

“DISORDERED” BEHAVIOUR. ALTERNATIVES TO DSM-5 FROM AN ETHOLOGICAL PERSPECTIVE

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ABSTRACT

The shortcomings of DSM-5 and related psychiatric diagnostic systems are discussed, whilst maintaining sympathy for clinicians' need for a shared category system. The ethological approach offers an alternative which promises to base clinical treatment on a more scientifically sound footing. Some examples of this approach are described, relating it to the behaviour of children diagnosed with ADHD or ASD; ethological concepts are used, such as behaviour observed when there are external or internal blocks to ongoing behaviour (frustration or motivational conflict), or behaviour seen along a dimension from simple displacement activities to playfulness. Concepts like pathology and disorder can be the object of study, but are not useful starting concepts to guide a scientific study; they are essentially practical and political concepts related to what a community agrees clinicians may treat. A scientific study acknowledges the need to study the range of human behaviour to provide a “map” to locate different behaviours, their causes, consequences and ontogeny, which then not only gives clinicians a better understanding and guidance to how to treat, but also can inform the societal debate about what they should treat.

Keywords: *DSM-5, disordered behaviour, mental illness, ethological approach, frustration, motivational conflict, autism, ADHD, emic, etic, agents, onlookers, psychological measures, behaviour map.*

DSM-5 SHORTCOMINGS AND OUTLINE SOLUTIONS

Traveller: "Which is the way to Dublin?"

Local resident: "Well, if I were going to Dublin, I wouldn't start from here."

Shortcomings of DSM-5

DSM-5 is the latest attempt by the American Psychiatric Association (APA) to create a manual of diagnostic categories to be used by those who assess, treat, research and administer people with mental health problems (APA, 2013). This latest Diagnostic and Statistical Manual (DSM) has attracted a storm of criticism, sometimes extending to contempt or ridicule or both. It has even been roundly attacked by the Chair of the task force of the previous DSM (DSM IV), Allen Frances, who accused its authors of providing "a cautionary tale of soaring ambition, poor execution and a closed process". He charges that, "The mental disorders included in DSM-5 have not gained their official status through any rational process of elimination. They made it into the system and survived because of practical necessity, historical accident, gradual accretion, precedent and inertia – not because they met some independent set of abstract and universal definitional criteria." He goes on to say, "No surprise then that DSM disorders are something of a hodgepodge, not internally consistent or mutually exclusive." He also admits that he and his colleagues never predicted the diagnostic inflation that followed his own DSM-IV, but accuses DSM-5 of creating categories so poorly defined and so easy to apply to "normal" behavior, that diagnostic "hyperinflation" will result. His attack is all the more surprising since it is from, as his book title says, an Insider (Frances, 2013)

But he is far from alone. DSM-IV was wildly successful in its global influence, as well as its profit generation for the APA. But the criticisms which DSM-5 has attracted are just the latest and perhaps most ferocious and contemptuous of a long running critique, not just of the details, as Frances has done, but of the endeavor itself which produced DSM I, II, III, IV and IV-TR. Kinderman et al (2013) and Bentall (2007) provide many telling criticisms of this approach to psychiatric diagnosis. The criticisms which they and others make can be summarized as follows.

- most patient's problems do not fit neatly into the categories
- there is overlap of categories
- there are no clear boundaries between "disorder" and "normal"
- the disorders do not correlate with causes
- the disorders do not imply clear treatments
- the disorders do not predict outcomes

and concluding that as a system to guide practice the DSMs are pretty useless.

Why DSM has been successful?

It needs to be asked therefore why DSM-IV was so successful and influential. Part of the answer is that it produced benefits for most of the key players:

- for clinicians: categories in which to place problems giving the clinician a sense that they understand and can communicate about the problems and that each clinician is not acting alone.
- for clinicians: it fits with the standard medical practice of diagnosis and treatment and it fits with the Kraepelinian theory (a.k.a. belief or hope) that the behavioural patterns are symptoms of unitary underlying pathologies.
- for insurance companies / government health agencies: boxes to record payments in
- for epidemiologists / service planners: discrete categories to count
- for pharmaceutical companies: explicit categories of problems to treat, but also new diseases for old drugs and drugs for well people
- for other health providers: disease categories to fit products /services
- even for patients: also a sense that they are not alone, and the sense that the clinicians understand and know what to do.

Inaccurate criticisms

There have been some inaccurate criticisms.

DSMs have been criticised for not embracing the subjective world of the patient, however that world is extremely variable and it is up to the clinician to try to understand the particular inner world of each individual patient. But some argue that the DSMs have led some clinicians to give too little time to understanding the patient’s inner world and the real meaning of their complaints and this has led to poor communication with the patient; this may be true in some cases but the onus is on the clinician to rectify that (see below).

DSMs have also been criticised for not embracing cultural differences, but DSM-5 has a chapter on “Cultural Formulation”.

Similarly there has been criticism for not embracing environmental / developmental causes, but that is implicit in some definitions (e.g. PTSD) and in any case the DSMs try to be atheoretical with respect to causation. The understandable attempt to describe the individual’s presenting problems does not at all imply the absence of environmental / developmental causes, but it can lead some clinicians to over focus on current physical (usually drug) management, (over)using a biological/medical model (Frances, 2013). There has been an explosion of drug treatment in psychiatry in the last two decades.

Categories are normal and necessary

One point needs to be made at the outset. Many current psychiatric diagnostic categories *are* very useful to busy, and often tired, clinicians. Used appropriately they can help the clinician to do the best for their patient and communicate effectively to help that patient, as long as they are seen as a very imprecise framework to indicate of the approximate area the problems are in. But used badly they constrain thinking, impoverish understanding and lead to crass insensitive damaging and/or unnecessary treatments. Nevertheless their existence exemplifies the need for some common language or category system to structure thought, practice, communication and joint action. So the attempt to produce a category system is necessary and laudable.

Scadding (1988), a specialist in chest diseases, usefully describes four types of diagnosis in medicine:

1. Clinical description (syndrome) – a recognisably similar pattern of symptoms and signs.
2. Disorder of Structure (morbid anatomy) – e.g. mitral stenosis
3. Disorder of function (pathophysiology) – regularly associated with a syndrome
4. Causation (aetiology) – the cause of a disease becomes known, e.g. as in tuberculosis after the discoveries of Koch published in 1882.

Scadding notes how the definition, boundaries and subdivisions of diseases can change as understanding moves from syndrome description to the other three. Also that diseases may be defined by a mixture of types, he gives the example of pneumococcal pneumonia defined partly by aetiology, partly by morbid anatomy.

Psychiatric diagnostic categories are almost all of the first, syndromic, type, yet so often seem unfit for purpose. A question is why this approach, which has served physical medicine well, has largely failed in psychiatry. There seems more to the answer than psychiatry still being at the stage most other branches of medicine left some time ago.

Doing things with words: the utility of categories

All concepts (memes) are judged (survive), in part at least, by their utility to their users. The basic concepts of science are no different. Like many, but not all, everyday concepts, they are tools for the job of describing and classifying the world with a goal facilitating prediction and adaptation, and for creating theoretical understanding and explanation. Medawar (1967) puts it well when he notes that scientists try to create coherent stories about the natural phenomena which stand up to empirical test.

Science differs from every day practical knowledge, in many ways including that there is:

- greater demand for precision with which its concepts are defined; they must be in terms of publically observable phenomena which can be precisely agreed upon (e.g. a “gram” is the mass of a cubic centimetre of water at 4°C, the “femur” is the long bone between the hip and the knee in the human leg).
- greater demand for the internal coherence of the “stories”, the theories. By contrast, everyday “explanations”, like indeed psychoanalytic theory, often have the “advantage” of offering an “explanation” regardless of what happens – “too many cooks spoil the broth” but also “many hands make light work” and thereby fulfilling their function of giving the individual and group a comforting sense that they understand.
- greater openness to probing weakness of theories, and conversely
- greater reluctance to accept ideas simply because those in authority advocate them.

The creators of the DSMs have laudably tried to create useful categories and to define their categories with precision. Unfortunately they fail for many reasons as we she discuss below.

The necessity for action now

The primary creators and users of the DSMs, clinicians, have patients to assess and treat *now*, but must do so in a state of incomplete knowledge. Just like our everyday concepts for describing and coping with our world, diagnostic categories are tools for the job to help us deal with clinical problems. Psychiatric diagnostic categories are what the clinician (sometimes) finds useful and give him or her a sense that they have some understanding of the problems confronting them.

They also enable the clinician to communicate with colleagues and give a rough idea of what sort of problems the patient is presenting, which enables them to collaborate to help the patient (see also Mandell, (1967), for a similar argument about psychotherapeutic theories).

In order to fulfil these psychological and social functions to some extent, the diagnostic categories do not need to have the precision of scientific concepts. But their (albeit limited) success in these psycho-social functions can lend them the appearance of scientific validity which they do not deserve.

The concept of mental disorder

A useful example which shows the confounding of the demands for guidance and justification of action now on the one hand, with the demands for scientific value on the

other, is the very concept of (mental) “disorder” and its antithesis, “normality”. There is a long history of attempts to define illness or abnormality or disorder in watertight objective ways. The attempt in DSM-5 ranks amongst the worst:

“A mental disorder is a syndrome characterised by clinically significant disturbance in an individual’s cognition, emotion regulation, or behavior that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental functioning.

Mental disorders are usually associated with distress or disability in social, occupational or other important activities.

An expectable or culturally approved response to a common stressor or loss, such as death of a loved one, is not a mental disorder.

Socially deviant behavior (e.g. political, religious, sexual) and conflicts which are primarily between the individual and society are not mental disorders unless the deviance or conflict results from a dysfunction in the individual as described above.” (APA 2013, page 20)

The naïve emptiness and tautological nature of this “definition” is obvious. For instance, what does “clinically significant disturbance” mean? What does “reflects a dysfunction” mean? How is that “dysfunction” independently identified? If “mental disorders are usually associated with distress or disability” what about those that are not? And how is “distress” or “disability” defined? The definition is amateurish in the extreme, and reflects the misguided notion that there is some objective criteria which can define “disorder”. Such objective criteria would have given the “disorders” some scientific validity and respectability instead of simply reflecting clinical practice in the present, or perhaps hopes for the future.

Frances (2013) wrote, “I sometimes *joke* that the only way to define mental disorder is “that which clinicians treat; researchers research; educators teach; and insurance companies pay for. Unfortunately, this practical “definition” is *elastic, tautological, and potentially self serving – following* practice habits rather than guiding them.” (*Italics mine*). But **this is no joke**, this is what “disorders” are, they **are** *elastic, tautological, and potentially self serving*. This has been exposed even more clearly in DSM-5. Let me hasten to add that I am not accusing the DSM creators of being deliberately self serving, but it that is an inevitable consequence of the failure to accept that the concept of “disorder” is one arising out of the urgency and messiness of clinical practice in the messy real world and out of the concepts being judged by their utility in clinical practice rather than their scientific coherence and utility. There is nothing wrong with that as long as it is recognised, and as long as the categories are not clothed in an entirely spurious mantle of scientific respectability, for if that is attempted then we must say that the Emperor has no clothes. In the end such people are trying to give a scientific status to what is really a job description.

A more coherent attempt to define mental illness and acknowledge its culturally influenced nature was that of Taylor (1979, 1980) who simply argued that mental illness is that which arouses therapeutic concern, in the individual, and/or in those around him and/or in clinicians. This honestly embraces the fact that the concept of mental illness is defined by practice, and not by something inherent in the “illness” or “disorder”.

It does open the way to “concept creep”, via a process which has the following basic structure:

1. “Disorders are what psychiatrists (and other mental health clinicians) assess and treat”, creeps into
2. “What psychiatrists assess and treat are disorders” and that creeps further into
3. “Psychiatrists are justified in claiming competence in assessing and treating this ‘disorder’”.

What is called a “disorder” becomes therefore a matter of actual practice and of negotiation within a society, rather than what is objectively defined. Frances’ 2013 book, “Saving Normal” is an example of a powerful blast in that negotiation, as are the many critiques of the DSMs. Taylor’s work describes and analyses this social phenomenon, as I have tried to do.

Ethologists might be attracted to the notion that mental disorder can be defined as “that which tends to increase the risk of the individual’s genes not being passed on to the next generation”. Scadding’s (1967, 1988) own definition leans in this direction.

In medical discourse, the name of a disease refers to the sum of the abnormal phenomena displayed by a group of living organisms in association with a specified common characteristic or set of characteristics by which they differ from the norm of their species in such a way as to place them at a biological disadvantage.

Leaving aside questions of what “abnormal”, or “norm” mean, “biological advantage” remains undefined. Kendell (1975) attempts a more precise definition, saying it must embrace increased mortality and reduced fertility. But as Taylor (1980) points out, should sterilisation be considered an iatrogenic disease, or a celibate religious life a mental illness. He could also mention homosexuality which was listed as a disease in DSM I and II, but, following strong protests, was withdrawn from the 7th printing of DSM II in 1974. The socio-political influence on diagnostic categories, and their status as, in effect, job descriptions (what psychiatrists, and related professionals, may and may not address) is well illustrated by this (Richer, 1976).

Neither is the idea of rarity a defining characteristic, some mild “disorders”, such as some anxiety states and depressive states, are very common, although whether they need professional treatment is highly dubious (Frances, 2013).

Factors increasing and decreasing pathologising

It is worth considering what factors tend to *increase* the tendency to pathologise. They include:

- Clinician's income rises with each patient (private medicine).
- Diagnosis gives patients access to resources - in special education, social security benefits, treatments.
- Diagnostic categories allow professionals to claim money from Insurance companies / government agencies for a greater proportion of the people they see, or it increases the size of their "market".
- Pharmaceutical and other health companies looking for new markets (Frances 2013) e.g.
 - New uses for old drugs.
 - Treatments in search of disorders.
 - Allowing advertising to general public creating a "worried well".
- General clinical enthusiasm wanting to help more people.
- Creation of medical defences for crimes.
- Where there is strong political / societal pressure to pathologise (e.g. substance (mis)use and, in the past, homosexuality)

On the other hand there is a *decreased* tendency to pathologise when:

- Clinician's income remains stable regardless of the number of patients seen (as in publically funded medicine)
- Health services are deficient.
- There is no available diagnostic category.
- There is strong societal pressure to exclude some diagnoses (e.g. homosexuality, see above)

DSM 5's justification

DSM-5 justifies the value of its diagnostic categories in various ways:

- "Reliable diagnoses are essential for guiding treatment recommendations",
(*but reliable is not the same as useful or valid*)
- for "identifying prevalence rates for mental health service planning," (*But prevalence of what?*)
- for "identifying clinical groups for clinical and basic research", (*But the categories of previous DSMs have been shown to be poor for this purpose*)
- and documenting important public health information such as morbidity and mortality rates" (*But poor categories do not generate useful information*)

They do admit that, "The scientific community 'recognised that past science was not mature enough to yield fully validated diagnoses'". True. But DSM-5, like the previous DSMs, tries to cloak their enterprise in scientific respectability by stating aspirations as if they were at largely attained. They were, and are, not.

So what is the alternative?

Alternatives

As Kuhn (1962) described, scientific positions are not overthrown simply because they face contradictory data, a new paradigm is necessary. Psychiatry and other mental health professions are not, quite rightly, going to give up the current category system just because it is being criticised, a better paradigm is required. Ethology is well placed to contribute to this, but before discussing that, it is first necessary to flag up a fundamental distinction.

Agents and Onlookers, symptoms and signs, inside and outside viewpoints

In medicine it is commonplace to distinguish between symptoms and signs. Definitions vary, but, roughly, symptoms are what the patient complains of and signs are what the clinician observes. Essentially, the inside and the outside view, which echoes the Agent-Onlooker or Mind-Body dichotomy (Richer 1975, 1994). An analogous distinction was made by Harre and Secord (1972) describing the two aspects to the study of human social behaviour:

1. "Negotiation of accounts"
2. "Micro sociological analysis"

The first, the "negotiation of accounts", involves discussion with the people being studied, trying, through a process of to and fro conversation, to understand as well as possible what their viewpoints were. It bears many similarities to the process of therapeutic Counselling, and to some proper clinical consultations. Inevitably this process involves using the concepts of the people involved (otherwise there would be no communication).

The second, what they call the "micro sociological analysis", involves observing behaviour, as an ethologist would observe the behaviour of non human species, using the observer's own categories to describe the behaviour under investigation.

The linguist and anthropologist Pike (1967) discussed a similar issue in describing cultures; a culture could be described in the concepts of the culture itself or in the scientist's concepts. He called these "emic" and "etic" accounts respectively. Ethologists will know that the division was painfully acute for Charles Darwin, who had devoted his life to studying the life and death of organisms as a scientist, only to find himself a

participant in the very process of natural selection, which he had described dispassionately from the outside, when his beloved daughter Annie died (Keynes, 2001).

Ethologists have not pursued the first process, of negotiation of accounts, for the obvious reason that they could not converse with the animals they studied, (which is not to say there was not (non verbal) communication with some species). So ethologists developed a category system which was thoroughly etic / observer-generated, in much the same way as did researchers in other natural sciences. Human ethology draws on this rich and relatively coherent paradigm.

Psychologists and other social scientists have not been so lucky. Each culture already has a rich body of knowledge and skills about people, but its purposes include much more than making a good description of observable human behaviour - that purpose plays a small part. There are many other functions such as getting on with others, cooperating or competing, persuading, explaining and justifying oneself, understanding the viewpoint of others, communicating one's own subjective states (feelings, intentions, etc.) as well as describing the physical world. The knowledge about people embodied in each culture is for use by members of that culture to interact with each other. It is shot through with ideas of agency. It is not the same sort of knowledge as would be generated by a passive (scientific) observer. Psychologists, and it is understandable, seem to have thought that this rich cultural knowledge could be a starting point of their science but, as Tinbergen (1963) memorably wrote, "It has been said that, in its haste to step into the twentieth century and to become a respectable science, Psychology skipped the preliminary descriptive stage other natural sciences had gone through, and was soon losing touch with the natural phenomena". But it got away with it because our cultural knowledge is so familiar, rich and useful.

I return to the question of why the definition of "mental disorders" has not made the progress that has been made in other branches of medicine. Part of the answer is the obvious environment dependency of behaviour, much more so than other aspects of human functioning. The individual does not necessarily carry with him into the consulting room his obsessionality or tendency under stress to behave in an Asperger way, in the same way as he carries in his lung problem, skin rash or broken bone. The clinician is left with the patient's reports which very often cannot be taken at face value, or information from other sources which is usually couched in mentalistic language.

A major factor is that the language, which is used to describe behaviour, has many other functions which muddy the meaning when there is the attempt to use them in a scientific way. In particular, subjective or mental state terms, emic terms, are so much more central to psychiatry than say pulmonary medicine. There is little temptation to

describe shortness of breath, a rattle when breathing or a dark shadow on a lung X-ray in mentalistic terms, which is in contrast to the overwhelming temptation to describe anxiety or aggression or depressed behaviour in such mentalistic terms. Indeed trying to observe just the overt behaviour seems laborious, it seems to fail to capture the situation and seems, in the end, less helpful.

It is not difficult to see why this is so. A major development in human evolution was the expanding ability to be empathetic / intersubjective, as Humphrey (1982) has argued, it gave those with better developed abilities to see into the mind of the other, an advantage in the evolutionary "arms race", an arms race between the ability to deceive others to one's own advantage and the ability to detect deception. Intentions, and it was intentions for future which mattered, were largely inferred by thinking, "what would I be intending if I were behaving like that?" (Humphrey 1982). This weapon¹, and the language that accompanies it, is far more economical, easily acquired and powerful in the arms race than a laborious "scientific" analysis of overt behaviour. Yet such an analysis is what an ethological study of human behaviour requires.

The mental health community seems stuck in their less than adequate position, in part also because, if people try to get out of it, understanding at first seems to get impoverished (a well known phenomenon in treatment is where the patient must first confront their problem which leaves them unhappier or more uncertain). For example, the attempt in the late 1960s and the 1970s to create dictionaries of human behaviour (Grant, 1969, Blurton Jones 1972, McGrew, 1970, Richer, 1976, 1979) whilst interesting to fellow ethologists, ran into the sand partly because most people did not know how to use them and they seemed less useful and rich than ordinary description. No such impediment exists for ethological animal studies since other species do not have a rich language to describe behaviour and mental life (at least not that we, the observers, can share!).

The topsy turvy folly of "measures"

It is quite likely to turn out that many of the behaviour categories emerging from an ethological analysis will be pretty similar to those used in everyday life, for instance, facial expressions may come to be lumped together in categories strongly resembling what people would associate with fear, anger, disgust, happiness, sadness and surprise. Psychologists endlessly try and create "measures" for these categories (anger, disgust, intelligence or whatever) without actually have any way of independently identifying whatever it is that the "measure" is supposed to, well, measure.

¹ Humphrey focussed on competition, but these abilities can also be seen as valuable in cooperative relationships, and groups with better developed skills and better cooperation would be expected to be more adaptive.

By contrast, ethological categories, very importantly, will have been derived from direct observation and experiment, plus, of course, there are the ideas which the observer also injects which influence how he sees the phenomena. Their meaning will not embrace subjectivity or all the cultural nuances of the everyday terms. They will not be "measures" of something else, the category is defined by the behaviours and settings. Blurton Jones (1975) put this very succinctly when he said "the lateral thinking inductive approach of ethology may be contrasted with the deductive approach of psychology and its disdain for facts for their own sake" (page 72). Charlesworth (pers. comm.) puts it even more succinctly, if slightly cryptically, "follow the Duck, not the theory of the duck"

So understandable though it is that we are in the position we are, splashing about in our warm bath of cultural knowledge of each other, we would, as the joke goes at the very beginning of this paper, best not start from this cultural knowledge, and, more specifically to this paper, from DSM-5, to create a scientific understanding of human behaviour.

The contribution of Human Ethology

So what might the contribution of human ethology be? Like any science, human ethology tries to map out in as coherent and accurate way as it can, the phenomena in its area of study. It was greatly helped in having its paradigm clearly described early in its history in Tinbergen's classic 1963 paper "On the Aims and Methods of Ethology". The map would consist of descriptions of observable behaviour in natural environments, clustered in ways which reflect putative causation or function, and analysed according to Tinbergen's "4 Whys", namely asking about immediate causation, ontogeny, adaptive value and evolution.

A word about "natural" environments. Here "natural" equals "minimally scientist influenced". Natural environments are the everyday environments that people would find themselves whether or not there was an ethologist doing direct observation. They are to be contrasted with psychologist's predilection for "controlled" experimental settings, i.e. scientist-created settings. (This is not to claim that the observer does not have an effect on the observed behaviour, but there is an attempt to minimise that and certainly to take the possibility into account (Richer, 1974)). While many experiments elegantly test well founded hypotheses, there are at least two shortcomings with research in many such "controlled" settings: firstly the impact of the setting itself is not known, and secondly, it is legitimate to ask, why are we interested in how people behave in settings so divorced from the everyday. Often much more interesting and useful are Tinbergen's "natural experiments", where a specific perturbation is made in the natural

environment and the effect observed; his investigation of the effect of broken egg shells near the nests of Herring Gulls is a classic example of this (Tinbergen et al, 1962). Such data from natural experiments is frequently more useful to clinicians, not least because it mirrors the daily actions of many clinicians when they offer treatment: they change some aspect of the patient's everyday environment (the treatment) and look for therapeutic improvement.

The results from clinical interventions can themselves contribute to the "map making", alluded to above. One thing which this map will **not** define is what should be considered "normal or a "disorder", it will simply describe the range of behaviour including the development and consequences of different behaviours in the range. The demarcation lines between what clinicians regard as legitimate to treat and what they should leave alone, will be easier to *describe*, (just a location can be better described if a good map is available, but the map itself does not decide the location). The "map" will contribute to the old clinical question of what "illnesses" get better without clinical intervention. Such maps will help clinicians and others determine what to do to help their patients. They would fulfil the same function as say basic biochemistry, physiology, mechanics, etc. do for physical medicine.

In the following paper are some examples of what parts of this map might look like, most examples are inevitably taken from my own of field child behaviour.

I emphasise that ethology makes a contribution, a strong one, but still just a contribution. Clinicians must, in their efforts to help their patients, gather information and techniques, magpie like, from wherever they can. Medicine is littered with examples of treatments, often serendipitously stumbled upon, which have been found empirically to be helpful, but without the underlying mechanism of their action being known at first.

Finally, and at the risk of mixing metaphors, an analogy. The artist's palette. Artists can construct the whole range of colours from the few primary colours on their palette. Ethological research tries to discover the underlying processes, the primary colours, out of which the huge variety of human behaviour is generated. The DSMs, perhaps especially 5, offer the equivalent of a large number of complex colours, with all their varying and overlapping combinations of primary colours, so it is unsurprising that these do not form a good basis for starting to understand behaviour.

I shall now give some example of these "primary colours", or, using the other metaphor, parts of the map. One important constituent of the clinical palette will be the results of motivational analysis, at which ethologists are well practiced. It is at the level of motivational systems that patterns are likely to be found.

EXAMPLES OF AN ETHOLOGICAL CONTRIBUTION

In discussing examples of an ethological contribution, it is necessary to step outside the mindset of asking whether something is a disorder or not. We should just consider the range of human behaviour, its causes and consequences. Such knowledge of the range of human behaviour will inform the practical decision of whether something should be assessed and treated, i.e. whether it is classified as a “disorder”, but it will not decide it. Science does not make moral decisions.

This has been implicit in the ethological approach for decades. It is pleasing that the NIMH has taken a step in this direction by advocating research into the functional and brain systems in all humans, systems whose “dysfunction” underlies mental illness (Insel, 2013, Cuthbert, 2014).

Being ready to step outside existing diagnostic categories and look at the range of human behaviour must be the controlling mindset, but it is inevitable that in the practical business of doing research, observations of behaviour are related to the behaviour of individuals given certain diagnoses. At times, the group studied will be that with a certain diagnosis. But always, there needs to be the expectation that the differences between those with and without a diagnosis will not be clear cut and that similar underlying mechanisms may well be operating in both groups, but perhaps with different thresholds and different probabilities of consequences.

Motivations

In ethology, one important putative organising mechanism which links disparate behaviours is the motivational system. By convention, Hinde (1982) notes, motivational changes are temporary and reversible, more permanent changes are ascribed to learning or ageing, and there can also be changes in sense organs and effectors.

Motivational systems are induced from an analysis of how overt behaviours cluster in time or are related to similar causes or consequences. Unlike in psychology, the process is not one of finding “measures” for some *a priori* category (anger, intelligence etc.) whose existence cannot be independently identified.

It is at this level, motivations, rather than overt behaviour, that patterns are more likely to be found. After all, a goal can be pursued in many different ways according to circumstances.

Responses to the blocking of an activity either by external factors (frustration) or internal ones (conflicting motivations), are likely to be helpful in investigating “disordered” behaviour. The impact of one motivation, fear, is also likely to pay close investigation (e.g. Gray, 1976, 1987). Gray (1987) has argued for the causal and functional close similarity between fear and frustration.

Fear / Avoidance. Fear, or sometimes called avoidance, motivation is defined by a cluster of behaviours which, in children, include:

- attempts to distance or protect self from the putatively feared object: moving whole or part of body away, turning away, hunching up, pulling chin in, shielding with arm over head or face
- attempts to reduce input (e.g. gaze aversion, hands over the ears or eyes, hanging the head down)
- attempts to reduce output: still face, freezing,
- correlated expressions: fear grin (Richer 1979), eyebrows strongly up, eyebrows strongly down (also protective)

More on this later.

What follows are some examples of the application of ethological approaches to issues relevant to clinical practice. Most will be taken from studies of children. I shall also try to relate the ethological analysis to clinical categories and to everyday descriptions which are encountered in clinic – but bearing in mind that the everyday descriptions may be specific to the UK or even to just one part of it.

Reactions to frustration (external blocking)

Let me start by looking at behaviour when an ongoing activity is blocked by some external factor, in other words, when there is frustration. The responses to frustration in numerous species are well described (e.g. Hinde, 1970) and include:

- Exploration
- Overintensity (responding too fast, too intensely, to a narrowed range of cues and stopping too soon)
- Switching activity
- Displacement activities
- Aggression and re-directed aggression
- Regressive behaviour
- Attachment behaviour

An expanded description of these was developed into a leaflet and offered to parents in clinic. It was similar to the indented text below. Most parents understood it very well and related it to their child's behaviour. Note that the structure is ethological but an attempt is made to relate the ethological description to everyday descriptions. I leave it in this format to illustrate one of the challenges for a clinician in this area – embracing simultaneously scientific and everyday language.

1. *Exploration*. This is the main adaptive reaction to frustration, but it requires the child to maintain attention on a problem even when failing. Frustration leads to switches of attention within the goal of trying to solve the problem, i.e. trying out different possible solutions.

Children differ in the amount to frustration they can tolerate before they give up exploration, switch away from a focus on the problem and start the other types of behaviour.

2. *Overintensity*. The child still maintains some attention on the activity but tends to respond to a narrowed range of cues (he is careless) and he responds too quickly and with too great an intensity (he is impulsive). Children sometimes appear loud and attention seeking, and sometimes appear to be aggressive (but the motivation is not aggressive) and "overconfident", (but this masks their "lack of confidence" at the time). Their behaviour is sometimes described as "Over The Top" or OTT.

3. *Switch attention*. The child gives up the activity. It is said he "cannot concentrate", is "easily frustrated", "doesn't try", etc. He may also switch attention from, or avoid, the person he is with.

As frustration increases, children move from 1 to 2 to 3, first they concentrate, then get careless and impulsive, then give up.

A similar phenomenon can be seen in reverse as children become more confident in, say, a social situation. They are at first said to be shy or even avoidant, then they become loud and attention seeking and "silly", and then they become calmer and more focussed and controlled.

A graph illustrating this is below (see Figure 1).

The following frustration reactions imply some switching of attention from the task in hand. Some can be performed at the same time as the first three.

4. *Displacement activities*. Attention is switched to something irrelevant to the ongoing activity. Displacement activities are simple, often repetitive, activities, and so are very likely to be done successfully. Their function seems to be homeostatic. In other words, just as we shiver to warm ourselves, so at a time of frustration, the displacement activity gives some success. ("I may not be able to do this sum, but at least I'm succeeding in scratching my head!") Displacement activities can occur with exploration - they seem to help the child to maintain concentration on the activity. Or they can occur after the child has switched away from the activity.

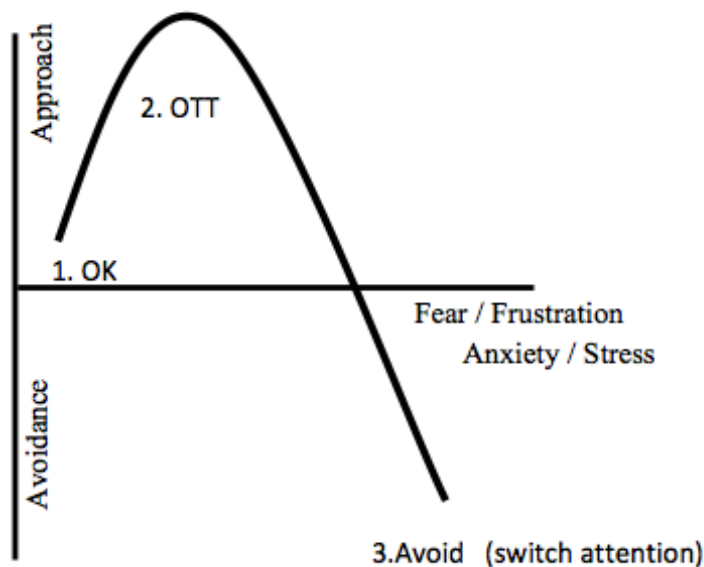


Figure 1. Schematic description of the inverted J curve

5. *Aggression.* Frustration in an encounter with another child or an adult can lead to aggression directly against that person. (For example, Fred will not give Jamie a toy, so Jamie hits Fred to try and get it, or Fred hits Jamie to try and get rid of him!).

6. *Re-directed aggression.* Here, to continue the example, Jamie goes and hits Ben or smashes something. The aggression is not directed against the cause of the frustration, but at somebody or something else. At home "Ben" is very often mother or younger sibling, who often bear the brunt of re-directed aggression! People often say Jamie is venting his frustration on Ben.

7. *Regression.* This is when the child behaves in a way typical of a younger child.

8. *Attachment behavior.* The child seeks to get close to someone he trusts, usually a parent, and seeks comfort. This is done either by the child moving towards the parent, or attracting the parent over by crying, calling etc.

These reactions to frustration are not confined to clinical groups, they, or at least some, are universal (and not just in humans but many other species, probably all mammals and some other classes of animal) (Eibl-Eibesfeldt, 1970; Hinde, 1970; Tinbergen and Tinbergen, 1983; Morris, 1982).

Individuals differ in their thresholds, most particularly in how quickly they stop concentrating on the task and move to overintensity, switching attention, aggression, regression etc. Displacement activities can sometimes be an aid to concentration (e.g. the well known pacing up and down whilst thinking through a difficult problem).

ADHD

Reactions to frustration are seen in all individuals and therefore in all clinical groups, but one clinical category is worth singling out, Attention Deficit Hyperactivity Disorder (ADHD).

DSM-5 gives the following definition of ADHD

- A. Persistent *inattention* **and/or** *hyperactivity-impulsivity*, more frequent/severe than in developmental peers
- B. Present before 12 years
- C. At least 2 settings
- D. Interference with social, academic, occupational functioning
- E. Not exclusively during the course of Schizophrenia, other Psychotic disorder and is not better explained by other mental disorder

Under the first part (A) DSM-5 gives some details of the behaviours involved, which can be summarised:

Inattention. Often: inattentive, careless, does not listen, does not complete tasks, poor organisation, avoids sustained effort, loses things, easily distracted, forgetful

Hyperactivity & Impulsivity. Often: fidgets, leaves seat, runs climbs when inappropriate, noisy, talks excessively, on the go, not wait turn, interrupts.

Several points can be made about this.

1. *Unclear boundaries.* The DSM-5 description, like in its predecessor DSMs, makes it unclear where the boundaries of the category are: How inattentive? How hyperactive? How much more severe or frequent? What is the behaviour of peers? And so on. The lack of clarity of boundaries is widely accepted (e.g. British Psychological Society Working Party Report, 2000).

Given this it is unsurprising that prevalence estimates vary wildly from 3% to 12% (Wender et al, 2001; Brown et al, 2001) and even reach to 25% if parents are asked in a general clinic (Foreman et al, 2001). It lays open the possibility of diagnostic inflation and that so many (e.g. Frances 2013) have pointed out.

2. *Muddled behaviour description.* The behaviours defining ADHD are reactions to frustration. But they would not be arranged in the same way as in DSM-5. The impulsivity/hyperactivity category is a mixture of different types of behaviour:

- "hyperactivity", "on the go", is the sequence of switching activity, then acting overintensely ("rushing impulsively"), then switching again and rushing and so on (i.e. switch attention and overintensity alternate).
- "Fidgets" is usually a displacement activity.
- "Interrupts" and "not waiting turn" are examples of overintensity,
- "leaving seat" is switching attention plus perhaps overintensity.

The "inattention" category is much the same as the frustration response of switching activity.

Just as the authors of the DSMs are accused of creating overlapping diagnostic categories which are difficult to relate to underlying causes or to outcomes, so even in the micro descriptions of behaviour they muddle behaviours. This illustrates where superficial everyday descriptions are often just not good enough.

3. *Re-description masquerading as explanation.* There is also the frequent assertion, perhaps more by lay people than clinicians, that ADHD *causes* the behaviour, an assertion encouraged by the DSM-5's definition of a disorder which includes: "disturbance in an individual's cognition, emotion regulation, or behavior that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental functioning." (underlining mine). Scadding (1988) too discusses how, for many syndromes, this mistaken assumption - that there is an underlying cause - is probably even more prevalent in lay people than in clinicians. In short, ADHD is not the *cause* of the behaviour, it *is* the behaviour.

4. *Heterogeneous aetiology.* Again given the universality of frustration reactions, it would be expected that the causation of ADHD would be highly heterogeneous, as indeed is the finding (e.g. Millichap, 2008). Individuals can be frustrated by many factors in a wide variety of situations, but all with the potential of leading to frustration behaviours which are seen in children diagnosed with ADHD.

5. *A fuzzy category for research.* When a category has unclear boundaries and is poorly defined, it becomes difficult to use it in research. Moreover, as Rette and Hudziak (2009) argue, much information about causes and consequences is lost by the arbitrary

cut off points in the diagnosis which prevent quantitative differences in behaviour being taken into account; they are implying that the diagnostic category does not map well onto the real world.

6. *Comorbidity*. Given that all humans show frustration behaviours, it might be expected that a diagnostic category, with which it seems to correlate closely, would be comorbid with many other diagnostic categories. This is the case, indeed there is little that ADHD has not found to be co-morbid with! (Watkins, 2002; Brown 2009). One way of re-describing this is offered by Brown (2009), who describes ADHD as a “Foundational Disorder”, which “substantially increases a person’s risk of experiencing additional cognitive, emotional or behavior disorders across the life span”. Brown (2009), like Barkley (1998) sees ADHD as a “developmental impairment of executive functions”. It seems that there is an edging towards the idea which can be more coherently and economically expressed by simply talking about a low frustration tolerance, and taking that as a starting point for scientific study, rather than the diagnostic category.

There are children who tend to stop exploring and to start showing overintensity and switching attention much sooner compared to other children in similar settings. They will do so from a variety of causes. These children who show these frustration behaviours frequently, are probably more likely to receive the diagnosis of ADHD.

So, given the many shortcomings of the ADHD category, is the proposal here that ADHD be re-defined as co-extensive with having a low frustration tolerance? No. After all, how low is low? That misses the point. The model which is currently being proposed is *not* a re-description or re-definition of ADHD but an altogether different and alternative approach. This approach determinedly starts from a description and analysis of observable behaviour of a wide variety of individuals in everyday settings, without prior assumptions, or premature classification. It will talk not about illness or disorders, but about, for instance, behavioural tendencies and thresholds.

Motivational conflict behaviour (internal blocking)

When two, or more, motivations are aroused simultaneously, one motivation may win out and behaviour be under the control of that motivational system. But sometimes the conflicting motivations are more evenly balanced and motivational conflict behaviours are seen. Most are similar to frustration behaviours and include:

- Displacement activities
- Aggression and re-directed aggression
- Regressive behaviour
- Attachment behaviour
- Overintensity

Some example of overintensity include:

- the child approaches but bashes hard into the person
- the child starts to touch but then grabs very hard
- child speaks but loudly and goes on and on
- the child stares at the other person and gets very close

In addition to these reactions shared with frustration, there may be the alternating or simultaneous expression of the two motivations. Consider the example of a child who is motivated both to be sociable and interact with someone, but is also fearful of doing so.

Alternating expression:

- the child may alternate between looking at the other then looking away,
- the child may move towards the other then move away then towards and so on,
- the child may make alternating “intention movements” towards and away (e.g. leaning towards then away) – the appearance is of “dithering”.

Simultaneous expression:

- the child may approach the other but with any gaze fixation,
- the child may approach but facing away (i.e. approach backwards)
- the child may speak but facing away
- the child may approach someone, not look at them, take hold of them and pull them to something, to get, or so it seems, that thing.

Autistic Spectrum Disorder

The DSM-5 criteria for and Autistic Spectrum Disorder (ASD) are:

DSM 5: An individual must meet criteria A, B, C and D:

A. Persistent deficits in social communication and social interaction across contexts, not accounted for by general developmental delays, and manifest by all 3 of the following:

1. Deficits in social-emotional reciprocity; ranging from abnormal social approach and failure of normal back and forth conversation through reduced sharing of interests, emotions, and affect and response to total lack of initiation of social interaction.
2. Deficits in nonverbal communicative behaviors used for social interaction; ranging from poorly integrated- verbal and nonverbal communication, through abnormalities in eye contact and body-language, or deficits in understanding and use of nonverbal communication, to total lack of facial expression or gestures.
3. Deficits in developing and maintaining relationships, appropriate to developmental

level (beyond those with caregivers); ranging from difficulties adjusting behavior to suit different social contexts through difficulties in sharing imaginative play and in making friends to an apparent absence of interest in people

B. Restricted, repetitive patterns of behavior, interests, or activities as manifested by at least two of the following:

1. Stereotyped or repetitive speech, motor movements, or use of objects; (such as simple motor stereotypies, echolalia, repetitive use of objects, or idiosyncratic phrases).
2. Excessive adherence to routines, ritualized patterns of verbal or nonverbal behavior, or excessive resistance to change; (such as motoric rituals, insistence on same route or food, repetitive questioning or extreme distress at small changes).
3. Highly restricted, fixated interests that are abnormal in intensity or focus; (such as strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interests).
4. Hyper- or hypo-reactivity to sensory input or unusual interest in sensory aspects of environment; (such as apparent indifference to pain/heat/cold, adverse response to specific sounds or textures, excessive smelling or touching of objects, fascination with lights or spinning objects).

C. Symptoms must be present in early childhood (but may not become fully manifest until social demands exceed limited capacities)

D. Symptoms together limit and impair everyday functioning

Essentially these criteria boil down to two main areas:

- (i) severe social interaction and relationship difficulties
- (ii) a tendency to show extremely risk averse, stereotyped behaviour

Returning to the motivational conflict behaviours described above, these behaviours may be seen in very many children, but they are particularly prevalent in children who receive the diagnosis of autistic spectrum disorder (Richer, 1971, Tinbergen and Tinbergen 1972, 1983, Richer, 1978, 2001a). In the children given this diagnosis and who behave like this *most* of the time and whose development is (in part as a consequence of this predominant social avoidance) *delayed* (Richer 1978, 2001b).

These and related behaviours have given rise to an large number of false or meaningless attributions, more so in the past than now. For example:

- It has been a common assertion that the child seems not “aware” of another person’s mind (e.g. Frith, 1989) or of their presence or even of his own body (Kanner 1943), however it is unclear how this assertion of unawareness is

operationalised, and how scientific observers could agree. The behaviour giving rise to these impressions is largely avoidant behaviour where the child is not behaving sociably towards the other person and indeed acting to avoid social interaction by not being responsive in a positive sociable way.

- Similarly it was said that the child “uses people as objects”. The observation is: “the child may approach someone, not look at them, take hold of them and pull them to something, to get, or so it seems, that thing” so it feels that the person is being used and not granted agency, but a better description is that the child is showing simultaneous conflict behaviour.
- It was often said that the child “smiles and laughs inappropriately”. But this mistakes a fear grin and the monotonous giggle that sometimes accompanies it for sociable behaviour.
- To be fair to DSM-5, it avoids many of the more blatant examples of misobservation and subjectivity, but still describes the child as “apparently indifferent to pain” (DSM-5 definition above). But this is better than saying the child does not feel pain (Wing, 1996). This latter assertion is nonsense in this strong form since the children do not suffer the damage seen in children with, say, congenital analgesia. Moreover close observation reveals that the children do react, in an albeit inhibited way, when they have accidentally hurt themselves (personal observation, and see also Nader et al, (2004)). Many children with autistic behaviour injure themselves, such as biting the back of their hands, banging their heads, pressing themselves against something very hot, which used to be seen as evidence of pain insensitivity, but these are intense displacement activities done at times of great stress.

If children who receive the ASD diagnosis are observed in their everyday environments, it is clear that they show frequent motivational conflict behaviour where fear (also called avoidance) motivation dominates other motivations much more than in other children (Richer, 1971, Tinbergen and Tinbergen 1972, 1983, Richer, 1978, 2001a).

It is possible to plot what factors reduce the fear behaviours in a social context, i.e. where the child with the ASD diagnosis could interact with others. These include:

- the joint activity the child is doing is easy
- the situation and joint activity is predictable for the child
- the other person is not too socially intrusive
- the activity is with just one other person, not a group
- the situation is quiet, not crowded,
- if food intolerant, the child has not recently consumed the non tolerated food

It is also possible to observe that the threshold for showing this predominantly social avoidance behaviour differs between children. Some children show it in most situations they encounter (these are easily diagnosed as conforming ASD if their behaviour also shows considerable stereotypy). Most children would not fall into this way of behaving in the presence of these causal factors. Some children fall into this way of behaving only when the causal factors are sufficiently intense / numerous / long lasting. This is illustrated in Figure 2.

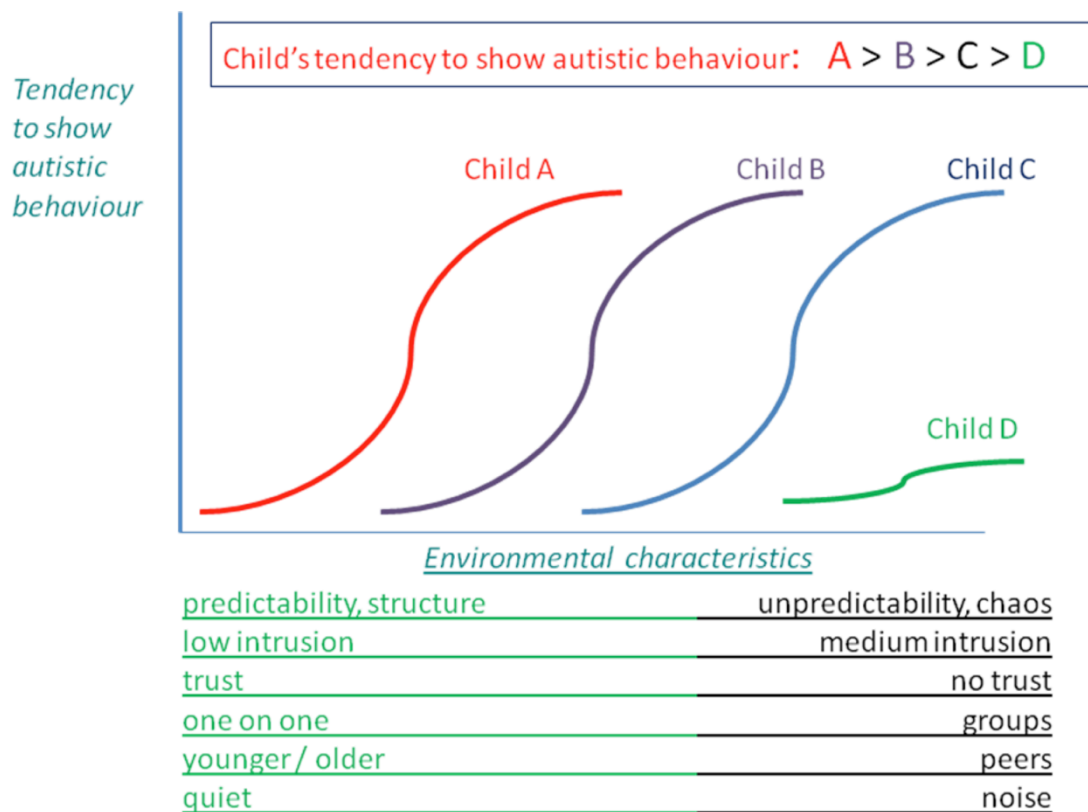


Figure 2. Schematic representation of individual differences in thresholds for showing autistic behaviour with various causal factors.

It needs to be remembered that a frequently repeated finding in ethological research is that motivations may be triggered by stimuli being sufficiently intense, and/or lasting a sufficient time, and/or acting together with a sufficient number of other (often called predisposing) stimuli (Hinde 1970, 1982).

Avoidance dominated motivational conflict social behaviour is only one aspect of what describes children who receive the ASD diagnosis. Many other children also show this conflict behaviour and may be colloquially or clinically described as timid, highly

introverted, socially anxious, or even socially phobic. Children who get the ASD diagnosis also have a strong tendency to seek and create predictability (the second main criterion of restricted interests/stereotypy), which is the obverse of exploratoriness and especially of playfulness. This will now be discussed.

A dimension from Displacement Activities to Playfulness.

So far I have discussed displacement activities in the context of reactions to frustration and motivational conflict. It is useful to see them in a wider context. Although they are often described as “goalless”, because they do not seem part of achieving adaptive goals, this is not the whole story; their execution, like the execution of most, if not all, activity, creates the expectation that particular feedback will be received, and in that limited sense, they have a goal. Displacement activities are very likely to achieve their expected feedback - it is difficult to fail at scratching one’s head, or at rocking back and forth. They are simple activities, they are often repetitive and they require few specific environmental conditions – many are self grooming activities and so involve the individual’s own body (which is always there!).

Their function, I and others have argued (Richer, 1979; Delius, 1967; Hutt and Hutt, 1970), is one of self maintenance or homeostasis. In this sense they are examples of what Hess called “trophotropic” behaviour. These trophotropic behaviours include: self maintenance and protective behaviour, consummatory behaviour, attachment behaviour and restorative behaviour. These are contrasted with “ergotropic” behaviours which require, as “ergo” suggests, work and energy expenditure, and involve engagement with the environment. They include exploration, play, imitation, other learning behaviours (Hess 1954, Trevarthen and Aitken, 2003). Trophotropic behaviours help maintain the individual in the short term, ergotropic behaviour promotes longer term success through developing successful adaptations to the individual’s environment. There is a balance to be struck between these two: insufficient trophotropic activity and exhaustion, disease, injury etc. are risked, insufficient ergotropic activity and fewer adaptive behaviours are developed and long term success is compromised.

One aspect of the trophotropic – ergotropic dimension is the extent to which the individual avoids, or conversely seeks out, uncertainty / novelty. Displacement activities are at the extreme trophotropic end, play and exploration are at the ergotropic end. There are behaviours at different points between. Here are some examples on this putative dimension from trophotropic to ergotropic:

- simple stereotypies / displacement activities / tics
- very complex stereotyped/obsessional behaviours.
- pursuing one’s own agenda in complex activities, i.e not responding much to environmental contingencies.

- “pottering about” [“occupy oneself in a desultory but pleasant way”, OED] the activities are simple, well practiced and requiring little effort. Stressed or tired people often resort to this, but pottering about often achieves small goals, e.g. tidying up.
- pursuing simple goals, easy, albeit new, tasks.
- exploring novelty in a safe familiar environment.
- exploring novelty in a less familiar environment.
- seeking out novelty through exploration and play.

The more an individual seeks out novelty and is playful, the more adaptive behaviour is likely to be acquired. Children receiving the autistic diagnosis do the opposite and not only rarely play but also strive to create familiarity / predictability to the detriment of their learning. Given too their tendency to be avoidant of any but simple social interactions, their learning from other people and about other people is impaired. This is their area of greatest disability (Richer 1971, 1976, 1978, 2001a & b).

Postscript

In this paper I have tried to give some examples of the application of well known ethological approaches and ideas to behaviour which often comes to the attention of clinicians. I have tried to show how this approach can relate to the sorts of everyday descriptions encountered in clinic – at least in the UK and perhaps in other English speaking countries. Also I have tried to show how it can relate to conventional psychiatric diagnostic categories, although it offers a rather different way of classifying and understanding behavioural phenomena. Even if this different way of looking at behavioural problems gains purchase in the clinical and wider world, it will not soon or quickly displace conventional diagnostic and treatment thinking, habits of thought which have served their users are not suddenly jettisoned. However given the march of scientific thinking in most areas of human knowledge, it is likely that the more thoroughly scientific approach of ethology will play an increasingly useful role.

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