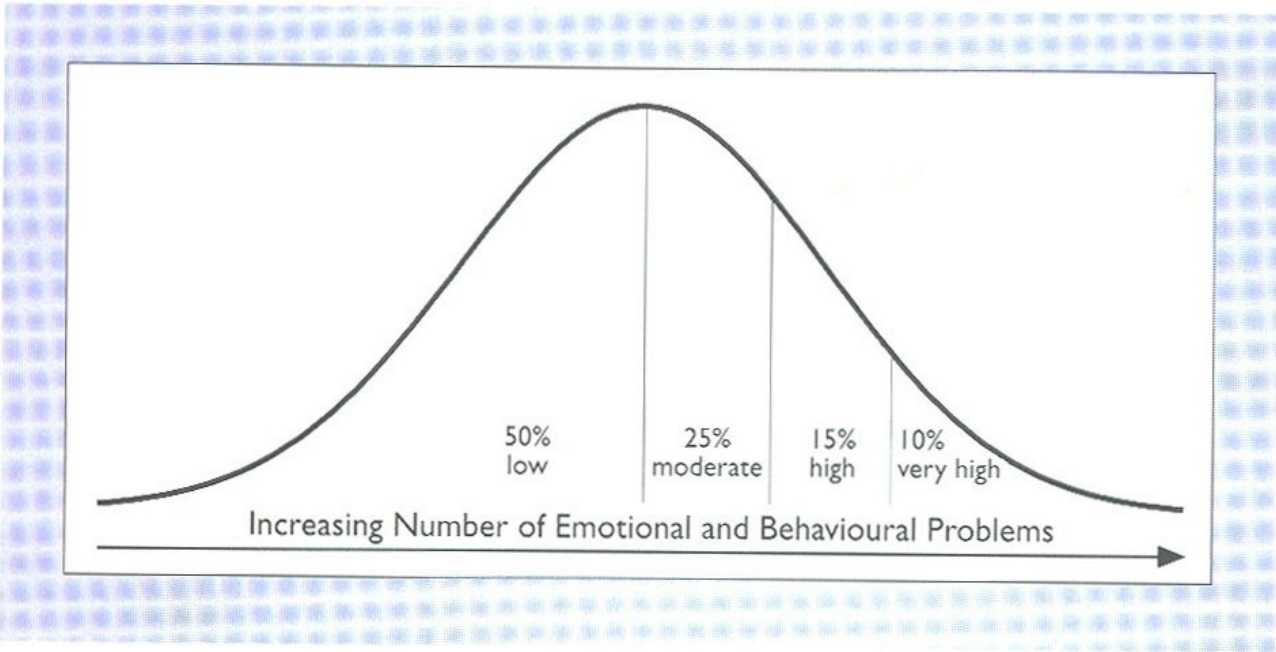
Figure 4.1 Problem level categories for children and adolescents as rated on the Total Problems Scale of the Child Behaviour Checklist



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1. **Diagnosis – some comments**

characteristics of individuals and groups of individuals at the extremes of a normal distribution essentially differ from those individuals that lie closer to the mean

brain behaves differently
environment behave differently

Major depressive disorder – one or more major depressive episode(s) characterized by the following:

period of two weeks or more

-depressed and/or irritable mood predominant and/or

-loss of interest or pleasure

-3 or 4 or more of the following;

feelings of worthlessness or excessive or inappropriate guilt, >5% weight change in a given month, in/hyper somnia, psychomotor agitation/retardation, anergia (fatigue), **decreased concentration or ability to think or decisiveness**, recurrent thoughts of death, suicidal ideation, suicide plan or suicide attempt

symptoms cause impairment in interpersonal, social, academic, occupational functioning

not due to a substance, medical condition or bereavement

Dysthymic disorder is characterized by the following:

1 year or more (most of the day, for more days than not),
<2 months absence in a given year

-depressed and/or irritable mood predominant

-2 or more of the following:

feelings of hopelessness, low self-esteem

appetite change, in/hyper somnia, anergia (fatigue),

decreased concentration or decisiveness

no major depressive episode evident in first year of the symptoms

symptoms cause impairment in interpersonal, social, academic, occupational functioning

not due to a substance, medical condition or bereavement

approximately 2/3 DD ⟶ MDD

additive effect of ‘double’ depressive disorder
on morbidity and treatment non-responsiveness

relates to known ‘biological’ and ‘environmental’ factors

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Comorbidity within a developmental context
-some comments

Common comorbid disorders with early onset depressive disorders

- oppositional defiant disorder/conduct disorder
- ADHD
- anxiety disorders
- learning disorders (language-based/visuo-spatial)
- developmental coordination disorder
- speech/language disorders

Standard multiple regression of ADHD-CT, dysthymic and anxiety disorder symptoms on the CBCL-externalising subscale in primary school age children with ADHD-CT (N=183)

	B (unique)	β	sr^2
ADHD-CT sx	.87*	.51	.20
Dysthymic d sx	1.11*	.35	.08
Anxiety d sx	-.22	-.08	

*p<.0005

R^2 = .51

Adjusted R^2 = .50

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Comorbidity within a developmental context -some comments

Common clinical presentations

- arguing back, negativistic child
- inattentive child
- anxious, shy, 'shut down' child
- school refusing child
- experimenting, 'high risk' behaviours

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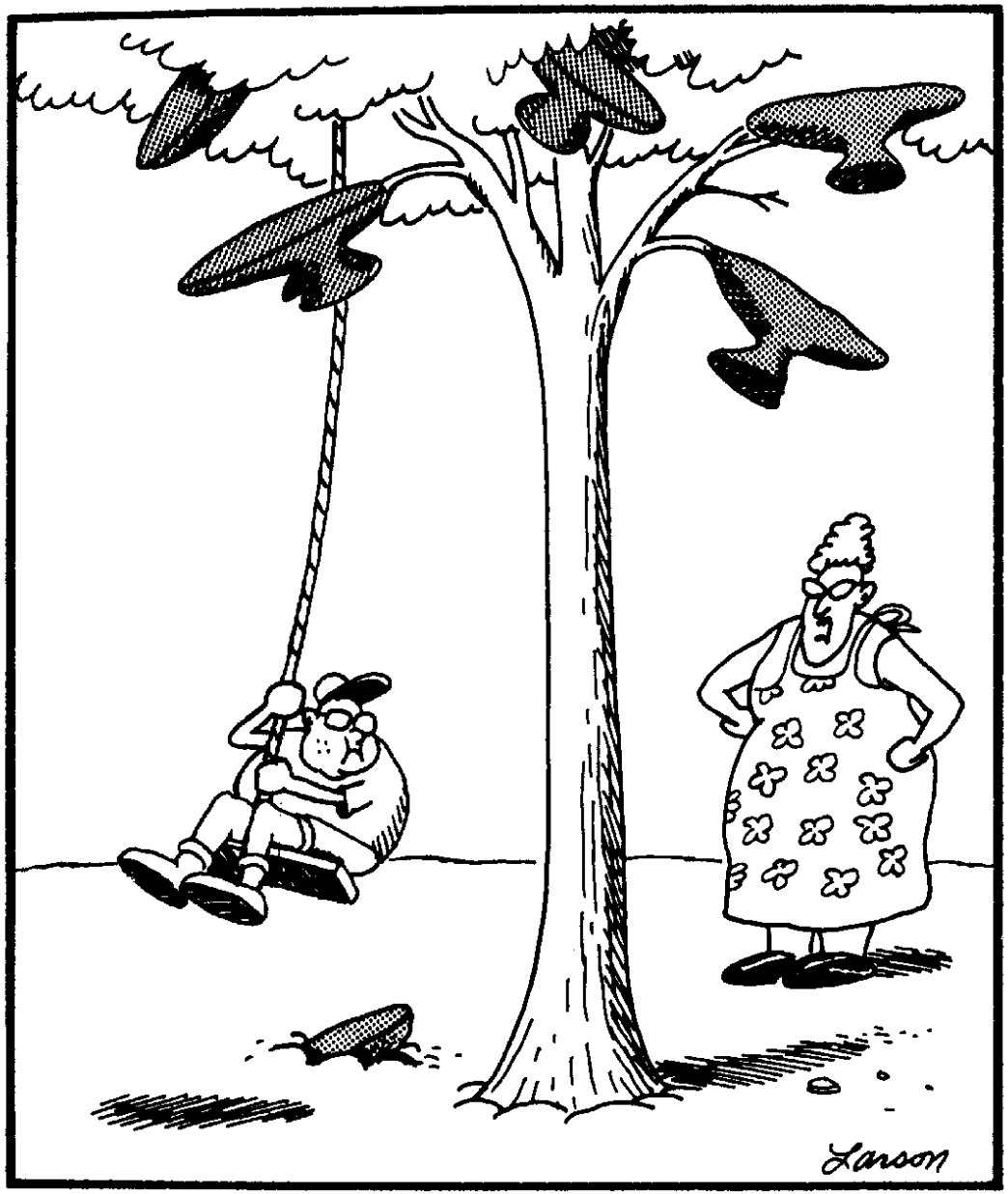

"All right, Billy, you just go right ahead! . . . I've warned you enough times about playing under the anvil tree!"

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Some current clinical research

Spatial memory: encoding and retrieval aspects

Spatial working memory: 'holding in mind' and manipulation aspects

Relatively human language-free / experimenter bias free

Well described brain behaviour relationships

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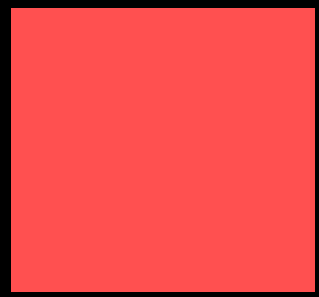
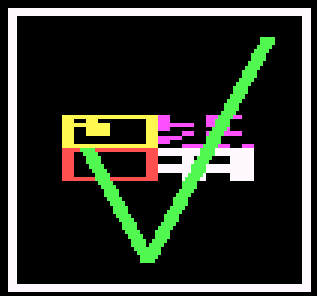
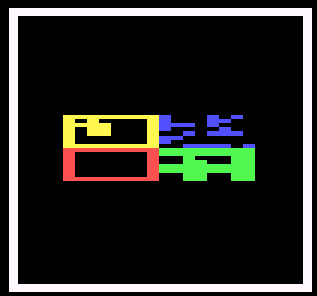
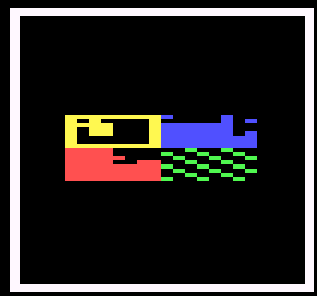
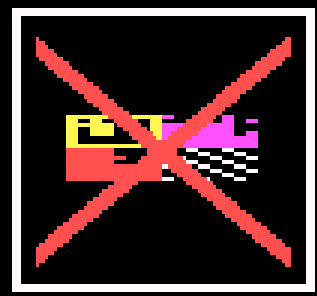
CORRECT





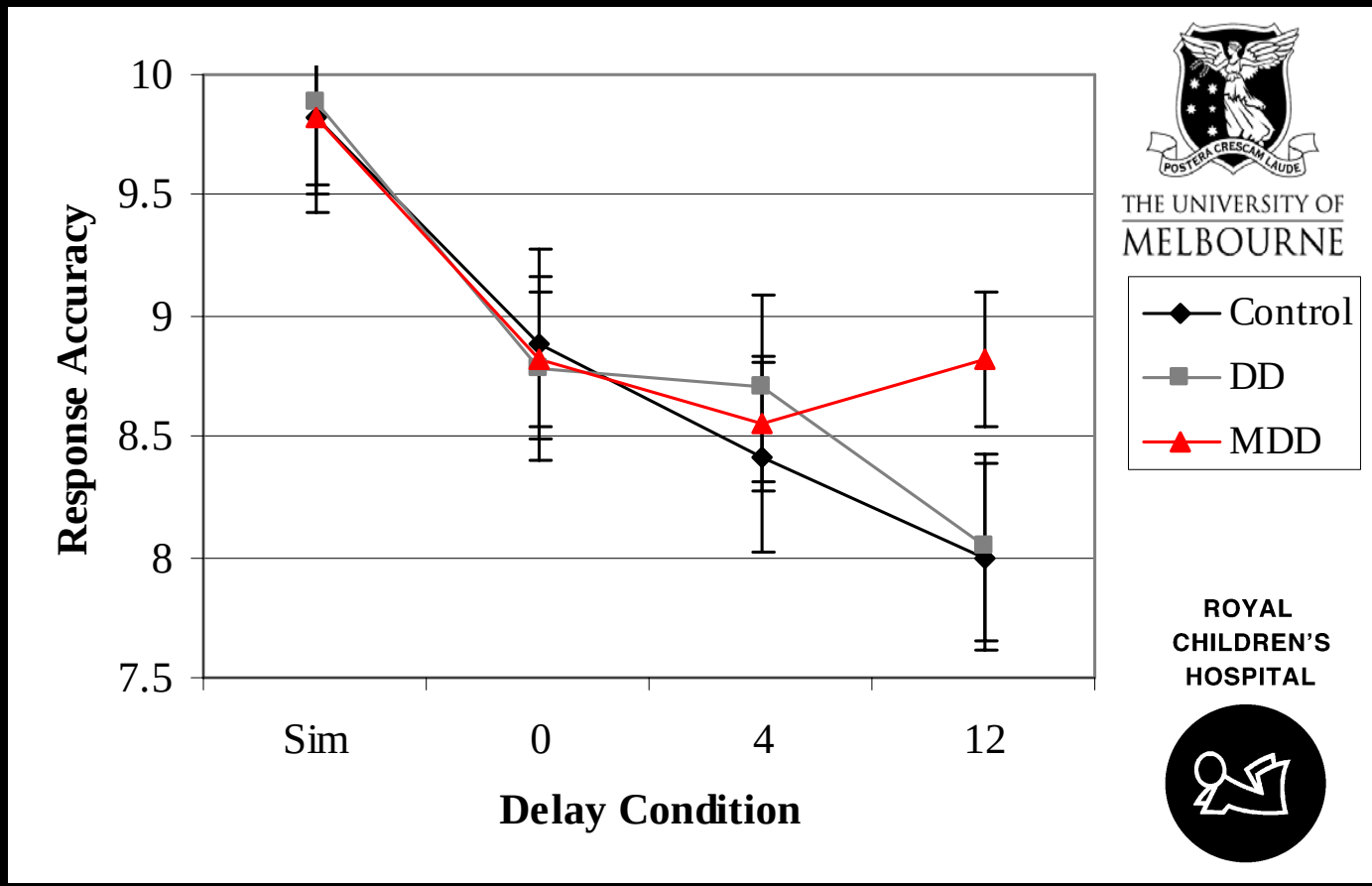




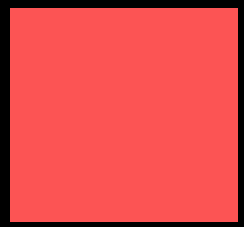


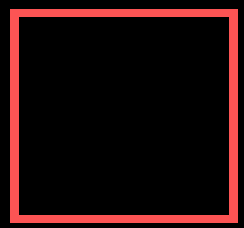
Spatial memory: simultaneous and delayed

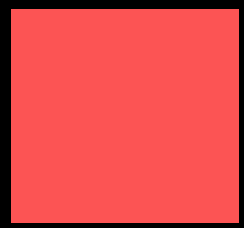
Delayed Matching To Sample(DMTS) (mean correct responses) at simultaneous and three delay conditions across the three groups, covarying for age



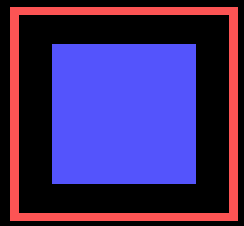
Level of delay (simultaneous, 0,4,12 seconds)
[a] $F(4, 144)=2.55$, $p=.04$
[b] MDD > controls / DD, Cohen's d = .68 / 60

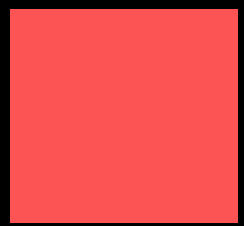


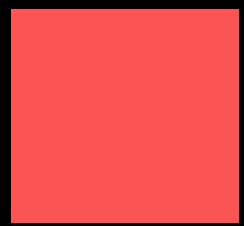




Spatial working memory
(manipulate)

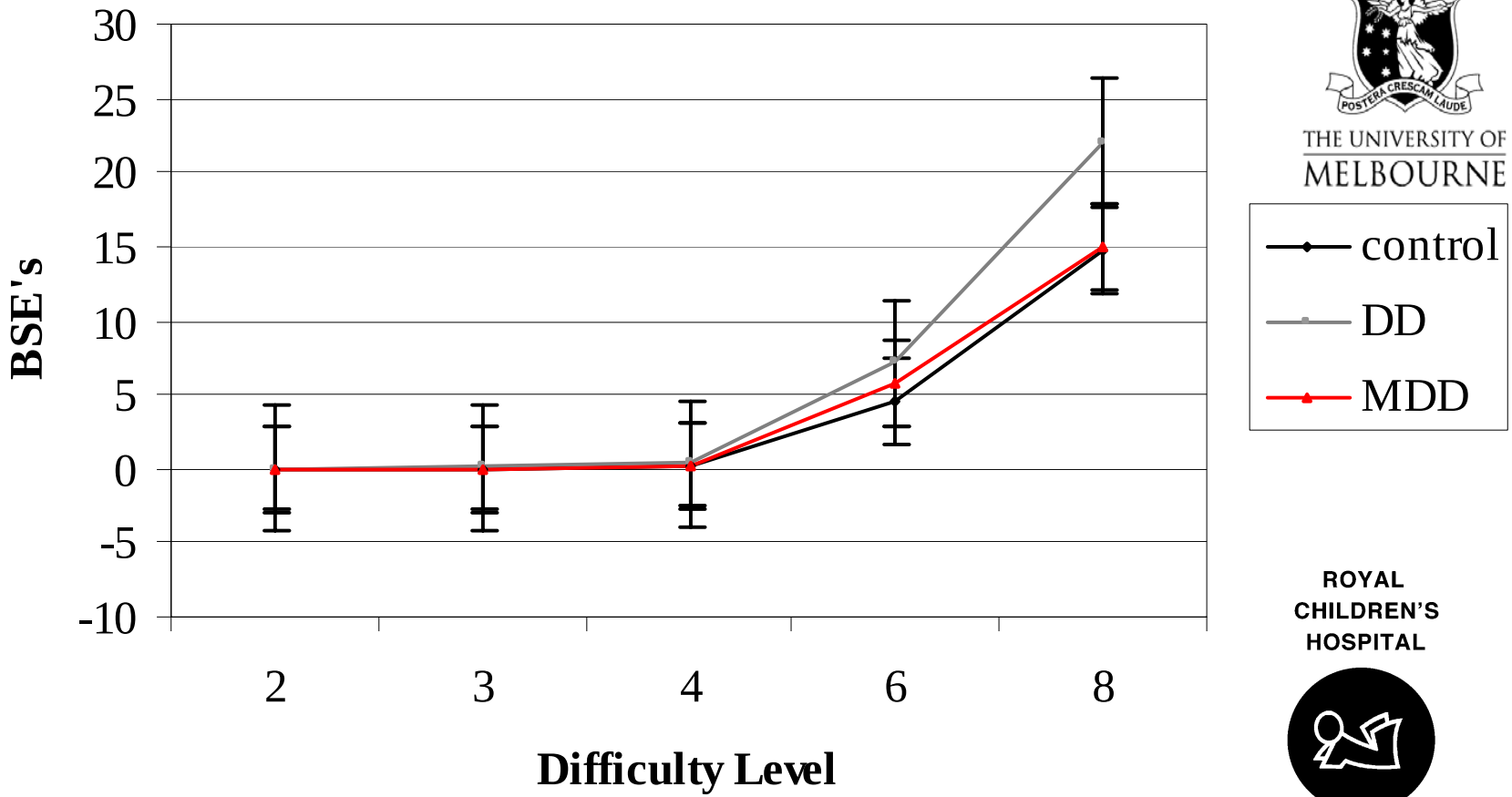






Spatial working memory
(manipulate)

Between Search Errors(BSE) (mean) at each level of difficulty across the three groups, covarying for age

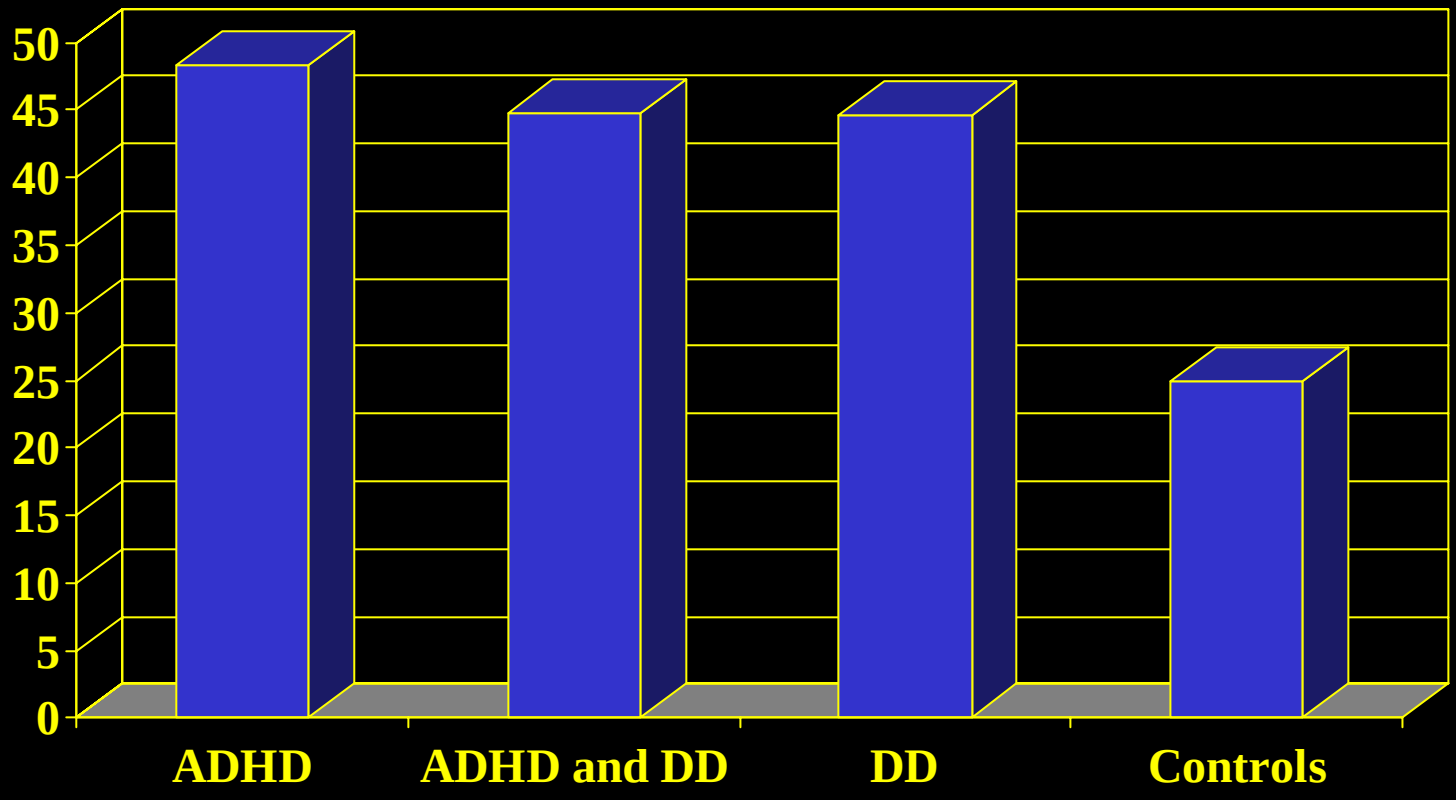


Level of difficulty (number of boxes)

[a] $F(2,74)=4.00$, $p=.02$, partial $\eta 2 = .10$

[b] DD > controls/MDD, Cohen's d=.82/.60

Total Between-Search-Errors (BSE)



Controls > ADHD = ADHD and DD = DD

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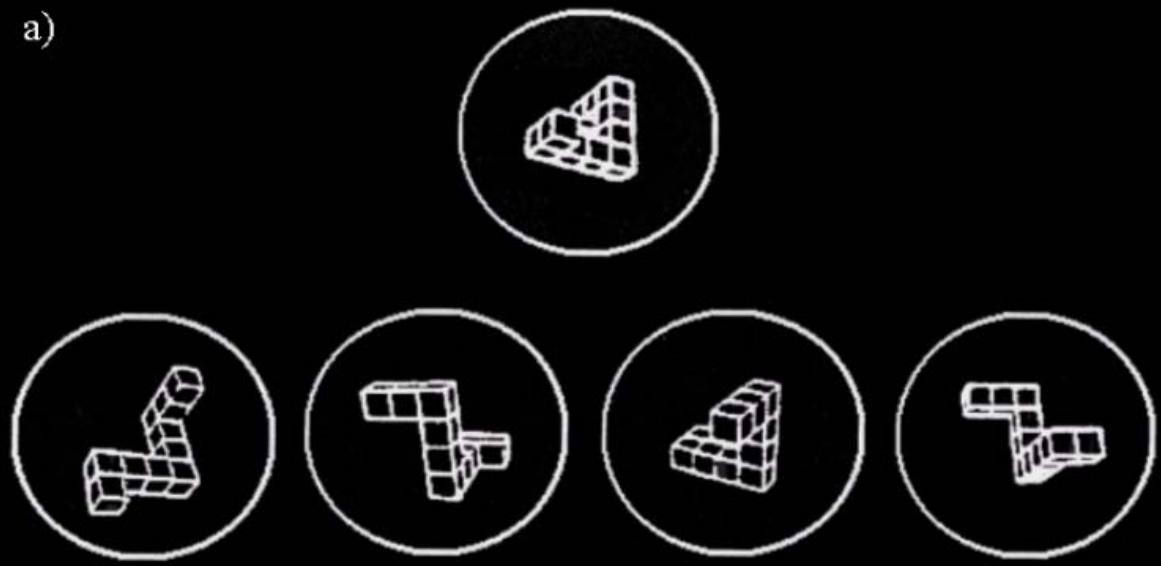
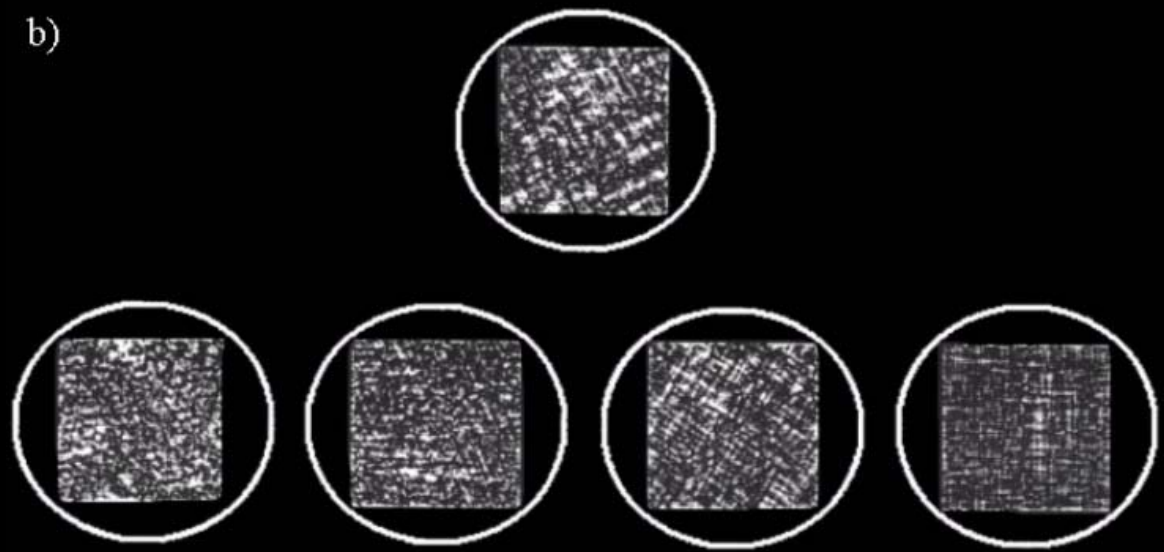
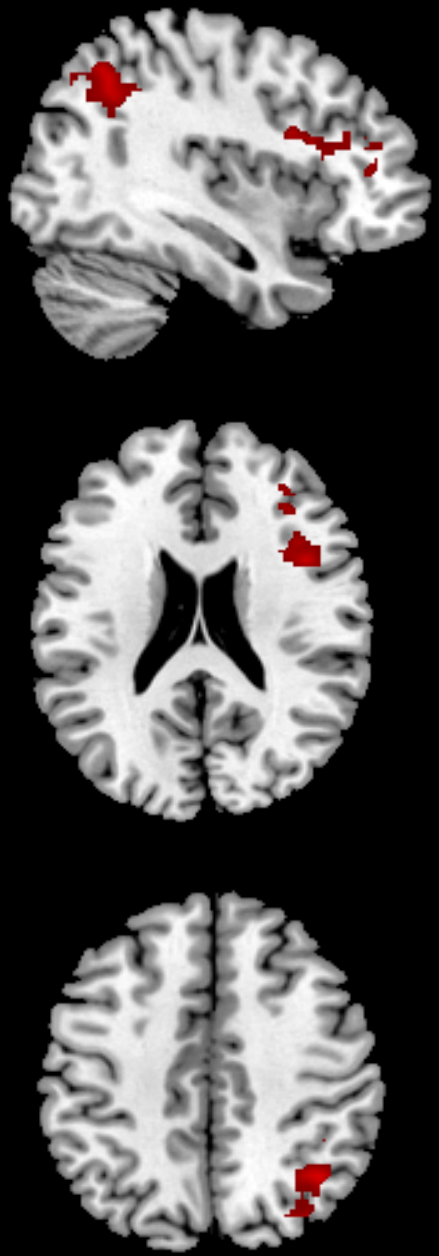
a)



b)





Greater Activation for Control than Dysthymic Disorder

Region	BA	x	y	z
Right Frontal Lobe				
Inferior Frontal Gyrus	9	42	10	22
Middle Frontal Gyrus	46	44	42	14
Middle Frontal Gyrus	46	40	18	20
Middle Frontal Gyrus	10	34	40	20
Inferior Frontal Gyrus	44	50	14	14
Right Parietal Lobe				
Inferior Parietal Lobule	40	40	-58	44
Superior Parietal Lobule	7	36	-74	44
Inferior Parietal Lobule	39	48	-62	40
Superior Parietal Lobule	7	30	-74	44
Precuneus	19	34	-66	36
Inferior Parietal Lobule	40	42	-44	44

N=14, CBCL inattention subscale T score: 70.88 (9.75)

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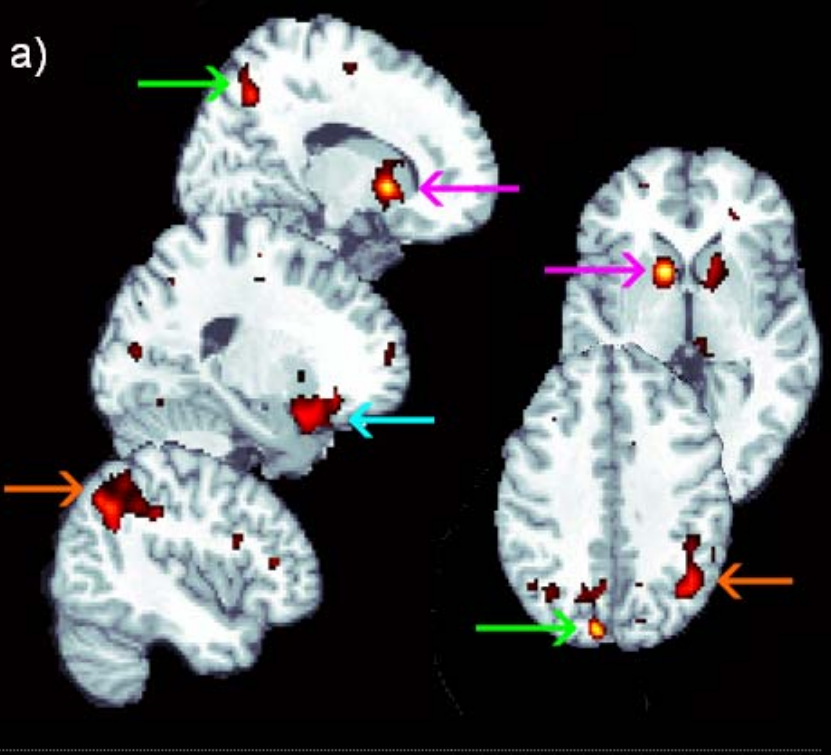
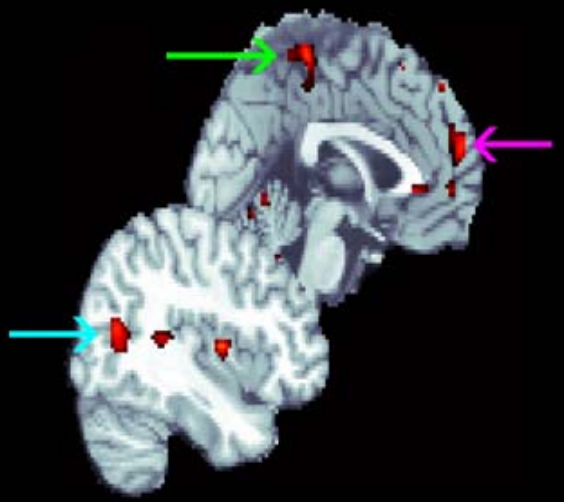
a)



Greater activation for Control than ADHD group.

Region	BA	x	y	z
Left Prefrontal				
Caudate Head		-15	12	0
Sup Frontal Gyr.	10	-27	54	3
Inf Frontal Gyr.	46	-30	30	12
Right Prefrontal				
Ventral Inf Frontal Gyr.	47	18	12	-21
Right Parietal				
Inf Parietal Lob.	40	42	-57	39
Sup Parietal Lob.	7	36	-60	51
Occipital				
Left Precuneus	19	-12	-81	42
Right Cuneus	19	15	-84	33

b)



Greater activation for ADHD than Control group.

Region	BA	x	y	z
Medial Sup Frontal Gyr.	10	-9	63	15
Posterior Cingulate Gyr.	31	18	-24	30
Left Temporal				
L Sup Temporal Gyr.	13	-36	-27	6
L Mid Temporal Gyr.	39	-48	-60	9

Silk, Vance et al, B J Psych 2005

N=14, CBCL inattention subscale T score: 72.23 (10.72)

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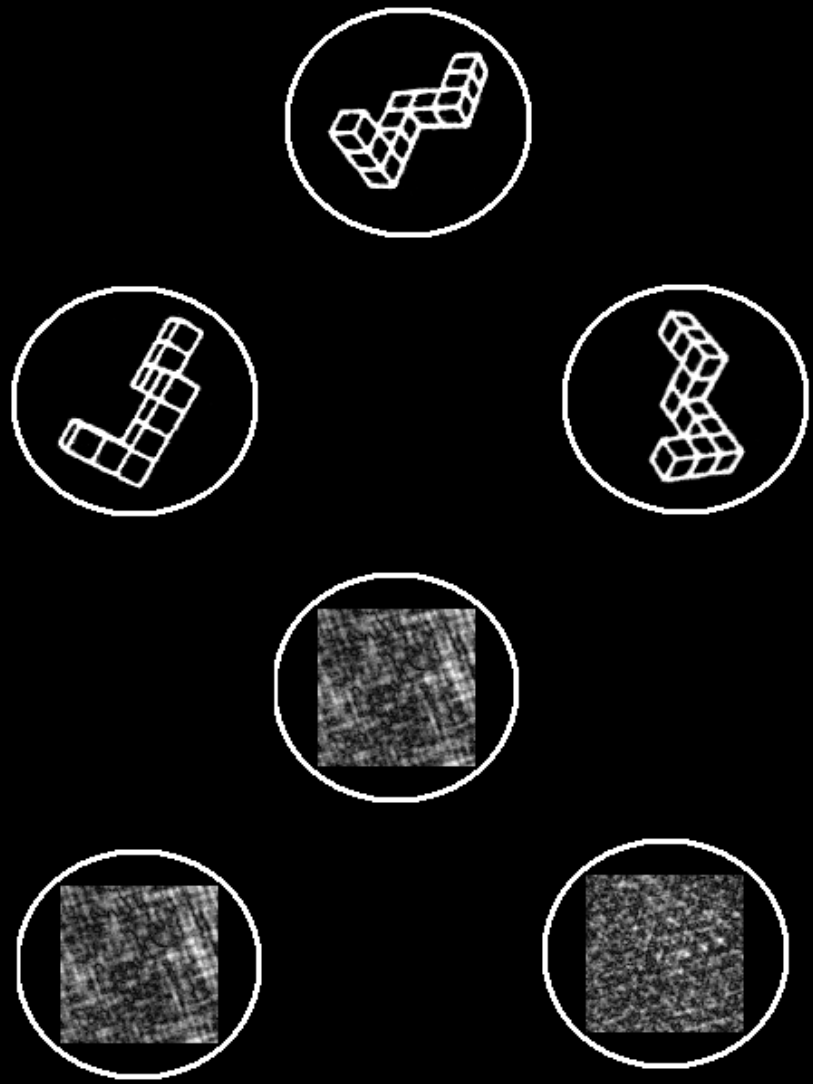

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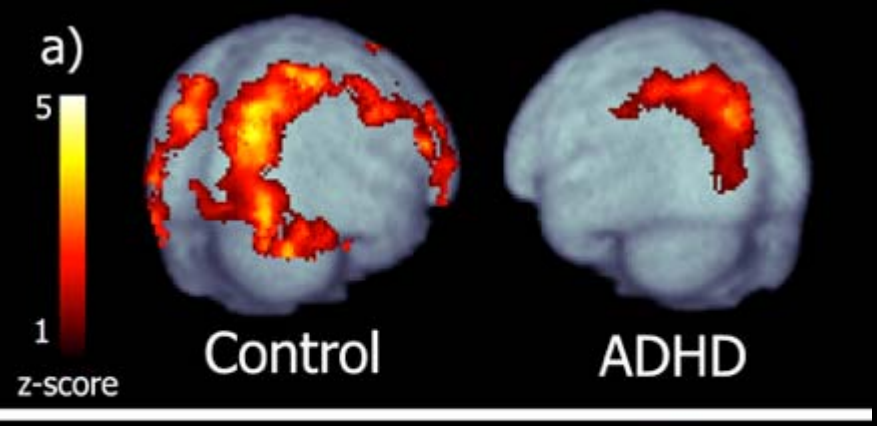

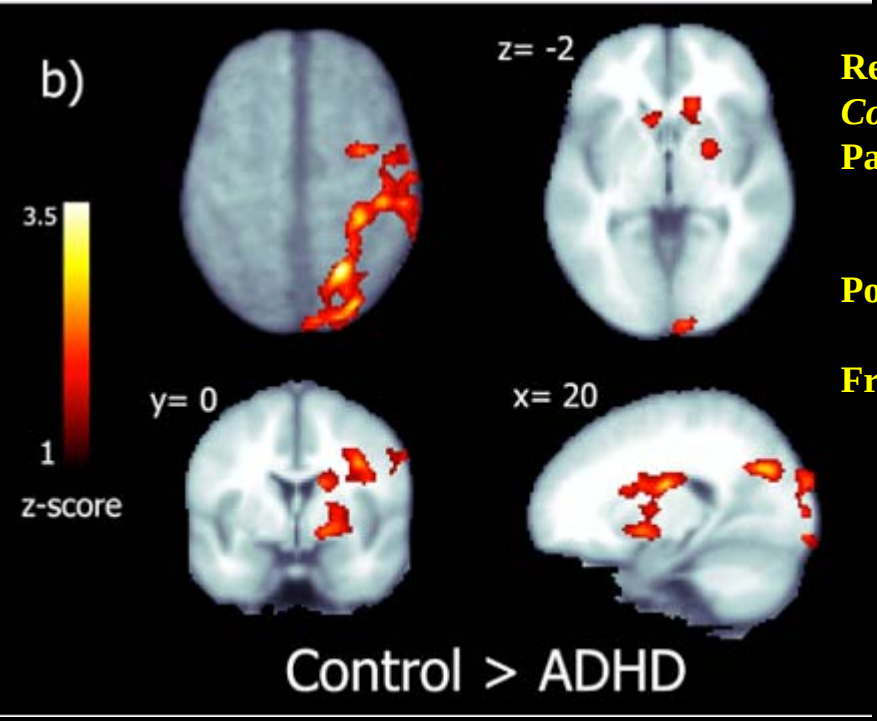

Region of activation	BA	C (mm)	Z
Control Group greater than ADHD-CT Group			
Parieto-Occipital			
R Precuneus	19	24 -70 32	3.53
R Cuneus	19	32 -90 28	2.82
Posterior Parietal			
R Inf. Parietal	40	36 -40 50	2.82
Frontal/Subcortical			
R Caudate Nucleus, Body		18 -12 22	2.82

Vance et al, Mol Psych 2007

N=24, CBCL inattention subscale T score: 72.14 (9.43)

In summary

major depressive disorder

better memory retrieval, independent of encoding processes, compared to dysthymic disorder and healthy control participants

In summary

dysthymic disorder

spatial working memory deficits compared to MDD and controls

Dysthymic disorder:	frontal-striatal-parietal dysfunction
Major depressive disorder:	frontal-temporal dysfunction

Recently

‘pure’ Dysthymic disorder: strategy dysfunction (BA 9,46)

when ADHD, inattentive type symptoms removed

Future directions conjecture!

Dysthymic disorder:	predominantly environmentally mediated dysfunction (reversible?)
Major depressive disorder:	‘limbic’ dysfunction, driving a a normally functioning frontal-temporal system harder

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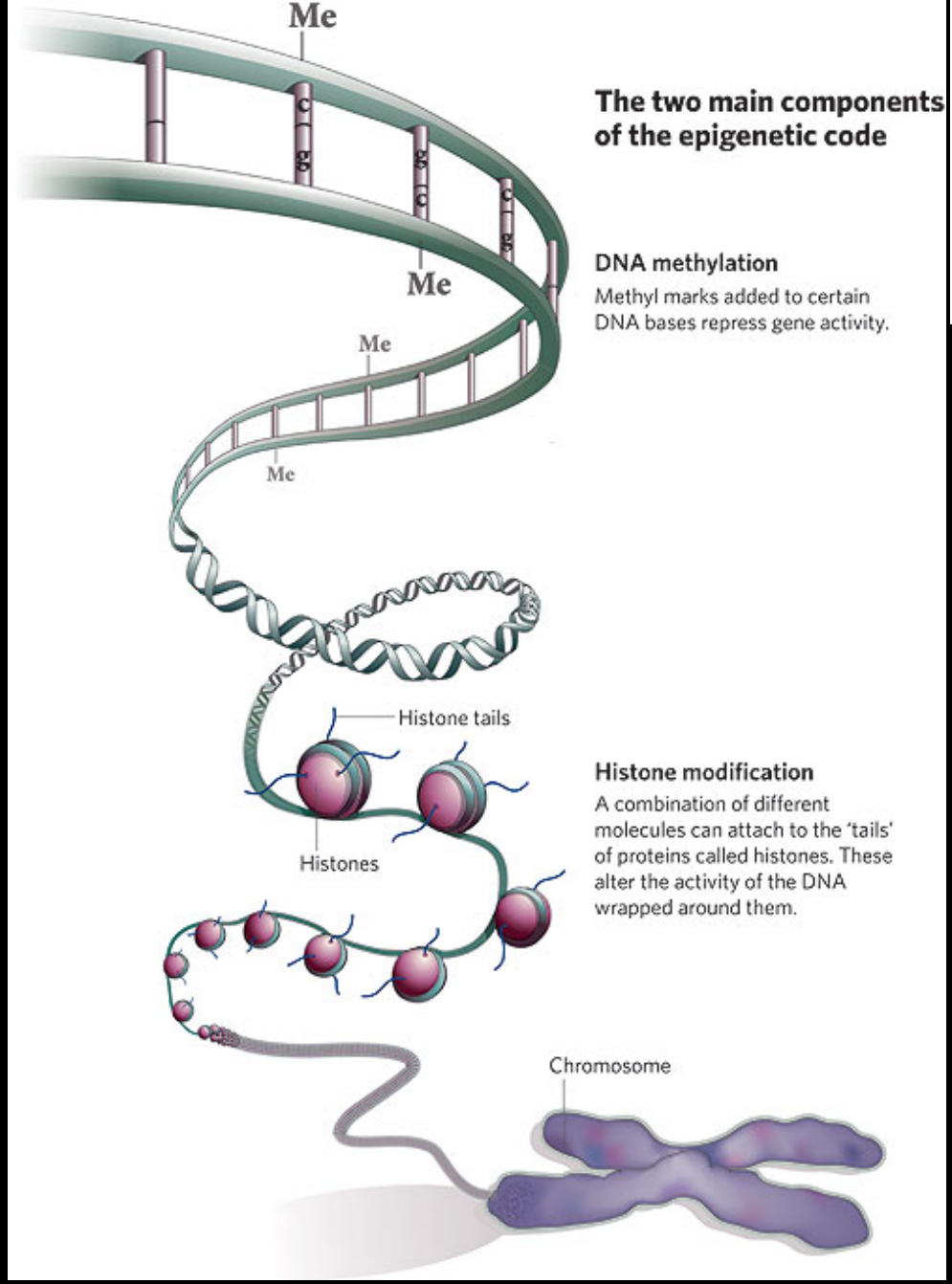

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Key psychosocial risk factors

- parental psychopathology: alcohol/depressive/anxiety ds
- marital functioning:
- family functioning:
- peer group functioning:

"empathy/attunement/sensitivity/responsiveness"

"flexibility/adaptiveness/regulation of affect/problem solving"

sociocultural context affects the character of these aspects and their detection

Treatment approach

- Aim is always to maximize learning in home, classroom and playground environments

  through **maximizing resilience** and **minimizing risk** factors

- psychosocial treatments focussed on psychosocial factors

- medication treatment focussed on biological factors in order to facilitate each child's involvement in the psychosocial treatments

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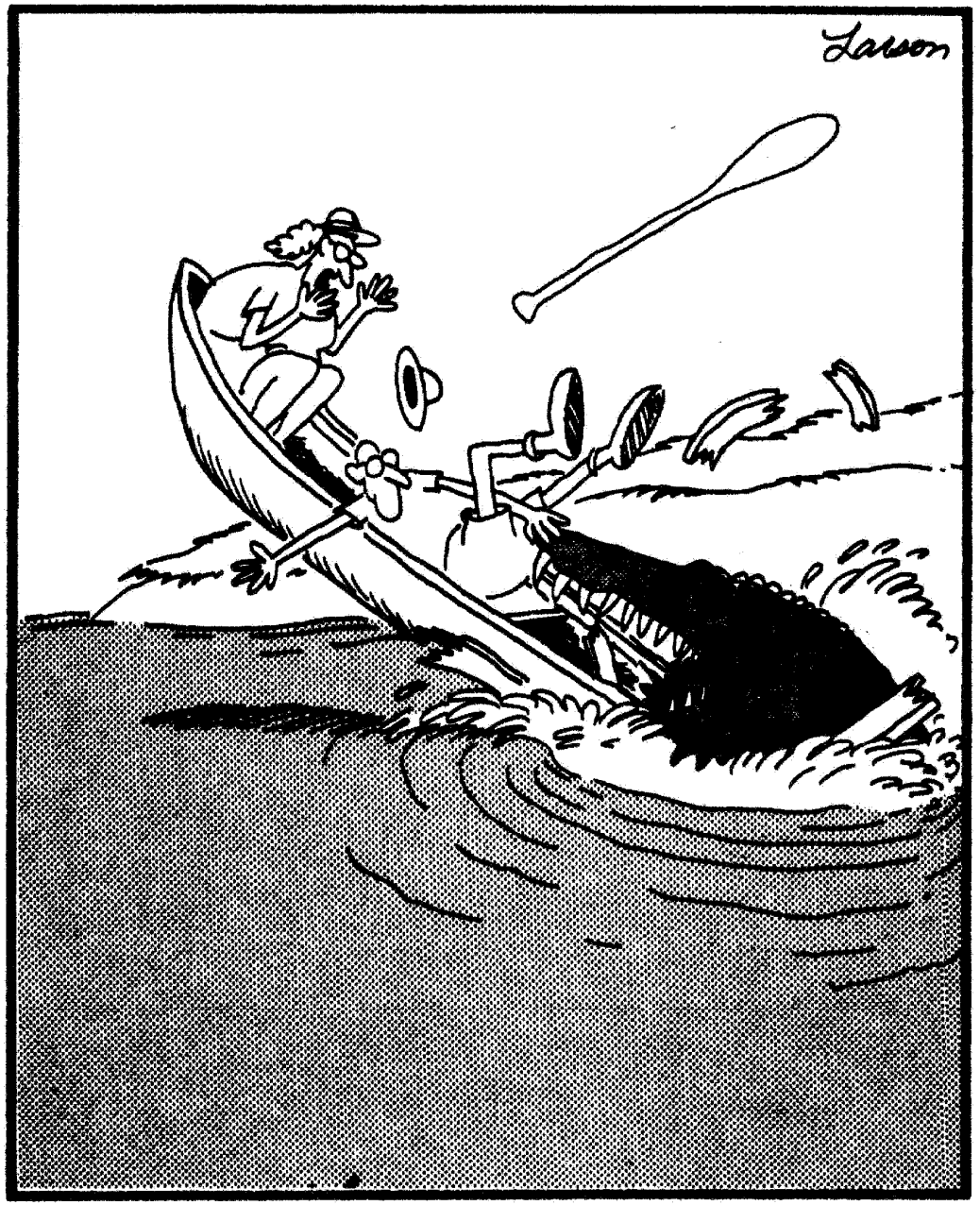

"Rub his belly, Ernie! Rub his belly!"

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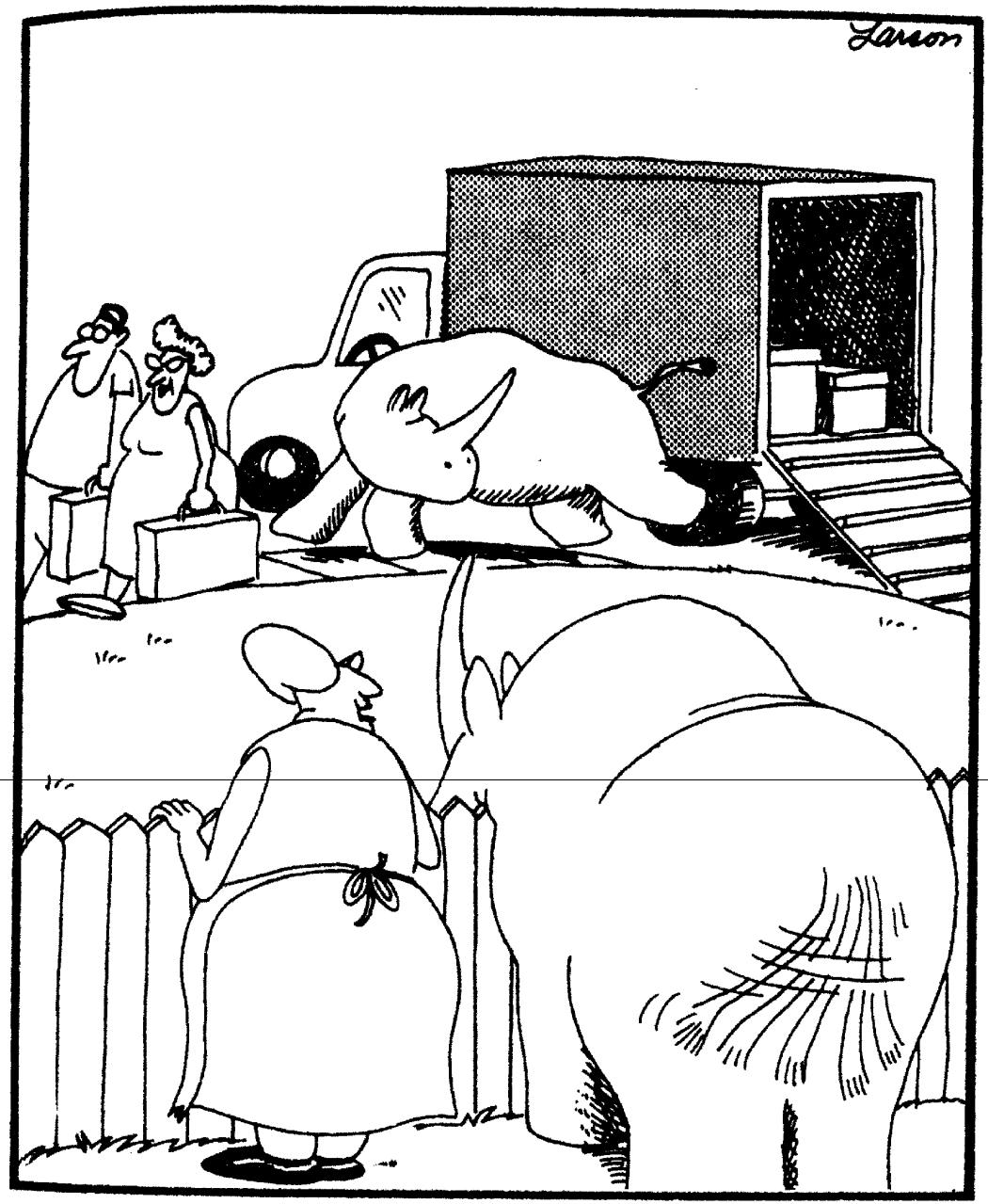

"Well, well, King . . . looks like the new neighbors have brought a friend for you, too."

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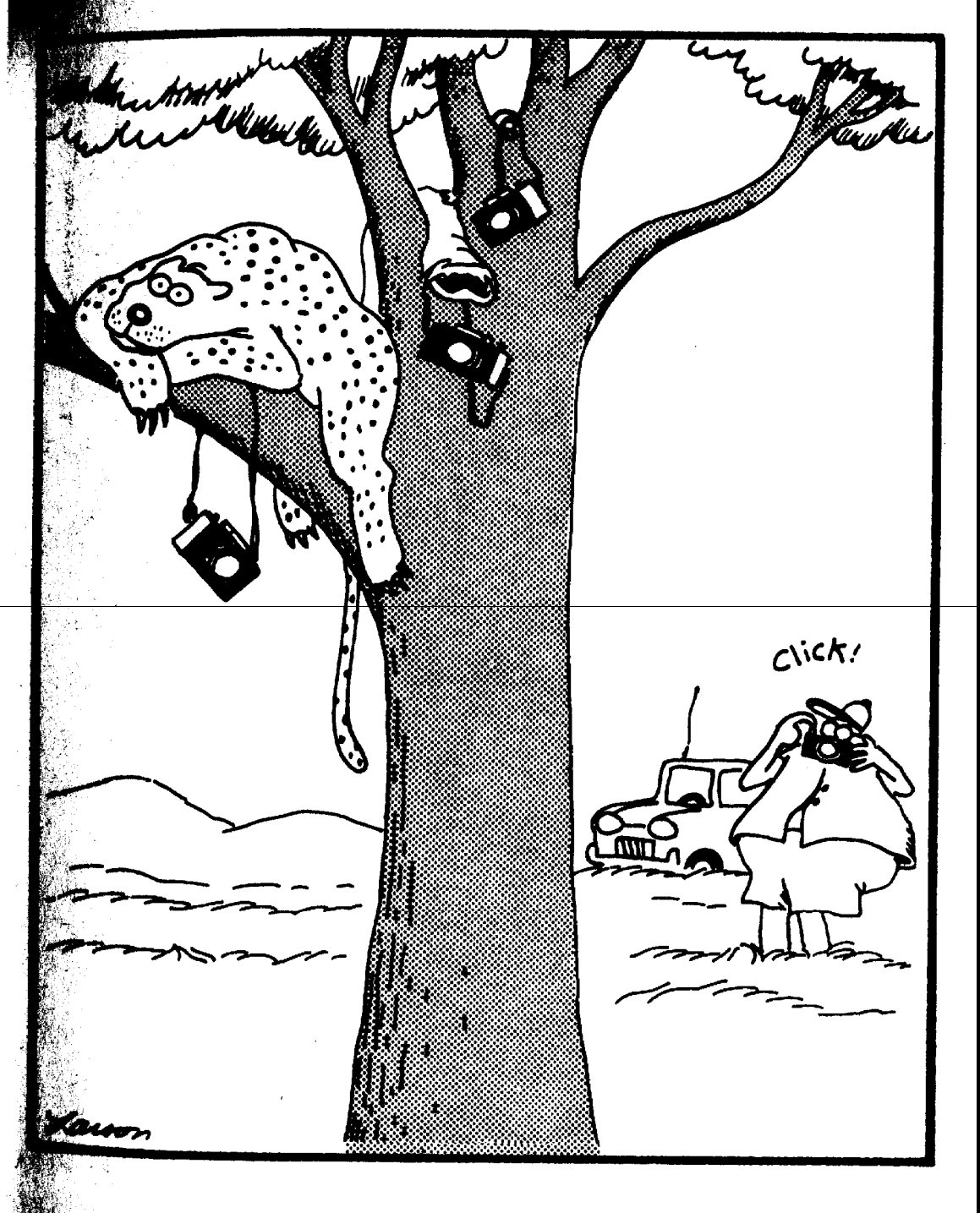

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