Eating disorders And Diabetes

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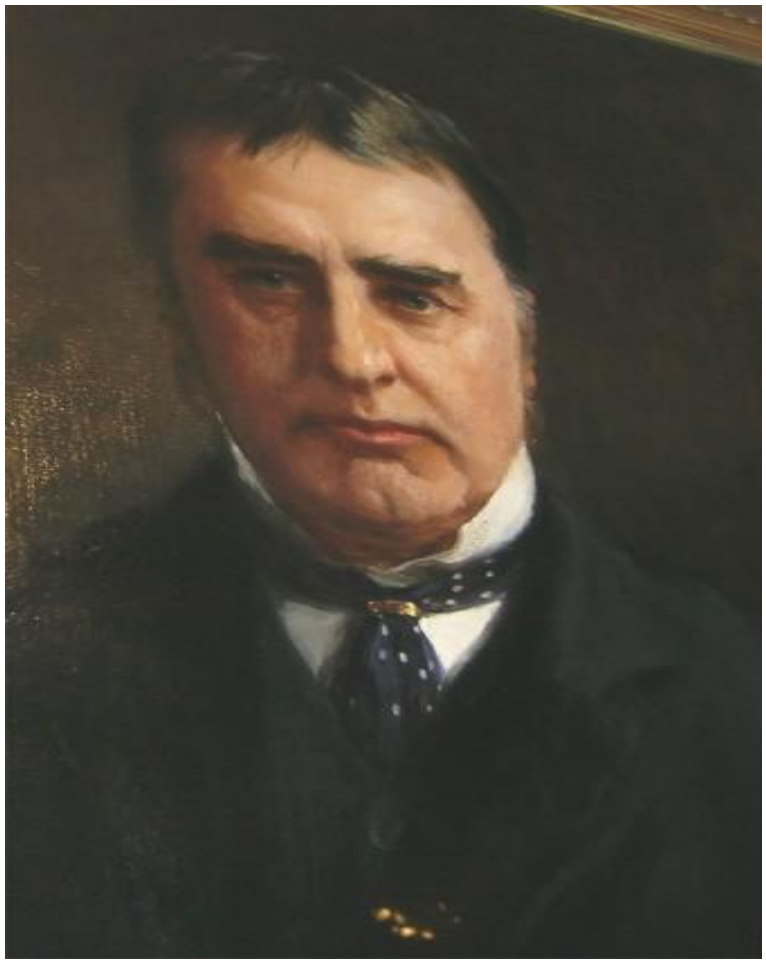
NHS Trust

Talk Map

- What are eating disorders
- The prevalance of eating disorders
- Comorbidity of eating disorders and DM
- What puts DM patients them at risk
- What patients find is helpful
- What patients find not so helpful

Anorexia Nervosa



- USA National Comorbidity Lifetime prevalence 0.9%F & 0.3% M *(Hudson et al 2007).*

Ulrike Schmidt **Gerald Russell** Janet Treasure

Bulimia Nervosa

1979: Defined by Russell

1980: Bulimia DSM-III

1987: Bulimia nervosa DSM-III-R

Median age of onset is in the late teens to early 20s

USA Lifetime prevalence 1.5%F & 0.5% M *(Hudson et al 2007)*.

WHO .BN (.8%; .4-1.0%). *(Kessler et al 2013)*

Persistence BN (6.5 years; 2.2-15.4)

Binge Eating Disorder: History

2013 DSM-5

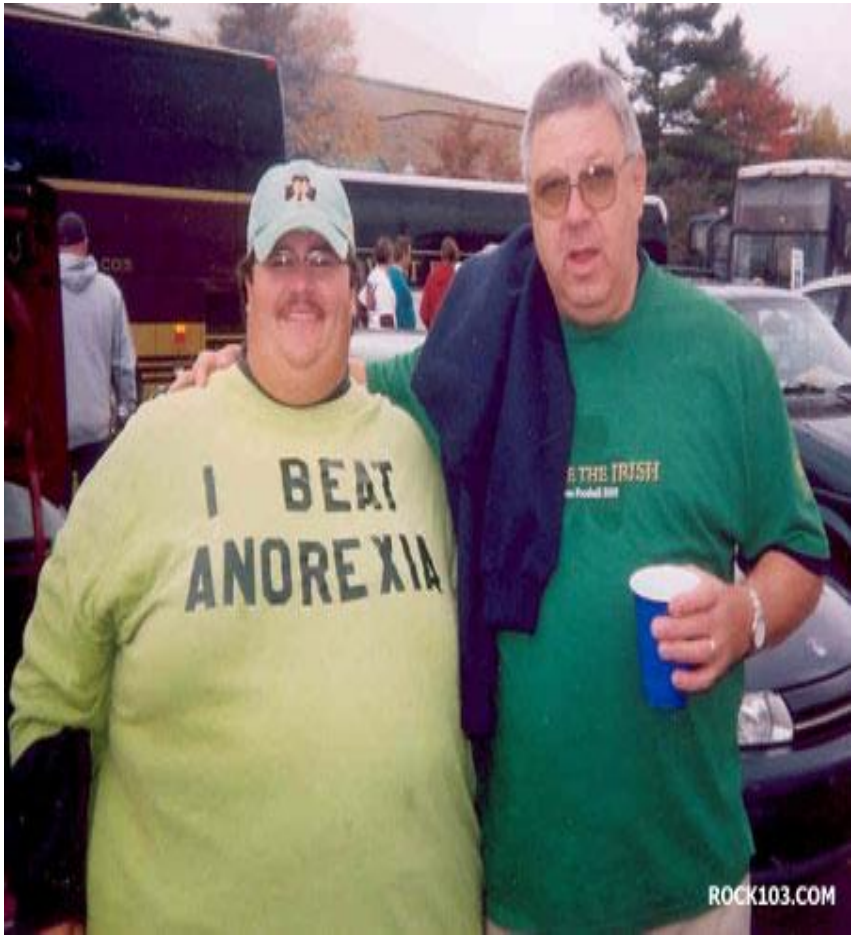
Recurrent distressing binges

- No food restriction
- No compensatory behaviours
- Obesity

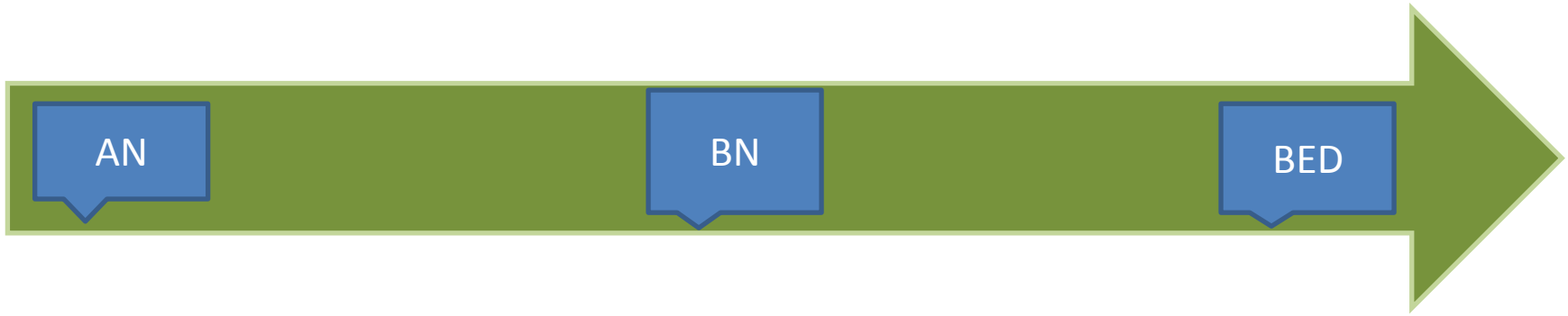
Peak age onset: late adolescence and early 20s

USA Lifetime prevalence 3.5%F & 2% M *(Hudson et al 2007). WHO* BED (1.4%; .8-1.9%) (Kessler et al 2013)

Persistence BED (4.3 years; 1.0-11.7).



Diabetes with Eating Disorder



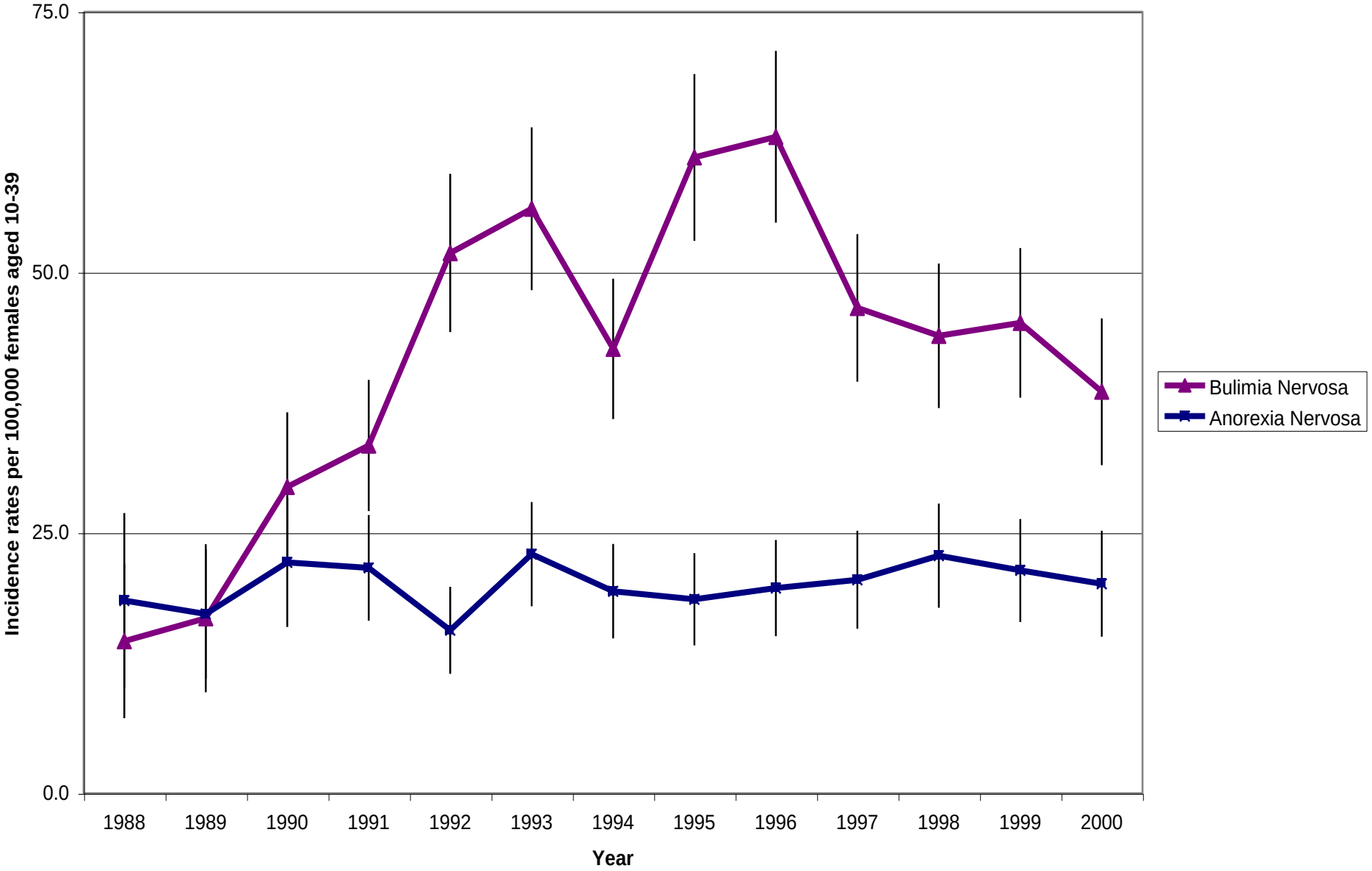
Over Control lack of control eating behaviours

Compensatory weight control behaviours

Body Dissatisfaction

Insulin need

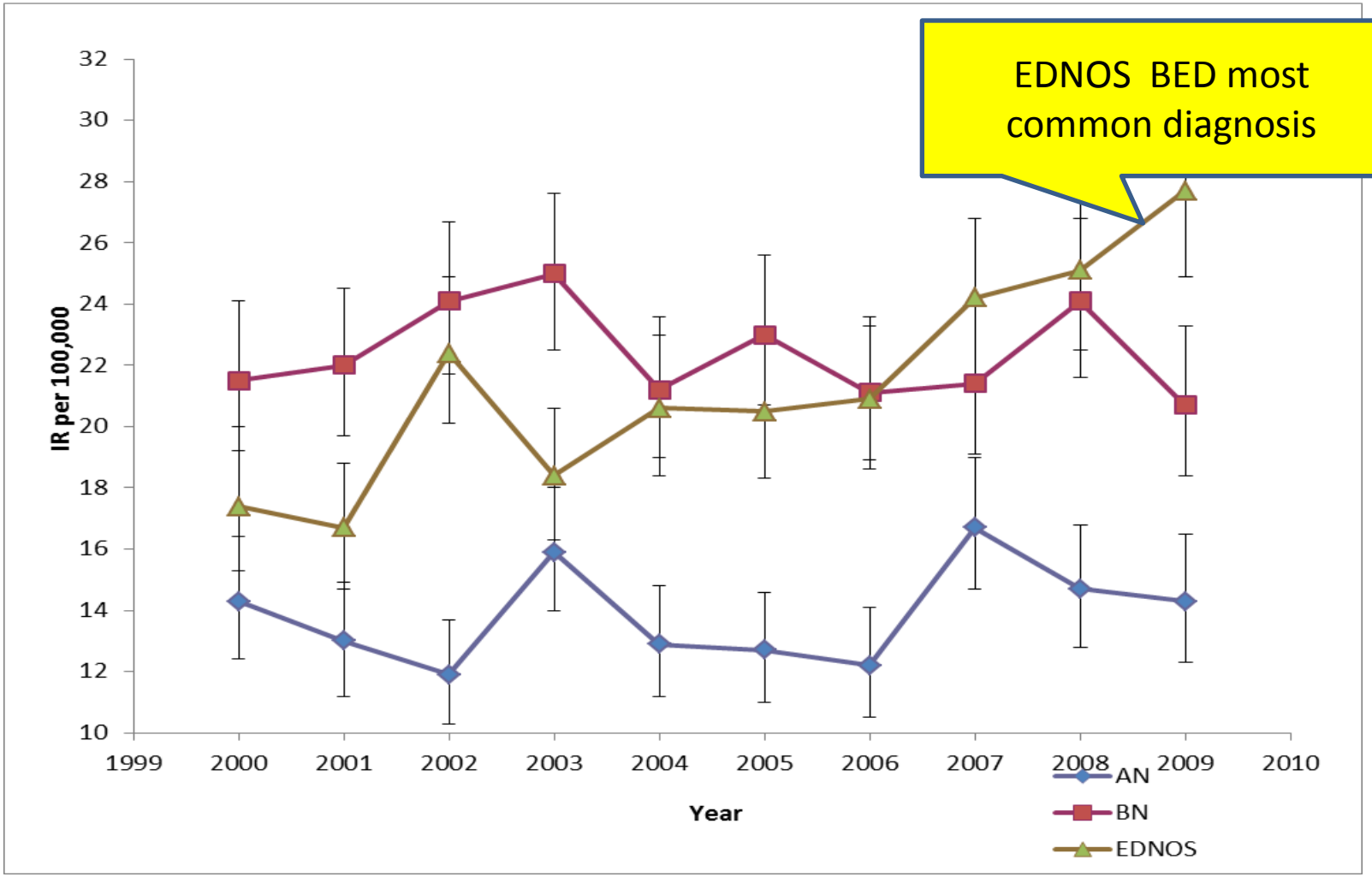
Time Trends in the Incidence of AN and BN in Primary Care in the UK



Turnbull et al.. 1996: Currin et al.. 2004

Cases presenting to primary care in UK

(Micali et al 2013)

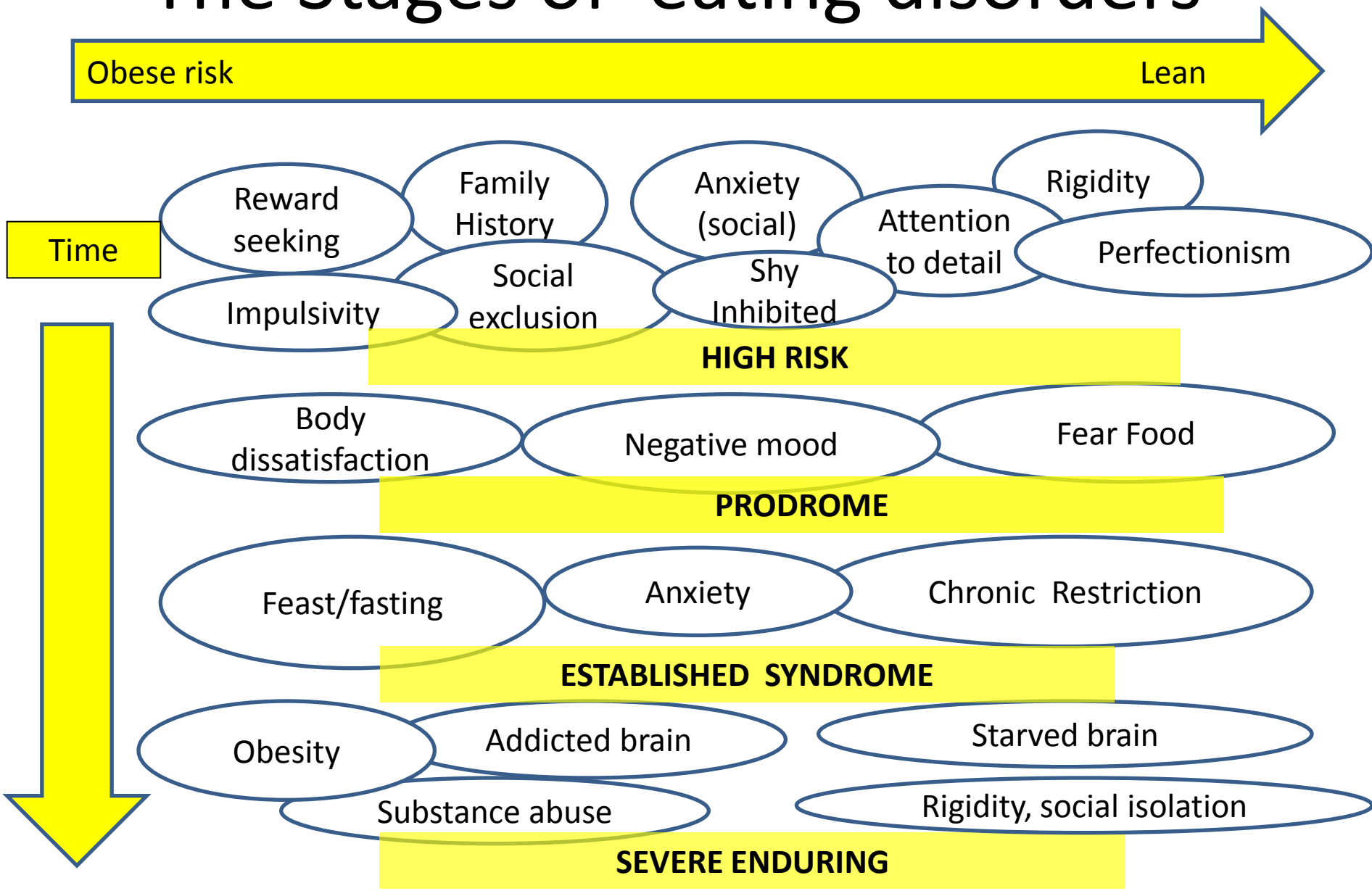


The association between gender ethnicity and BMI and ED behaviours in SE London (Solmi et al 2013)

	OR
Black	1.2
Asian	1.9
Other	1.8
Underweight	1.6
overweight	1.5
Obese	2.1
Female	2.0

10% (N=164) ED behaviours in the year prior to interveiw.
M= 5.9% , F= 12.2%

The Stages of eating disorders



Epidemiology of ED in type 1 diabetes

Case control studies:
Increase in subthreshold eating problems: overeating; dieting; heavier; insulin omission; worse HbA1c
Fairburn et al, BMJ 1991; Peveler et al, Diabetes Care 1992

Increase in DSM IV ED 10% versus 4% p<0.001
Increase in subthreshold ED 14% versus 8% p <0.001
Worse HbA1c
Jones et al BMJ 2000

Systematic review
females with diabetes n=748 and without diabetes n= 1587
Anorexia nervosa: 0.27% versus 0.06% ns
Bulimia nervosa: 1.73% versus 0.69% p<0.05
Combined AN/BN: 2.00% vs 0.75% p <0.05
Mannucci et al Inter J Obesity 2002

Eating Disorders in girls with Type 1 Diabetes *(Colton et al* **Diabetes Care** 30:2861 2007)

DEB –Disturbed eating Behaviour; 43% restrict, 6% binge, 6% V, 3% insulin omission, 25% extreme exercise

ED Eating Disorder : 3% BN, 3% EDNOS, 7% subthreshold

Disordered eating with rapid fluctuations in blood glucose leads to microvascular complications

Diagnostic Survey for Eating Disorders	Diabetic retinopathy (%)	Abnormal urinary albumin excretion (%)
Highly disordered	6/7 (86)	3/7 (43)
Moderately disordered	6/14 (43)	3/15 (20)
Non disordered	12/50 (24)	9/50 (18)
P-value	0.004	0.32

Rydall et al NEJM 1997:336;1849-54

What are the things DM specialist need to know?

- Causal Risks: Fat talk, Social processing, Cognitive Factors (OCPD).
- Maintaining Factors: Brain Starvation, Brain fast/feast addiction. Carer reaction
- How to spot

Causal Risk Factors

Classical Conditioning: Fat Talk

Praise for not Eating

Fat Talk

(Nichter & Vuckovic 1994

Sharpe et al 2013)

Food=Negative emotions

Criticism Eating

Vicarious learning

Parental eating disorder *(Van den Berg 2010,Rodgers & Chabrol 2009)*

Social contagion *Allison 2013)*

High sensitivity to judgement and rank

Not Eating

Teasing, criticism, bullying eating shape weight *(Brixel et al 2012, Menzel et al 2010)*

Evaluative Conditioning:

Meaning- Idealisation Thinness/ Fitness

Food=fat

Valuation of Emaciation

Stigmatisation of Fat

The meaning of food/ eating

Startle (Reichel *et al.*, 2014)

Perfectionism (*Wade & Tiggemann 2013)*

Not Eating

Body dissatisfaction *(Stice & Shaw 2002, Jacobi et al 2004)*

Social comparison *(Myers & Crowther 2009 ; Van den Berg et al 2002*)

Learning

Memories of food
Consequences
Negative context

Self regulation system

Embeds eating into social context & individual values

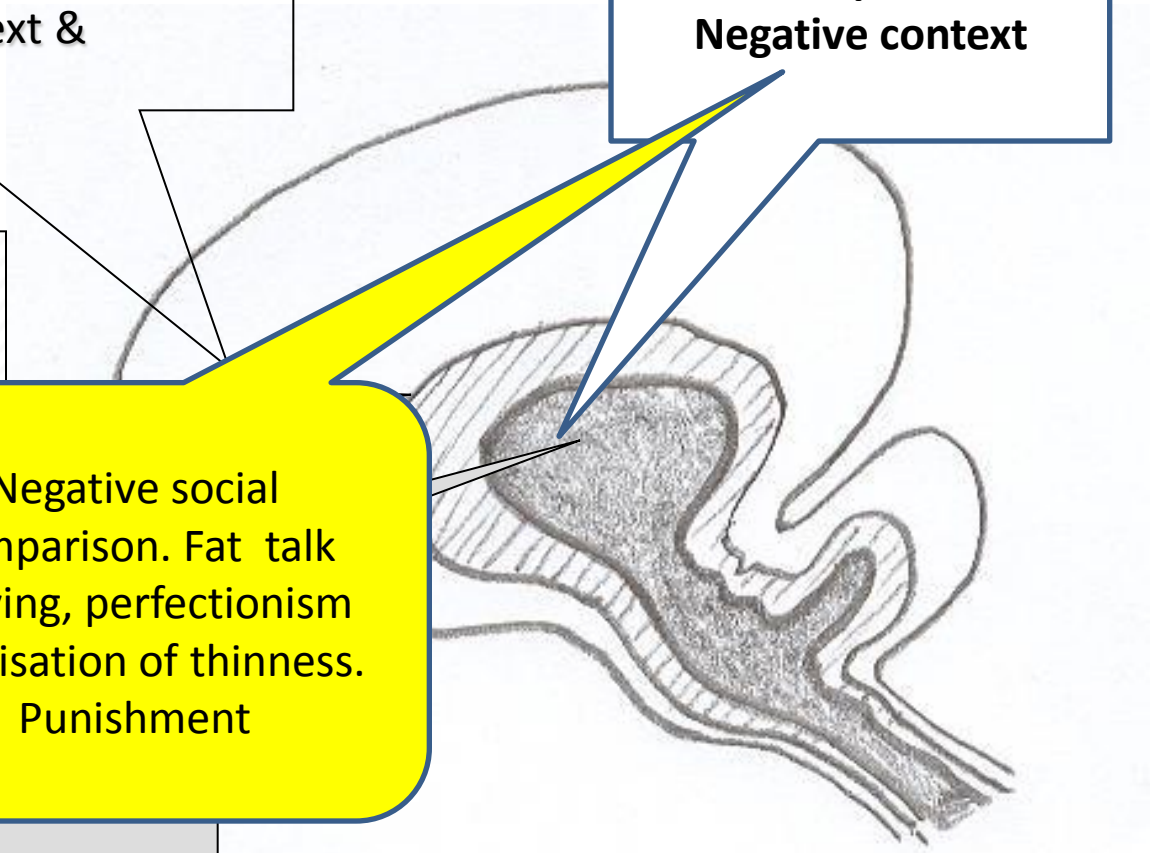
Hedonic centre

Reward from food (limbic system)

Homeostat

Regulates input and
supply

Negative social comparison. Fat talk
Striving, perfectionism
Idealisation of thinness.
Punishment



Are there Binge Promoters in the DM environment?

Emotional environment	Weight & food environment
Chronic Disability /low self esteem.	•High BMI *(Domargard et al 1999) (* 45% of adolescent cohort > BMI 25 kg/m2.*(Colton et al 2007))* rapid weight change +-developmental trajectory •Salience BMI (weigh-ins). •Salience food. •Over treatment of hypoglycaemia-hunger, craving, • Iatrogenic- “fat talk”.

Maintaining Factors

Animals models of binge eating environmental factors

- A period of under nutrition.
- Divert food stomach
- Intermittent availability of highly palatable food
- Stress.
- Breeding

(Rada et al 2005, Lewis et al 2005, Avena et al 2005, Corwin 2006, Corwin & Hajnal 2005, Boggiano et al 2005; Avena & Hoebel 2003, Avena & Hoebel 2007, Boggiano et al 2007).

Animals models of binge eating

These animals also become addicted to other substances (eg. amphetamine) with changes in opiate, dopamine receptors

Avena et al., 2011 & 12

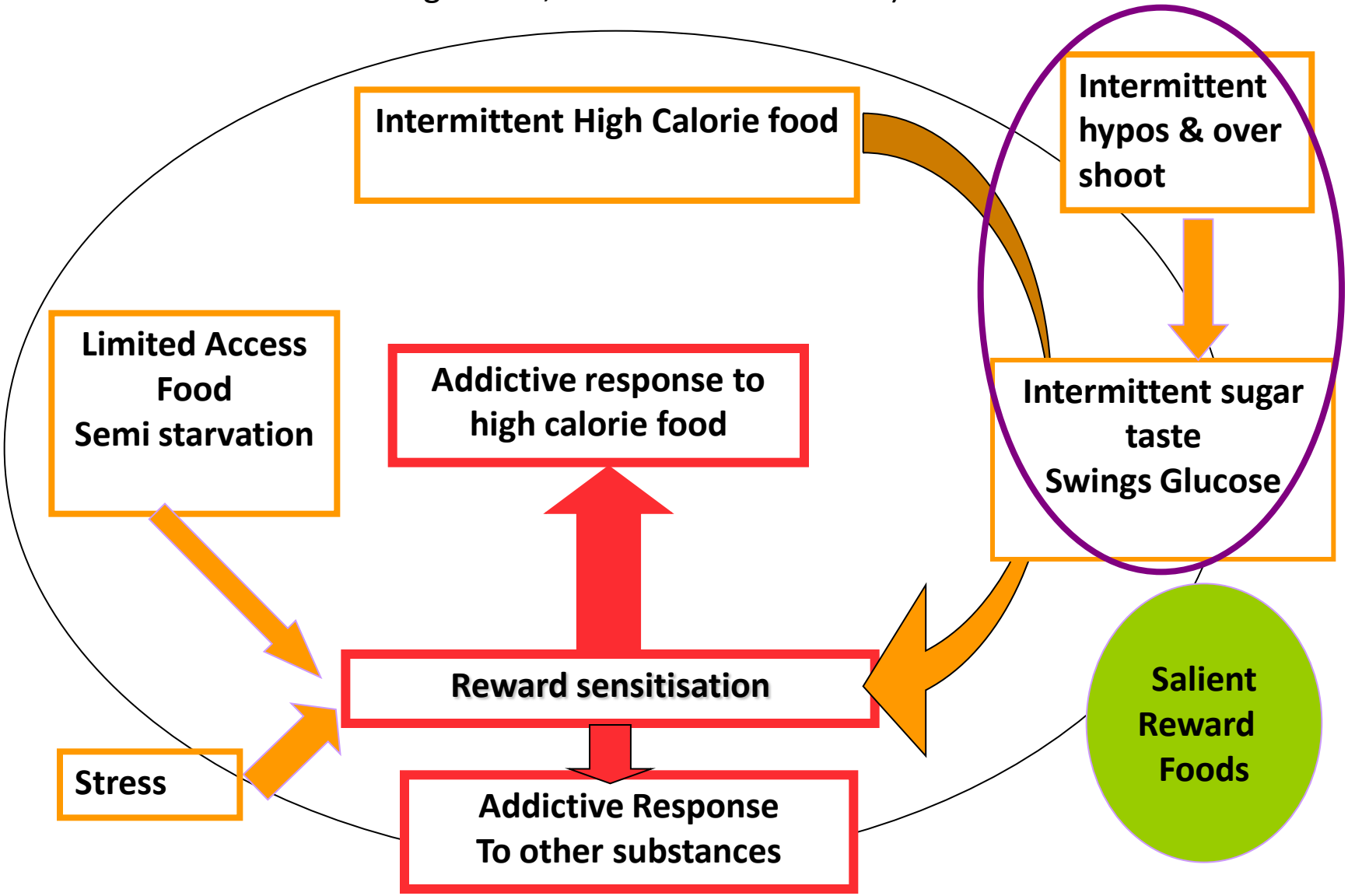
Animal models.

Fast/feast

► neuroprogression to addictive brain with BN, BED.

Reward sensitisation in DM ?

Berridge 2007, Avena & Hoebel 2007)



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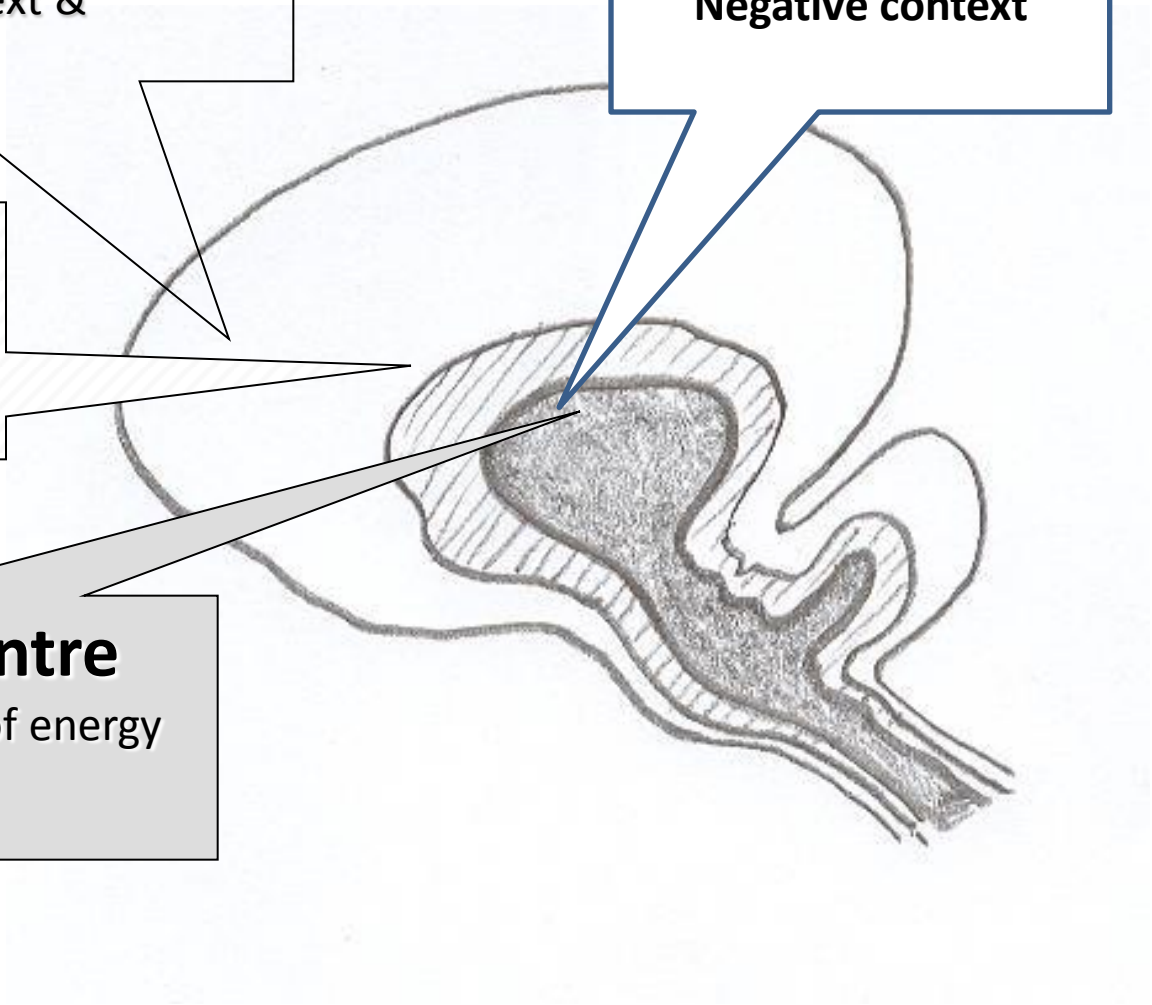
(limbic system)



Homeostatic centre

Regulates input and output of energy supply

Learning

Memories of food
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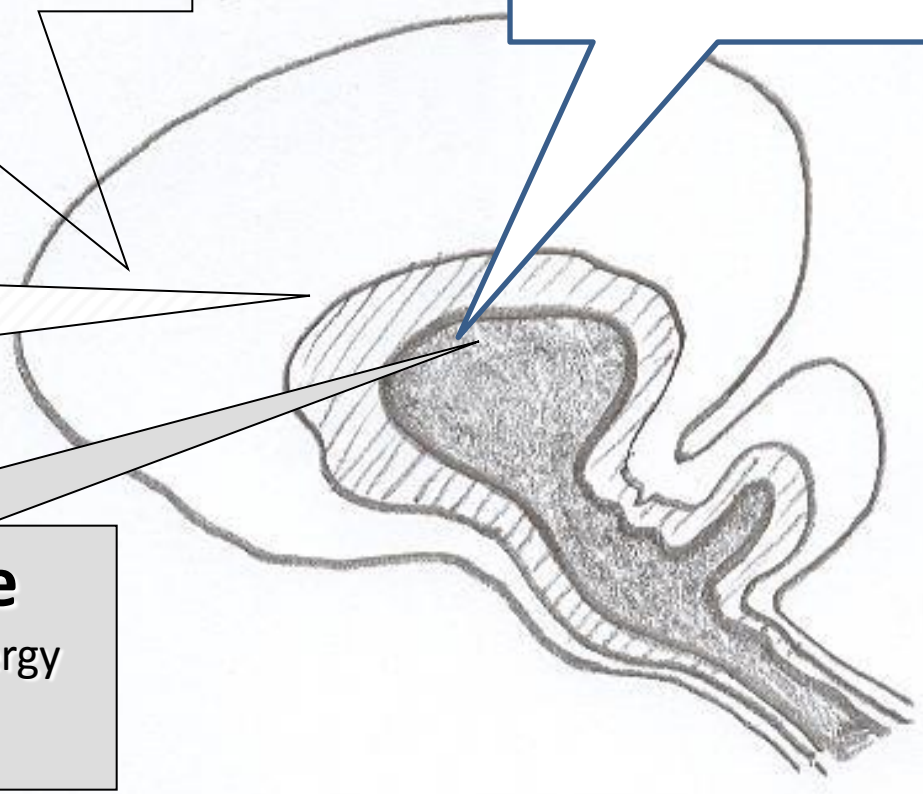
Self regulation system

Embe eating into social context &
indiv l values

Metabolic chaos reduces
Cognitive control

Reward from food
(limbic system)



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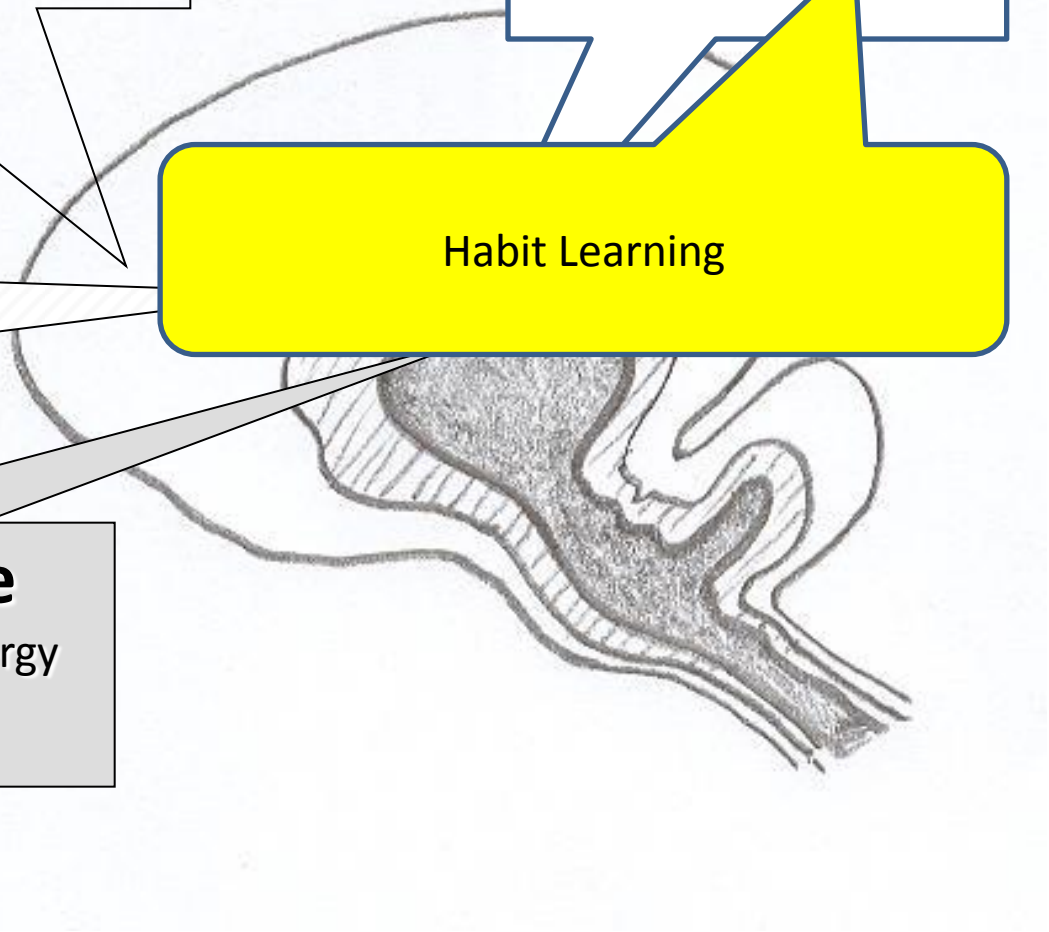
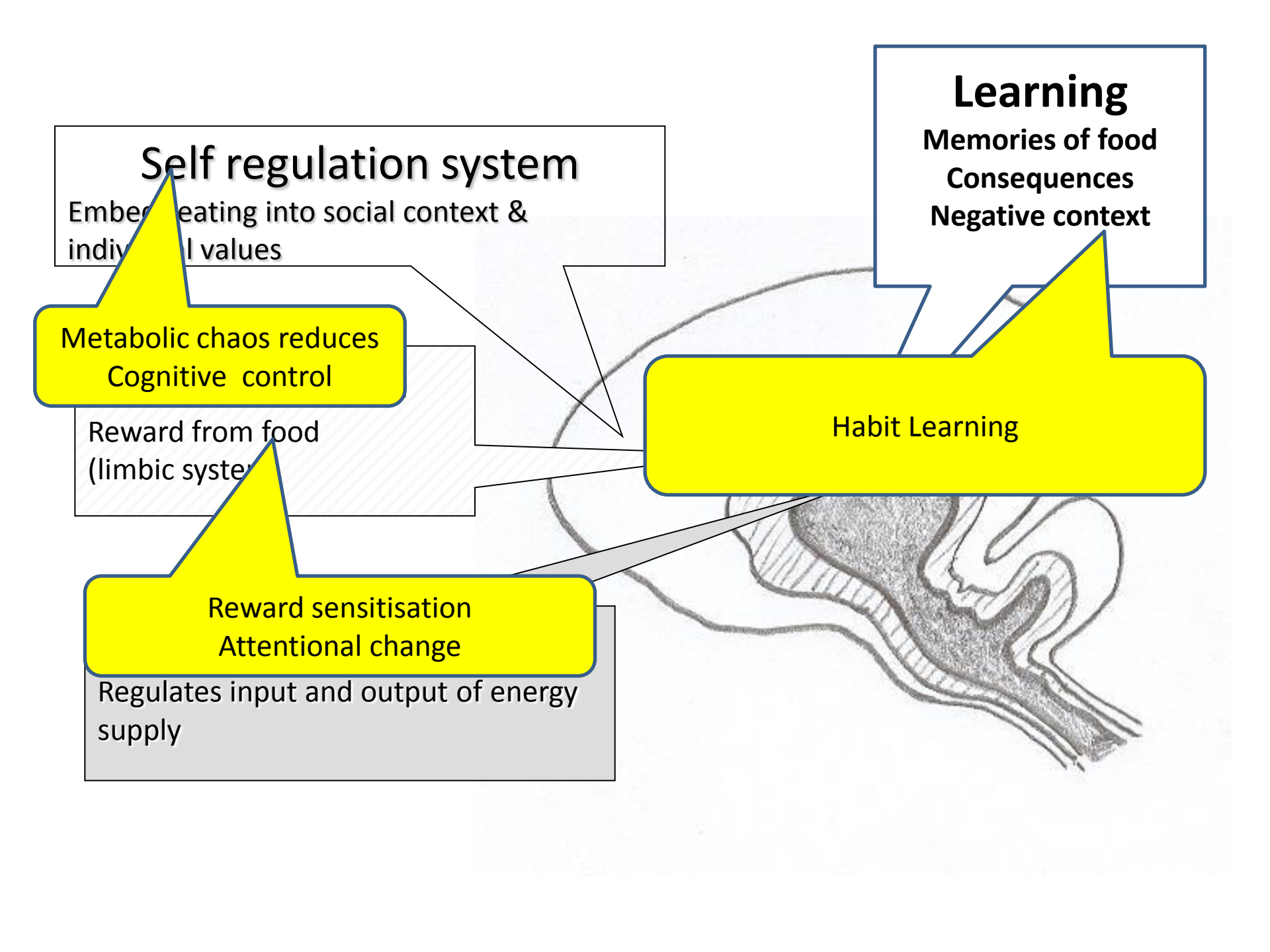
Habit Learning



Homeostatic centre

Regulates input and output of energy supply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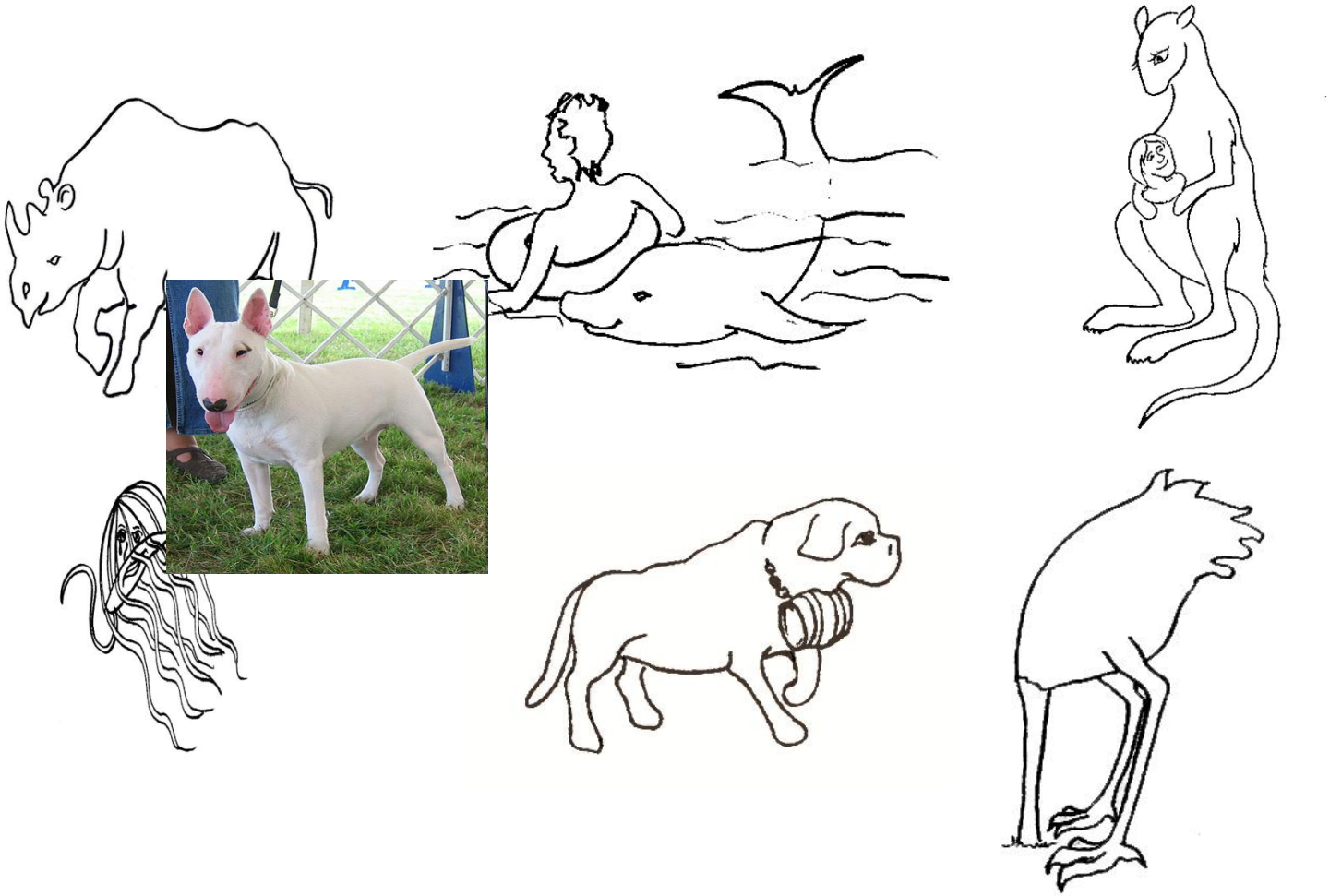
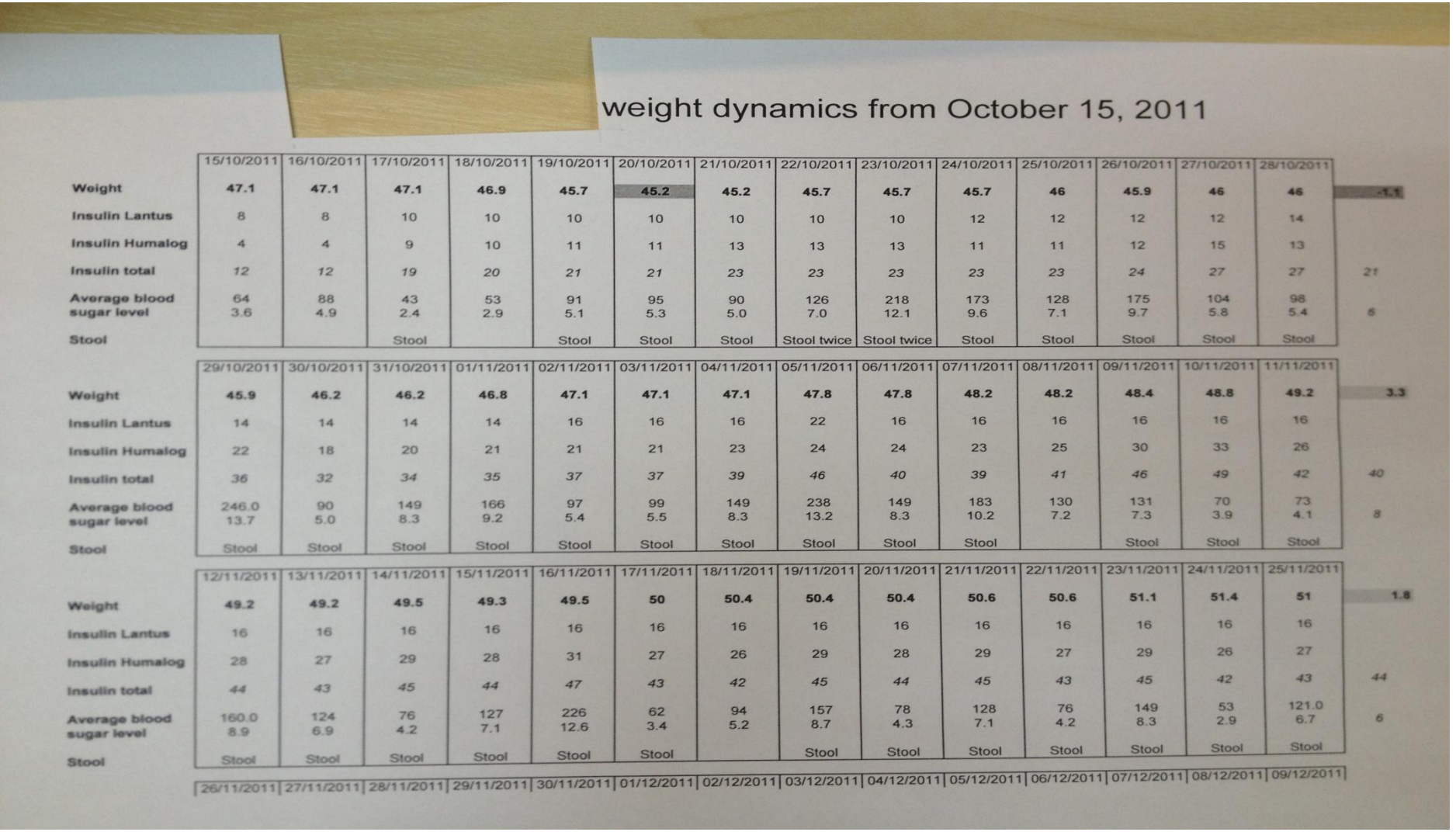
Typical carer responses

Animal Metaphors

Skills Training Ridge et al 2014



A fathers record of 22 year old daughter's health



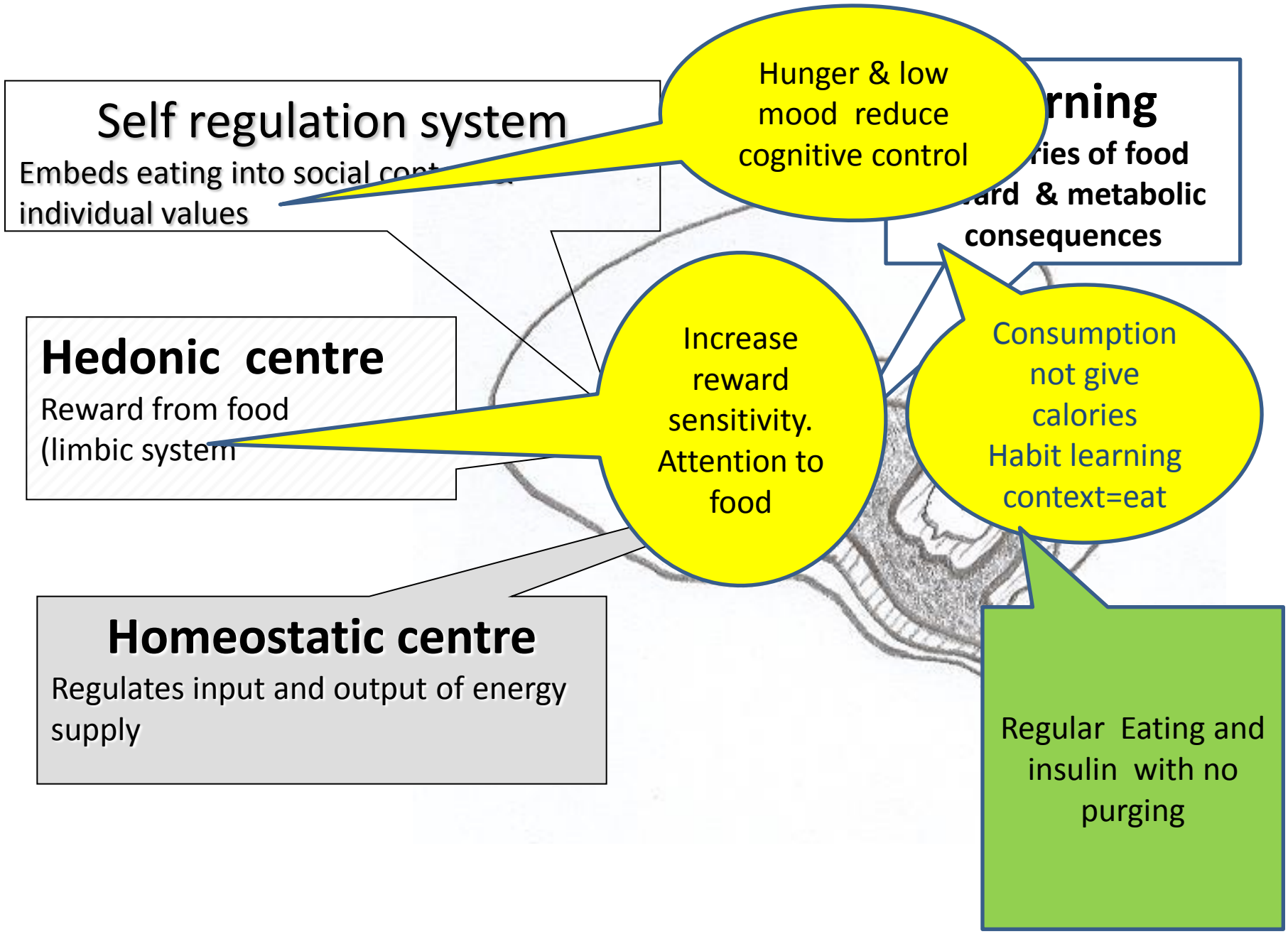
weight dynamics from October 15, 2011

	15/10/2011	16/10/2011	17/10/2011	18/10/2011	19/10/2011	20/10/2011	21/10/2011	22/10/2011	23/10/2011	24/10/2011	25/10/2011	26/10/2011	27/10/2011	28/10/2011	
Weight	**47.1**	**47.1**	**47.1**	**46.9**	**45.7**	**45.2**	**45.2**	**45.7**	**45.7**	**45.7**	**46**	**45.9**	**46**	**46**	**-1.1**
Insulin Lantus	8	8	10	10	10	10	10	10	10	12	12	12	12	14	
Insulin Humalog	4	4	9	10	11	11	13	13	13	11	11	12	15	13	
Insulin total	*12*	*12*	*19*	*20*	*21*	*21*	*23*	*23*	*23*	*23*	*23*	*24*	*27*	*27*	*21*
Average blood sugar level	64 3.6	88 4.9	43 2.4	53 2.9	91 5.1	95 5.3	90 5.0	126 7.0	218 12.1	173 9.6	128 7.1	175 9.7	104 5.8	98 5.4	*6*
Stool			Stool		Stool	Stool	Stool	Stool twice	Stool twice	Stool	Stool	Stool	Stool	Stool	

	29/10/2011	30/10/2011	31/10/2011	01/11/2011	02/11/2011	03/11/2011	04/11/2011	05/11/2011	06/11/2011	07/11/2011	08/11/2011	09/11/2011	10/11/2011	11/11/2011	
Weight	**45.9**	**46.2**	**46.2**	**46.8**	**47.1**	**47.1**	**47.1**	**47.8**	**47.8**	**48.2**	**48.2**	**48.4**	**48.8**	**49.2**	**3.3**
Insulin Lantus	14	14	14	14	16	16	16	22	16	16	16	16	16	16	
Insulin Humalog	22	18	20	21	21	21	23	24	24	23	25	30	33	26	
Insulin total	*36*	*32*	*34*	*35*	*37*	*37*	*39*	*46*	*40*	*39*	*41*	*46*	*49*	*42*	*40*
Average blood sugar level	246.0 13.7	90 5.0	149 8.3	166 9.2	97 5.4	99 5.5	149 8.3	238 13.2	149 8.3	183 10.2	130 7.2	131 7.3	70 3.9	73 4.1	*8*
Stool	Stool	Stool	Stool	Stool	Stool	Stool	Stool	Stool	Stool	Stool		Stool	Stool	Stool	

	12/11/2011	13/11/2011	14/11/2011	15/11/2011	16/11/2011	17/11/2011	18/11/2011	19/11/2011	20/11/2011	21/11/2011	22/11/2011	23/11/2011	24/11/2011	25/11/2011	
Weight	**49.2**	**49.2**	**49.5**	**49.3**	**49.5**	**50**	**50.4**	**50.4**	**50.4**	**50.6**	**50.6**	**51.1**	**51.4**	**51**	**1.8**
Insulin Lantus	16	16	16	16	16	16	16	16	16	16	16	16	16	16	
Insulin Humalog	28	27	29	28	31	27	26	29	28	29	27	29	26	27	
Insulin total	*44*	*43*	*45*	*44*	*47*	*43*	*42*	*45*	*44*	*45*	*43*	*45*	*42*	*43*	*44*
Average blood sugar level	160.0 8.9	124 6.9	76 4.2	127 7.1	226 12.6	62 3.4	94 5.2	157 8.7	78 4.3	128 7.1	76 4.2	149 8.3	53 2.9	121.0 6.7	*6*
Stool	Stool	Stool	Stool	Stool	Stool	Stool		Stool	Stool	Stool	Stool	Stool	Stool	Stool	

26/11/2011	27/11/2011	28/11/2011	29/11/2011	30/11/2011	01/12/2011	02/12/2011	03/12/2011	04/12/2011	05/12/2011	06/12/2011	07/12/2011	08/12/2011	09/12/2011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Reward from food
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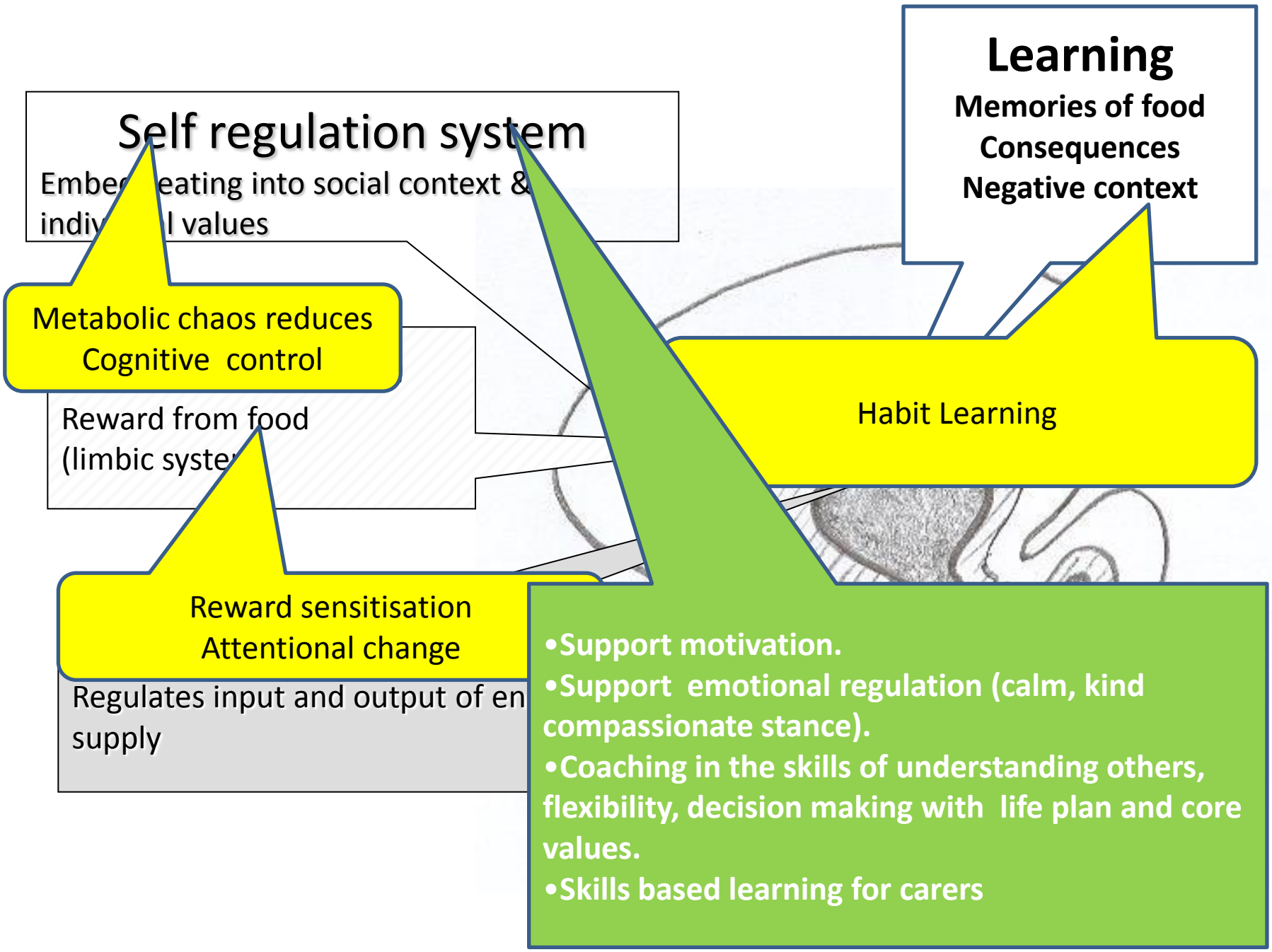
Increase reward sensitivity. Attention to food
Consumption not give calories
Habit learning context=eat
Homeostatic centre
Regulates input and output of energy supply
Regular Eating and insulin with no purging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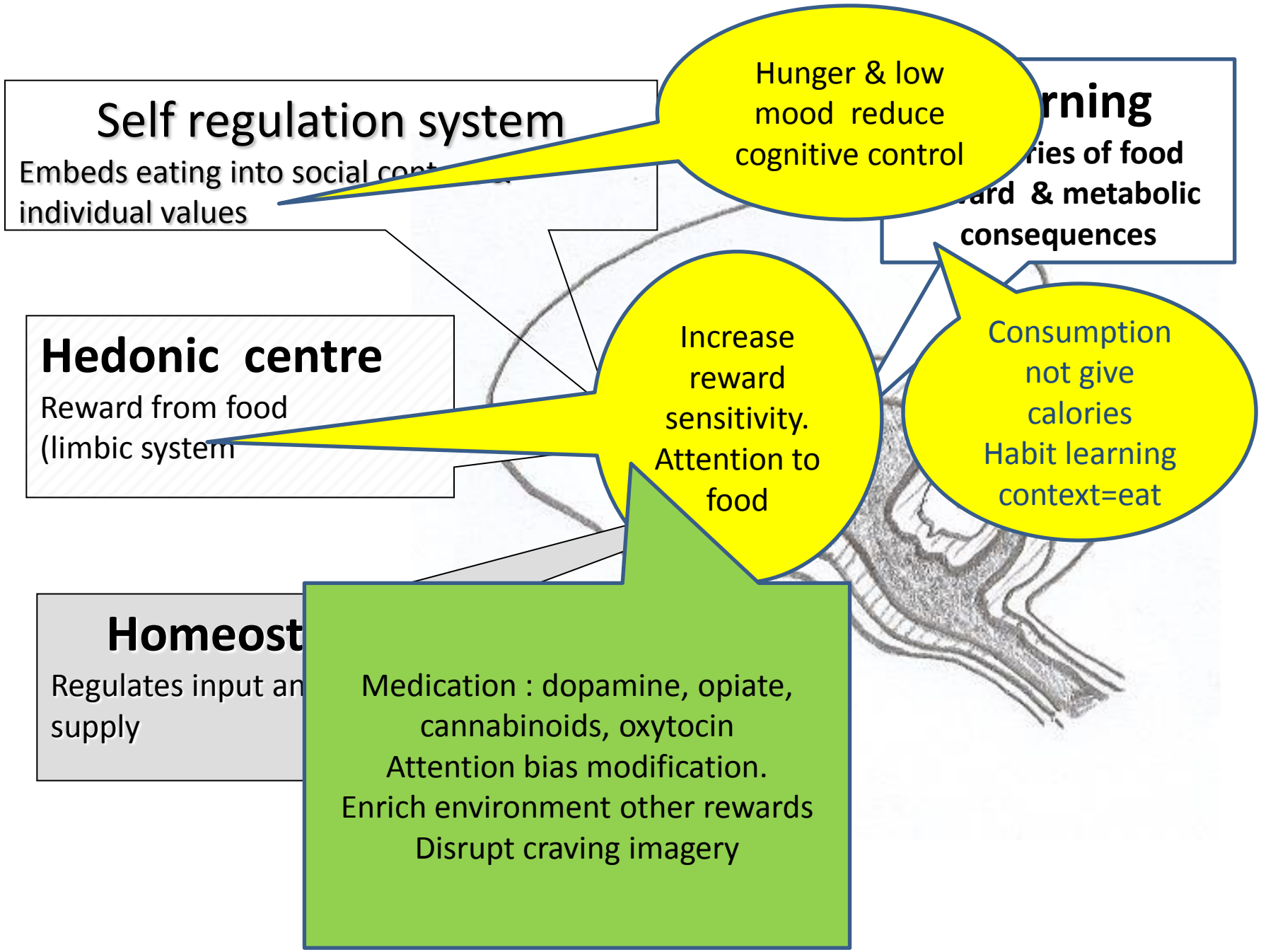
supply
•Support motivation.
•Support emotional regulation (calm, kind compassionate stance).
•Coaching in the skills of understanding others, flexibility, decision making with life plan and core values.
•Skills based learning for carers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Medication : dopamine, opiate, cannabinoids, oxytocin
Attention bias modification.
Enrich environment other rewards
Disrupt craving imagery

What do patients find not so helpful?

- Problematic thoughts and/or behaviours
- Problematic support from professionals
- Isolation

You can go to a diabetic nurse and she can say “we’ll just sort your insulin out and assume that you’ll be able to eat and will be keeping the food down”. I need help with how I feel when I am eating … Or you can go to an eating disorder specialist and they’ll say “oh lets focus on your eating disorder and obviously you can just take this and that unit”. They don’t realise that its an emotional thing to have to take the decision to take your insulin.

Being told by the GPs that what you’ve got is a phase … all they need to do is improve their blood sugar … Being told you don’t have an eating disorder because diabulimia doesn’t actually exists.

It was very easy for me to equate insulin with being fat, just as though you’re injecting fat.

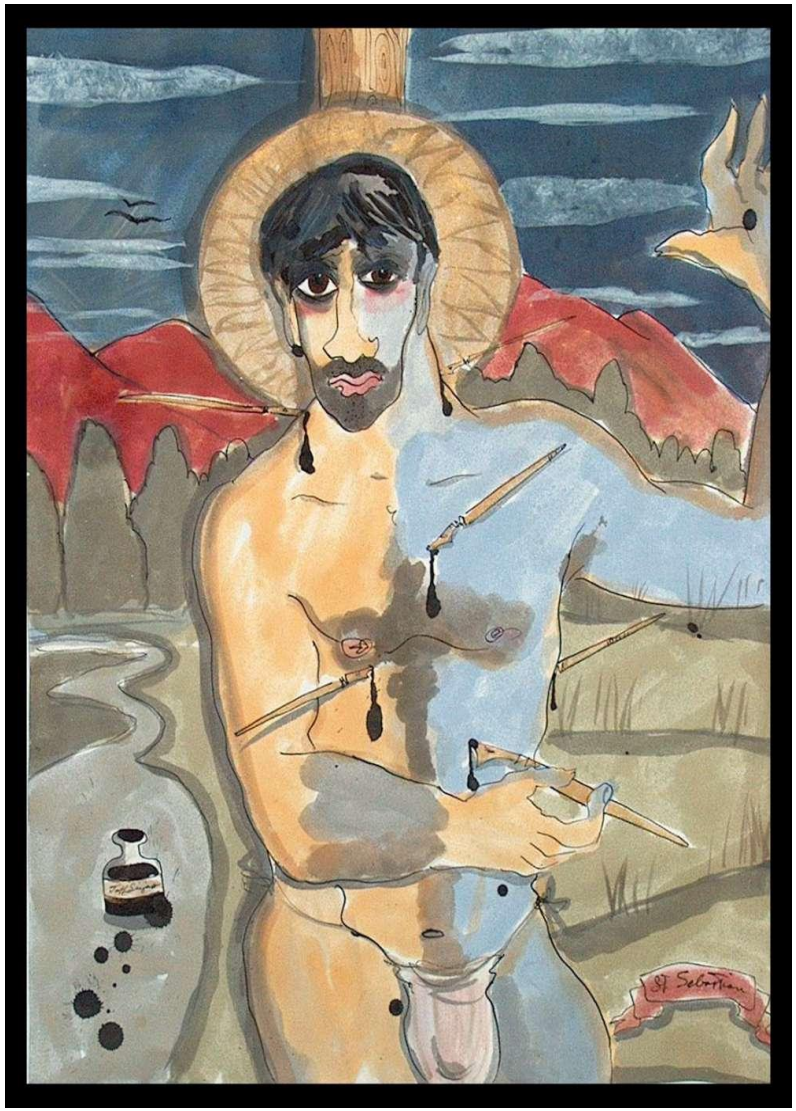
I'm going to have a massive binge but then go for a walk … it was a case of setting goals and trying to reach those goals to kind of get out of the mess. And every time you achieve a goal it makes you feel better.

If you drop your sugars too quickly, you're going to bring a whole world of pain. That's how you get complications quickly … Having a target range between 18 and 25 felt much more do able.

A lot of diabetes specialists will really push for perfection which is not a great thing when it comes to eating disorder patients because often they are perfectionists … Sometimes it is ok not to get everything alright.

Teaching Self compassion

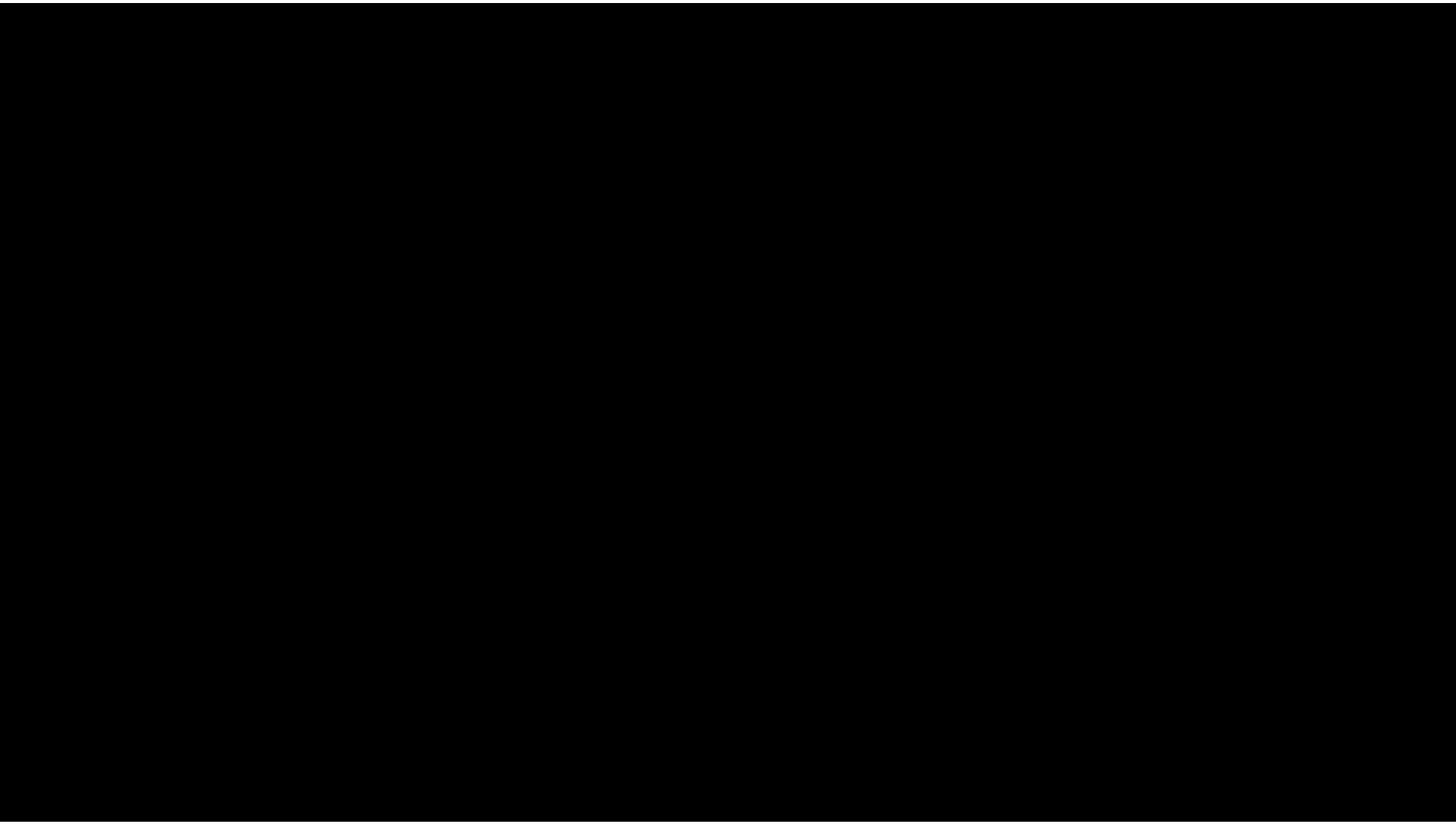
- it was mainly my psychologist that kind of taught me yeah your blood sugars don't have to be perfect and if you go up say like 14 then it doesn't matter, you can correct
- its going to happen..
- So to be told that its ok……, it was kind of a turning point.__
-



Understand ambivalence about insulin

- What are the not so good things about optimal glucose ?
- Not “feel” right.
- More hypos.
- Gain weight.
- Increased appetite.

It gets better



Conclusion

- Cultural factors such as the tension between thin values and easy access to high palatability food leads to behaviours that prime binge eating.
- The salience of weight and food and intermittent sugar treatment in DM may increase this risk.
- Early intervention before plastic changes in the reward and counter reward system develop may prevent the physical side effects caused by insulin omission and binge eating.
- Pharmacological treatment may have a role.

Who are DWED ?

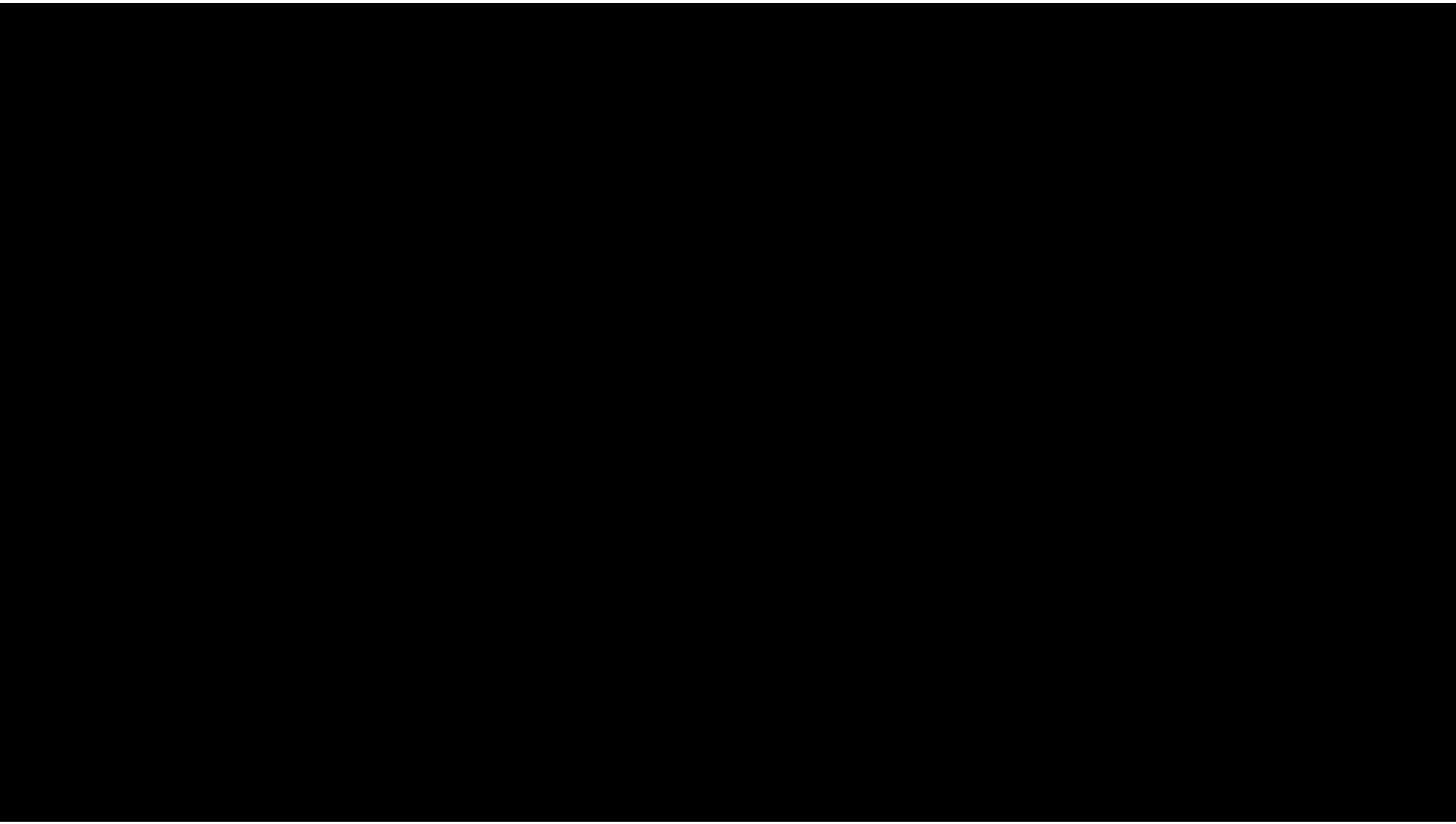
- Started as a social networking group
- Support, Advocacy, Awareness, Action
- Work with Strategic Clinical Networks
- Training for Health Professionals
- The Trustee Board
- Website for Carers, Professionals & DWEDs

Where can you find Diabetics with Eating Disorders?:

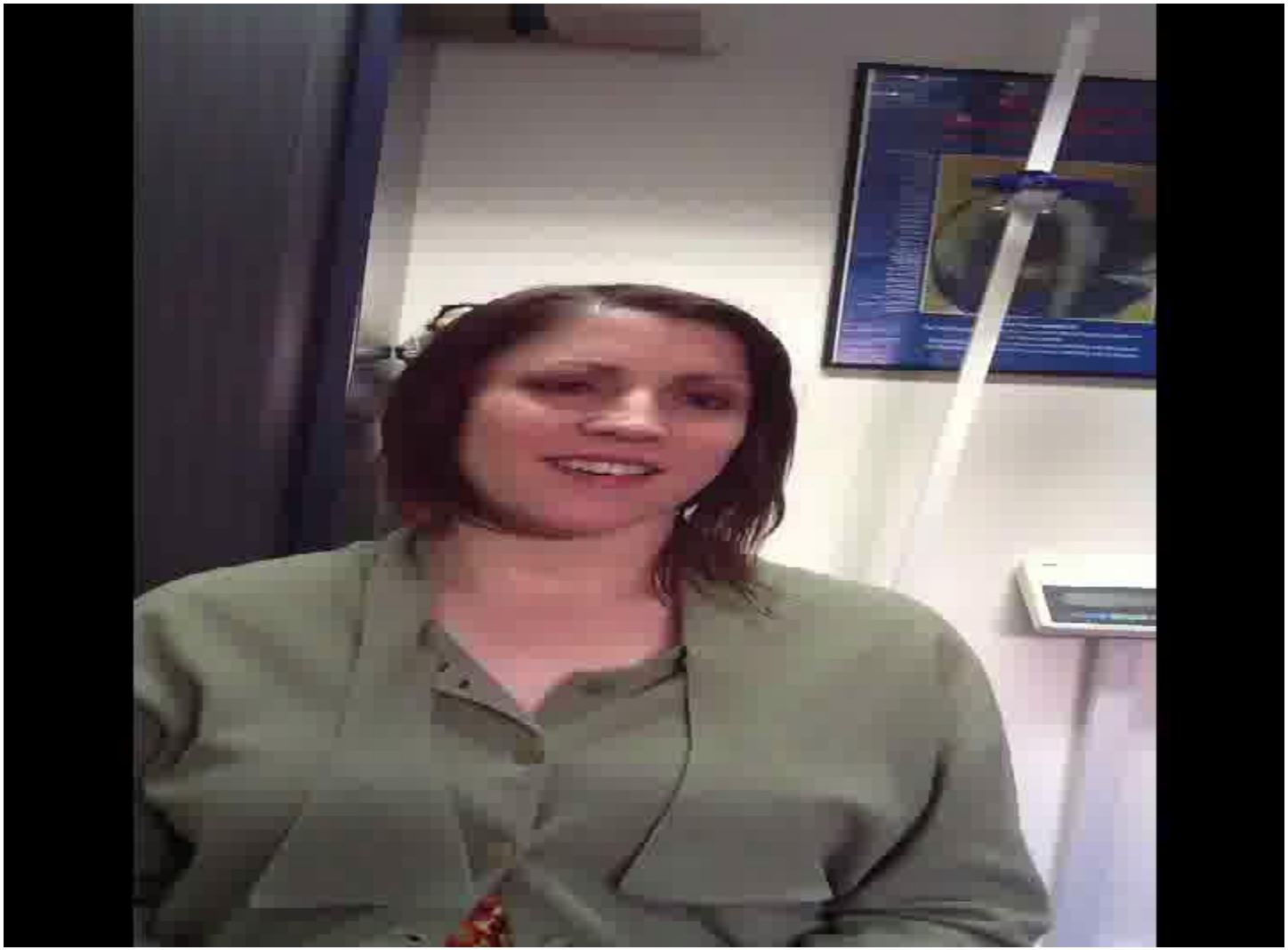
Where can you find Diabetics with Eating Disorders?:
http://www.dwed.org.uk/
http://www.facebook.com/DiabeticswithEatingDisorders
http://www.facebook.com/groups/DiabulimiaSupport/ (peer support group)
https://twitter.com/diabeticswithed
http://dwed.tumblr.com/
http://www.youtube.com/user/DWEDinfo
http://www.tudiabetes.org/group/diabeticswitheatingdisorders

Where can you donate?
http://www.justgiving.com/diabeteswed/donate

Life Saving advice



Support Injection



- Bermudez O: Diabetes and eating disorders. Audio Digest Family Practice 2013; 62 (www.audio-digest.org/adfwebcasts/pdfs/fp6102.pdf)

What are the things ED specialist need to know?

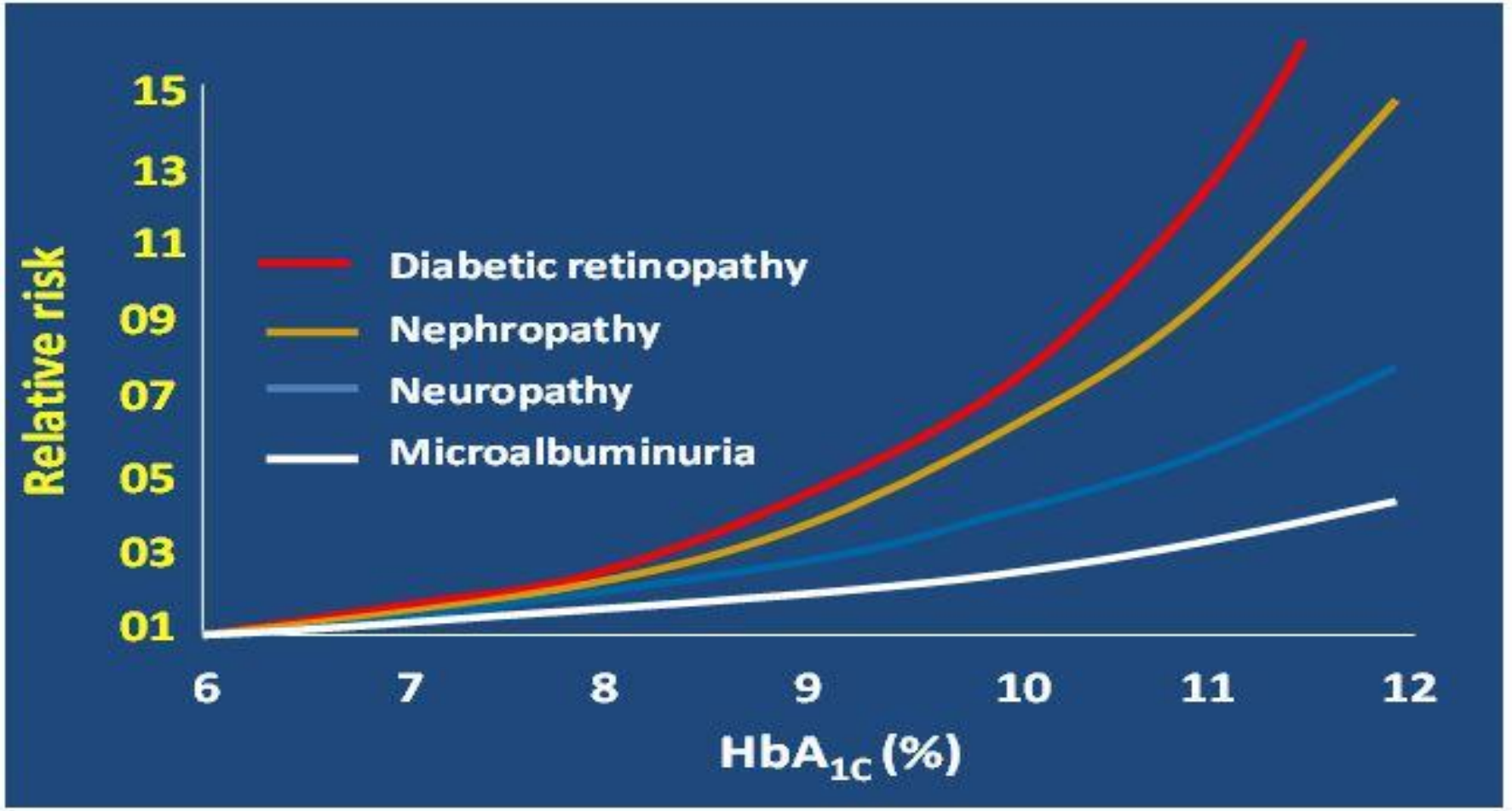
- Too rapid restoration of Normal sugar can be harmful

Markowitz, J. T., Butler, D. A., Volkening, L. K., Antisdel, J. E., Anderson, B. J., & Laffel, L. M. B. (2010). Brief screening tool for disordered eating in diabetes: internal consistency and external validity in a contemporary sample of pediatric patients with type 1 diabetes. *Diabetes care*, *33*(3), 495–500. doi:10.2337/dc09-1890

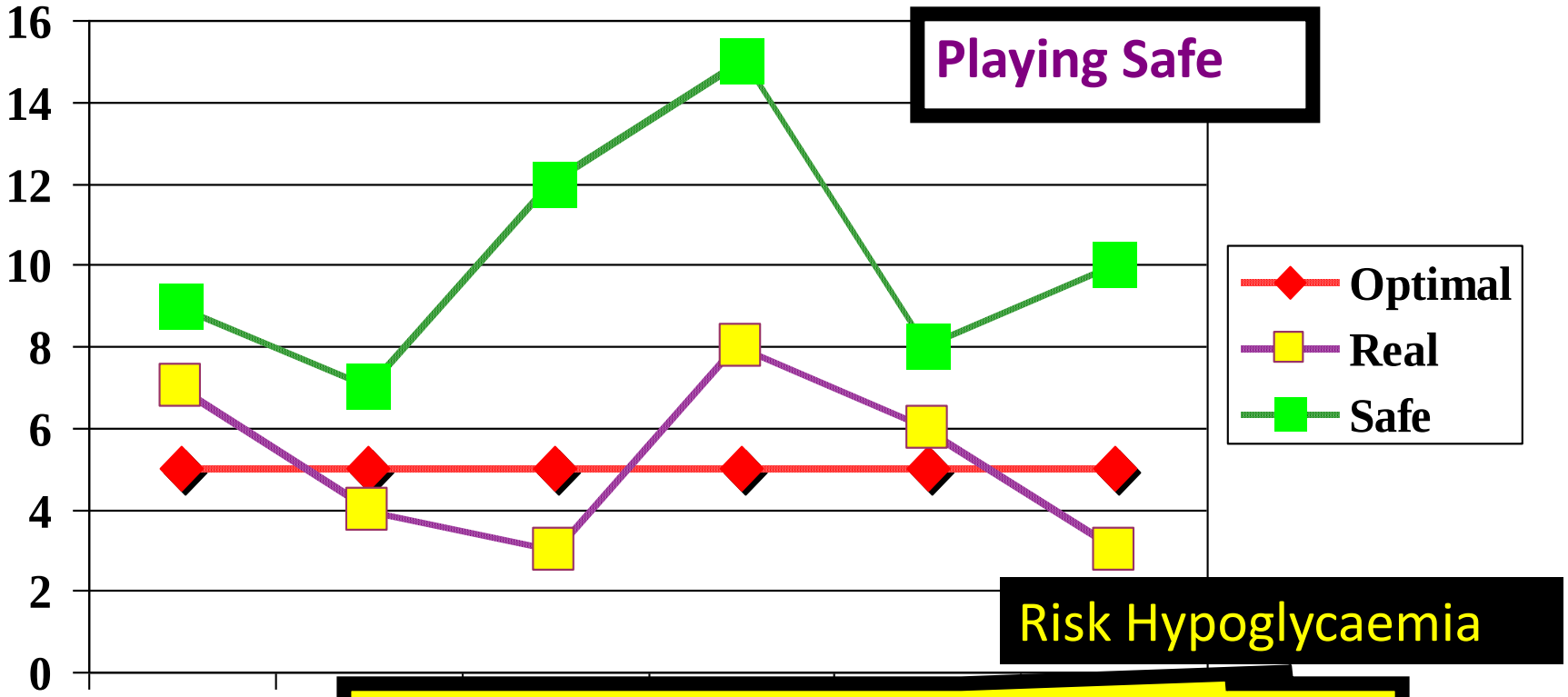
Revised Diabetes Eating Problem Survey (DEPS-R)

Disordered eating behaviours, such as insulin omission, excessive dieting and binge eating, are more prevalent in adolescents with type 1 diabetes.(Markowitz et al., 2010)

It has been reported that 30-40% of adolescents and young adults with diabetes omit or reduce their insulin after meals with the intention of losing weight.(Hasken et al., 2010)

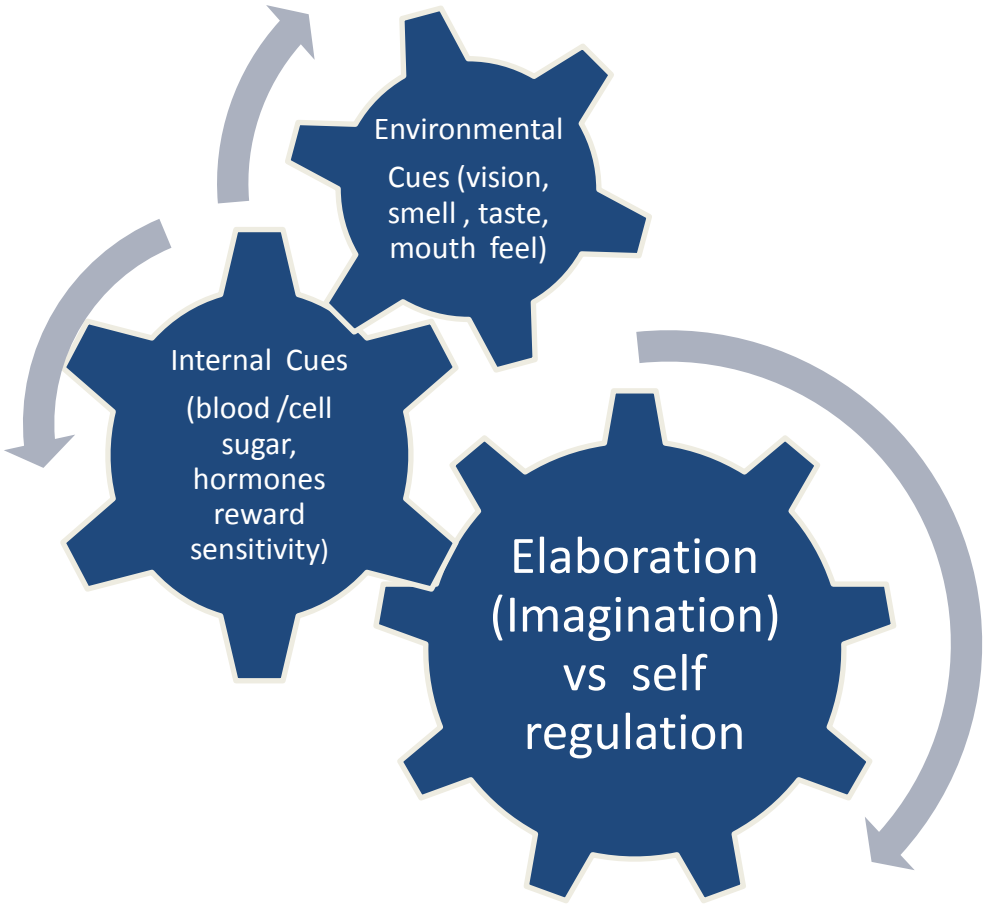

Relative risk
15
13
11
09
07
05
03
01
Diabetic retinopathy
Nephropathy
Neuropathy
Microalbuminuria
6
7
8
9
10
11
12
HbA1C (%)

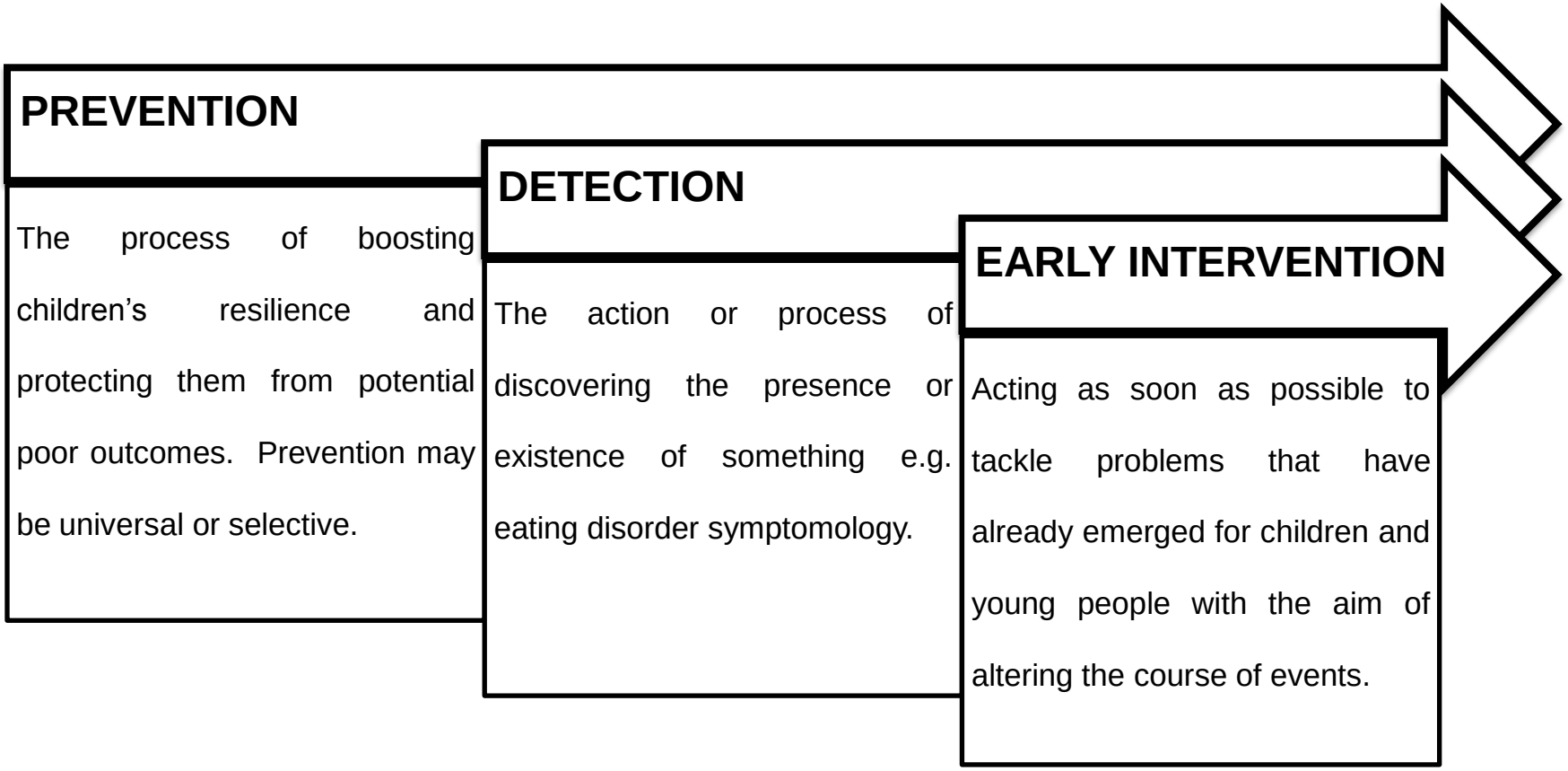
Optimal HbA1c: Balance Risk/benefit



What does this mean for perfectionist
Shame, stigma
Out of control

Craving: The Drive to Eat




PREVENTION
The process of boosting children's resilience and protecting them from potential poor outcomes. Prevention may be universal or selective.
DETECTION
The action or process of discovering the presence or existence of something e.g. eating disorder symptomology.
EARLY INTERVENTION
Acting as soon as possible to tackle problems that have already emerged for children and young people with the aim of altering the course of events.