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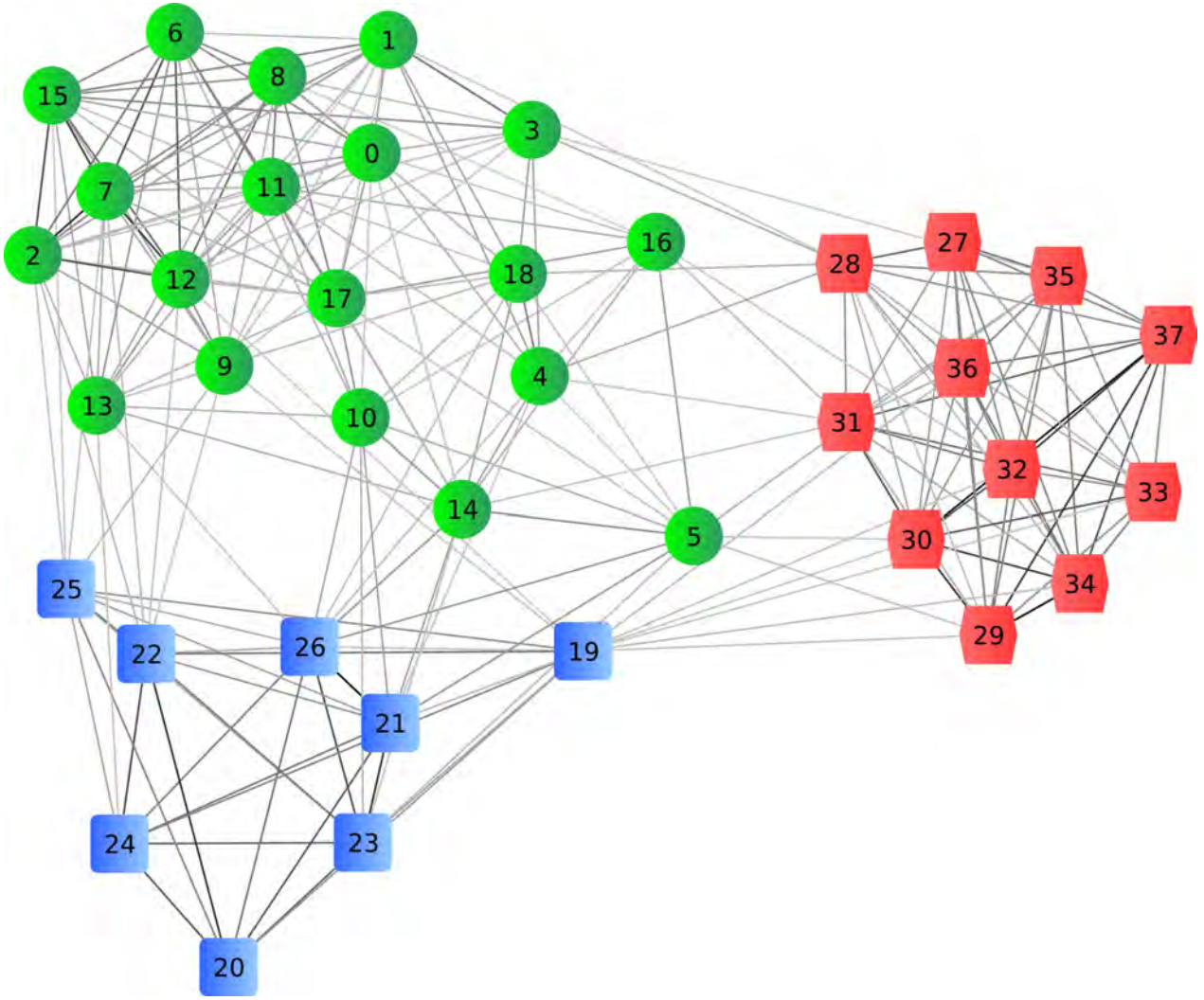

Klusteranalys i ätstörningsforskning

David Clinton

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Vad är klusteranalys?

- Person-centrerad
- Heuristisk metod
- Reducerar data
- Grupperar individer (objekt) enligt deras karakteristika
- Inga teoretiska antaganden (om t.ex. antal klustrar)
- Genererar hypoteser
- En bro mellan kvantitativ och kvalitativ forskning

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Vad händer med klusteranalys?

- Klusteranalys minimerar avståndet mellan individer i en kluster
- Klusteranalys maximerar avståndet mellan klustrar.

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Vad är inte klusteranalys?

- Faktor Analysis
- Discriminant Analysis
- Latent Class Analysis

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Tillämpningar

- Antropologi
- Biologi
- Paleontologi
- Informationsteknologi
- Medicin
- Psykologi

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Nackdelar?

- Deskriptiv
- Icke-teoretisk
- Non-inferential
- Inte möjligt att generalisera

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Varför klusteranalys?

- När du behöver utforska och upptäcka
- När du är nyfiken
- När du behöver formulera idéer som kan testas av andra metoder
- Lets your data speak for itself.
- Det är kul!

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Två exempel

- Ätstörningsdiagnostik: klutrerande av patienter
- Spädbarnsforskning: klustrerande av episoder av beteende

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Cluster analysis of key diagnostic variables from two independent samples of eating-disorder patients: evidence for a consistent pattern

DAVID CLINTON*, ERIC BUTTON, CLAES NORRING AND ROBERT PALMER

Division of Psychiatry, M57, Neurotec Department, Karolinska Institutet, Huddinge University Hospital, S-141 86, Sweden; University Department of Psychiatry, Brandon Unit, Leicester General Hospital, Leicester LE5 4PW, UK; Psychiatric Research Centre, Örebro County Council, PO Box 1613, S-701 16 Örebro, Sweden; University Department of Psychiatry, Brandon Unit, Leicester General Hospital, Leicester LE5 4PW, UK

ABSTRACT

Introduction. The optimal classification of eating disorders has been a matter of considerable debate. The present paper tackles this issue using cluster analysis with large independent samples of eating-disorder patients.

Method. Two samples of adult female patients from Sweden ($n=631$) and England ($n=472$) were classified on the basis of 10 key clinical variables of primary significance for diagnosing eating disorders. A separate series of cluster analyses were conducted on each sample.

Results. Results suggested that a three-cluster solution was optimal in both samples. The first cluster ('generalized eating disorder') was characterized by high levels of eating-disorder psychopathology on all variables except weight and menstrual functioning. The second cluster ('anorexics') was typified by low weight, amenorrhoea and the absence of binge eating, and seemed to correspond to the clinical picture of anorexia nervosa. The third cluster ('overeaters') was characterized by high weight and moderate levels of binge eating and compensatory behaviour.

Conclusions. Results suggest that patients presenting to eating-disorder services in different countries have clinical features that fall into very similar patterns. These patterns resemble, but are not identical to, existing diagnostic categories.

INTRODUCTION

Since the original key papers in the 1870s on what is now known as anorexia nervosa, a number of new terms have been introduced to describe a range of clinical conditions akin to anorexia nervosa. Russell's (1979) seminal paper on bulimia nervosa heralded a new wave of terminology to describe a related clinical problem, which shared some of the features of anorexia nervosa, but in which the dominant phenomenon centred around so-called 'binge eating'.

Nylander (1971) was one of the first authors to draw attention to the concept of a continuum of eating disorders in his research on dieting and feeling fat in a Scandinavian teenage school population. Button & Whitehouse (1981) extended such thinking in their study of British female college students. They identified a substantial number of young women who had many of the symptoms of anorexia nervosa without fulfilling strict criteria. They suggested that anorexia nervosa may be somewhat the tip of the iceberg and introduced the term 'subclinical anorexia nervosa' to describe this group.

* Address for correspondence: David Clinton, Division of Psychiatry, M57, Neurotec Department, Karolinska Institutet, Huddinge University Hospital, S-141 86, Sweden.
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Bakgrund

- Den nuvarande klassifikation av ätstörningar är inte optimal
- Avspeglar diagnoser naturliga grupperingar av patienter?
- CA av patienter från Sverige (N=631) och England (N=472) på "key diagnostic variables"

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Key diagnostic variables

1. BMI
2. Fear of weight gain
3. Restriction of food intake
4. Avoidance of fattening foods
5. Binge eating
6. Vomitting to compensate for binge eating
7. Use of laxatives to compensate for binge eating
8. Compulsive exercise
9. Amenorrheoa
10. Body image disturbance

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Dataanalys

Med hjälp av *Sleipner* (statistisk paket för CA)

Separata CA i båda sampel i tre steg:

1. Identifiera outliers
2. Hierarkisk klusteranalys
3. Re-analys med icke-hierarkisk klusteranalys

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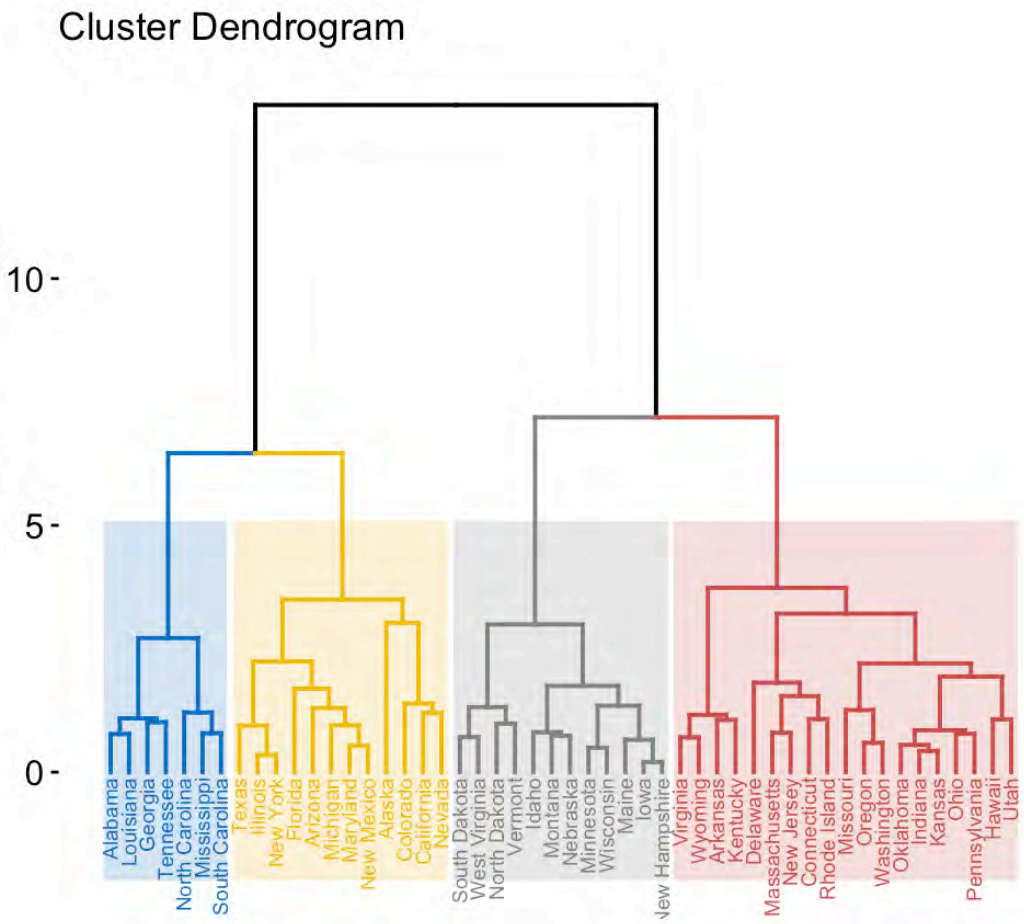
Identifikation av outliers:

- Oftast multivariata outliers
- Residual analysis i Sleipner
- Hieraktisk klusteranalys i sig (t.ex. single-linkage metoden)
- Mahalanobis distance (SPSS)



Hierakisk klusteranalys:

- Vad har du för slags data?
- Hur ska man beräkna avstånd?
  - *Squared Euclidean distance är vanligast för intervaldata.*
- Vilken kusteranalys metod?
  - *Wards metod kan ofta vara bra när outliers har tagits bort*
- Standardisera?
- Man kan köra olika metoder och jämföra också

Table 1. *Standard scores on essential clinical variables in relation to specific cluster solutions using Ward's method of hierarchical cluster analysis*

	n	BMI	Weight phobia	Binge eating	Restriction	Food avoidance	Vomiting	Laxative abuse	Compulsive exercise	Amenor-rhoea	Body image
Five-cluster solution											
Swedish sample											
Generalized eating disorder	211	0·02	0·19	0·33	0·44	0·54	0·38	−0·19	0·29	−0·51	0·25
Anorexics	178	−0·53	−0·13	−0·87	0·24	0·20	−0·76	−0·12	0·10	0·91	0·29
Overeaters	94	0·90	−0·10	−0·03	−0·95	−1·04	−0·51	−0·27	−0·55	−0·97	−0·69
Binge eaters	90	0·12	−0·27	0·88	−0·73	−0·83	1·01	−0·26	−0·37	0·40	−0·60
Laxative abusers	28	−0·16	0·61	0·36	0·68	0·82	0·47	3·93	0·21	0·05	0·55
English sample											
High-weight bingers	152	0·56	−0·43	0·33	−0·41	−0·62	0·16	−0·36	−0·63	−0·47	−0·31
Compulsive exercisers	93	−0·04	0·10	−0·58	0·14	0·41	−0·39	−0·36	0·56	−0·56	0·11
Anorexics	76	−0·94	−0·17	−0·92	0·10	0·09	−0·80	−0·40	−0·22	1·78	−0·43
Restricting bulimics	63	0·01	0·68	0·92	0·46	0·56	0·94	−0·20	0·53	0·07	0·49
Laxative abusers	58	−0·18	0·44	0·26	0·23	0·23	0·24	2·24	0·46	−0·28	0·67
Four-cluster solution											
Swedish sample											
Generalized eating disorder	211	0·02	0·19	0·33	0·44	0·54	0·38	−0·19	0·29	−0·51	0·25
Anorexics	178	−0·53	−0·13	−0·87	0·24	0·20	−0·76	−0·12	0·10	0·91	0·29
High-weight bingers	184	0·52	−0·18	0·41	−0·84	−0·94	0·23	−0·26	−0·46	−0·30	−0·64
Laxative abusers	28	−0·16	0·61	0·36	0·68	0·82	0·47	3·93	0·21	0·05	0·55
English sample											
Generalized eating disorder	156	−0·02	0·33	0·03	0·27	0·47	0·15	−0·29	0·55	−0·31	0·26
High-weight bingers	152	0·56	−0·43	0·33	−0·41	−0·62	0·16	−0·36	−0·63	−0·47	−0·31
Anorexics	76	−0·94	−0·17	−0·92	0·10	0·09	−0·80	−0·40	−0·22	1·78	−0·43
Laxative abusers	58	−0·18	0·44	0·26	0·23	0·23	0·24	2·24	0·46	−0·28	0·67
Three-cluster solution											
Swedish sample											
Generalized eating disorder	239	0·00	0·24	0·33	0·47	0·57	0·39	0·30	0·28	−0·44	0·28
High-weight bingers	184	0·52	−0·18	0·41	−0·84	−0·94	0·23	−0·26	−0·46	−0·30	−0·64
Anorexics	178	−0·53	−0·13	−0·87	0·24	0·20	−0·76	−0·12	0·10	0·91	0·29
English sample											
Generalized eating disorder	214	−0·06	0·36	0·09	0·26	0·41	0·17	0·39	0·52	−0·30	0·37
High-weight bingers	152	0·56	−0·43	0·33	−0·41	−0·62	0·16	−0·36	−0·63	−0·47	−0·31
Anorexics	76	−0·94	−0·17	−0·92	0·10	0·09	−0·80	−0·40	−0·22	1·78	−0·43
Two-cluster solution											
Swedish sample											
Restrainers	417	−0·23	0·08	−0·18	0·37	0·41	−0·10	0·12	0·20	0·13	0·28
High-weight bingers	184	0·52	−0·18	0·41	−0·84	−0·94	0·23	−0·26	−0·46	−0·30	−0·64
English sample											
Overeaters	366	0·19	0·03	0·19	−0·02	−0·02	0·17	0·08	0·05	−0·37	0·09
Anorexics	76	−0·94	−0·17	−0·92	0·10	0·09	−0·80	−0·40	−0·22	1·78	−0·43

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Laxative abusers	28	−0·16	0·61	0·36	0·68	0·82	0·47	3·93	0·21	0·05	0·55

- **största kluster**
- **normal BMI**
- **ganska hög restriction, undvikande av mat, hetsätning, kräkning, tvångsmässig motion, kroppsuppfattningsstörning**
- **låg laxermedelsmissbruk och amenorré**

	n	BMI	Weight phobia	Binge eating	Restriction	Food avoidance	Vomiting	Laxative abuse	Compulsive exercise	Amenor-rhoea	Body image
Five-cluster solution											
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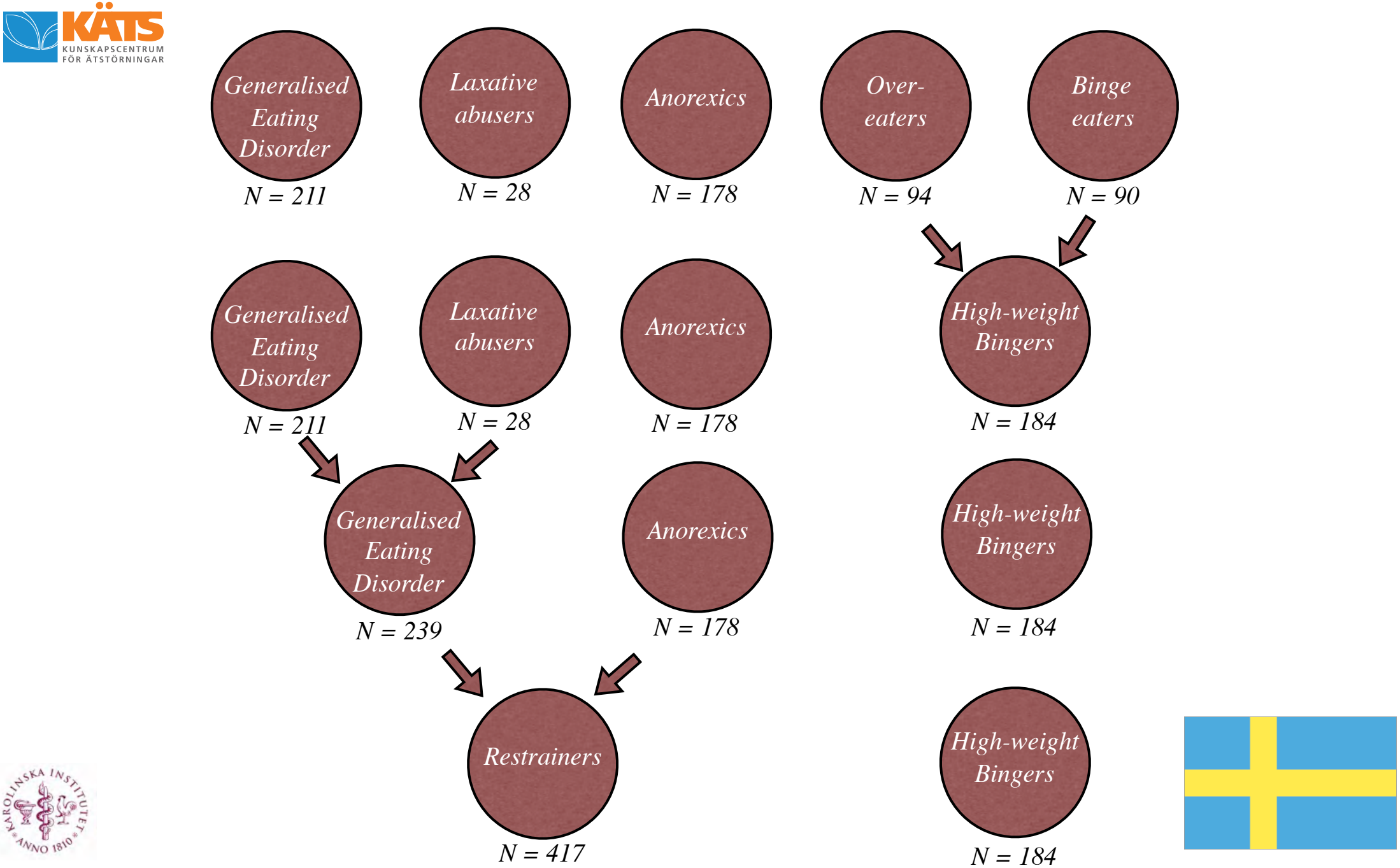
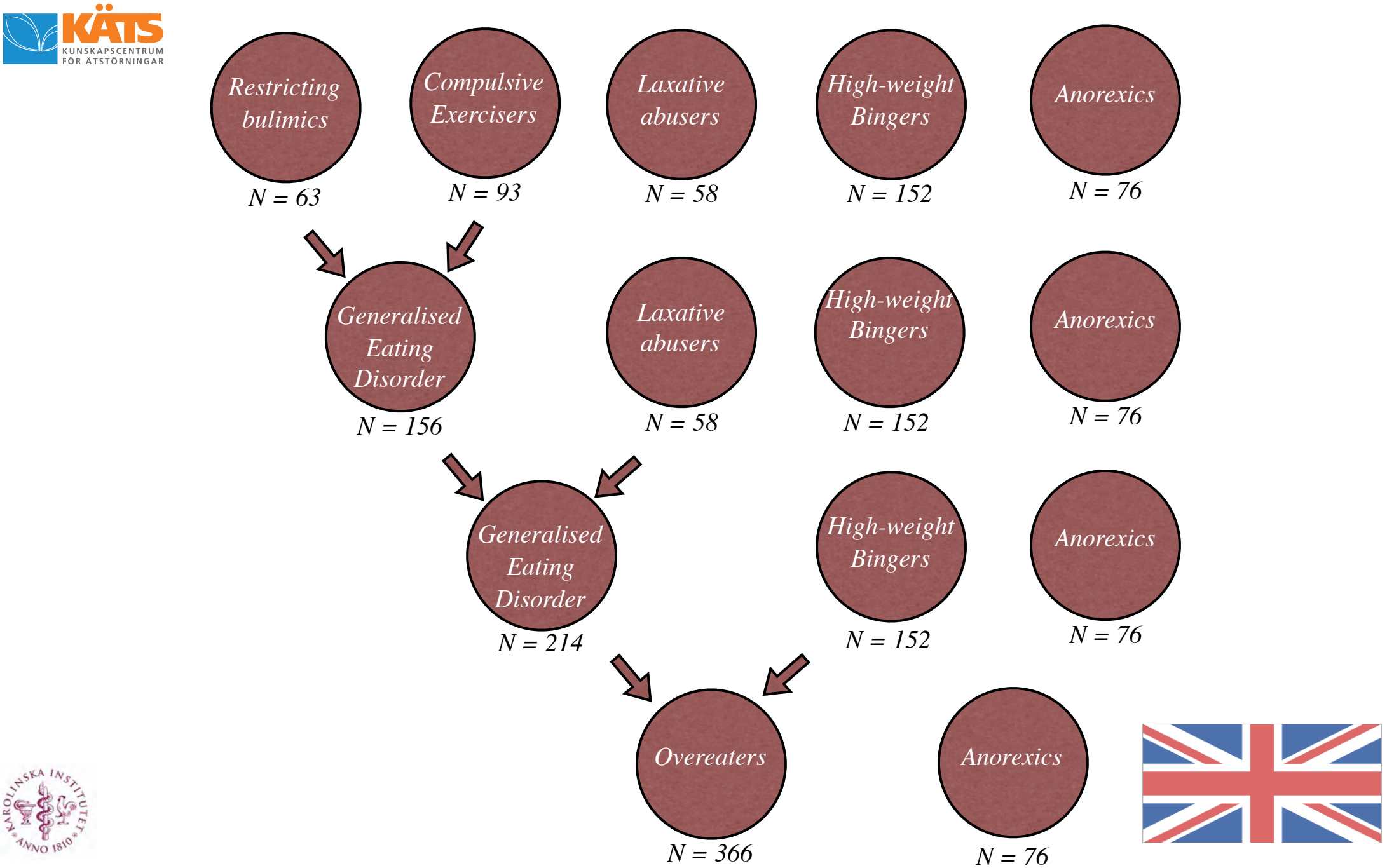
Laxative abusers	28	−0·16	0·61	0·36	0·68	0·82	0·47	3·93	0·21	0·05	0·55

- **minsta kluster**
- **mycket höga nivåer av laxermedelsmissbruk**


Generalised Eating Disorder
N = 211
Laxative abusers
N = 28
Anorexics
N = 178
Over-eaters
N = 94
Binge eaters
N = 90
Generalised Eating Disorder
N = 211
Laxative abusers
N = 28
Anorexics
N = 178
High-weight Bingers
N = 184
Generalised Eating Disorder
N = 239
Anorexics
N = 178
High-weight Bingers
N = 184
Restrainers
N = 417
High-weight Bingers
N = 184


Restricting bulimics
N = 63
Compulsive Exercisers
N = 93
Laxative abusers
N = 58
High-weight Bingers
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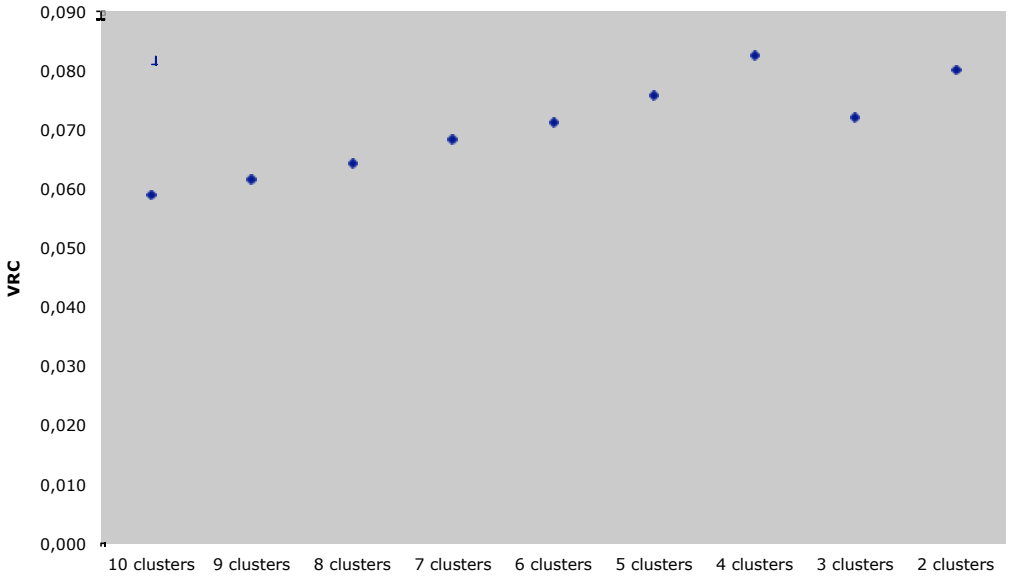

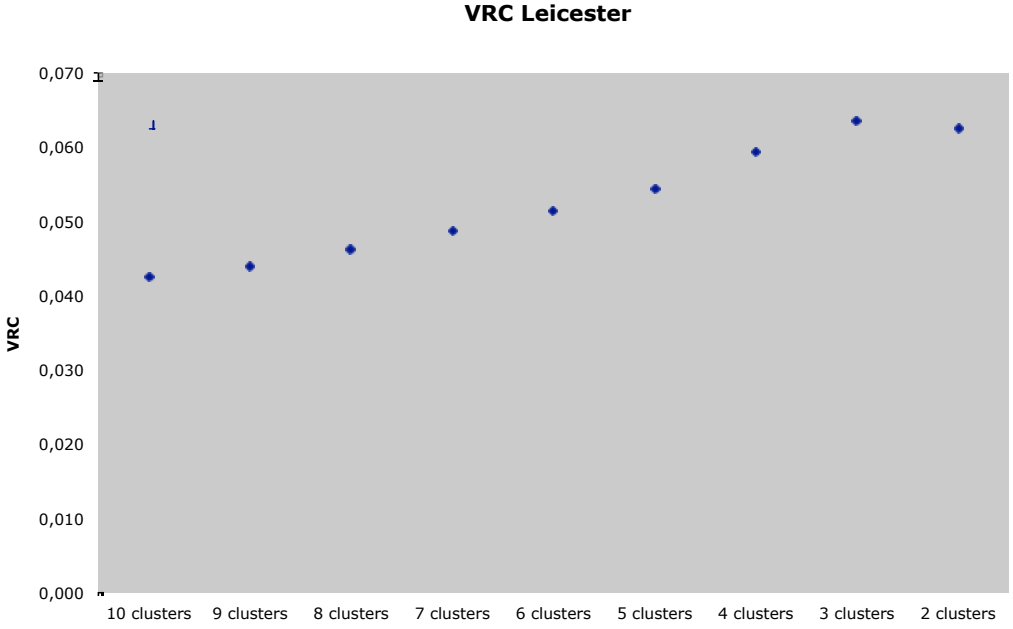

Var drar man gränsen? Hur många klustrar?

- Meningsfullhet och tolkningsbarhet

- Kvantitativa hjälpmedel
- Variance ration criterion (VRC):

$$VRC = (BGSS/k-1)/(WGSS/n-k)$$

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Eating Behaviors 6 (2005) 403–418

EATING BEHAVIORS

The comparative utility of statistically derived eating disorder clusters and DSM-IV diagnoses: Relationship to symptomatology and psychiatric comorbidity at intake and follow-up

David Clinton [a,*], Claes Norring [b,c]

[a]*Division of Psychiatry, M57, Neurotec Department, Karolinska Institutet, Huddinge University Hospital, S-141 86, Sweden*
[b]*Psychiatric Research Centre, Örebro County Council, P.O. Box 1613, S-701 16 Örebro, Sweden*
[c]*Department of Behavioral, Social and Legal Sciences (Psychology), Örebro University, Sweden*

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Abstract

Introduction: The classification of eating disorders has been a matter of considerable debate. The present paper extends previous work and aimed to compare the utility of statistically derived clusters of eating disorders and conventional diagnoses.
Methods: Adult female eating disorder patients who had previously been classified on the basis of cluster analysis of key diagnostic variables were examined on measures of eating disorder symptomatology and psychiatric comorbidity at intake ($N=601$) and subsequent follow-up after 6 and 36 months ($N=349$, $N=322$, respectively).
Results: Compared to DSM-IV diagnoses, clusters demonstrated greater utility in terms of more distinct between-group differences and higher effect sizes in relation to a wide range of variables. The greater utility of clusters was in important respects due to the reallocation of EDNOS patients to more relevant alternative categories and to a greater emphasis on psychological and behavioural features of eating disorders.
Conclusions: In order to achieve a better classification of eating disorders, it will be important to place increased emphasis on common psychological features. There is a need to move away from increased use of subtypes and toward a definition of eating disorder per se.

Keywords: Anorexia nervosa; Bulimia nervosa; Classification; Comorbidity; Diagnosis; Eating disorders

* Corresponding author.
E-mail address: David.Clinton@neurotec.ki.se (D. Clinton).

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So what?

- Vad fungerar bäst för att förklara ätstörningspatologi? Klustrar eller diagnoser?
- Sv patienter fr CA studien (N=601) följt upp efter 6- och 36 månader
- Klustrar fungerade mycket bättre än diagnoser
- Mycket pga betoning på psykologiska och beteende-mässiga variabler i CA

Utveckling av affect attunement

Infant and Child Development
Inf. Child Dev. **15**: 387–402 (2006)
Published online 2 June 2006 in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/icd.466

What do Mothers Attune to During Interactions With Their Infants?

Carl-Otto Jonsson[a,*] and David Clinton[b]
[a] *Department of Psychology, Stockholm University, Sweden*
[b] *Division of Psychiatry, Neurotec Department, Karolinska Institutet, Karolinska University Hospital-Huddinge, Sweden*

There has been considerable theoretical interest in the developmental importance of affect mirroring and attunement, but little empirical attention has been directed toward the topic. The present study systematically explored the sorts of infant behaviour that elicit affect attunement in mothers. Written descriptions of video-recorded sequences of interaction in 27 mother–infant dyads were used to examine 141 instances of affect attunement in samples from Sweden and the former Yugoslavia. Infants were aged between 2 and 12 months. Behaviour that elicited affect attunement from mothers was rated in terms of 10 behavioural themes, which were used to cluster episodes of affect attunement. Cluster analysis suggested that mothers attuned to six distinct forms of infant behaviour: pleasurable motoric behaviour, effect initiation, focusing, loss of balance, uncontrolled behaviour and displeasure. Incidents of affect attunement elicited by categorical affects comprised only 20% of the instances examined. Most importantly, affect attunement was often elicited by infant exploration and play in relation to the non-social world. Affect attunement may function to reinforce and regulate ongoing behaviour that is largely explorative in nature. How mothers respond to the infant's interaction with the external, non-social world may be more important for intrapsychic development than previously thought. Copyright © 2006 John Wiley & Sons, Ltd.

Key words: affect attunement; affect mirroring; infant development

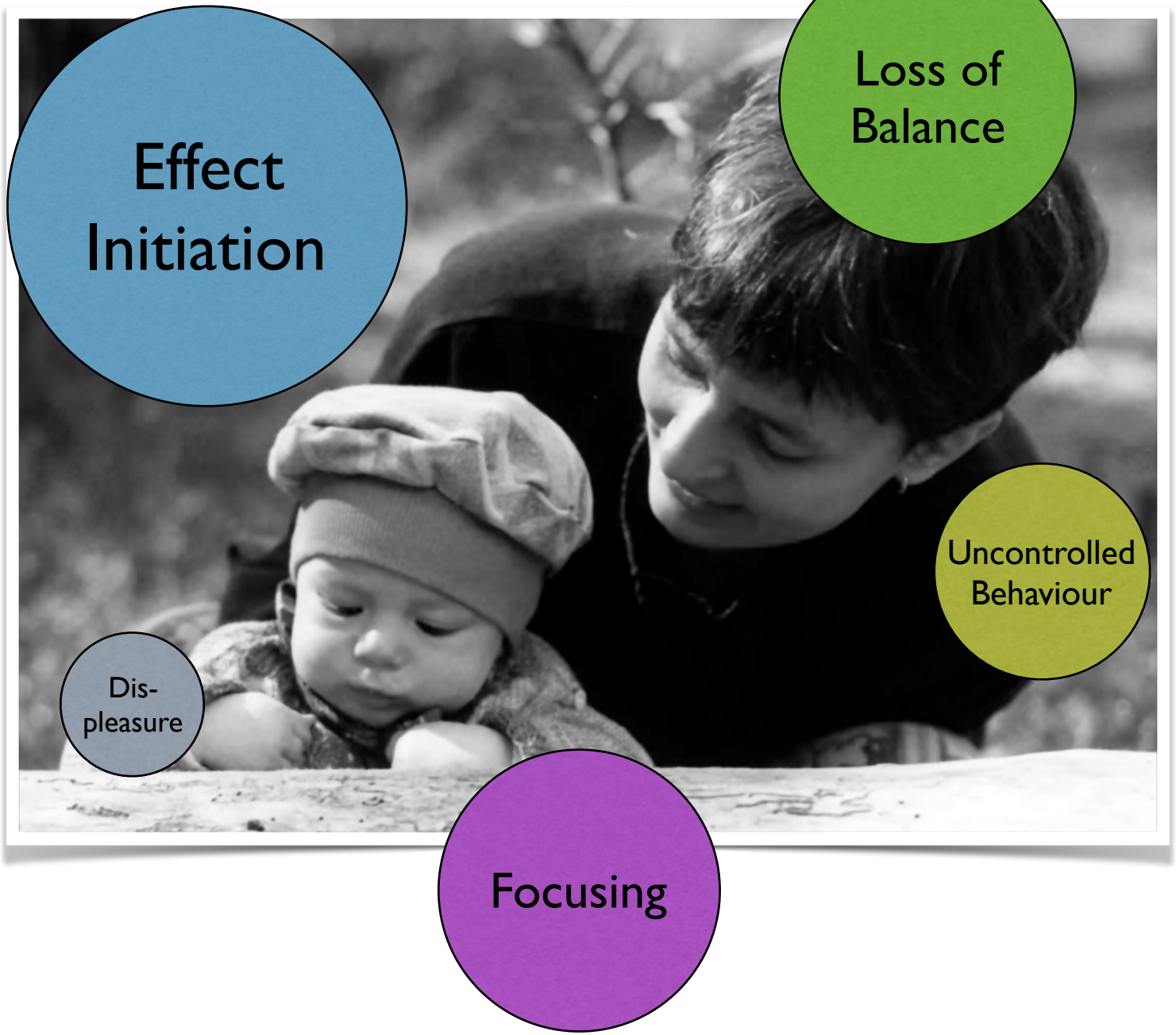
INTRODUCTION

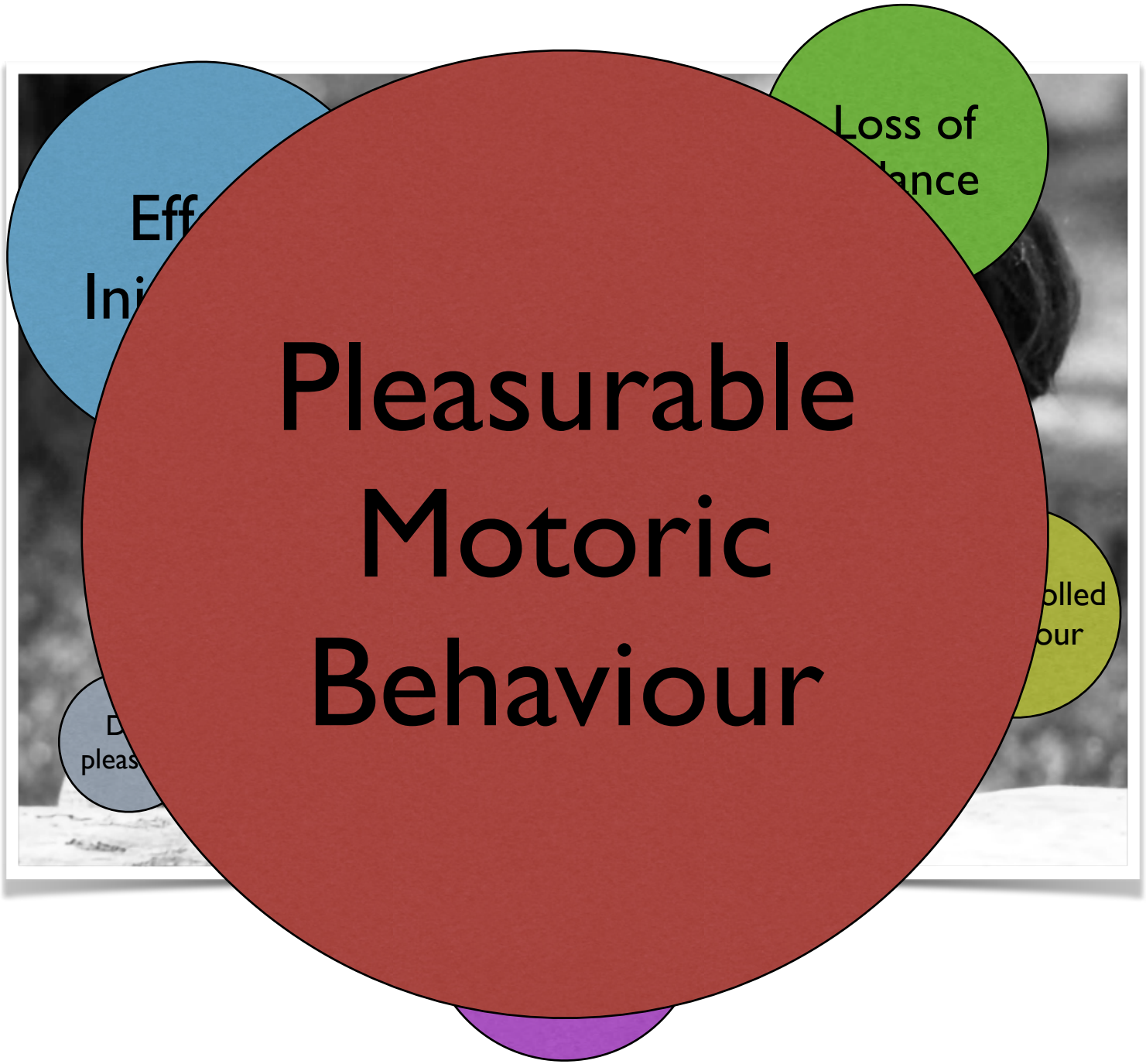
An important question concerning human development is how emotional experience becomes organized, conscious, linguistically encodable and sharable. In recent years there has been an increasing emphasis on integrating empirical studies of cognitive, linguistic and social development during infancy with psychodynamic and interpersonal theories in order to illuminate

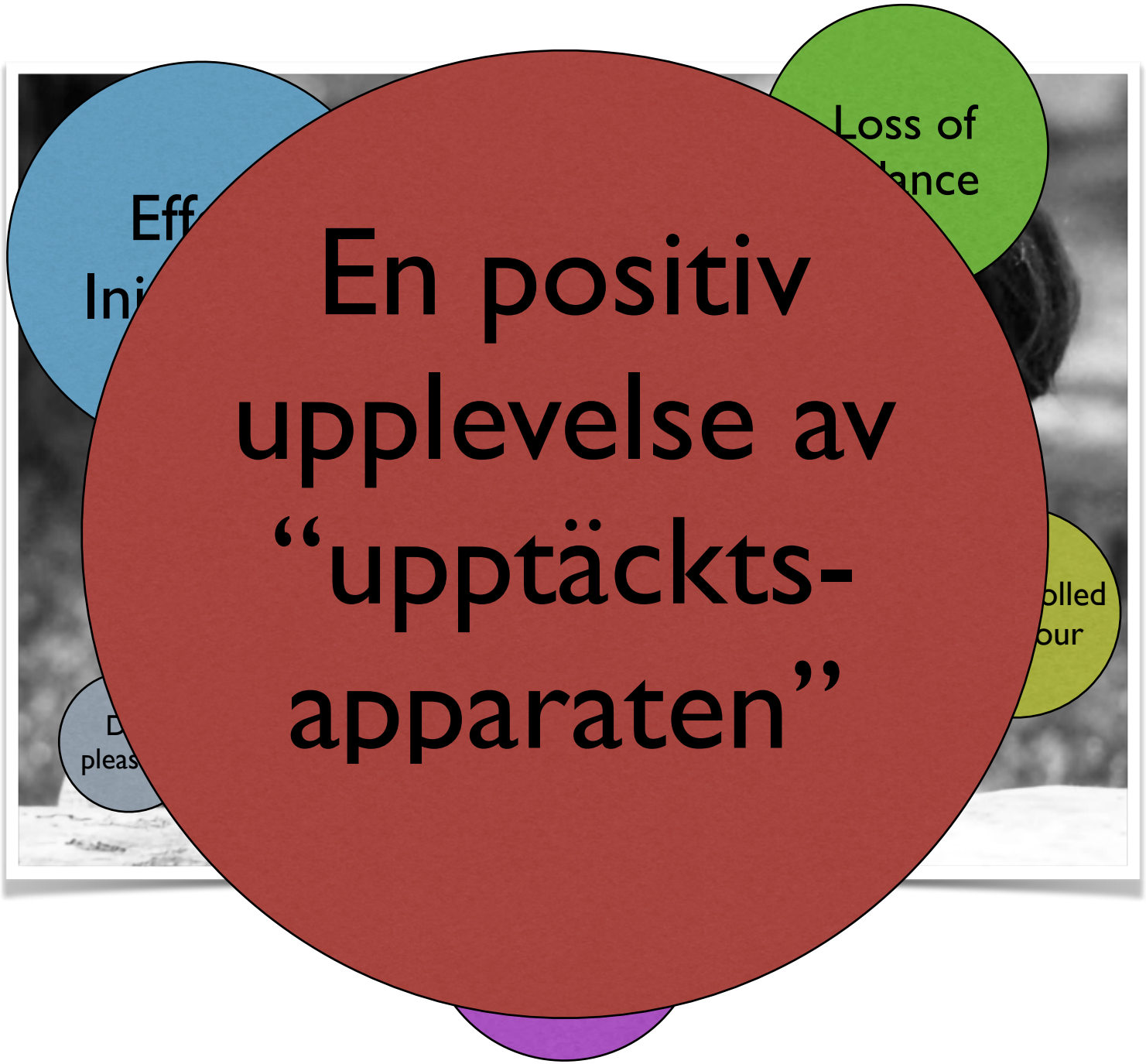
*Correspondence to: Carl-Otto Jonsson, Burträskgatan 63, S-162 62 Vällingby, Sweden. E-mail: cojn@psychology.su.se

Metod:

- Par av spädbarn och sina mödrar (10 fr Sverige, 17 fr fd Jugoslavien), ålder 2-12 månader
- Video inspelningar av fri lek
- Skattningar av affect attunement, AAP, Haft (1989), 141 episoder
- Skattningar av behavioural themes, Jonsson & Clinton (2006), oftast korta 1 - 2 sek
- Klusteranalys på episoder av affect attunement i termer av behavioural themes


Effect Initiation
Loss of Balance
Uncontrolled Behaviour
Dis-pleasure
Focusing


Loss of
Pleasurable
Motoric
Behaviour


Loss of
ance
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our
En positiv upplevelse av "upptäckts-apparaten"

KÄTS
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Sammanfattning

Klusteranalys kan:

- hjälpa dig upptäcka viktiga mönster i din data
- hjälpa dig att generera hypoteser som kan testas med andra metoder
- hjälpa din data att komma till tals

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Frågor?