



The Association  
for Child and Adolescent  
Mental Health

# THE BRIDGE

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## Eating disorders issue

Understanding eating disorder  
susceptibility requires an  
integrated sociological,  
biological and genetic approach

Research highlights from our  
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Dr Juliette Kennedy  
Editor of The Bridge

## Foreword from the Editor

Welcome to this edition of The Bridge which focuses on eating disorders. Research from JCPP and CAMH over the last 2 years is summarised here. Culbert et.al research review describes some of what is known about the underlying causes of eating disorders. The aetiology of eating disorder is multifactorial and complex, but the pressure on young people from the media and the notion that there may be an idea of a 'thin ideal' is acknowledged.

The RCPsych College report CR 168s<sup>1</sup> – “Junior MARSIPAN: Summary of Management of really sick patients under 18 with Anorexia Nervosa” has been produced to guide clinicians in managing young people with eating disorders. It states in its key recommendations that “All health professionals should be aware that Anorexia Nervosa is a serious disorder with life threatening physical and psychological complications and patients require the same level of care and should be subject to the same emergency protocols as a child with any other serious illness”. Over the last year there has been considerable national effort to train CAMHS and paediatric colleagues together, to promote a consistent and evidence based approach to the management of young people with eating disorders, who may have complex concurrent physical health and mental health needs. Several members of the team I work in have attended this nationally coordinated training and have met with teams from all over the country. Young people can be categorised into Red, Amber, Green or Blue levels of risk depending on various physical and behavioural parameters e.g. their weight or degree of recent weight loss, cardiovascular health, state of hydration/degree of dietary restriction, biochemistry, compensatory behaviours etc... Clinicians can download the MARSIPAN APP for a smartphone that can help them calculate the overall score. Young people in RED zone need very close monitoring of their health and often do need to be cared for in physical health settings for periods of time, so mental health and physical health specialists working together in partnership with young people and their families is essential for young people to recover. I hope you find this edition helpful.

<sup>1</sup> <https://www.rcpsych.ac.uk/pdf/CR168summary.pdf>

## Infants of mothers with eating disorders show neurobehavioural and cognitive defects

By Dr Jessica K. Edwards

Eating disorders can have serious adverse clinical, social and psychological outcomes in affected patients, but whether maternal eating disorders are associated with negative outcomes in newborns is unknown. Now, a study by Manuela Barona and colleagues has assessed neurobiological and cognitive outcomes in newborns and infants born to mothers with eating disorders. Healthy women and those with an active or past eating disorder were recruited to a prospective longitudinal study during the first or second trimesters of pregnancy. Newborns were assessed at 8 days for neurobehavioural dysregulation using the Brazelton Neonatal Behavioural Assessment Scale, and later assessed at 1 year for cognitive development using the Bayley Scales of Infant and Toddler Development. Newborns from mothers with an active eating disorder showed worse autonomic stability (e.g. poor regulation of breathing or temperature), compared to those from healthy controls. The same trend (although not significant) was identified in newborns of mothers with a past eating disorder. Infants of mothers with a past eating disorder also exhibited delayed language skills and poorer motor development at 1 year compared to healthy controls. The researchers suggest that autonomic stability may be an early biomarker of the effects of maternal eating disorders on offspring, and dysregulated cognitive development at 1 year may be a stable marker of eating disorder risk.

Barona, M., Taborelli, E., Corfield, F., Pawlby, S., Easter, A., Schmidt, U., Treasure, J. & Micali, N. (2017), Neurobehavioural and cognitive development in infants born to mothers with eating disorders. *J Child Psychol Psychiatr.* 58: 931-938. doi:10.1111/jcpp.12736

### Glossary:

**Eating disorder:** an unhealthy attitude towards food and often weight/body image that has adverse medical and psychological consequences; eating disorders can be categorized as either anorexia nervosa, bulimia nervosa, binge eating disorder (BED) or other specified feeding of eating disorder (OSFED)

**Prospective longitudinal study:** a study that looks for outcomes (e.g. disease development) in the same subjects over a period of time ranging from months to decades.



## Beat – helping those affected by eating disorders

By Jamie Osborn, Beat Press Officer



Beat is the UK's eating disorder charity, and is a champion, guide and friend to all affected by these serious mental illnesses. We base our work on the latest research and advice from clinical experts, as well as on what sufferers and carers tell us about their experiences.

Currently, Beat is very concerned about the level of eating disorder training for medical students. Research shows medical students in the UK receive less than two hours of eating disorder training during their undergraduate degree, and one in five universities do not offer any teaching on eating disorders at all.

The lack of undergraduate training means that doctors are often unable to provide appropriate referrals for sufferers when a patient presents, causing delays in treatment and putting patient safety at risk.

This lack of training also means undertrained doctors too often only look at physical symptoms of eating disorders like BMI and do not consider mental health factors.

In a survey of 1,700 people in 2017, only 42% felt that their GP understood eating disorders and only 34% believed their GP knew how to help them with their illness.

Another worrying aspect of the research into medical student training is the severe lack of specialist training posts, with just 17 such posts dedicated to training clinicians to treat eating disorders. Patients with eating disorders should be referred to specialist services and should not be treated in general mental health units, but the lack of specialist training placements will only add to shortage of specialist clinicians.

One patient told Beat, “I’ve had staff in general psychiatric wards tell me that I don’t look like I have an eating disorder, which has been very triggering and difficult.”

This research comes in the wake of a 2017 Parliamentary and Health Service Ombudsman (PHSO) inquiry into the deaths

of three people with eating disorders, which concluded that lack of training was one of the factors that contributed to the tragedies.

Other patients spoke of doctors whose understanding of eating disorders enabled them to make appropriate referrals. One patient described this as “...a huge help to my recovery and a major factor in me not requiring inpatient treatment later on.”

It is vital that eating disorders are treated at the earliest opportunity, as this gives people the best chance of a full recovery, and can more than half the cost to the NHS per patient. Adequate training for all doctors is essential if they are to recognise problems, manage crises and provide appropriate referrals.

Beat runs training for healthcare and educational professionals, and offers partnerships with NHS to reduce the burden on service providers. This includes training and peer support groups for carers. Contact [contracts@beateatingdisorders.org.uk](mailto:contracts@beateatingdisorders.org.uk) for more information.

Beat also runs a helpline service that is open every day of the year.

<sup>1</sup> <http://pmj.bmj.com/content/early/2018/06/04/postgradmedj-2018-135658>

<sup>2</sup> <https://www.beateatingdisorders.org.uk/uploads/documents/2018/5/gp-briefing-document.pdf>

<sup>3</sup> <https://www.ombudsman.org.uk/sites/default/files/page/FINAL%20FOR%20WEB%20Anorexia%20Report.pdf>

<sup>4</sup> <https://www.beateatingdisorders.org.uk/uploads/documents/2017/11/delaying-for-years-denied-for-months.pdf>

# Understanding eating disorder susceptibility requires an integrated sociological, biological and genetic approach

By Dr Jessica K. Edwards

In 2015, Kristen Culbert, Sarah Racine and Kelly Klump compiled a Research Review on the underlying causes of eating disorders for the Journal of Child Psychology and Psychiatry. Their review identified variables that can be considered risk factors for eating pathologies and the critical areas for future research. Here, the researchers revisit their key findings and discuss how the field needs to progress in future years.

Eating disorders are severe psychiatric illnesses with an estimated lifetime prevalence of ~2.8-6.4% in US adolescents. Three primary categories of eating disorder have been recognized by the DSM-5: anorexia nervosa, bulimia nervosa and binge eating disorder. In addition, ~20-40% cases of eating pathology fall into “Other Specified or Unspecified Feeding or Eating Disorders” categories. Despite diagnostic distinctions between these categories, all are associated with negative medical, cognitive, emotional and social outcomes. As such, increasing our understanding of the factors that contribute to the development of an eating pathology is necessary for early intervention and prevention

In their review, Culbert and colleagues reinforce that no single factor accounts for the development of an eating disorder. “Risk for eating disorders involves a complex interplay between sociocultural, psychological and biological influences, but most research has examined biological and psychosocial risk factors in isolation”, explains Culbert. “Studies that examine factors across all domains are critical to fully determine the causes that contribute to the development of an eating disorder. Consequently, our review aimed to identify key risk factors that had been studied using integrative methods — i.e. approaches that captured both biological and environmental influences (e.g., twin studies) and/

or various levels of analysis, like the combination of biological and behavioural data (e.g., imaging analyses during cognitive testing)”.

The authors describe that over the course of the 20th century, the level by which women living in Western societies idealize being thin and the incidence of anorexia nervosa and bulimia nervosa has increased. Westernised cultures offer ample opportunity and exposure to pressures to obtain the “thin ideal”, which is considered to increase risk of developing an eating disorder in females. This effect has been exemplified in the case of bulimia nervosa: increased rates of bulimia (which also has a strong genetic element) have been observed in non-Western cultures following exposure to Western influences, such as Western television programs.

Culbert et al. identified that media exposure, perceived pressure to be thin, thin-ideal internalization, and an expectancy to gain life improvements from thinness can prospectively predict increased levels of disordered eating in adolescents and young adult women. As such, they claim that interventions that (i) reduce the extent to which an individual internalizes the thin-ideal as being important and (ii) that alter expectations that life will improve if thinness is achieved, have the potential to reduce the risk of developing disordered eating. One such intervention is the “Body Project”

— a body acceptance program that uses a cognitive dissonance technique to help school-aged girls and young women resist cultural pressures to pursue an unrealistic body image. Interestingly, the Body Project technique has been shown to alter neural responsiveness to thin-ideal media images and statements, thus highlighting the interplay between cognitive and behavioural processes that underlie biological change.

Given that only a minority of individuals are susceptible to thin-ideal sociocultural messages, and even fewer go on to develop an eating disorder, implies that individual susceptibility factors moderate the contribution of sociocultural effects on eating disorder risk. One of these individual factors may be personality traits, such as negative emotionality, perfectionism and a type of emotion-based impulsivity known as negative urgency. Longitudinal studies have consistently demonstrated that these traits can predict development of an eating disorder, suggesting that they may be risk factors for eating disorders.

The predominant biological risk factors identified thus far for eating disorders are genetic risk factors and ovarian hormone levels.

**Full article is available to be viewed online at <https://bit.ly/zlAkOze>**

## Referring to:

Culbert, K.M., Racine, S.E. & Klump, K.L. (2015), Research Review: What we have learned about the causes of eating disorders — a synthesis of sociocultural, psychological, and biological research. *J Child Psychol Psychiatr*, 56: 1141-1164. doi:10.1111/jcpp.12441

## Further reading:

Culbert, K. M., Burt, S. A., & Klump, K. L. (2017), Expanding the developmental boundaries of etiologic effects: The role of adrenarche in genetic influences on disordered eating in males. *J Abnorm Psychol*, 126, 593-606. doi:10.1037/a0000226

Stice, E., Marti, C.N. & Rohde, P. (2013), Prevalence, incidence, impairment, and course of the proposed DSM-5 eating disorder diagnoses in an 8-year prospective community study of young women. *J. Abnorm Psychol*, 122: 445-457. doi:10.1037/a0030679

[www.bodyprojectsupport.org](http://www.bodyprojectsupport.org)

## Glossary:

**\*Anorexia nervosa (AN):** a disorder characterized by deliberate weight loss, induced and sustained by the patient. The disorder is associated with a specific psychopathology whereby a dread of fatness and flabbiness of body contour persists as an intrusive overvalued idea, and the patients impose a low weight threshold on themselves. There is usually undernutrition of varying severity with secondary endocrine and metabolic changes and disturbances of bodily function. The symptoms include restricted dietary choice, excessive exercise, induced vomiting and purgation, and use of appetite suppressants and diuretic.

\*World Health Organization. 1992. The ICD-10 classification of mental and behavioural disorders: clinical descriptions and diagnostic guidelines. Geneva: World Health Organization.

**Binge eating disorder (BED):** an eating disorder in which affected patients regularly eat an excessive amount of food over a short period of time and feel unable to stop during the eating episode; patients then typically experience feelings of upset and guilt

**\*Bulimia nervosa (BN):** a syndrome characterized by repeated bouts of overeating and an excessive preoccupation with the control of body weight, leading to a pattern of overeating followed by vomiting or use of purgatives. This disorder shares

many psychological features with anorexia nervosa, including an overconcern with body shape and weight. Repeated vomiting is likely to give rise to disturbances of body electrolytes and physical complications. There is often, but not always, a history of an earlier episode of anorexia nervosa, the interval ranging from a few months to several years.

\* World Health Organization. 1992. The ICD-10 classification of mental and behavioural disorders: clinical descriptions and diagnostic guidelines. Geneva: World Health Organization.

**Cognitive dissonance:** producing inconsistent or conflicting thoughts or attitudes to produce a feeling or discomfort and ultimately lead to an alteration of beliefs

**Disordered eating:** abnormal eating habits that although are similar in presentation to diagnosed eating disorders, do not warrant diagnosis usually due to the level of severity or frequency of the behaviour

**Lifetime prevalence:** the proportion of the population that at some point in their life time will experience a particular condition

**Negative emotionality:** the propensity to experience and react to stressful situations with negative emotions

**Negative urgency:** a tendency to engage in impulsive risky behaviour following intense negative emotion

**Other Specified Feeding or Eating Disorder (OSFED) or Unspecified Feeding or Eating Disorder (UFED):** diagnostic categories of eating disorders that include patients who do not entirely fulfil the expected symptoms of any of the three primary eating disorders.

**Perfectionism:** a personality trait by which an individual strives for flawlessness, and has high standards accompanied by critical self-evaluation

**Thin ideal:** the concept of the ideally slim body, commonly a slender figure with a small waist and little body fat

**Thin ideal internalization:** the degree by which individuals ‘buy into’ the importance of achieving the thin ideal



# The origins of fussy eating in young children

By Dr Andrea Smith, postdoctoral researcher in the Obesity group at the Research Department of Behavioural Science and Health at UCL



This is a summary of the paper – Food fussiness and food neophobia share a common etiology in early childhood; by Smith et al, 2017. **Read the full blog at <https://bit.ly/2Msphj6>**

## Key points:

- Food fussiness (FF) and food neophobia (FN) are restrictive eating phenotypes. Parents and clinicians consider these behaviours to be problematic because excessively fussy children may under eat or only accept a restricted number of foods.
- This twin study revealed the expression of FN and FF to be under moderate genetic control in early childhood.
- Largely shared environmental and genetic factors influenced variation in these behaviours, suggesting a common aetiology of these traits
- The considerable genetic influence on these tendencies in young children diverts the blame away from the home environment. The shared aetiology of FF and FN behaviours indicates that parent-led eating behaviour change programs, for fussy or food neophobic children, may be effective in decreasing the expression of both.

As young children make the transition from a solely milk-based diet to a 'family diet', they are gradually introduced to increasing numbers of foods. While some children happily accept novel flavours and textures and enjoy widening their dietary repertoire, many are hesitant or even suspicious about trying new foods. Food avoidant behaviour can be broadly classified into two groups: 'food fussiness' and 'food neophobia'. 'Food fussiness' is the tendency to be highly selective about the foods you are willing to eat, largely based on properties such as textures, tastes and smells. It is often thought to result from parenting styles, for instance overly pressuring a child to finish a meal. 'Food neophobia' is a related behaviour characterised by the refusal to try unfamiliar foods specifically. In contrast to food fussiness it is considered, to some extent, a normal developmental behaviour experienced by most young children, regardless of the way their parents feed them. Fussy and neophobic eating behaviours typically emerge during toddlerhood and commonly peak between two and six years of age; but for some children these traits persist into later childhood, and in rare circumstances, into adulthood.

Aside from the worry and frustration that these behaviours cause parents, in severe cases they can also significantly impact on children's health. Children who eat only a restricted range of foods may miss out on dietary nutrients essential for healthy development, and some children eat

too little, leading to weight faltering. Food refusal (especially neophobia) can also impact negatively on the development of children's food preferences. This is because repeated exposure to a food facilitates liking (especially with healthier, commonly rejected foods such as vegetables); but if a child refuses even to try a food, they are unlikely to learn to like it. Researchers have therefore been interested in finding out what shapes food avoidant behaviour in early life. Some research has reported that children who are breastfed for longer and whose parents use less controlling feeding practices (e.g. allowing the child to take some control over his or her own food intake at mealtimes) are less likely to be fussy eaters; suggesting there are important environmental shapers to this behaviour. On the other hand, food neophobia is a behaviour seen more often in children who are shy or inhibited; which are characteristics with an established genetic influence, indicating that food neophobia might also have a strong genetic basis. Until recently, virtually nothing was known about the extent to which food fussiness and food neophobia are each shaped by genetic and environmental influences, and whether or not they share common influences. A better understanding of the extent of their common aetiology has important implications for clinical management; for example, if they are largely shaped by the same environmental influences, similar treatment and management strategies could be used for both behaviours.

# Expressed emotion varies with eating disorder diagnosis

By Dr Jessica K. Edwards

Unique patterns of expressed emotion characterize communication within families with children affected by eating disorders, according to new research. Researchers across the USA recruited 215 adolescents (aged 12-19 years) with eating disorders and their families, and asked them to complete the Standardized Clinical Family Interview. Levels of expressed emotion were then scored by trained raters who watched recorded videos of the interviews. They found that fathers made more critical comments to children with bulimia nervosa or major depressive disorder than to those with anorexia nervosa. Mothers also made more critical comments towards children with bulimia nervosa and made the least number of positive remarks to those with major depressive disorder. Overall, fathers in intact households showed more warmth and made less critical comments than those in non-intact households. Mothers from intact

households made fewer critical comments, but also made fewer positive remarks than mothers in non-intact households. The presence of a sibling in the family reduced the mother's warmth and emotional over-involvement. The researchers consider that therapists should assess for parental expressed emotion and initiate interventions to reduce high levels of expressed emotion where possible.

Rienecke, R.D., Sim, L., Lock, J. & Le Grange, D. (2016), *Patterns of expressed emotion in adolescent eating disorders*. *J Child Psychol Psychiatr*. 57: 1407-1413. doi:10.1111/jcpp.12594

## Glossary:

*Expressed emotion*: a measure of critical, hostile and emotionally over-involved attitude that relatives have towards family members with a disorder

*Intact household*: a family in which there has been no dissolution of marriage through death or divorce

*Non-intact household*: a family in which some type of dissolution of marriage has occurred

# Targeting the neural task-control circuitry to enhance self-regulatory control in bulimia nervosa

By Dr Jessica K. Edwards

Previous research has found that bulimia nervosa is associated with dysregulated self-regulatory control, as a result of anatomical and functional disturbances to the neural task-control circuitry in the brain. A longitudinal study has now assessed how activation of these task-control circuits varies with changes in bulimia nervosa symptoms that occur during adolescence. Participants (32 females with bulimia nervosa and 28 healthy controls) were invited to complete a Simon task that involved presentation of a leftward or rightward pointing arrow that was either congruent or incongruent with its position on a screen. The participants were asked to report the direction of the arrow as quickly as possible, whilst the neural task-control circuits were monitored by functional magnetic resonance imaging. The procedure was repeated at three time points over adolescence. Healthy controls showed decreased conflict-related neural activation over time, whereas those with bulimia nervosa showed increased activation of the task-control circuits. Interestingly, bulimia symptoms inversely predicted conflict-related neural activation over time, meaning that as symptoms decreased, activation of the task-control circuitry increased. The researchers propose that this phenomenon may be a compensatory mechanism that permits regulation of eating behaviours over childhood development. They conclude that the neural task-control circuitry may be an anatomical target for early intervention in bulimia nervosa to enhance self-regulatory control.

Cyr, M., Fontaine, M., Stefan, M., Terranova, K., Kopala-Sibley, D.C., Attia, E. & Marsh, R. (2017), *A longitudinal functional magnetic resonance imaging study of task control circuits and bulimic symptoms over adolescence*. *J Child Psychol Psychiatr*. doi:10.1111/jcpp.12840

## Further reading:

Lock, Garrett, Beenhakker, & Reiss, 2011; Marsh et al., 2011) and adults (Marsh et al., 2009; Skunde et al., 2016

Lock, J., Garrett, A., Beenhakker, J & Reiss, A.L. (2011), *Aberrant brain activation during a response inhibition task in adolescent eating disorder subtypes*. *Am J Psychiatry*. 168:55-64. doi: 10.1176/appi.ajp.2010.10010056

## Glossary:

*Bulimia nervosa*: an eating disorder characterized by recurrent episodes of binge eating followed by compensatory behaviours to prevent weight gain

*Self-regulatory control*: conscious management of guiding ones thoughts, behaviours and desires to reach goals; it encompasses executive control, emotional regulation and the ability to delay gratification

*Simon task*: a paradigm described by J.R. Simon in 1963 whereby people respond faster and more accurately if there is a match between a stimulus and its response feature (the "stimulus-response compatibility effect")

*Functional magnetic resonance imaging*: a non-invasive technique that uses a strong, static magnetic field and radio waves to measure brain activity based on detecting changes in cerebral blood flow





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## Persistent picky eating predicts pervasive developmental disorders in children

Picky eating — characterized by food refusal, unwillingness to try new foods or eating a limited variety of foods — affects 14-50% preschool children and is often considered by clinicians as a normal phase of child development. However, whether persistent or late-onset picky eating has adverse consequences on mental health is unknown. Researchers in the Netherlands have started to address this concept by analysing eating habits in >3,500 children from a population-based cohort. The children were assessed for picky eating at ages 1.5, 3 and 6 years by maternal report and for problem behaviours at age 7 years using the Teacher's Report Form. The majority of children (51.4%) were not picky eaters, 31.9% were remitting picky eaters and 5.5% were persistent picky eaters. Data analysis found that persistent picky eating could predict pervasive developmental disorders at age 7 years, but was not associated with behavioural (attention hyperactivity and oppositional defiant problems) or emotional problems (anxiety and affective problems). Remitting and late-onset picky eating were not associated with adverse mental health outcomes. The researchers consider that remitting picky eating should be considered a normal phase of development in preschool children but that persistent picky eating may be an early indicator of pervasive developmental problems.

Cardona Cano, S., Hoek, H.W., van Hoeken, D., de Barse, L.M., Jaddoe, V.W.V., Verhulst, F.C. & Tiemeier, H. (2016), Behavioural outcomes of picky eating in childhood: a prospective study in the general population. *J Child Psychol Psychiatr.* 57: 1239-1246. doi:10.1111/jcpp.12530

Glossary:

**Pervasive developmental disorders:** a group of five disorders characterized by delays in social and communicative development. The disorders include autism spectrum disorders and Rett syndrome.



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Email [prabha.choubina@acamh.org](mailto:prabha.choubina@acamh.org)

Research digests are written by Dr Jessica Edwards. She received her MA in Biological Sciences and her DPhil in Neurobehavioural Genetics from the University of Oxford (Magdalen College). After completing her post-doctoral research, she moved into scientific editing and publishing. Jessica is now a freelance editor and science writer for 'The Bridge'.