

# ASCAP

Volume 9, No 1, (Cumulative #98)

January 1996

"The genetic code is virtually unchanged from *Escherichia coli* to man. The DNA molecule that incorporates genetic information is the same molecule, based on the same biochemistry, in the simplest and most complex organisms."

Philip Leder<sup>1</sup>

## Across Species Comparison and Psychopathology (ASCAP) Newsletter Aims

- ◆A free exchange of letters, notes, articles, essays or ideas in brief format.
- ◆Elaboration of others' ideas.
  - ◆Keeping up with productions, events, and other news.
- ◆Proposals for new initiatives, joint research endeavors, etc.

ASCAP Society: Executive Council  
President: Leon Sloman  
President- Elect: Daniel R Wilson  
1st Vice President: Kent Bailey  
2nd Vice President Mark Erickson  
Past Presidents: Michael A Chance, John S Price, Paul Gilbert, John Pearce  
Editor: R. Gardner; Graves Bldg, D-28, University of Texas Medical Branch, Galveston TX 77555-0428.  
Tel: (409) 772-7029  
Fax: (409) 772-6771  
E-Mail: i ASCAP @ beach.uunb.edu  
Previous volumes are available. For details, contact Managing Editor: Erica Airsbury, at above address,

## ASCAP Society Mission Statement

The society represents & group; of people who view forms of psychopathology in the context of evolutionary biology and who wish to mobilize the resources of various disciplines and individuals potentially involved so as to enhance the further investigation and study of the conceptual and research questions involved. This scientific society is concerned with the basic plans of behavior that have evolved over millions of years and that have resulted in psychopathologically related states. We are interested in the integration of various methods of study ranging from cellular processes to individuals in groups. The ASCAP Newsletter is a function of the ASCAP society.

## Contents

To & From the Editor.....	page 2
<i>Comment on the Sloman/Waller exchange</i> by John Price.....	page 4
<i>The hedonic and agonic modes: A comparative perspective</i> by Koenraad Kortmulder.....	page 7
<i>Treatment alliance: Excerpt from E-mail</i> by Tim Miller.....	page 11
Abstracts & Extracts on novelty seeking behavior; neuronal nitric oxide synthase in mice; matching behavioral evolution to brain morphology; personality and cognitive ability differences in monozygotic twins; "galaxies" in the protein universe; morphogenesis in cannibalistic salamanders; an <i>in vivo</i> voltammetric study on the amygdala, prefrontal cortex and striatum; genome evolution; and language related field potentials in the anterior-medial temporal lobe.....	page 18
Announcements .....	page 19
References .....	page 20
Concerning paleobiology, sociophysiology, interpersonal and group relations, and psychopathology	

# ADDRESSED TO & FROM ...

## COURSE READINGS

I am developing a graduate level seminar course in Evolutionary Psychology (broadly viewed). This is meant to serve both biology grad students who often are sophisticated in evolution research but have bought into the view that human behavior is exempt from its principles AND clinical, social, and developmental psychologists curious about this "new" field. I am looking for what readers of the HBES list and *The ASCAP News* -/efferview as recent seminal theoretical or speculative papers and, especially, empirical quantitative or experimental applications of Darwinian theory to applied problems facing society at large or applications to basic and applied areas in psychology and other social sciences. Mate selection is an obvious area in which there is much written; but what is the best in classroom/seminar contexts? I feel I will need relatively concise but methodologically tight and interdisciplinarily respectful reports. I would like to include papers, chapters, or authors that seem to reflect some consensus (ha ha - given recent goings on) as to where the field is coming from and exciting new directions. Therefore, although self suggestions will be appreciated, I will give more weight to suggestions of other people's work. The course will begin with some readings from Darwin's two "psychology" books and then fast forward to the present with a few pitstops at early ethology, Trivers, and E. O. Wilson. Some of the

students will already have taken a course where we read *The Adapted Mind* so I do not want to use that book as a text, although it will be recommended.

At the same time I will be teaching a senior psych capstone course on the same topic and there I will probably use Wright and Nesse & Williams along with some original sources as well. So these books will be available to the grad students as background reading if needed.

Please send suggestions directly to me at burghd@utkvx.utk.edu All will be much appreciated.

Gordon M. Burghardt,  
burghd@UTKVX.UTCC.UTK.EDU  
Department of Psychology,  
University of Tennessee,  
Knoxville, TN 37996-0900

## PROMISE TO PUBLISH

As you will see I am now on the Internet. I got wired about ten days ago. I got my *Newsletter* yesterday and was most distressed to learn about the cash problem. I will send off my subscription in the next couple of days. I am no expert in marketing, but I understand that what you are supposed to do is to think of something special about your product and then major on that. With *ASCAP* I think mainly of one thing. At a time when nobody else would publish me (which may or may not be coming to an end) you gave me repeated opportunities to develop my ideas by putting them in print in front of a very

knowledgeable audience.

Now as I understand things, getting published remains a general problem. Could we not therefore "sell" *ASCAP* on the basis of the "ASCAP Promise" i.e. that its membership will be held to such a level as to ensure that all members are guaranteed publication of the material they send in subject only to four criteria:

1. It must be no longer than a specified number of words.
2. Its content must be accessible to the main body of readers.
3. The normal conventions and proprieties of academic exchanges must be observed.
4. Individual exchanges will be limited to two per year and a maximum of four rounds each, unless space allows a more generous treatment.

No doubt these could be improved upon, but is not the general strategy sound? Would not most people in our type of country be overjoyed if they could be certain to get their contribution into print? Given suitable publicity, might not the problem then become a matter of holding numbers down so that the promise could be honoured?

Mike Waller  
mwaller@comparator.win-uk.net

## OBSCURER NAME

Come on guys, make up your minds. I always thought the intent was to keep the *Newsletter* confined to a small band of insiders. The name *ASCAP* is obscure and

seems designed to be uninformative. The obscure and misleading subtitle, "Across Species Comparison and Psychopathology" is well-crafted to keep people off the track. "Sociophysiological integration" is a phrase that conveys nothing to anyone who was not party to the discussions that led to its adoption. Nowhere in any of these words and phrases is there anything that any researcher, scientist or clinician who is not already an ASCAP participant could possibly recognize as germane to their own work. In short, our protective cover has been totally successful. Now you want more subscribers?

Well, if that is the revised goal, our ways will have to change drastically. We would need a title that announces its relevance to the people whom we want to attract. Title and descriptors would have to clearly indicate what kind of contributions would be welcome and what kind of information might be present, in terms that are clearly recognizable - which means standard. There are very few "across species comparisoners." "Sociophysiology" is not one of the most common departments in American universities.

I have some suggestions, if indeed the time has come to poke our heads through the leaf litter. I have the impression that the *Newsletter* is about evolution and mental health. Does it follow that we want to recruit clinicians and mental health researchers who have an evolutionary perspective, or who might become interested in an

evolutionary perspective? If so, then either of the following two titles might clue some of them in: (1) "The Mental Health and Evolution Newsletter"; (2) "The Evolution and Mental Health Newsletter". True, the acronyms are weak, but sometimes you have to give up something.

There is a danger here. As evolutionists have occasionally noted, human beings tend to be influenced by considerations of status and prestige, while academics have to answer to various faculty committees. Having a letter or an idea appear in "The Mental Health and Evolution Newsletter" sounds a bit more impressive than having the same letter or idea appear in something called ASCAP. Changing the title might therefore induce some people to subscribe and contribute for reasons that are not purely altruistic.

Ambition and striving are widely frowned upon in many circles. We should hesitate. But on second thought, there is probably something in Darwinism that can help us overcome our distaste for crassness in our colleagues and conspecifics. Maybe we should try.

Kalman Glantz  
Cambridge MA, USA

### **UPDATE**

Many thanks to all of you who have been sending in your ideas for ensuring the continued survival of ASCAP. I want to keep you informed about what has been going on, and to request assistance that some of you may be able to supply.

I have posted the ASCAP advertisement and The Beck Competition announcement on the E-mail list for HBES. We have had about 15 people responding with interest, but no-one has subscribed as yet.

I am aware that there must be many other lists out there with potential subscribers just itching to join, but I don't yet know where they are. So, please, please, send me any E-mail listnames/ listowners that you can think of so that I can post our information.

Thanks to Karl Grammer of ISHE, we can now be browsed at <http://evolution.humb.univie.ac.at/guest/ascap.html>.

In February, we will probably be running a classified advertisement in *The Psychiatric News*, *The Psychiatric Times* and *The Psychiatric Times*. This advertisement will be a revised version of the mission statement, and will cost close to \$900 to run for three months.

Dr. Gardner has sent a letter to request funding from the Beck Foundation, which has responded with a contribution of \$500 additional to the Beck ASCAP Award contribution. We are pursuing others. If you can think of any society or foundation that might be willing to subsidize us (we would be happy to print credit), please contact them and/or us as soon as possible.

I look forward to hearing from you!

Erica Ainsbury  
Managing Editor  
[ascap@beach.utmb.edu](mailto:ascap@beach.utmb.edu)

## Comment on the Sloman/Waller exchange

May I butt in on the Sloman/Waller exchange and suggest that what they have both independently done is to rediscover sexual selection? They are both talking about a social process that increases the correlation between a favourable mutation and fitness. Darwin recognised this social process and he called it sexual selection. Sloman emphasises, rightly, that this social process may begin in childhood and it may exhibit positive feedback characteristics. Waller emphasises that the people not selected by the process may have a bad time, and he points out that the capacity (or, rather, obligation) to engage in the social process is genetically determined. These are additions to the theory which Darwin put forward in the *Origin* and subsequently elaborated in *The Descent of Man and Selection in Relation to Sex*.

Darwin made it clear that natural selection is based on differential ability to deal with the physical environment, including predator and prey relations with other species, but at the same time he recognised that selection occurs as a result of interactions with members of the same species. In *The Origin of Species* he wrote:

*This form of selection depends not on a struggle for existence in relation to other organic beings or the external conditions, but on the struggle between individuals of one sex, generally the males, for the possession of the other sex.*

In 1871 Darwin published *The Descent of Man and Selection in Relation to Sex* which was devoted to a meticulous analysis of sexual selection. In this book he introduced the term for the first time, and he pointed out that sexual selection has two components. He wrote:

*Sexual selection depends on the success of certain individuals over others of the same sex, in relation to the propagation of the species; whilst natural selection depends on the success of both sexes, at all ages, in*

*relation to the general conditions of life. The sexual struggle is of two kinds; in the one it is between individuals of one sex, generally the male, in order to drive away or kill their rivals, the female remaining passive; whilst in the other, the struggle is likewise between the individuals of the same sex, in order to excite or charm those of the opposite sex, generally the females, which no longer remain passive but select more agreeable partners. This latter kind of selection is closely analogous to that which man unintentionally, yet effectually, brings to bear on his domesticated productions, when he preserves during a long period the most pleasing or useful individuals, without any wish to modify the breed.*

The capacity to "drive away or kill one's rivals" was not given a technical name until, in 1974, Geoffrey Parker introduced the term resource-holding potential or RHP.<sup>1</sup> Success in agonistic encounters raises RHP, so the genetically determined RHP management system acts as a deviation amplifying device. Human beings low in RHP suffer from low self-esteem and have increased liability to many forms of psychopathology.

Darwin included both types of sexual selection under the same heading, but did not give them separate names. Julian Huxley introduced the term "intra-sexual selection" for the social process between members of the same sex, and he called mate choice "epigamic selection".<sup>2</sup> Use of the term "intersexual selection" for mate choice has been rightly criticised by Helena Cronin.<sup>3</sup> Epigamic selection is a powerful amplifying device; if women would only mate with men who can sing in tune, the musical ability of the population would rapidly improve. Darwin concentrated on epigamic selection, rather than on intrasexual selection, and so have most of the biologists who have followed him. This, and the rather clumsy name, have probably shielded intrasexual selection (and the mainly non-lethal forms of social competition which subserve it) from the biological enquiry which it deserves. Huxley pays some attention to the fate of

the unselected, pointing out that a significant proportion of adult birds fail to mate each year, and he wrote:

*... defeat in combat has far reaching general effects, birds though physically uninjured sometimes dying as a result, if not promptly removed from contact with other birds, and even when physically recovered losing the impulse to mate for the rest of the season. Conversely, successful threat-displays promote both general and sexual vigour..<sup>2</sup>*

Huxley does not seem to have been aware of the work of Schjelderup-Ebbe, who had already published similar observations.<sup>4</sup> Huxley also noted that when a male pelican's courtship display is rejected, its frontal protuberance shrinks and the nearby skin changes colour. This is likely to be part of a self-induced deviation amplification mechanism, as other females can recognise him as a rejected suitor and ignore him, and thus his own physiological changes are reducing his fitness.

Intrasexual selection is what Sloman and Waller are talking about. The confusing thing about it is why anyone should choose to be unselected or de-selected - why isn't the tendency to go into one of Sloman's maladaptive cycles bred out of the population (which was Waller's original question)? There are two answers to this, one from ethology and one from behavioural ecology. The ethological answer is that social selection is mediated by agonistic behaviour, which has become ritualised, and is widespread in the animal kingdom, probably having evolved many times over. Because it is so common it must have some value, and the value is to prevent serious injury. The answer from behavioural ecology is an analysis of two alternative strategies which may be adopted in social competition: the "hawk" strategy which is one of escalation and fighting to the death, and the "dove" strategy which is one of de-escalation and giving way. Maynard Smith applied game theory to the evolution of

these strategies, and he showed that in certain conditions a pure hawk strategy is not stable, but is likely to be infiltrated and replaced by a mix of strategies.<sup>5</sup> Either some of the players must be

**It is not generally realised that the rules of social selection changed about ten million years ago ...**

doves, or each player must play dove in a proportion of encounters. Note that this applies even if every member of the population starts with equal RHP. If there is genetic

(or environmental)

variation in RHP, then

the game is different and the stable strategy is to assess the other and to play dove if one's RHP is less. This "Assessor" strategy is getting very close to Waller's comparator gene.

It is not generally realised that the rules of social selection changed about ten million years ago. The assessment is not now by the player himself (or herself) but by the group as a whole. We now have competition by attraction leading to "prestige" and "status" rather than competition by intimidation leading to dominance (Reference #6, and see my contribution to last September's ASCAP). This not only means that selection can be more rapid, but that any characters the group chooses can be selected for, rather than the "tough guy" attributes that give success in agonistic behaviour. This allows selection for task competence, linguistic ability, group loyalty and altruism. It probably also selected for "Parents choosing the bridegroom" so that what I have called "externally mediated sexual selection" (because the selectors are external to the competing or mating dyad) applied not only to intrasexual selection but also to epigamic selection or mate choice.

There are several important consequences of this change in the method of sexual selection:

1. Social attention holding power (SAHP) replaces RHP as the relevant self-concept.
2. The signals which raise and lower RHP and SAHP

(which I have called anathetic and catathetic signals) are applied to the individual by the group as a whole rather than by the rival. Approbation and disapprobation have replaced submission and threat. These new signals convey the message, "you are good (bad)" rather than "you are more (less) powerful than me", and so have lost their implication of status difference between evaluator and the person being evaluated. Therefore they can be used both up and down the social hierarchy.

3. The social role of evaluator or judge has evolved.

4. Groups which allocate SAHP to individuals on the basis of qualities that make for group success are likely to out compete groups that use other criteria.

5. Free-riders can be detected and allocated low SAHP, making group selection mathematically possible.

6. Groups which outlaw agonistic behaviour will outperform groups which do not.

7. Low self-esteem and depression, which are the fate of the unselected and de-selected, are now induced by the group as a whole, and they have come to be associated with group-relevant depressive emotions such as shame, guilt and humiliation in addition to the emotions which are aroused by losing an agonistic encounter.

8. Language is important for this new type of selection, because group members need to discuss each other's merits, and to give people "reputations".

9. Language is also important for attracting people and gaining SAHP.

10. With language the criteria for selection can be discussed by group members. Stories can be told about heroes who have the traits which the group values.

11. The positive feedback between the acquisition of language and the replacement of agonistic behaviour by social attraction has probably had a lot to do with

the increase in human brain size over the past 3 million years. The change in the rules of sexual selection would have been the crucial factor. It is probably the only rule change since sexual selection itself evolved over 300 million years ago.

It is in no way denigratory to Sloman or Waller to suggest that they have rediscovered something that Darwin discovered 150 years ago. I wish I had done it myself.

Our contribution has been to ask the question which Darwin never asked, "What happens to the people who are driven away?".<sup>7</sup> Where are they? What do they look like? They cannot all be in prisons or psychiatric hospitals. They must be "out there" somewhere - or, more likely, "in here" with us (perhaps they *are* us!). Would they show up on a personality test? There is no suggestion in the personality literature that investigators have been looking for them. Could they be responsible for "Neuroticism/Negative Affectivity" ?<sup>8</sup>

And, once they have been driven away, what stops them from coming back? Do the "drivers away" stand constantly on guard ready to drive them away again? We have suggested that the constraint which stops them coming back lies not in the drivers away but in themselves, in those who are driven away.<sup>7</sup> We think they have some sort of "internal referee" which tells them, "You have not been selected, so stay away (or, stay down)", and this internal referee inhibits self-assertion and challenge behaviour, and causes them to have "subordinate self-perception", and we once called this internal referee the "yielding subroutine of ritual agonistic behaviour" but more recently we have called it the "involuntary subordinate strategy", and it consists of a lowering of those variables which cause a person to attack rather than submit, which are RHP, Resource Value and "sense of ownership", and it may manifest as a lifetime trait of low self-esteem, or as an episodic occurrence of a depressive state, depending on whether the individual feels unselected in the first place or is selected at first but then becomes de-selected ... but this is a train of thought with which *ASCAP* readers will by now have become familiar.

*References: page 20 c8*

## ***The hedonic and agonic modes: A comparative perspective***

### **Introduction**

Substantial advances have recently been made in the study of the hedonic and agonic modes of human behaviour, in a whole series of contributions in *The ASCAP Newsletter* by Michael Chance, David Stevens, and John Price.<sup>123</sup> Important though this is from a psychological, social or even political point of view, it neglected the comparative perspective. Yet, Michael Chance discovered the modes while studying the behaviour of monkeys and chimpanzees. Some of the recent theoretical developments concerning humans may not be appropriate for explaining the behaviour of subhuman primates, let alone other vertebrates. Nevertheless, I think there is enough in common between the latter and *Homo sapiens* to warrant a broad comparative approach, and to expect it to shed light on the essence of the modes also in humans. In this paper, I shall draw upon a wide spectrum of vertebrate behaviour, and on some aspects of Behavioural Field Theory which I have found useful in the interpretation of vertebrate behaviour. I shall begin where Michael Chance began: with monkeys and apes.

### **Modes of social interaction**

Among Old-world monkeys, macaques and baboons (genera *Macaca* and *Papio*) live in groups with *centric organisation*. At the approach of a predatory mammal, the group tightens and males come to confront the enemy. In most species, group behaviour is controlled by a small number of dominant adult males. These threaten or attack and bite any other group members that come too near, try to leave the group or tussle among each other. Avoidance, reverted escape, i.e., escape back to within the boundaries of the group and appeasement are the common responses of the subordinates. Hostility thus plays an important part in maintaining the coherence of the group, besides sexual, parental and *teder'* behaviour. This pattern does not apply to all species of these genera (e.g., the Tonkean macaque,<sup>4</sup>), but I shall for convenience refer to it as the macaque pattern.

In contrast, some species of the same sub-family flee and disperse when a predator is spotted. The patas monkey (*Erythrocebus*) is the best known example. The one adult male patas generally keeps at a distance from his group, and tries to divert predators' attention away from it by performing conspicuous bouncing displays. This kind of grouping is called *acentric*.<sup>5</sup>

Chimpanzee grouping is centric, but the organisation is much more flexible and relaxed than the macaque pattern. In order to highlight the differences, I quote from Chance and Jolly's book *Social Groups of Monkeys, Apes and Men*:

*Chimpanzee attention structure is based upon attention-demanding behaviour or display, practised competitively between males of the colony, and is distinct from the pattern of aggression between the same individuals. This display behaviour leads not to submission or appeasement by a subordinate, but is a form of social solicitation, as it leads on to forms of associative behaviour in which there is a continuing interaction between individuals, such as grooming, play, sexual or mothering behaviour with the displayer.*

*Aggression has to be opposed by counter-aggression, appeased, or avoided, all forms of behaviour designed to eliminate the intensity and continuity of the social contact. Display behaviour, responded to by greeting, stimulates and enhances the tendency of individuals to develop many forms of contact behaviour at close quarters. Manipulation, both of the individual's own body or that of the companion, not only by grooming but also by holding and investigation, is jointly engaged in. Their attention may also switch to the environment or to other objects and give rise to manipulation of objects as tools.*

*Such varied and flexible behaviour, both social and non-social in form, but often involving the combined attention of two companions towards each other and*

towards a physical object, is clearly of a different nature from the rigid, fixed pattern of agonistic behaviour, and should be regarded as constituting a separate mode for which the term hedonic is proposed, without the subjective connotation associated with 'hedonistic' but suggesting an affinity with pleasant human feelings.<sup>6,p. 176-7</sup>

Later, Chance defined yet another mode of behaviour, the *agonic*, to be distinguished from the hedonic and the agonistic modes, and perched, so to speak, between them. Whereas agonistic behaviour now means overt violence, the agonic mode is characterized by continuous high tension without the accompanying agonistic behaviour.<sup>78</sup> Appeasement and spatial equilibration at respectful distances from the 'boss' are the characteristic patterns of the agonic mode on the part of the subordinates. The high tension and arousal contrast with the hedonic mode, which is more relaxed. The agonic mode is typical for the macaque pattern. Humans are supposed to have access to both modes of social interaction, being able in principle to switch between them.

### States or Dimensions?

Two elements come to the fore in Chance's definitions: *tension* and *broken symmetry*. Tension refers to mechanical tension in the bodies of the participants and/or between them. In principle it can be measured quantitatively, but for the present we may content ourselves by estimating it by eye. It is more profusely present in the agonic mode. Breaking of symmetry may refer to a number of ways in which the balance between contestants may be reduced. In the modes it mainly occurs as dominance-subordination, particularly in the agonic and agonistic modes. One may thus position the modes in a two-dimensional state space with the agonic mode scoring high on both the axes of tension and broken symmetry.

The same two dimensions played prominent roles in my own theoretical studies on displacement activities and the correlation between species-specific behaviour traits in the individual.<sup>9,10,11</sup> These were about fishes, birds and mammals, and the fact that the same dimensions were found to be relevant, strongly supports the comparative approach. There is much

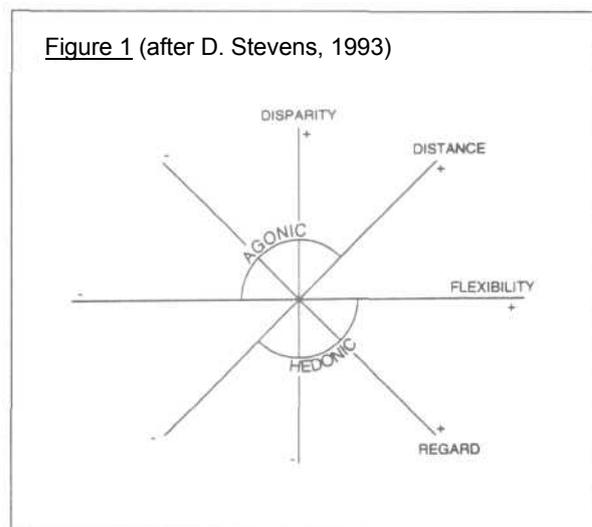
more to the hedonic and agonic modes than the specific capabilities of apes and human beings.

Before coming back to the modes in humans, a little more may be said on dimensions describing vertebrate behaviour, particularly that of behavioural expansion-constriction. These may be defined as follows. Under *expansion*, an animal's movements are rapid and suggest 'lightness'; behaviour is varied and flexible, with easy changes from one behaviour type to another; roles change easily and partnership is open (> conspecifics, and thirds may join in). In other words, these are the characteristics of play. Under *constriction*, movement is ponderous (slow and 'heavy'<sup>1</sup>); behaviour is monotonous and strictly sequenced; roles are fixed and narrowly defined; partnership is restricted: the characteristics of ritualised behaviour, particularly agon (from Greek: *agoon* = games<sup>11</sup>). *Constriction may go with increased tension. Tension may be relaxed in either of two major ways: by behavioural expansion or by symmetry breaking.*

We may now turn to how David Stevens described the hedonic and agonic modes in human behaviour in terms of dimensions. I quote:

1. **Distance.** *Interindividual spacing is a fundamental index of modality. In the agonic mode it is greater, in the hedonic mode less.*
2. **Flexibility.** *Both attention structure and social structure are rigid in the agonic mode and flexible in the hedonic mode.*

Figure 1 (after D. Stevens, 1993)

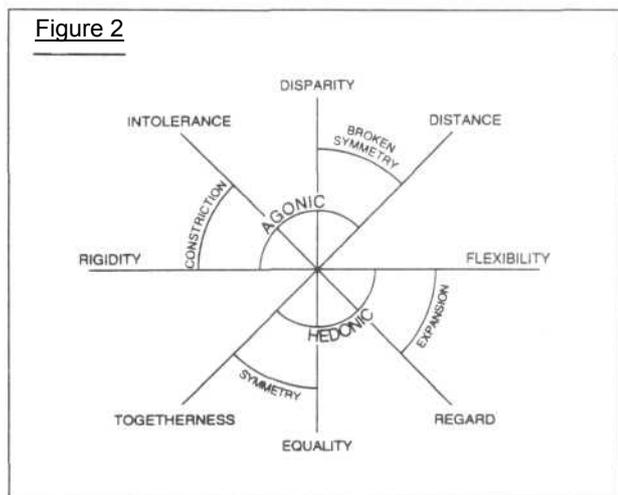


**3. Disparity.** *Inequality between individuals, in power and resource control, and in rank or status, are characteristically agonic, whilst the hedonic mode has fewer discrepancies, of lesser degree.*

**4. Regard.** *The quality of interindividual attention and communication can be positive or negative; it is characteristically positive in the hedonic mode and negative in the agonic.*

*These four dimensions can be represented conceptually in a diagram, and the two modes may be mapped on to them as follows (fig. 1).*

Though Stevens has four dimensions, and I have only two (tension under constriction (vs. expansion) and symmetry breaking (vs. symmetry)), I claim that our dimensions are, in fact, identical. Fig. 2 may assist



comparison. There I have entered Stevens' dimensions and labeled the opposite poles. It may be seen that *Disparity* and *Distance* correspond to 'Broken symmetry', while *Flexibility* and *Regard* correspond to 'Behavioural expansion'. Tension comes along with *Rigidity* and with *Intolerance* as to the acceptance of congeners. These correspondences again support the comparative approach.

All this does not suggest that either the discrete states or the dimension approach is more appropriate. Both contribute to a better understanding of the two modes. In higher primates and men they are no doubt relatively discrete. Yet, a whole relationship between people is rarely completely hedonic (or completely

agonic, for that matter). Hedonic and agonic patterns mix, depending on context and on the level of integration that is considered. The development from agonic to hedonic in a full human relationship is, in my opinion, a gradual process that never comes to full completion.

Why tension?

There is more than etymology to connect agon -- defined as symmetric contest -- and the agonic mode. Both are characterised by high tension. Relaxation may be found via two more or less opposite paths: through behavioural expansion (for instance towards courtship or play) or through symmetry breaking (dominance-subordination or territoriality). It is tempting to think that agon and the agonic mode are identical, but this cannot be so, since the agonic mode combines tension with broken symmetry (dominance-subordination), whereas in agon the symmetry between the actors is conserved.

In another place I have argued that symmetry breaking may relax the tension of agon.<sup>11</sup> The pertinent question, therefore, is why the same does not happen in the agonic mode. The answer comes in two steps. First, consider a thought experiment in which the level of tension of the agonic mode is compared with that during a symmetric contest between the same animals. The tension, as measurable by any mechanical means, would certainly be even higher during the latter. This means that the breaking of symmetry does *something* relax tension. Second, the residual tension of the agonic mode is due to the fact that the actors are still bound to stay in the same group. In that respect, the agonic mode is not qualitatively different from the condition of a group of fish or birds or lower mammals in an enclosure, where also both dominants and subordinates remain tense. Only, the inhibition on escape is social rather than mechanical. It is thus the centripetal forces of the centric group (punishment for attempted desertion and reverted escape) which set the conditions for the maintenance of tension in the agonic mode. Total relaxation may only result when subordinates leave the group. For humans there are other, symbolic, paths, such as breaking with the common ideals of the group or analysis of an oppressive parent image.

Agon and the agonic mode are thus different in spite of their etymological relatedness. *I propose to reserve the term agon for the symmetric contests* such as for example 'threat' display duels offish, reciprocal singing of territorial birds, parallel walk in deer or human sporting matches in all their variety. This tallies exactly with Huizinga's use of the term in his great pioneering study *Homo ludens*.<sup>12</sup>

### Towards descriptive definitions of the modes

The above discussion is grounded on Chance's original characterisations of the two modes. Others have tried to tighten the definitions. According to Frank Cawson, the hedonic mode is present where people feel that similarities are more important than differences.<sup>13</sup> If the other way around, the agonic mode is in vigour. Anthony Stevens defines the hedonic mode on the basis of affiliative behaviour and the absence of agonic tensions; the agonic mode he defines as by the inhibition of agonistic behaviour.<sup>14</sup> For John Price, competition is the crucial diagnostic feature: agonistic competition for the agonic mode and prestige competition for the hedonic. He defines the hedonic mode as by the absence of agonistic competition.

It may be noted how much of this is definition by exclusion. Moreover, Price's definitions involve theory as to the causative role of competition. This is a question of 'nominal' vs. 'realistic' definition. As far as the evidence goes, it might be that the hedonic mode allows prestige competition to occur, rather than being caused by it. As long as this is not settled, the form of competition occurring in any one mode may be used as a diagnostic feature in a nominal definition, but not as a realistic definition.

For the purpose of further investigation of the modes, however, it is important that definitions concentrate on the real features of what is defined *and* that they contain as little theory as possible, so as to be immune against changes in interpretation or differences of opinion. A definition that combines these two

requirements, I call descriptive. It seems to me that we are still far removed from descriptive definitions of the modes. Let me try to move a little bit nearer.

An analysis of related dichotomies proposed by others may help. I mention but a few: Claire Russell contrasts *relaxed* with *stessful* behaviour, the former of which may be expressed as the sharing of space without tension, the latter as keeping distance.<sup>15</sup> For humans, the state of mind of being in love (corresponding to the relaxed mode) is "intensely communicative". William M.S. Russell developed profound ideas on the modes of internal communication in the individual animal, with inevitable repercussions on social relationships. In what he calls the *instinctive* system, moods and sub-moods are isolated from each other.<sup>16</sup> These separations have been partly broken down in the *homeostatic*, and have completely vanished in the *intelligence* system. In the latter, any experience acquired in any mood, can come to the

benefit of the whole animal. In his delightful book *Eros als Bevrijding* (Eros as liberation), Lietaert Peerbolte contrasts *erotic complementarity* with *sadomasochistic complementarity* in human relationships.<sup>17</sup> While the latter is invariably expressed

as a master-slave relation governed by ego-drives, the former is characterised by

positive regard for the partner and indeed for the whole of the pair, and allows reciprocal free exploration.

If these examples are representative of a vast literature, the common theme seems to be: the free and easy flow of energy and information, both within and between individuals, in the one case, and stagnation and isolation in the other. If the hedonic and agonic modes can be defined in these terms, they would be described in terms of *order* which, according to David Bohm is the most fundamental notion in science and in art.<sup>18</sup>

*References: page 20 c8*

... if might be that  
the hedonic mode  
allows  
prestige competition  
to occur...

## **Treatment alliance: Excerpt from E-mail**

It seems to me the most important thing we know about psychotherapy is that diverse forms of psychotherapy produce approximately equivalent results. This is true even when the scientific and theoretical foundation for a given treatment method is known to be incorrect!

The second most important thing we know about psychotherapy is that the best predictor of success is the quality of the "working alliance" or "treatment alliance" between therapist and patient, regardless of whether the specific beliefs they share have any scientific or logical credibility.

Without an evolutionary perspective, it's pretty hard to make sense of these facts. From an evolutionary perspective, they make a great deal of sense. All that is necessary to explain them is to conceive of psychotherapy as a reciprocal alliance between a socially competent, high-status, high IQ, experience-rich person (the therapist, healer or shaman), and a less competent, experience-poor, and (usually) lower-status, lower-IQ person (the client or patient). The healer makes a sincere, thoughtful and vigorous attempt to help the patient. The patient makes the relationship reciprocal by paying the healer for her trouble and also, in many cases, by enhancing her reputation. (I'll alternate gendered pronouns.) This is the common denominator shared by all psychotherapeutic relationships, including western "faith-healing," nonwestern healing, and shamanic healing relationships have in common.

An alliance with a socially competent, high-status, experience-rich high-IQ person is going to evoke new hope, energy and determination in almost anyone. I think we'll find this effect wherever we look for it, not just in psychotherapy. A mentor/protege relationship in business or academia or a coach/athlete relationship ought to work about the same way. So should the relationship between a physically sick patient who has

not responded to conventional medical treatment and a non-conventional healer. We see a similar effect in chimpanzees, and perhaps other animals. It might stimulate immune functions or adjust the hypothalamic-pituitary-adrenal axis. It might adjust sexual hormones.

It's worth noting that significant coach/athlete and mentor/protege relationships are also fully reciprocal. Both athlete and coach feel the athlete "owes it to the coach" to enhance the coach's reputation and income by playing as well as he can. Same goes for protege and mentor.

Humans have been taking their troubles to shamans for so long that sufficient time may have passed for some biological recognition of this ancient form of human interaction to have become genetically encoded. Or it may be that shaman/patient is a special case of the more general mentor/protege relationship.

Reciprocal altruism allows us to understand the "therapeutic alliance" more specifically than we can otherwise.

If the healer/client relationship is fully reciprocal, the client believes something like this:

*This healer has earned his high status by virtue of superior knowledge, talent and experience. He has helped other people and he can help me too. When we discuss my problems, he understands them better than I do. He understands them better than any of the other people with whom I have discussed them. Even his offhand remarks and gestures suggest wide experience, social competence and wisdom. He gives me reason to hope and gives me good ideas about how to conduct my life differently. Even though his assistance is expensive and inconvenient, this is a good use of my time and money.*

The healer believes something like this:

*This client appreciates my superior knowledge, talent and life experience. She does her best to make good use of it, though her innate capacities may be somewhat limited. She pays me enough money to make this a good use of my time, and about as much as she could afford in any case. Additionally she praises me to others, which enhances my reputation, social status, and income. I expect her to benefit from my services, so she will become an ongoing advertisement for my ability.*

When one considers the modern psychotherapy relationship in this way, it soon becomes clear that it doesn't matter whether the therapist's beliefs are scientifically correct or even logical. After all, most traditional shamanic beliefs are scientifically ridiculous. All that is necessary is for both parties to believe the same things. The patient might believe the healer's beliefs before consulting the healer, or the healer might have to convince the patient that her beliefs are superior to competing beliefs held by other healers.

I've often observed that certain clients come to me with preconceived notions of what I will have to do in order to help them. They might expect me to explore their childhood memories for example. In other cases, they might expect me to uncover repressed memories of Satanic sexual abuse they suffered in infancy. Whether or not I feel able to help them depends partly on whether or not I can stretch my own genuine beliefs far enough to overlap with their preconceptions regarding treatment.

This view raises the possibility that modern cognitive-behavioral psychotherapy is compiling a slightly better track record than its competitors simply because the method and underlying belief system are more plausible to contemporary therapists and patients than competing theories and methods.

This view challenges the traditional expectation that psychotherapists ought to be trained in the same general way that physicians are trained. Scientific understanding of pneumonia is necessary and sufficient to diagnose and treat it successfully. As long as

the physician possesses the necessary scientific understanding of pneumonia, his/her other personal qualities are (mostly) irrelevant. The analogy between treating pneumonia and treating, say, depression, is a bad one, though.

If shamanic healers are valued for broad life experience, social competence, high IQ, and so on, then we ought to select potential psychotherapists from mature people who have already accumulated broad life experience and demonstrated mastery of our culture by succeeding in several other areas of contemporary life. They ought to receive scientific training, with the understanding that such training is neither necessary or sufficient to be a successful psychotherapeutic healer. It has begun to strike me as cruel and stupid - to both patient and therapist - that we expect young, naive, highly-educated recent graduates of clinical training programs (who might have accumulated little life experience or be socially incompetent, despite strong scientific training) to be credible psychotherapeutic healers. This line of reasoning also casts doubt upon the wisdom of turning former alcoholics and drug addicts into drug and alcohol rehabilitation counselors if their only important accomplishment in life has been sobriety.

I wonder if the therapist-client relationship can ever be managed by a financially-interested third party (a managed care firm) without vitiating the healing power of the relationship. I doubt it. When a financially-interested third party interferes, neither the healer nor the patient will consider their relationship fully reciprocal. A related problem arises if the patient gets treatment more or less free, because of health insurance. What therapist has failed to notice that the patients who pay nothing are the ones most likely to miss appointments, criticize the therapist, and fail to benefit from treatment?

Citations:

The following articles are recent representative examples of the many articles substantiating the importance of the treatment alliance in psychotherapy.

Piper, William E; McCallum, Mary; Azim, Hassan F; Joyce, Anthony S: Understanding the relationship

between transference interpretation and outcome in the context of other variables. Special Section: Transference interpretation. *American Journal of Psychotherapy* 1993;47(4):479-493. U Alberta, Psychotherapy Research Ctr, Edmonton, Canada.

Eaton, Timothy T; Abeles, Norman; Gutfreund, M. Janice: Negative indicators, therapeutic alliance, and therapy outcome. *Psychotherapy Research* 1993 3(2) 115-123.

Mallinckrodt, Brent: Session impact, working alliance, and treatment outcome in brief counseling. *Journal of Counseling Psychology* 1993;40(1):25-32.

Hentschel, Uwe; Kiessling, Manfred; Heck, Martina; Willoweit, Isabella: Therapeutic alliance: What can be learned from case studies? *Psychotherapy Research* 1992;2(3):204-223. Leiden U, Unit of Personality Psychology, Netherlands. c8

---

## ABSTRACTS & EXTRACTS...

Extracts "crunched" by Beverly Sutton: Genetics of novelty seeking behavior.

Nielson RJ, Demas GE, Huang PL, Fishman MC, Dawson VL, Dawson TM & Snyder SH: Behavioural abnormalities in male mice lacking neuronal nitric oxide synthase,

Legendre P & Lapointe F: Matching behavioral evolution to brain morphology.

Smith K: Are neuromotor systems conserved in evolution?

Karras Sokol D, Moore CA, Rose RJ, Williams CJ, Reed T & Christian JC: Intrapair differences in personality and cognitive ability among young monozygotic twins distinguished by Chorion type.

Ladunga I: Phylogenetic continuum indicates "galaxies" in the protein universe: Preliminary results on the natural group structures of proteins.

Pfennig DW & Collins JP: Kinship affects morphogenesis in cannibalistic salamanders.

Garris PA & Wightman RM: Different kinetics govern dopaminergic frontal cortex, and striatum: An *in vivo* voltametric study.

Holmquist GP & Filipski J: Organization of mutations along the genome: A prime determinant of genome evolution.

McCarthy G, Nobre AC, Bentin S & Spencer DD: Language-related field potentials in the anterior-medial temporal lobe: I. Intracranial distribution and neural generators.

Nobre AC & McCarthy G: Language-related field potentials in the anterior-medial temporal lobe: II. Effects of word type and semantic priming.

Beverly Sutton of Austin, Texas has sent us her "crunch" of several important articles:

---

**Cloninger CR, Adolfsson R, Svrakic NM: Mapping genes for human personality. *Nature Genetics* 1996;12:3-4.**

AND

**Ebstein RP, Novick O, Umansky R, Priel B, Osher Y, Blaine O, Bennett ER, Nemanov L, Katz M, Belmaker RH: Dopamine D4 receptor (D4DR) exon III polymorphism associated with the human personality trait of novelty seeking. *Nature Genetics* 1996; 12:78-80.**

AND

**Benjamin J, Li L, Patterson C, Greenberg BD, Murphy DL, Hamer DH: Population and familial association between the D4 dopamine receptor gene and measures of novelty seeking. *Nature Genetics* 1996;12:81-84.**

Genetic studies of personality in twins show 7 independent measures. Four are temperament measures that are moderately heritable (40%-60%); three are character measures that are weakly heritable. Differences in temperament are fairly stable regardless of cultural or ethnic background.

Independently, two groups have found a genetic locus associated with novelty seeking behavior (NS). On the short arm of Chromosome 11, the exonic sequence variants of the D4 dopamine receptor gene (D4DR) account for about 10% of the genetic variation in NS. People with long alleles (7 repeat allele) of D4DR exon III are higher in NS than people with short alleles (4 repeat allele). This polymorphism is associated with NS but not with any other temperament measure. This relationship is also independent of ethnic and cultural background, age and sex. Amino acid variations within repeat lengths may influence receptor functioning. By examining pedigrees, the association between D4DR and NS was found to be due to genetic transmission

and not to population stratification.

Dopamine was studied because it has an important role in euphoria in humans (amphetamine and cocaine produce dopamine release) and exploratory approach behavior in animals. NS is associated with increased blood flow in the striatum and striatal uptake of 18-flora-dopa (dopamine precursor) especially in the left caudate. High NS is associated with high plasma prolactin which in turn is associated with low dopamine activity. Dopamine-deficient patients with Parkinson's disease are low in NS.

Different rating scales were used in the two studies: *The Tridimensional Personality Questionnaire* measures 4 domains:

- Novelty Seeking
- Harm Avoidance
- Reward Dependence
- Persistence

The Novelty Seeking subscales include novelty seeking, explosive excitability, impulsiveness, extravagance, and disorderliness.

*The NEO Personality Inventory* measures 5 domains:

- Neuroticism
- Extraversion
- Openness
- Agreeableness
- Conscientiousness

The Extraversion facets include warmth, gregariousness, assertiveness, activity, excitement seeking, and positive emotions; the Conscientiousness facets include competence, order, dutifulness, achievement striving, self discipline, and deliberation.

Personality development is a complex dynamic process:

- Bulimics who binge are high in NS and Harm Avoidance.
- Extraverts with a mature creative character have low Harm Avoidance (optimistic), high Reward Dependence (sociable) and high Persistence.

- A NS is likely to become disorganized or schizotypal if aloof (low Reward Dependence) but average on other measures.
- A NS is at risk for antisocial alcoholism if aloof (low Reward Dependence) and risk taking (low in Reward Dependence and Harm Avoidance).

---

**Nelson RJ, Demas GE, Huang PL, Fishman MC, Dawson VL, Dawson TM & Snyder SH: Behavioural abnormalities in male mice lacking neuronal nitric oxide synthase. *Nature* 1995;378:383-386.**

Abstract: In addition to its role in blood vessel and macrophage function, nitric oxide (NO) is a neurotransmitter found in high densities in emotion-regulating brain regions. Mice with targeted disruption of neuronal NO synthase (nNOS) display grossly normal appearance, locomotor activity, breeding, long-term potentiation and long-term depression. The nNOS<sup>-</sup> mice are resistant to neural stroke damage following middle cerebral artery ligation. Although CO<sub>2</sub>-induced cerebral vasodilation in wild-type mice is NO-dependent, in nNOS<sup>-</sup> mice this vasodilation is unaffected by NOS inhibitors. Establishing a behavioural role for NO has, until now, not been feasible, as NOS inhibitor drugs can only be administered acutely and because their pronounced effects on blood pressure and other body functions obfuscate behavioural interpretations. We now report a large increase in aggressive behaviour and excess, inappropriate sexual behaviour in nNOS<sup>-</sup> mice.

---

**Legendre P & Lapointe FJ: Matching behavioral evolution to brain morphology. *Brain Behav. & Evol.* 1995;45:110-121.**

Abstract: A method is presented to test the relationship between a phylogenetic tree derived from brain morphology, and different hypotheses describing the evolution of a behavioral trait. This is a question of interest for evolutionary psychologists and behavioral biologists. The paper first discusses how hypotheses

for behavioral evolution should be coded for such a comparison, then a triple-permutation test, originally proposed to compare independently obtained evolutionary trees, is used for the statistical assessment of each hypothesis. Non-parametric correlation coefficients computed between brain components and appropriately coded behavioral states can then be used to suggest what brain components are responsible for the development of the various states of the behavioral trait of interest. The procedure is illustrated with three different applications relating brain evolution to habitat selection in marsupials, locomotory specialization in primates, and trophic adaptation in bats.

---

**Smith KS: Are neuromotor systems conserved in evolution? *Brain Behav. & Evol.* 1994;43:293-305.**

Abstract: Hypotheses that neuromotor systems are conserved during evolution are examined. Focus is on the fundamental assumption underlying such hypotheses, that neuromotor patterns are homologous. The criteria for testing hypotheses of homology are briefly reviewed and applied to several cases in which neuromotor conservatism has been proposed. It is concluded that few studies of neuromotor conservatism are complete enough to convincingly corroborate a hypothesis of homology. Particular problems include an absence of specific definitions of the parameters designating the conserved neuromotor pattern and the lack of sufficiently broad and detailed phylogenetic tests. The hypothesis that terrestrially feeding vertebrates exhibit a conservative feeding program, which has acted as a constraint in evolution, receives particular attention and it is concluded that existing data do not support this hypothesis.

---

**Karras Sokol D, Moore CA, Rose RJ, Williams CJ, Reed T & Christian JC: Intrapair differences in personality and cognitive ability among young monozygotic twins distinguished by chorion type. *Behavior Genetics* 1995;25(5):457-466.**

Abstract: We evaluated placentation effects on

behavioral resemblance of 44 pairs of monozygotic (MZ) twin children. Tested at ages 4-6, the twins' zygosity and placental type had been determined at their delivery. The sample included 23 monozygotic (MC) and 21 dichorionic (DC) MZ twin pairs: DC-MZ twins result from separation of blastomeres within 72 h of ovulation; MC-MZ twins arise from later duplication of the inner cell mass. Twins were individually administered the McCarthy Scales of Cognitive Ability, while their mothers separately rated each cotwin on an individualized 280-item form of the Personality Inventory for Children (PIC). Absolute differences between MC-MZ cotwins were smaller than those between DC-MZ cotwins for all 20 PIC scales, significantly so for 3 of 4 factor scales, 8 of 12 clinical scales, and 2 of 4 validity/screening scales from the PIC; in contrast, no consistent differences in intrapair resemblance of mono- and dichorionic MZ twins were found for the McCarthy Scales. The chorion differences found in the PIC data cannot be due to genetic differences, because all pairs are monozygotes; nor are they associated with differences in parity, gestational age, birth weight, maternal education, palmar dermatoglyphic asymmetry, or maternal knowledge of chorion type. We interpret our findings as suggestive evidence that variation in timing of embryological division, with effects on MS twins' placental vasculature, has significant consequences for some dimensions of their behavioral development, as well.

---

**Ladunga I: Phylogenetic continuum indicates "galaxies" in the protein universe: Preliminary results on the natural group structures of proteins. *J of Mol. Evol.* 1992;34:358-375.**

Summary: The markedly nonuniform, even systematic distribution of sequences in the protein "universe" has been analyzed by methods of protein taxonomy. Mapping of the natural hierarchical system of proteins has revealed some dense cores, i.e., well-defined clusterings of proteins that seem to be natural structural groupings, possibly seeds for a future protein taxonomy.

The aim was not to force proteins into more or less

man-made categories by discriminant analysis, but to find structurally similar groups, possibly of common evolutionary origin. Single-valued distance measures between pairs of super families from the Protein Identification Resource were defined by two  $\chi^2$ -like methods on tripeptide frequencies and the variable-length subsequence identity method derived from dot-matrix comparisons. Distance matrices were processed by several methods of cluster analysis to detect phylogenetic continuum between highly divergent proteins.

Only well-defined clusters characterized by relatively unique structural, intracellular environmental, organismal, and functional attribute states were selected as major protein groups, including subsets of viral and *Escherichia coli* proteins, hormones, inhibitors, plant, ribosomal, serum and structural proteins, amino acid synthases, and clusters dominated by certain oxidoreductases and apolar and DNA-associated enzymes.

The limited repertoire of functional patterns due to small genome size, the high rate of recombination, specific features of the bacterial membranes, or of the virus cycle canalize certain proteins of viruses and Gram-negative bacteria, respectively, to organismal groups.

---

**Pfennig DW & Collins JP: Kinship affects morphogenesis in cannibalistic salamanders. *Nature* 1993;362:836-838.**

Abstract: Inclusive fitness theory predicts that organisms can often increase their fitness by helping relatives. Indeed, many animals modify their behaviour towards kin in a fashion consistent with theory. Morphogenesis may also be sensitive to kinship environment, especially in species that facultatively produce distinct morphs that differ in their ability to harm relatives, such as those that produce alternative cannibalistic and non-cannibalistic phenotypes. We tested this hypothesis by examining whether consanguinity affected the probability that structurally distinctive cannibal morphs would develop in larval Arizona

tiger salamanders (*Ambystoma tigrinum nebulosum*). We report here that when tiger salamander larvae are reared in mixed-brood groups they are significantly more likely to develop the cannibal morphology and at an earlier age than siblings reared in pure-sibship groups. In general, morphogenesis may be responsive to kinship in any species that facultatively develops structures that can be used against conspecifics as weaponry.

---

**Garris PA & Wightman RM: Different kinetics govern dopaminergic transmission in the amygdala, prefrontal cortex, and striatum: An *in vivo* voltammetric study. *J of Neuroscience* 1994;14(1):442-50.**

Abstract: The regulation of extracellular dopamine (DA) concentrations was examined and compared *in vivo* in four projection fields of mesotelencephalic dopaminergic neurons with fast-scan cyclic voltammetry at carbon-fiber microelectrodes. Transient electrical stimulation of ascending DA fibers in a near physiological range of frequencies (10-20 Hz) elicited similar levels of extracellular DA in the medial prefrontal cortex (MPFC), basal lateral amygdaloid nucleus (BAN), caudate-putamen (CP), and nucleus accumbens (NAc) despite the documented 90-fold disparity in DA tissue levels and terminal density. However, marked differences were observed in the dynamics and overall frequency dependence of the evoked synaptic overflow of DA. These differences are due to the significantly different rates of release and uptake found in each of the four regions. For example, rate constants for the release and uptake of DA were similar in the MPFC and BAN but approximately 8 and 50 times less, respectively, than that in the CP and NAc. When the parameters were normalized to endogenous DA tissue content, a unique picture emerged: compared to all other regions, relative release was 10-fold greater in the MPFC while relative uptake was at least 10 times less in the BAN. The results further differentiate the functional characteristics of mesotelencephalic dopaminergic systems and demonstrate the *regiospecific* nature of DA neural transmission in the brain. In addition, the regulation of

extracellular DA levels in the MPFC and BAN is suitable for the "long-range" transfer of chemical information in the brain and is consistent with a hypothesis of extrasynaptic neurotransmission.

---

**Holmquist GP & Filipinski J: Organization of mutations along the genome: A prime determinant of genome evolution. *Tree* 1994;9(2):65-69.**

Abstract: Recent advances in molecular mutagenesis reveal that two of the mechanisms which contribute to mutagen-induced point mutations, the frequency of induced DNA damage and the repair rate of this damage, vary considerably along the genome. At a grosser level of genomic resolution, cytogeneticists now distinguish several classes of chromosome bands along human chromosomes. The hot spots for X-ray induced breaks (chromosome mutations) occur in certain band classes, while the hot spots for mitomycin C-induced exchanges or melphalan-induced breaks occur in other band classes. Knowledge of these mutation patterns is modifying our concepts of genome evolution.

---

**McCarthy G, Nobre AC, Bentin S & Spencer DD: Language-related field potentials in the anterior-medial temporal lobe: I. Intracranial distribution and neural generators. *J of Neuroscience* 1995;15(2):1080-1089.**

Abstract: Field potentials were recorded from intracranial electrodes in humans to study language-related processing. Subjects viewed sentences in which each word was presented successively in the center of a video monitor. Half of the sentences ended normally, while the other half ended with a semantically anomalous word. The anomalous sentence-ending words elicited a large negative field potential with a peak latency near 400 msec, which was focally distributed bilaterally in the anterior medial temporal lobe (AMTL), anterior to the hippocampus and near the amygdala. Subdural electrodes positioned near the collateral sulcus just inferior and lateral to the amygdala re-

corded a positive field potential at the same latency. This spatial distribution of voltage suggested that this language-sensitive field potential was generated in the neocortex near the collateral sulcus and anterior fusiform gyrus. Additional task-related field potentials were recorded in the hippocampus. The AMTL field potential at 400 msec shares characteristics with the N400 potential recorded from scalp electrodes that has been associated with semantic processing.

which orthography and word type varied, or in which words were primed by semantic associates. Large negative field potentials were elicited within the AMTL by isolated words. The amplitude and intracranial distribution of these AMTL field potentials were consistent with those in our previous study in which anomalous sentence-ending words were used as stimuli. The neocortex, in the region of the collateral sulcus and anterior fusiform gyrus, was identified as the likely neural generator of this field potential. The AMTL field potential was diminished by semantic priming, and was larger for words with semantic content than for words serving grammatical function. Orthographically illegal nonwords did not elicit this field potential. The N400 scalp event-related potential (ERP) has been shown to respond in the same manner to these task manipulations and, thus, the AMTL field potential was proposed to contribute to the generation of N400. The possible roles in language processing reflected by the AMTL field potential were considered. c8

---

**Nobre AC & McCarthy G: Language-related field potentials in the anterior-medial temporal lobe: II. Effects of word type and semantic priming. *J of Neuroscience* 1995; 15(2): 1090-1098.**

Abstract: Field potentials were recorded from intracranial electrodes in humans to study the role of the anterior medial temporal lobe (AMTL) in language-related processing. Subjects viewed lists of words in

## ***ANOTHER REMINDER ...***

Please remember to pass on information regarding the 2nd Annual Aaron T. Beck Award competition to residents, graduate students, fellows, and recent graduates of your department and acquaintance. This award is given to the best unpublished paper related to the subjects of evolutionary biology and psychopathology. Papers may be submitted by residents and fellows in psychiatry and related clinical fields and by graduate students in psychology, biology, anthropology, and related academic disciplines, and by recent graduates of such programs (within seven years of terminal degree).

The award will be presented at our annual meeting to be held in New York on May 5, 1996, one day prior to the annual meetings of the American Psychiatric Association. The Aaron T. Beck ASCAP Award carries with it a cash prize of \$1000.00 to support travel expenses.

All participants should send three copies of their paper to:

Mark Erickson, MD - Beck ASCAP Award  
c/o Russell Gardner, Jr., MD  
Department of Psychiatry & Behavioral Sciences  
4.450 Graves Building  
University of Texas Medical Branch  
Galveston TX 77555-0428, USA  
Tel: (409) 772-7029

**The postmark deadline for entries will be March 1, 1996.**

---

# ANNOUNCEMENTS

Introducing a new book: *Investigating the Biological Foundations of Human Morality: An Interdisciplinary Perspective*. Edited by James P. Hurd (hurd@bethel.edu).

The central question of this volume is: To what extent is evolutionary biology a necessary and sufficient explanation for human morality? Biologists, psychologists, anthropologists, theologians, and philosophers address this question from their respective disciplines. Four main issues are addressed:

- Is human moral behavior unique? To what extent can it be explained using models of animal behavior?
- Does biology provide us only with a Description of how morality has evolved or can it also provide us with a Prescription for what morality should be? If the latter, do we seek to prescribe moral behavior as that behavior which our biology has programmed, or is morality a culturally-designed resistance to our biological propensities?
- Can morality be adequately explained by a demonstration of natural selection operating at the individual level, or are we forced to consider natural selection operating at the level of the group or species?
- To what extent can humans make autonomous moral choices (i.e., choices not predetermined by biology or environment)?

This volume will interest scholars, students, and academic libraries in the areas of sociobiology, ethics, religion, and social philosophy. It will serve as a text for courses in ethics or sociobiology at the graduate level and as a supplementary text for courses in ethics, philosophy, psychology or anthropology at the undergraduate level.

Available from: Edwin Mellen Press, P.O. Box 450; Lewiston, New York, 14092.  
Telephone: (716) 754-2266. ISBN: 0-7734-8843-x 264 pp. Textbook price: \$29.95.

---

Precis of: *The Scent of Eros: Mysteries of Odor in Human Sexuality* by James Vaughn Kohl and Robert T. Francoeur.

This precis provides an overview of the above book which details for a general audience a five-step biological pathway that allows the social environment to influence the genetic nature of mammalian behavior. This pathway is: gene-cell-tissue-organ-organ system. Moreover, though there are many environmental influences on genes, mammalian pheromones are the only known social-environmental stimuli that appear to activate gene expression in neurosecretory cells of tissue in the brain, an organ that is essential to any organ system involved in behavior. Human pheromones appear both to elicit a homologous "neuroendocrine" response and to influence behavior. Thus, human pheromones may fulfill the biological criteria required to link at least one aspect of a sensory-based, nurturing, social environment: olfaction, to the genetic nature of human behavior through a five-step pathway common to all terrestrial mammals and to many other vertebrates.

Available from New York: Continuum Publishing Company, 1995. 14 chapters, 268 pages.  
For more information: James Kohl, 2621 Seashore Drive, Las Vegas, NV 89128. Telephone: (702) 255-3414.  
Email: jkohl@vegas.infi.net

---

# AS CITED BY

## Cover page

- <sup>1</sup> Leder P: Mechanisms of gene evolution. *Journal of the American Medical Association* 1982;248:1582-1591
- 

## Price: Response ... page 2

- <sup>1</sup> Parker GA: Assessment strategy and the evolution of fighting behaviour. *Journal of Theoretical Biology* 1974;47:223-243.  
<sup>2</sup> Huxley J: The present standing of the theory of sexual selection. In GR de Beer (Ed): *Evolution: Essays on Aspects of Evolutionary Biology Presented to Professor E.S. Goodrich on his Seventieth Birthday*. 1938, pp. 11-42.  
<sup>3</sup> Cronin H: *The Ant and the Peacock*. Cambridge: Cambridge University Press, 1991.  
<sup>4</sup> Schjelderup-Ebbe T: Social behaviour of birds. In C Murchison (Ed): *Handbook of Social Psychology*. Worcester, Mass.: Clarke University Press, 1935, pp. 947-972.  
<sup>5</sup> Maynard Smith J: *Evolution and the Theory of Games*. Cambridge: University Press, 1982.  
<sup>9</sup> Gilbert P, Price J & Allen S: Social comparison, social attractiveness and evolution: how might they be related? *New Ideas in Psychology* 1995;13:149-165.  
<sup>7</sup> Price JS, Sloman L, Gardner R, Gilbert P & Rohde P: The social competition hypothesis of depression. *Brit J of Psychiatry* 1994; 164:309-135.  
<sup>9</sup> Watson D & Clark LA: Emotions, moods, traits and temperaments: Conceptual distinctions and empirical findings. In Eckman P & Davidson RJ (Eds): *The Nature of Emotion: Fundamental Questions*. New York: Oxford University Press, 1994, pp. 89-93.
- 

## Kortmulder: Response... p 7

- <sup>1</sup> Chance MRA: A socio-mental bimodality. *The ASCAP Newsletter*, August, September and October issues, 1994.  
<sup>2</sup> Stevens D: Bimodality - categories or dimensions? *The ASCAP Newsletter*, September, 1993.  
<sup>3</sup> Price J: Agonic versus hedonic competition; a possible basis for a distinction between the two modes. *The ASCAP Newsletter*, November, 1995.  
<sup>4</sup> Thierry B. Patterns of agonistic interactions in three species of macaque. *Aggressive Behavior* 1985; 11:223-233.  
<sup>5</sup> Hall KRL: Behavior and ecology of the wild patas monkey, *Erythrocebus patas*, in Uganda. *J. Zool.* 1965;148:15-87.  
<sup>6</sup> Chance MRA & Jolly C: *Social Groups of Monkeys, Apes and Men*. London: Jonathan Cape, 1970.  
<sup>7</sup> Chance MRA: Biological systems synthesis of mentality and the nature of the two modes of mental operation: hedonic and agonic. *Man-environment Systems* 1984; 14:143-157.  
<sup>8</sup> Chance MRA: (ed) *Social Fabrics of the Mind*. Hove: Lawrence Erlbaum. 1988.  
<sup>9</sup> Kortmulder K: In preparation.  
<sup>0</sup> Kortmulder K: Towards a field theory of behaviour. *Acta Biotheor.* 1994;42:281-93.  
<sup>1</sup> Kortmulder K & Feuth-De Bruijn E: On some generative orders of behaviour. *Acta Biotheor.* 1993;41:329-44.  
<sup>2</sup> Huizinga J: *Homo ludens; Proeve ener Bepaling van het Spei-element der Cultuur*. Groningen: Willink, 1938/1974.  
<sup>3</sup> Cawson F: A historical context for bi-modality theory. Unpubl. 1955.  
<sup>4</sup> Stevens A: *Private Myths; Dreams and Dreaming*. London: Hamish Hamilton, 1995.  
<sup>5</sup> Russell C: The Chimpanzee carnival; food, space and social behaviour. *Social Biology and Human Affairs* 1975;40:77-100.  
<sup>6</sup> Russell WMS: Evolutionary concepts on behavioural science III/IV. *General Systems* 1961;6:51-92; 1962;7:157-193.  
<sup>7</sup> Lietaert Peerbolte M: *Eros als Bevrijding; Agressie en de twee Sexen*. Amsterdam: De Driehoek, 1970.  
<sup>8</sup> Bohm D: 69. Some remarks on the notion of order. Further remarks on order. In: C.H. Waddington (ed.) *Towards a Theoretical Biology* 2: 18-40; 41-60. Edinburgh Univ. Press.
- 

*The ASCAP Newsletter* welcomes contributions. Please E-mail to  
ascap@beach.utmb.edu,  
or mail hard copy and 3.5" HD diskette to Russell Gardner, Jr., c/o Linda Crouch,  
Dept of Psychiatry & Behavioral Sciences, University of Texas  
Medical Branch, Galveston TX 77555-0428, USA. WordPerfect, Microsoft Word or  
ASCII format preferred. Diskettes will be returned to you.  
Thank you.