

## PL-5. PLENARY LECTURE

**WAR AS AN INSTITUTION: WORKING FOR PEACE****Hinde, Robert A.**

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After World War 2, there were hopes that wars would become much less frequent. Sadly, that was not to be - though the wars currently in progress are mostly of a very different kind, occurring within states and of a type for which the UN was not designed. The talk will address two questions. First, what are the bases of these wars at the societal level. Do the causes lie in ethnicity, religion, environmental issues, poverty, greed, or what? Second, what are the incentives for those who fight? war is dangerous and destructive -- what induces individuals to take part? In attempting to answer that question, it is useful to think in terms of a continuum from conflicts in which individual aggressiveness predominates to those in which war is best thought of in institutional terms. The important driving forces for individuals vary according to the type of conflict. In aggression between individuals, individual aggressiveness is crucial. In conflicts between groups, group loyalty augments and exacerbates individual aggressiveness. Factors making for group coherence are ubiquitous in humans, and often lead to the denigration of out-groups. The psychological processes involved are important in all types of war. In those cases in which the institutional aspects predominate, individuals see it as their duty to participate - and this includes not only the combatants but also the munition workers and so on. To reduce the incidence of that sort of conflict, it is necessary to undermine the institution, and for that purpose the forces that support it must be identified. They fall into three categories -- everyday factors, such as the metaphors we use in ordinary speech, and the way history is taught in schools; medium-term factors, such as religion, ethnicity, nationalism and so on; and thirdly the military-industrial-scientific complex, itself consisting of a hierarchy of sub institutions. The role of education in reducing the incidence of war in the long run will be emphasized.

## PL-6. PLENARY LECTURE

**THE ROLE OF THE HUMAN RIGHTS COMMUNITY  
IN LIMITING VIOLENCE AND THE ABUSE OF HUMAN RIGHTS****Roth, Kenneth**

Executive Director of Human Rights Watch

The human rights movement seeks to defend human rights and curtail violence abuse. In countries with mature legal systems and the rule of law, victims of human rights abuse can look to the courts for enforcement. But in most countries where organizations like Human Rights Watch work, the courts are too weak or compromised to rein in official abuse. In such circumstances, the human rights movement employs a variety of techniques to exert pressure on authorities to respect human rights. These include public shaming, diplomatic appeals, withholding or conditioning certain forms of economic assistance, depriving abusive forces of arms, and threatening violent officials with the possibility of international prosecution. Critical to the successful employment of these techniques is the collection of reliable and accurate information about human rights abuses. This information is then deployed to create a sense of outrage on the part of the relevant public and to spur powerful governments and institutions to use their influence to curb abuses. Governmental conduct in the human rights realm is measured against legal standards that are codified in a series of binding treaties. But in the "pre-legal" environment in which the human rights movement often must work, the power of exposing abuses lies less in the revealed violation of legal standards than in a contrast with popular moral judgments. Reinforcing a sense of moral outrage in the face of human rights abuse is thus a major priority. The task is most difficult when governments claim to act in the name of religious or cultural tradition. Partnerships between local and international human rights organizations can be particularly effective in such circumstances. Other contemporary challenges facing the human rights movement include promoting accountability for violent abuses without creating an incentive for tyrants to cling to power; exerting economic pressure on abusive governments at a time when government-to-government assistance often pales in comparison with private investment; exerting influence when abuses are committed armed factions in failed states rather than formal governments; and convincing the international community to deploy military force in the most extreme cases when it is the sole feasible option to stop genocide or comparable crimes against humanity.

IS-5. INVITED SYMPOSIUM

## HORMONES AND AGGRESSION

Organizer:

**Brain, Paul F.**

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### Symposium Abstract

There has been much progress since the early 'primitive' view that hormones (notably testosterone) 'cause' aggression. The papers in this session illustrate some recently revealed complexities in linking physiology and behavior in infrahuman animals and our own species. Sanchez-Martin et al provide tentative evidence that salivary testosterone levels in pre-school (especially boys) may prove a 'marker' of conflict behavior. O'Connor et al in a study involving giving testosterone to eugonadal males with partners found no evidence to support the view that supraphysiological levels of the hormone augmented aggression (reported by the patient or the partner). Salvador et al opine that sports competitions are likely to provide socially acceptable situations for studying the links between hormones and behavior in our own species. They also provide tentative support for positive correlations between some measures of offensive behavior in judo contests and testosterone. Haller et al work with rats and suggest that plasma corticosterone levels influence hostile responding in this (and other?) species. They suggest that ultradian variations in this hormone account for changes in expressed behavior.

### IS-5.1- TESTOSTERONE LEVEL MAY BE A 'MARKER' OF CONFLICT BEHAVIOR IN MALE AND FEMALE PRESCHOOL CHILDREN

**Sánchez-Martín, J.R., Fano, E., Cardas, J., Ahedo, L., Brain\* P.F. and Azpíroz, A.**

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A study was performed to assess relationships between a series of behavioral measures seen in the interactions of preschool children with their peers (particularly aggressive behavior) and salivary testosterone levels. The subjects were 28 boys and 20 girls of preschool age (4-5 years) videotaped in San Sebastian in free play interactions. Their behavior was subsequently ethologically evaluated, concentrating on levels of isolation, play and social interactions (including giving and receiving aggression and affiliation). Testosterone levels were measured twice using radioimmunoassay but the titers were highly correlated. Significant positive correlations with testosterone on the pooled data (boys and girls) were found for 'proximity without interaction'; 'parallel activity' and receiving aggression in 'social interactions'. A negative correlation was found between the hormone and 'play'. When analyzing the data for boys and girls separately, a significant direct correlation was found between testosterone and incidences of aggressive behavior in 'social interactions' in boys. This gender also showed inverse relationships between the hormone and 'play' and 'proximity without interaction'. Although the levels of hormone in boys and girls did not differ at this age (most of their androgens are of adrenocortical origin), the girls showed no such relationships. It could be the case, however, that the sexes express their conflict behavior in different ways even at this early age. Testosterone can be a useful biological marker for aggression (and behavioral patterns reflecting different levels of sociability) in children (especially boys). Much more work is needed, however, to evaluate the complex relationships between early hormone titer and current and subsequent behavior.

### IS-5.2.- EFFECTS OF EXOGENOUS TESTOSTERONE ON SELF REPORTED AND PARTNER REPORTED AGGRESSION IN MEN

**O'Connor, D.B., Archer\*, J., Hair\*\*, W.M. and Wu, F.C.W.**

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\*\*MRC Centre for Reproductive Biology, Edinburgh, UK.

In nonhuman primates, aggressive behavior correlates directly with testosterone (T) levels. In men, self-reported aggression does not reliably correlate with circulating T levels. This study set out to investigate the behavioral effects of supraphysiological levels of testosterone on self reported and partner reported aggression. Thirty healthy eugonadal men with partners (mean age = 28.2 years; range 19 – 45 years) and 7 hypogonadal men (mean age = 31.43 years; range 23 – 40 years) participated in this single-blind, placebo controlled study. Participants were randomised into two treatment groups (n = 15) to receive: 1) 200 mg testosterone (T) enanthate, intramuscularly, weekly for 8 weeks to raise T levels into the supraphysiological range; the active group or 2) 200 mg sodium chloride, intramuscularly, weekly for 8 weeks; the placebo group. The hypogonadal group received 200 mg T enanthate, intramuscularly, bi-weekly for 8 weeks. All groups completed a battery of behavior measures [Aggressive Provocation Questionnaire (O'Connor et al, in press); Aggression Questionnaire (Buss & Perry, 1992); Aggression Questionnaire-Partner version (O'Connor et al., in press); Rathus Assertiveness Schedule (Rathus, 1973); State Self Esteem Questionnaire (Heatherton & Polivy, 1991); Irritability sub-scale (Buss & Burkee, 1957); Barratt Impulsivity Scale-11 (Barratt & Patton, 1983)] and a blood sample was obtained at baseline, week 4 and week 8. Preliminary analysis has found no statistically significant increases in self reported or partner reported aggression levels in any of the groups, although there was a trend towards increased frequency of aggressive responding to provoking scenarios at week 4 in the active group. No significant changes in assertiveness or self esteem have been found. Surprisingly, the hypogonadal group reported significantly higher levels of hostility at all time points compared to the active and placebo groups. Plasma T levels were generally not significantly correlated with any of the behaviour measures. Cognitive and motor impulsivity emerged from stepwise multiple regression analysis as the most important predictors of self-reported aggression, explaining significant proportions of variance at different time points. These results generally do not offer support to the hypothesis that supraphysiological levels of T lead to increased self and partner reported aggression.

### IS-5.3.- TESTOSTERONE AND BEHAVIOR IN JUDO COMBAT

**Salvador, A., Suay, A.F., Martinez-Sanchis, S., Simon, V.M. and Brain\*, P.F.**

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The role of testosterone in competitive aggression is still open to debate in humans. An important problem is the difficulty of finding adequate behavioral measures. In fact, it has been repeatedly claimed that a main challenge for this topic of research is identifying social situations which permit the study of the role of testosterone in overt behavior comparable to investigation carried out in other species. Sports competitions present several important opportunities to analyse behavior associated with high competitiveness. In particular, contact sports have an especial propensity to develop into aggressive behavior. With this in mind, the relationships between testosterone levels measured before and after a judo combat and the behaviour displayed during the combat itself were examined. An observational scale was designed from activities usually shown by fighters in judo contests. This scale grouped a number of different elements to form seven behavioural categories that covered the entire period studied. These were threat, fighting, domination, attack/counterattack, defense, observation and stop. Positive correlations were found between offensive behaviours displayed in this kind of competition and testosterone. Furthermore, this relationship supports previous data indicating an association of testosterone with involvement and anger displayed during judo contests as assessed by the coaches. Sports competitions appear to be socially accepted situations that may be used to obtain information about behavior/hormone relationships in our own species.

IS-5.4- **PULSATING CORTICOSTERONE SECRETION IN MALE RATS:  
FAST EFFECTS ON AGGRESSIVENESS**

**Haller, J., Fabich, K. and Kruk\*, M.R.**

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Ultradian fluctuations in plasma corticosterone have been demonstrated in monkeys and humans. It has been recently shown that corticosterone secretion pulsates in female rats and an attempt was made to assess whether levels also fluctuate in male rats. The amplitude of oscillations was similar with that reported for females but the period was larger in males (a phenomenon perhaps related to the shorter corticosterone half-life in females). Male rats were studied in aggressive encounters lasting only 5 min to reduce interference from fight-induced stress reactions. Male rats were significantly more aggressive in the increasing phase of their corticosterone fluctuation when confronting a male intruder than counterparts in the decreasing phase of their corticosterone fluctuations facing such opponents. Corticosterone fluctuations were artificially mimicked by a combination of treatments with the corticosterone synthesis inhibitor metyrapone and corticosterone. Again, males with increasing plasma corticosterone levels were more aggressive than counterparts with a decreasing plasma corticosterone concentration. It appears that ultradian fluctuations in corticosterone affect the propensity of an animal to behave aggressively. This suggests that the behavioural response to an aggressive challenge may vary in the same animal across the day due to the pulsating nature of corticosterone secretion.

## S-8.-SYMPOSIUM

**CROSS-CULTURAL APPROACHES TO AGGRESSION RESEARCH**

## Organizers

**Ramírez, J. Martin**

University Complutense Madrid, Spain.

**Archer, John**

University of Central Lancashire, UK

**Symposium Abstract**

After a brief report of the conclusions contributed by a pre-conference meeting (the 15th International Colloquium on the Brain and Aggression), which focused specially on the different methods used in cross-cultural research on human aggression, this symposium deal s mainly with the following topics:

1) limitations in the measuring instruments, and analysis of those most suited to particular contexts, based on serious studies of each culture; 2) sex/gender differences in physical aggression, with: a) a meta-analysis of 82 studies in different cultures; b) an ethological study of Mongolian children in European Russia; and c) a socio-political approach to 'femaleness' stereotypes in Southern Africa; 3) moral justification of aggression: a) instrumental beliefs as a way of getting what one wants or deserves, in USA and France; and b) aggressive acts of different quality and intensity in different social circumstances, in Finland, Poland, Spain, USA, Iran, Japan and Southafrica; 4) different cultural mechanisms of preventing aggression, from an anthropological prospective.

S-8.1.- **A CROSS-CULTURAL PERSPECTIVE ON SEX DIFFERENCES IN AGGRESSION BETWEEN HETEROSEXUAL PARTNERS**

**Archer, J.**

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A recent meta-analytic review of sex differences in physical aggression to heterosexual partners, and its physical consequences (Archer, 2000) is outlined, and discussed in terms of the limitations of its data base. The overall findings were that women were slightly more likely ( $d = -.05$ ) than men to use one or more act of physical aggression, and to use such acts more frequently. Men were more likely ( $d = .15$ ) to inflict an injury, and overall 62 per cent of those injured by a partner were women. These findings partially support previous claims that different methods of measurement produce conflicting results, but there was also evidence that the sample was an important moderator of effect size. This finding is particularly noteworthy because 72 of the 82 studies on which the first conclusion was based were from the US, and another seven from the UK or Canada. The studies were also biased towards those involving high school or college dating couples ( $N = 42$ ). Similarly, most of the 17 studies yielding injury data were from the US, and seven involved students in dating relationships. Thus the conclusions are considerably limited by the available data base, which is biased towards young dating samples in the US. Cross-cultural surveys of the incidence of marital violence tend to concentrate on the more serious forms of violent acts, and tend to be restricted to female victimization. The very few studies of community samples (in Korea, Nigeria, Japan and India) have all found effect sizes in the male direction for acts of physical aggression, which contrast with a more symmetrical pattern in US community samples. Cross-cultural variations are discussed in terms of two conflicting norms about physical aggression to partners that operate to different degrees in different cultures. The feasibility of collecting data from different cultures using standardised measures is discussed.

### S-8.2.- **AGGRESSION AND SOCIAL EQUILIBRIUM IN THE GROUP OF KALMYK PRIMARY SCHOOL CHILDREN**

**Butovskaya M.L. and Vorotnokova O.S.**

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The nature of gender differences in aggression is one of the most disputable problems in research on aggression. It is known that differences between sexes are expressed very early and at the age of 2-2,5 boys are already different in some patterns compared to girls. Socialization for and counter aggression in different cultures may result in different rates of violence (Fry, 1988). The aim of this study is to analyse the structure of aggressive behaviour in the group of 6-7 year old primary school children from one of the urban national schools in Kalmykia (Butovskaya, Guchinova 1998). Kalmyks are Mongolian people residing in the European part of Russia, nomadic in the past, Buddhists by religion. The group of 20 (11 boys and 9 girls) were observed daily in April-May, 1996. Data were collected by videotaping. Ethological method of focal child observations was used (12 samples of 5 minutes duration for each child). All data were collected during free play sessions without any kind of interventions from the side of adults. Significant gender differences were found for contact aggression (actors: boys 22,09 8,54, girls 7,11 3,22,  $p < 0,05$ ; recipients: boys 19,64 8,38, girls 10,11 7,15,  $p < 0,05$ ). Boys initiated most aggressive interactions, and boys were most probable objects of aggressive attacks. Frequencies of non-contact aggression were of comparable rate for actors, though girls were significantly less frequent recipients in this case either (boys 11,00 5,29, girls 5,67 2,65,  $p < 0,05$ ). Matrix permutation tests based on 1000 permutations were applied to demonstrate the high level of positive correlation between levels of contact aggression and friendly contacts, both initiated and received (Kendall,  $\tau = 0,259$ ,  $p < 0,001$  and  $\tau = 0,306$ ,  $p < 0,001$  respectively). No gender differences were found in the level of post-conflict peacemaking. Post-conflict reunion tendency in this group was 70%, that is higher than in Russian or US group of children studied by the same method earlier (Verbeek, 1997; Butovskaya, Kozintsev 1999). This study was supported by RFBR, #99-06-80346 & RFHR, #96-01-00032.

### S-8.3.- **DIRECT AND INDIRECT AGGRESSION IN WOMEN: A COMPARISON BETWEEN SOUTH AFRICA AND SPAIN**

**Theron, W.H., Matthee, D.D. and Ramirez\*, J.M.**

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The proposed comparative study examines direct and indirect aggression as expressed by 148 South African and 174 Spanish female university students. As part of a collaborative project on attitudes and beliefs about aggression in Spanish and South African populations, this study provides the prospect of an enhanced cross-cultural understanding of aggression, as well as the potentiality of a clearer delineation of aggression in the South African context. Following recent trends in the study of female aggression, this investigation involves only female respondents, in order to avoid the construction of female aggression as a counterpart of male aggression and the construction of "femaleness" as a homogenous category. The results will be discussed from a socio-political stance, with consideration of women's position in dominant social discourses of aggression. Women's choice of aggressive strategy has traditionally been limited by social norms and their (dis)position as the so-called weaker sex, thus requiring them to resort to covert strategies, such as indirect aggression. Given the changes in socio-political structures, particularly in South Africa where the empowerment of women has become an incisive issue, the question is whether this will expand the availability of overt (or direct) aggressive strategies to women. A further issue that will be taken into account, is that of gender stereotyping. Although the concept of indirect aggression has been employed in refuting the myth of the non-aggressive female, it runs the risk of reifying another myth, namely that of the wily, manipulative female. In conclusion, this investigation wishes to contribute towards a clarification of the role of culture in the study of female aggression.

#### S-8.4.- **SOCIAL REPRESENTATIONS AND AGGRESSIVE BEHAVIOUR: CULTURAL OR CROSS-CULTURAL PERSPECTIVES?**

**Theron, W.H. and Painter, D.W.**

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The cross-cultural study of aggression can contribute to South Africa's struggle with violence, but it can also be confounding. The question should always be asked: is culture sufficiently conceptualised in a given cross-cultural study of aggression, and argues that the value of this theoretical model is curbed by psychology's methodological preoccupations. Restricting the operationalisation of social representations to a standardised questionnaire (such as the EXPAGG) reduces the construct in two ways relevant to the eventual understanding of culture. First, it reduces social representations to individual beliefs about aggression. Second, these beliefs are predetermined by the questionnaire and not provided by the people studied. In this way culture is effectively taken out of the equation: these restrictions make it impossible to address culture as a shared system of meanings (representations) negotiated between people in a given context. Along with this, culture is also rendered transparent in another way, namely by neglecting any reflection on the social representations of aggression held by psychology as a discipline and informing the construction of instruments like the EXPAGG. In the light of this critique it is argued that any attempt to compare across cultures should be built upon a serious study of culture - at least in illustration of how aggression is represented as an object of psychology by research subjects and their researchers alike. In a social representations mould this would mean attending to the actual construction and use of ideas and theories about aggression in these contexts. The intended outcome of this critique is not discrediting of cross-cultural work; rather, it is an attempt to suggest ways that will yield even richer results when comparisons across cultures are made. It may also provide the groundwork for the construction of measuring instruments more suited to a particular (specifically South African) context.

#### S-8.5.- **SOCIAL REPRESENTATIONS OF AGGRESSION IN U.S.A. AND FRANCE**

**Richardson, D.S., Huguet\*, P. and Schwartz, D.**

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This study examined instrumental beliefs about and experiences with aggression among university students from the United States and France. An instrumental view of aggression is associated with considering harming others as a means of gaining control or power and of maintaining one's self-esteem and reputation (Campbell, 1993). Thus the instrumental view suggests that aggression might be an acceptable way of getting what one wants or deserves. We expected that the relatively violent social context in the United States would be related to more instrumental beliefs about aggression, more experience with aggression, and more organized beliefs about aggression among students from that country. University students from the United States ( $n=146$ ) and from France ( $n=97$ ) indicated the extent to which they agreed with 20 instrumental statements derived from Campbell's EXPAGG scale. They also answered a series of questions about their direct and indirect experience with aggression (i.e., as aggressor, victim, witness). As expected, students from the United States reported more experience as aggressors, victims, and witnesses of aggression, and they were more likely to indicate that they were answering the questions with reference to recent personal experience with aggression. They also had a more organized concept of instrumental aggression, as reflected in considerably higher internal consistency ( $\alpha = .91$  vs.  $.63$ ) among their responses. However, students from the United States and those from France did not differ in their overall score on the scale of instrumental beliefs about aggression. Upon closer examination and further analysis, we discovered that this absence of a difference was due to French students having more instrumental views on items that associated aggression with control of self and other, and US students having more instrumental views on items that dealt with public displays of aggression. That is, French students were more likely to consider aggression as a means of controlling other people whereas US students were more likely to value public displays of aggressive behavior. In sum, we found evidence that the relatively violent social context in the United States might be related to more experience with aggression and more organized ideas about such behavior. However, extent to which individuals accept beliefs about aggression depends on the particular purpose that aggression might serve.

### S-8.6.- DIFFERENCES AND SIMILARITIES IN MORAL APPROVAL OF AGGRESSIVE ACTS (A CROSS-NATIONAL STUDY)

**Ramirez, J.M., Lagerspetz\*, K.M.J., Fraćzek\*\*, A.S., Fujihara\*\*\*, T., Musazahdeh\*\*\*\*, Z. and Theron\*\*\*\*\*, W.H.**

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Along the last two decades studies on moral approval of aggressive acts, that follow the original work of Kirsti Lagerspetz in Finland (Lagerspetz and Westman, 1980), were conducted in several countries over the world ( Poland: Fraczek,1985; Fraczek, Ramirez, and Torchalska, 1987; Spain: Ramirez,1991,1993; Japan: Ramirez and Fujihara, 1997; Japan, USA and Spain: Fujihara, Kohyama, Andreu and Ramirez, 1999; Iran: Musazahdeh, 1999; Southafrica: Theron, in preparation). In the studies completed in all mentioned countries a nationally adapted version of the Lagerspetz and Westman questionnaire applied to university students was used to collect data. The moral judgement of several aggressive acts of different quality and intensity have been analyzed in the context of different social circumstances that may justify them. Although the realized studies are not fully comparative from a methodological point of view (e.g. different samples, different time of collecting data, different number of alternatives, etc), comparison of patterns of moral approval of aggressive acts characteristic for national sample leads to cognitively interesting conclusions. In all countries: more drastic forms of aggressive acts (e.g. killing, torture) are less accepted, while common and not dangerous forms of such behavior (e.g. hindering, shouting) are relatively more accepted. Aggressive acts that are socially justified (e.g. in order to protect others, in self defense) are clearly more accepted than ones with no such justification (e.g. as an expression of emotions, as a result of communication difficulties). However, both in relation to seriousness as well as to the kind of justification of manifested aggression there are striking differences among studied countries. Irony is considered in Poland, Spain, USA as relatively less harmful behavior yet, is treated as quite serious offense in Finland, Japan and Iran. Aggressive behavior as a means of punishment has very low acceptance in Finland, Poland, Spain and USA while relatively high in Japan and Iran. Thus, it can be concluded that patterns of moral approval of various forms of aggressive acts are only to some extent common in contemporary world, while differences among countries in these attitudes are culturally bounded. Besides it, a study done in Finland with people of several professional backgrounds other than university students (Lagerspetz, Björkqvist, Björkqvist & Lundman,1988) showed that different groups of people within the same country may have rather differing attitudes toward aggression.

### S-8.7.- FROM FINNS TO ZAPOTECAS: AGGRESSION PREVENTION IN CROSS-CULTURAL PERSPECTIVE

**Fry, D.P.**

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The prevention of aggression has received scant attention within anthropology. This paper draws on fieldwork conducted in Finland and among Mexican Zapotecs as well as on descriptions of conflict found in the worldwide ethnographic literature to discuss certain recurring preventive measures. It is noted that prevention has different levels: 1) prevention of aggression in the first place and 2), following aggression, the prevention of a) escalation among the original actors, and/or b) the spread of aggression to other individuals. Additionally, the anthropological descriptions suggest that sometimes prevention of aggression largely reflects individual decisions and actions, although in other contexts prevention of aggression entails various group-level phenomena. In fact, prevention mechanisms might be viewed as running along a continuum from the individual to the group level. Cross-cultural sources illustrate cultural variations and also recurring patterns. Specifically, aggression is prevented via diverse psychocultural mechanisms such as internalization of self-restraint towards expressing anger, self-restraint towards expressing aggression, socialized sensitivity toward the emotional state and needs of other persons, socially institutionalized systems of sharing and reciprocal cooperation, the use of apology and the showing of remorse, the activities of third parties (such as ifriendly peacemakers, mediators, arbitrators, and so on) to separate combatants and/or to help them settle a dispute without (further) aggression. It is concluded that prevention activities are probably much more prevalent than might be indicated by the dearth of anthropological studies that focus on this topic. In closing, brief consideration is given to possible benefits of prevention activities for the individual(s) engaged in such actions.

## OP-8.-ORAL PRESENTATIONS

**PSYCHOPATHOLOGY AND HUMAN AGGRESSION****OP-8.1.- IS THE GENERAL PUBLIC A TARGET OF VIOLENT MENTALLY-DISORDERED INDIVIDUALS?. FINDINGS FROM A YOUNG ADULT BIRTH COHORT****Arseneault, L., Moffitt, T.E. and Caspi, A.**

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We showed in a previous report that at the age when violent incidents are at their peak, individuals who meet diagnostic criteria for schizophrenia-spectrum disorder, alcohol dependence or marijuana dependence account for a significant proportion of violence in the community (Arseneault, Moffitt, Caspi, Taylor, & Silva, 2000). The present study examined victims of violence committed by young mentally-disordered offenders at the age period when they contribute most heavily to the community's violence burden. This study aimed to determine the extent to which young adults with either schizophrenia-spectrum disorder, alcohol dependence or marijuana dependence had assaulted someone living with them, assaulted someone else, or perpetrated violent street crimes. In a total birth cohort (N=961), the past-year prevalence of mental disorders was measured via standardized DSM-III-R interviews, regardless of contacts with the hospital system. Past-year violence was measured via self-reports of offending: two items assessed simple and aggravated assaults against someone living at home (hit someone you lived with; attacked someone you lived with a weapon or with the idea of seriously hurting or killing them); two other items assessed simple and aggravated assaults against someone else (hit someone else; attacked someone else with a weapon or with the idea of seriously hurting or killing them); and two more items assessed serious violent acts, referred to as "street crimes" (used a weapon, force, or strong-arm methods to rob a person; were involved in a gang fight). Findings indicated that compared to controls, young offenders with schizophrenia-spectrum disorder or substance dependence were more likely to assault someone they were living with and also to assault other people or to commit violent street crimes. Ratios of offenses directed against someone living at home versus someone else show that among individuals with schizophrenia-spectrum disorder, an elevated proportion of offenses were committed against victims they were living with; among alcohol-dependent individuals, a slightly elevated proportion of offenses were committed against victims they were not living with; and among marijuana-dependent individuals, proportions of offenses against someone they were living with and against someone else were similar. These findings have implications for community violence prevention initiatives.

**OP-8.2.- THE REPORT FORM FOR AGGRESSIVE EPISODES (REFA) IN THE TREATMENT OF VIOLENT PSYCHOTIC PATIENTS****Bjørkly, S.**

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Aggressive episodes significantly affect patients and their treatment milieu. The need for valid, reliable instruments capable of quantifying the nature and frequency of aggressive behaviour is clear. In this paper three aspects of the clinical implementation of the REFA is presented: a) design and theoretical base; b) interrater reliability, and c) a ten-year prospective study of aggression. The REFA is a rating scale which measures aggressive behaviour towards other persons. The interactional approach of the scale explicitly focuses on detailed situational analyses of aggression. The scale provides a list of 30 situations/interactions, grouped in seven main categories, to help determine the situations/interactions that precipitated the aggressive episode. There are six vertical sections for the recording of characteristics of aggressive episodes: one for verbal threats, one for physical threats and four sections for physical assaults. Verbal threats are operationalized as: Verbal communication conveying a clear intention to inflict physical injury or death upon another person. Physical threats: Non-verbal expression of threats, such as shaking one's fist at somebody or otherwise signaling bodily preparation for an assault. Physical assaults: The intended infliction of bodily injury upon another person or unsuccessful attempts to cause physical injury to another person. A study of single raters' assessment showed high levels of interrater agreement and reliability (M = 83% correct assessments,  $k = .84$ , N= 48). Results from a small scale study of group ratings were also promising (M = 96%, confidence limits for the probability of obtaining 100% correct ratings = .961, .999). In both studies nurses assessed clinical vignettes by means of the REFA. The main findings from a ten-year prospective study of inpatient aggression in a Norwegian special secure unit were: a) a majority of the aggressive acts were verbal or physical threats; b) a small proportion of patients accounted for the majority of aggressive episodes, and c) most of the aggressive incidents were precipitated by situations pertaining to limit-setting and problems of communication. Finally, some favourable aspects and some flaws pertaining to the clinical application of the REFA are outlined.

### **OP-8.3.- SLEEP PATHOLOGY AND ANTISOCIAL BEHAVIOR: A NEED FOR RESEARCH**

**Michael, N.**

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Subsequent to providing a review of normative sleep, five distinct lines of research are reviewed: (1) depression and abnormal sleep architecture; (2) REM sleep deprivation in rats; (3) REM sleep and attachment behavior (4) sleep and functioning of the prefrontal cortex; and (5) atypical waking EEG patterns in chronically violent offender populations. Current research suggests that clinically depressed individuals exhibit substantial sleep pattern anomalies primarily in the form of a higher percentage of time spent in REM sleep. Of interest is that many of the core features of depression appear to be antithetical to those which characterize chronic antisocial behavior. Experimental studies examining the behavioral effects of selective REM sleep deprivation in rats report augmentation of aggression and impulsivity—key elements of repetitive antisocial conduct in humans. A recently developed hypothesis asserts that the primary function of REM sleep in mammals is to facilitate attachment behavior while concurrent research also suggests that insecure childhood attachment is a strong etiological risk factor for adolescent and adult antisocial tendencies. One of the most robust effects of sleep deprivation reported in humans is the deterioration of executive cognitive functioning capacities of the prefrontal cortex. Similar deficits in executive cognitive functioning evident in many delinquent and criminal populations have been implicated in the etiology of chronic antisocial behavior. Finally, numerous studies report abnormal waking EEG patterns in habitually violent offenders, which it has been suggested may be the result of irregular sleep patterns. It is proposed that taken together the results and implications emanating from these five disparate lines of research strongly suggest a potential link between abnormal sleep patterns and antisocial behavior in humans. Specific research questions in need of being addressed include: (1) does selective REM sleep deprivation in humans lead to an increase in aggression?; (2) do chronically antisocial populations manifest substantial sleep architecture anomalies in comparison to the general population?; (3) if there does prove to be a relationship between sleep pathology and antisocial behavior, what is the specific nature and direction of this relationship?; and (4) again presuming that a relationship does exist, what may be some of the primary neurobiological underpinnings of this relationship?

### **OP-8.4.- TREATMENT OF BORDERLINE PERSONALITY DISORDER - REDUCING VIOLENCE TO SELF AND OTHERS**

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Persons with personality disorders, particularly those with borderline personality disorder, have high rates of violence both to themselves and to others. In particular, these individuals are often chronically suicidal and employ parasuicidal methods of handling stress and relationship issues. They are also prone to become violent with others, particularly when they are disappointed in interpersonal relationships. Persons with borderline personality disorder are overly represented in clinical populations receiving mental health treatment, and in in-patient psychiatric settings. Their psychological dynamics of poor impulse control, emotional dysregulation, and idealization-devaluation in interpersonal relationships create a situation in which violence is common. Until recently, there was no effective method of treating borderline personality disorders. Psychoanalytical and psychodynamic methods do not result in improvement of the condition. However, in recent years a new method of treating these individuals, Dialectical Behavior Therapy, has shown promise. There is research evidence indicating that this treatment results in a decrease in violent behaviors as well as an improved ability to live successfully in the community. This method consists of a combination of individual psychotherapy and group skill building sessions; the course of treatment is approximately one year. The target client population was adults enrolled in a parasuicide clinic in a university setting. However, there are difficulties adapting this research model to community practice. In order to meet the needs of community-based practice, an adaptation of the DBT model was developed at a large community mental health center in the United States. This approach, Group Treatment of Adults with Personality Disorders, employs a predominantly group therapy format. It includes three integrated treatment groups which are provided to clients over the period of a year with supplemental psychiatric care. The groups consist of a process therapy group, a skill-building group, and a recreational/activity therapy group. While no formal program evaluation has yet occurred, clients have reduced their rate of in-patient hospitalization, and improved their ability to live successfully in the community. Additionally, this approach provides for treatment of clients with a variety of mental health problems in a cost-effective manner that works well in a managed care environment.

## OP-9.- ORAL PRESENTATIONS

**AGGRESSION IN HETEROSEXUAL RELATIONSHIPS****OP-9.1.- INVISIBLE TOUCH: AGGRESSION BY BRITISH WIVES 1200-2000 A.D.****George, M.J.**

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In contrast to intimate victimisation of female partners by males the reverse, aggression by females against their intimate males, is seemingly an 'Invisible Touch'. Evidenced by a wealth of gender neutral Conflict Tactics Scale studies, but little commented upon by academics and hardly ever researched in its own right. This dichotomy in academia, as well as elsewhere, arises out of a 'Great Taboo' (George, 1994); which is the uncomfortable notion of the 'battered husband' and the transgression and inversion of gender roles and norms inherent. Evidence for the existence of violence by wives against husbands can be traced back in European history to ancient Greece, but is manifest during the second Millennium from Russia in the East to Greece in the South and the United Kingdom in the West. Charivari rituals in early modern times punished all manner of slights against social convention (Thompson, 1972). Evidence, particularly from England, suggests that these rituals were at their most elaborate when men were beaten and subjugated by their wives. The use in England of 'Skimmington', as a distinct form of Charivari, to punish the beaten husband or even his neighbours is documented by contemporary literature and violence by wives exists in Court records from, at least, the Sixteenth Century onwards. This evidence demonstrates that from the Eighteenth century concern in England for women victims grew, whilst these ancient social customs of public disapproval and humiliation of beaten men fell into disuse. However, it is suggested that the use of the 'Skimmington' as a punishment of victimised men has not ceased. It exists as the invisible touch of a lamentable song within the social, political, legal and academic consideration of the field of intimate violence.

References: George, M.J. (1994) Riding the donkey backwards: Men as the unacceptable victims of marital violence. *Journal of Men's Studies* 3, 137-159. Thompson, E.P. (1972) *Rough Music: Le Charivari Anglais* Annales ESC 27, 285-312.

**OP-9.2.- AGGRESSION AND CONTROLLING BEHAVIOURS IN HETEROSEXUAL RELATIONSHIPS****Graham-Kevan, N.**

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This study investigated the proposition by Johnson (1995) that there may be distinct subgroups of violence within relationships. Johnson termed these patriarchal terrorism and common couple violence. Patriarchal terrorism was thought to be characterised by male to female violence set within a framework of controlling behaviours. Common couple violence was thought to be characterised by mutual violence by both partners when conflict occasionally gets out of hand. The sample comprised students (N=113), women from a domestic violence refuge (N=44), and male prisoners (N=108). Each participant completed The Controlling Behaviours Scale (CBS) (Graham-Kevan, 1999), Conflict Tactics Scale, CTS, (Straus, 1979) for themselves and their partner, and additional items regarding fear experienced by themselves during conflicts and injuries sustained by both themselves and their partner. In order to investigate physically aggressive relationships only, relationships were classified as either involving physical aggression or not, based on the responses given to the CTS. Only those classed as physically aggressive were used in subsequent analysis. Reports (N=136) of own and partner use of physical aggression, controlling behaviours, injuries sustained and self-reported fear were entered into a Discriminant Function Analysis (DFA). The DFA produced two significant discriminant functions which together correctly classified 76% of cases (88% of shelter, 39% of students, and 93% of prisoners). The first function accounted for 90% of the variance and was comprised of partners' use of controlling behaviours, self reported fear, partners' use of minor physical aggression, injuries sustained by self and partners' use of severe physical aggression. The second function accounted for 10% of the variance and comprised of respondents own use of minor aggression, injuries to their partner, own use of severe physical aggression, and their own use of controlling behaviours. These results support belief that there are subgroups within relationship violence. The fact that these subgroups appear to be reasonably distinct has important implications for intervention programs, official statistics and theoretical research.

### OP-9.3.- **AGGRESSION IN BRITISH HETEROSEXUAL RELATIONSHIPS: FURTHER INFERENCES**

**Maw, S.K. and George, M.J.**

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In 1996 results of a nationally representative survey of aggression between British heterosexual partners (N= 1865) was published (Carrado, George, Loxam, Lewis and Templar, 1996). Based upon use of an adapted Conflict Tactics Scale (Straus, 1979) containing five items of physical assault it was found that across all relationships 18% of men and 13% of women reported sustaining at least one of these acts, whilst 10% of men and 11% of women reported inflicting such an act on a partner. In current relationships 11% of men and 5% of women reported likewise and 5% of currently married or cohabiting men, as opposed to 1% of currently married or cohabiting women, reported sustaining more than one act of physical assault from their current partner. This survey was undertaken within a broader survey of consumer attitudes in which a considerable amount of demographic data and other details were available. This and the survey data itself has allowed a fuller statistical analysis, using Factor analysis, which has confirmed inferences drawn upon the previous descriptive review of data. Analysis of both the symbolic/verbal and physical victimisation/ aggression results in relation to a number of factors such as sex, age, relationship status, geographical location, household income and the presence of children in a household has been undertaken. This analysis has found a number of significant factors which allow inferences upon sex differences and between respondents according to the nature of conflict tactics experienced or used. This full analysis allows comparison with data obtained in the survey of intimate assaults undertaken within the 1996 British Crime Survey undertaken by the British Government's Home Office.

References: Carrado M., George M.J., Loxam E., Jones L., Templar D. (1996) Aggression in British heterosexual relationships. *Aggressive Behavior* 22, 401-415

Straus, M.A. (1979) Measuring intrafamily conflict and violence: The Conflict Tactics (CT) Scale. *Journal of Marriage and Family* 41, 75-88

### OP-9.4.- **COUPLES IN CONFLICT: CONSTRUCTIVE VS. DESTRUCTIVE RESPONSES TO EVERYDAY ANGER**

**Tangney, J.P.**

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To learn more about factors that foster constructive vs. destructive responses to anger, 216 romantically involved young adult couples were interviewed in-depth regarding recent episodes of anger. The couples described a broad range of anger-eliciting events, but one factor we were particularly interested in was whether the offense caused the victim partner to feel shame. Thus, we compared events that caused the victim to feel shame and anger (shame) vs. events that caused only feelings of anger (no shame). There was a clear link between shame and maladaptive responses to anger. First, victims of the shame-related anger events were significantly more angry than non-shamed partners. Second, shamed victims were more likely to report malevolent and fractious intentions. They were oriented toward getting back at their partner and letting off steam, rather than trying to fix the situation. Third, shamed victims behaved differently. Shamed boyfriends were inclined toward a range of direct and indirect forms of aggression -- behaviors intended to cause harm to the perpetrating girlfriend -- and they were also prone to ruminative anger. Shamed girlfriends showed a tendency toward displaced aggression and self-directed hostility. Fourth, not surprisingly, shamed victims did not feel very good about the way they handled their anger. Fifth, these apparently maladaptive expressions of anger did not result in any positive behavior on the part of the shame-inducing perpetrators (especially according to the victims' accounts). Perpetrator's responses to the aggressive retaliation of shamed victims centered on anger, resentment, defiance and denial -- rather than, for example, apologies and attempts to fix the situation which were much more common in non-shamed couples. Last, couples rated the longterm consequences of episodes of anger and shame as more negative than anger without shame. Taken together, these data provide a powerful empirical example of the shame-rage spiral described by Lewis (1971) and Scheff (1987), with (1) victim shame leading to feelings of rage, (2) and destructive retaliation, (3) which then sets into motion partner anger and resentment, (4) as well as expressions blame and retaliation in kind, (5) which is then likely to further shame the victim, and so forth -- without any constructive resolution in sight.

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**OP-9.5.- POST-SEPARATION VIOLENCE: THE MALE PERSPECTIVE****McMurray, A.**

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This study investigated separation-related violence against women from the male perspective to identify modifiable elements of the personal, situational and socio-legal environments that lead to violence against female former partners. Structured questions were developed for telephone interviews with separated and/or divorced males in Western Australia. Volunteers were recruited via a media campaign that posed the question: "Why do some men hit women: why don't all men hit women?" 146 interviews were analyzed using Pearson R and Spearman chi square for quantitative data, and thematic analysis of open-ended responses. Sixty-one of the men reported having been violent, 14 at the time of separation only. The violence was witnessed by children in 23 cases. Factors influencing their violent behaviours were reported as finances, alcohol/drugs, fatigue/stress, and 'the system'. No significant association was found between violence and having a source of support. Nearly half the men believed their violence was justified, either unequivocally or sometimes. Fairness in the legal system was the most frequent suggestion for redressing violence in society, followed by provision of counseling, support and education appropriate to the needs of males. Study findings emphasize the importance of understanding and accepting the tensions of families as they are embedded in social relations. Prevention, intervention and care-giving strategies for separating families must be contextualized to the personal, social, legal and situational environments of both partners to separation and divorce.

OP-10.- ORAL PRESENTATIONS

**AGGRESSION AND LAW**

**OP-10.1.- MANAGING THE THREAT OF VICTIM RETALIATION:  
DRUG ROBBERS AND INFORMAL SANCTION THREATS**

**Topalli, V., Wright\*, R. and Jacobs\*, B.**

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\* Department of Criminology and Criminal Justice, University of Missouri at St. Louis, USA

The purpose of this study was to address a gap in the criminological research on active offenders; The notion that risk of victim retaliation--arguably the ultimate informal sanction -- influences criminal decision-making. On its face, retaliation would appear to be a serious consequence of many offenses, especially those perpetrated against victims who themselves are involved in crime. It would seem reasonable to assume that offenders who engage in these activities risk swift and potentially fatal consequences at the hands of their victims. Paradoxically, there is the observation that a major benefit of preying on fellow criminals is that they cannot go to the police (e.g., Wright and Decker, 1997). Why should offenders elect to reduce their chances of getting arrested at the cost of increasing their odds of being killed? What is it that allows them to accept this putatively greater risk? Despite ample speculation on their part, criminologists lack any systematic empirical data on whether and, if so, how the threat of victim retaliation influences criminal behavior before, during, and after offenses. This represents a crucial gap in our understanding of both deterrence and of the contagion-like processes through which violence is contracted and contained (Loftin, 1986). Data were drawn from in-depth, systematic interviews with 25 currently active drug robbers recruited from the streets of St. Louis, Missouri. To be considered an active drug robber, an offender theoretically had to have (1) robbed at least one drug dealer in the last three months, and (2) committed at least three such robberies in the previous year. The drug robbers were located through the efforts of two street-based field recruiters, both of whom were themselves members of the criminal underworld. Our findings from these interviews indicate that drug robbers engage in a set of strategically oriented behaviors we refer to as Retaliation Threat Management Techniques (including the use of Intimidation, Anonymity Maintenance, and Hypervigilance) in order to enhance the enactment of their violent crimes and to control the ability of their victims to gain retribution post-offense.

**OP-10.2.- VICTIMS AND VENDETTAS: LAW AS AN INSTRUMENT  
OF REVENGE IN EARLY ENGLISH COMMON LAW**

**Greenberg, J.**

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Although we in our modern litigious society are accustomed to the practice of using law in order to harass our enemies and seek vengeance against those who have harmed us, we are less aware of the historical roots of this phenomenon. This paper explores the medieval and early modern English common law tradition that underlies the practice. As it happened, medieval law was particularly well suited for such a use, since the appeal of felony--in essence a private suit for a criminal wrong--permitted victims and their kin to vent anger and aggression by carrying out a legal vendetta against the alleged harm-doer. Prominent among those who waged these vendettas were parents of murdered children, widows of murdered husbands, and peasants who wanted to cheat their lords out of manorial dues. Evidence suggests that in most of these cases anger played an important role in motivating plaintiffs who brought appeals of felony. Two related themes--the emerging distinction between crime and tort, and the state's attempt to monopolize the prosecution of serious offenses--are also treated, since they led to the decline of such appeals. The paper concludes that while victims and their kin eventually lost the right to seek vengeance, in the end they gained the valuable advantage of being represented by the might and power of the state.

OP-10.3.- **AN EXPERIMENTAL INVESTIGATION OF THE PERCEPTUAL CHARACTERISTICS OF DISPOSITIONALLY AGGRESSIVE INDIVIDUALS: STREET ROBBERS' JUDGMENTS OF POINT LIGHT DISPLAYS**

**Topalli, V.**

Department of Criminology and Criminal Justice, Georgia State University - and The National Consortium on Violence Research.

In psychology, empirical research in aggression and hostility has been carried out in the laboratory using college student populations. In criminology, the study of aggression has been limited to its role in crime. The present study represents an attempt to integrate the experimental methodology of social and perceptual psychology with qualitative methods of criminology to explore the perceptual characteristics of dispositionally aggressive individuals -- street robbers. Active street robbers (recruited off the streets of St. Louis) were administered standardized psychological measures of aggressive attitudes including The Aggression Questionnaire (Buss & Perry, 1994) and the Vengeance Scale (Stuckless and Goranson, 1992; previously validated on non-criminal subject populations). They were then asked to describe specialized video-taped visual models depicting simple human social interactions, called Point Light Displays (PLDs). Previous research using PLDs indicates they are capable of eliciting judgments of hostility and aggression from individuals based on physical and affective stimulus features (Topalli & O'Neal, 1995). Responses from the street robber group were compared with those from two control groups; demographically matched control subjects (individuals who live in the same neighborhoods as our street robbers but were not offenders themselves) and a second, more traditional control group comprised of individuals recruited from undergraduate criminology and psychology classes at the University of Missouri--St. Louis. In comparison to demographically matched and experimental control participants street robbers scored significantly higher on aggression measures. Also, a significant relationship between these measures and PLD content judgments was evidenced. Finally, street robbers were more likely than both control groups to describe the PLDs as containing firearms and weapons, and depicting street violence and victimization. We contend that these results are most consistent with a motivation-based selective perception model of cognitive functioning, in which an individual's environment and environment-specific behavioral repertoire determine how ambiguous social interactions are.

## OP-11.- ORAL PRESENTATIONS

**ALCOHOL, MEDICINAL PLANTS AND AGGRESSION****OP-11.1.- YOUTH VIOLENCE AND ALCOHOL AVAILABILITY IN  
PREDOMINANTLY MEXICAN AMERICAN COMMUNITIES  
IN THE UNITED STATES****Alaniz, M.L.**

Prevention Research Center, Berkeley, Jose State University, San Jose, CA, USA

The Mexican American Youth Violence and Alcohol Study investigates the relationship between alcohol availability (density of alcohol outlets) and Mexican American youth violence (police crime data) in three cities in California. The study was funded by the National Institutes on Health - National Institute on Alcohol and Alcoholism and the California Wellness Foundation (1993 - 1998). Previous studies show that the relationship between alcohol availability and youth violence is statistically significant. In most urban communities in the U.S., alcohol outlets are concentrated in areas where there is also a high concentration of economically disadvantaged and racial/ethnic minority populations. Quantitative and qualitative techniques were used to examine the link between availability and violence through the use of U.S. census data, police crime data, State of California alcohol outlet listing, observation, document analysis and interviews. The results of our study are consistent with previous studies that show a high concentration of Mexican Americans in poor, segregated communities with a high concentration of alcohol outlets. In one of the cities we studied, there are two census block groups (smallest census unit of analysis/closely approximates a neighbourhood) where there is an overlap of Whites, poverty, and alcohol outlet density. In the same city, there are 29 census block groups where there is an overlap of Mexican Americans, poverty and alcohol outlet density. Multiple regression was used to measure the relationship between alcohol availability and youth violence. There is a statistically significant relationship between alcohol outlet density and Mexican American youth violence in each of the three cities and also in an aggregate model. In terms of the environment, there are five times more alcohol advertisements in Mexican American neighbourhoods. In one city, children are exposed to 10 - 61 advertisements on a walk from home to school. The high density of alcohol outlets in Mexican American communities is a significant contributor to high rates of violent crime. The proliferation of alcohol advertisements contribute to a permissive environment where alcohol consumption is encouraged and reinforced.

**OP-11.2.- INHIBITION OF ALCOHOL-HEIGHTENED AGGRESSION BY  
ACTION AT POST-SYNAPTIC 5-HT<sub>1B</sub> RECEPTORS IN MALE MICE****de Almeida, R.M.M., Faccidomo, S., Fish, E. and Miczek, K.A.**

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The 5-HT<sub>1B</sub> receptor subtype appears to be critical in the serotonergic inhibition of aggressive behavior, as indicated by studies using knockout mice and selective pharmacological agents. The objectives of the present study are to extend the observation of anti-aggressive effects with the 5-HT<sub>1B</sub> agonist CP-94,253, to the clinically used 5-HT<sub>1B/D</sub> agonist zolmitriptan. In addition, to investigate the effects of this agonist on aggression that was heightened as a result of treatment. In this experiment, male CFW mice (n=20) were administered with zolmitriptan (1-17 mg/kg) or its vehicle intraperitoneally 15 minutes prior to a 5 minute confrontation with a male intruder in their home cage. After the animals were co-treated with an antagonist to the 5-HT<sub>1B/D</sub> receptor (GR 127935; 10 mg/kg IP). In the second experiment, the animals (n=37) were injected with alcohol (1 g/kg, PO) and with zolmitriptan (1-17 mg/kg, IP) 15 minutes before the confrontation with an intruder. The measures of aggressive behavior were the frequency of pursuit, sideways threat, bite, and tail rattle and motor behaviors comprised walking, contact, grooming and rearing. Like CP-94,253, zolmitriptan (5.6; 10.0 and 17.0 mg/kg) decrease aggressive behavior in male mice without sedation. The effect of zolmitriptan on aggression was blocked when given with GR127935. Zolmitriptan (5.6-17 mg/kg) decreased aggression in individuals that show high levels of aggressive behavior after consumption of alcohol. The current results indicate that the 5-HT<sub>1B/D</sub> receptor is critically involved in the modulation of aggression in a behaviorally specific manner.

OP-11.3.- **EFFECTS OF APPLICATIONS OF SOME MEDICINAL  
PLANT EXTRACTS USED IN JORDAN ON SOCIAL AGGRESSION  
AND GONADAL FUNCTION IN MALE MICE**

**Homady, M.H., Hussain\*, H.H., Tarawneh, K.A., Shakhanbeh, J.M., Al\_Raheil\*\* I.A.  
and Brain\*\*\*, P.F.**

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\*\*\*School of Biological Sciences, University of Wales Swansea, U.K

The effects of ingestion of aqueous solutions of freshly-prepared ethanolic extracts of four plants much used in folkloric medicine in Jordan were investigated on social aggression as well as on the histology of the testes and preputial gland of intact male mice. The plants studied were *Eruca sativa* (claimed to treat sterility and to improve male sexual desire); *cinnamomum camphora* (said to calm excessive sexual activity); *Nigella sativa* (respiratory infections) and *Salvia fruticosa* (used to treat male sterility). The extracts were given daily for 30 days by intra-gastric application and compared with physiological saline-treated controls. *C. camphora* extract significantly suppressed attack on subjects by aggressive residents. This treatment in these mice also reduced preputial activity and resulted in testicular aspermatozoa. In contrast, the administration of *E. sativa* or *N. sativa* extracts dramatically increased the attack to which the mice were subjected as well as enhancing the maturation and differentiation of testicular spermatozoa and augmenting the activity of the preputials. The later histological effects were most evident with *E. sativa* extracts. *S. fruticosa* treatment also increased attack to which mice were subjected but did not have consistent effects on the gonadal system. The broad effects of these herbal remedies are consistent with their effects on mice, suggesting that the test can be used as a rapid screen for interesting complex plant-derived material. Some of these preparations seem worthy of further investigation.

OP-12.- ORAL PRESENTATIONS

**NEUROCHEMICALS, GENETICS AND AGGRESSION**

**OP-12.1.- ROLE OF 5-HT<sub>2A</sub> RECEPTOR AGONIST MICROINJECTED IN WISTAR FEMALE RATS IN THE DORSAL PERIAQUEDUCTAL GRAY AND MEDIAL SEPTAL AREA ON MATERNAL AGGRESSIVE BEHAVIOR**

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\*Curso de Psicologia, Nucleo de Neurociencias da Universidade do Vale do Rio dos Sinos (UNISINOS), Brazil

Serotonin (5-hydroxytryptamine, 5-HT) has been implicated in the modulation of different forms of aggression in rodents. However, the numerous types of 5-HT receptors with different function and localization in several areas of the brain having various modulatory effects on aggression and defense make the interpretation of the results of 5-HT rather complex. The purpose of the present study was to analyze the role of 5-HT<sub>2A</sub> receptor agonist on maternal aggressive behavior. Female Wistar rats (90 days old and 230-270 g) were used. On day 4 post-partum the females were submitted to stereotaxic surgery to implant guide-cannula. On day 7 post-partum the animals were microinjected with the 5-HT<sub>2A</sub> receptor agonist, 5-methyl-alfa-hidroxytryptamine in different doses (0.2; 0.5; 1.0 µg/0.2 µl) in the medial septal area (n=42) and dorsal periaqueductal gray (n=42) in the same doses. On day 7 post-partum the behaviors of lactating female rats with pups against a conspecific male intruder were recorded after 10 min the microinjection. The behaviors recorded were: sniffing the intruder, locomotion, lateral threat, lateral attack, frontal attack, bites and pup care. The results showed that in the dorsal periaqueductal gray this agonist decrease the number of bites the intruder, frontal attack and lateral attack in all doses studied. However, at a specific dosage (0.2 µg/0.2 µl), 5- $\alpha$ -methyl-hidroxytryptamine acting on postsynaptic receptors of the medial septal area increase the number of bites the intruder. The doses of 0.5 and 1.0 µg/0.2 ml did not show difference when compared with group control. In conclusion, the effects of 5- $\alpha$ -methyl-hidroxytryptamine depend on the area analysed and the dose utilized. In the dorsal periaqueductal gray the effects of this 5-HT<sub>2A</sub> receptor agonist is to decrease maternal aggressive behavior, but in the medial septal area a specific dose show a tendency to increase aggressiveness in female rats.

**OP-12.2.- EFFECTS OF CHROMIUM COMPOUNDS ON INCIDENCE OF SOCIAL AGGRESSION AND FERTILITY IN PREPUBERTAL MALE MICE**

**Homady, M.H., Hussain\*, H.H. and Tarawneh, K.A.**

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The effects of ingestion of trivalent (chromium chloride) and hexavalent (potassium dichromate) chromium compounds were investigated on social aggression and fertility in male mice. Prepubertal male mice were exposed to these salts in drinking water at concentrations of 1000 and 5000 ppm for 90 days. The exposure of male mice to chromium chloride at 1000 or 5000 ppm significantly augmented social aggression. Fertility was significantly reduced in males exposed to the hexavalent chromium compound. The number of implantation sites and the number of viable fetuses in females impregnated by males exposed to this compound were significantly reduced. The exposure of male mice to the trivalent chromium compound had, however, no effect on fertility. Body, testes, preputial gland and seminal vesicle weights were significantly suppressed in males exposed to the hexavalent compound but no such effects were evident in mice given the trivalent chromium compound. The results show that the ingestion of trivalent and hexavalent chromium compounds by male mice in prepubertal life have very different effects on both social aggression and fertility. Only potassium dichromate produced a pattern of responses clearly indicative of suppressed gonadal function.

**P-12.3.-EFFECTS OF GENETIC SELECTION FOR LACK OF AGGRESSION  
TOWARDS HUMANS ON REPRODUCTIVE PHYSIOLOGY  
IN THE SILVER FOX**

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Artificial selection for absence of aggressive response to humans and docility plays a key role in the domestication process. To establish genetic and physiological mechanisms of the early evolution of domestic animals, a model of silver fox domestication was developed at our institute by long-term selection for lack of aggression and fear towards humans (domestic behaviour). This study was designed to examine possible changes in the reproductive physiology of selected foxes. The levels and the in vitro gonadal production of reproductive hormones (testosterone, oestradiol and progesterone) were measured in selected and control foxes. Additionally sperm production, potential fertility, embryonic mortality and reproductive behaviour were assessed. The significant differences were found between selected and control animals throughout the reproductive cycle, pregnancy, and prenatal life, and also in responses of the reproductive system to different environmental conditions. The study has shown that increased progesterone output in domesticated vixens during oestrous and preimplantation period of pregnancy might be a part of the endocrine mechanism involved increased potential fertility that has been attained by selection. It has been established the timing shift of the annual rhythm of ovarian activity and a depressed relationship between photoperiod and endogenous hormonal cycles in selected fox vixens. Domesticated vixens were also more resistant to the detrimental effects of the artificial photoperiods on hormonal secretion and fertility. The shorter period of testicular activity, lower sperm production and lower sexual activity was found in selected males. Selection against aggression towards humans also reduced sexual and increased agonistic behaviour in males during bisexual encounters. The study of fetal development indicated to heterochrony in the pituitary-testicular axis in selected animals. In conclusion, selection of silver foxes for the absence of aggression towards humans resulted in a number of changes in reproductive function and its hormonal control, and a new genetically determined level of gonadal activity was established. The data obtained has led to a conception that this type of selection can bring about for a short time period a considerable destabilisation in the pituitary-gonadal axis. In addition, at present time various wild species bred in captivity can be selected for confidence to humans unconsciously, and this selection ultimately will provoke correlative alterations in reproduction.

## POSTERS

### P-25- **DOMESTICALLY VIOLENT MEN: COGNITIVE PROCESSING PATTERNS IN RESPONSE TO SOCIAL INTERACTIONS**

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Much of the current research in the area of domestic violence against one's intimate partner, or battering, has its roots in the research base established for cognitive and behavioral processes and aggression. The Social Information-Processing theory is a commonly used model in this area which outlines a series of steps which precede a behavioral response. The steps are (1) encoding cues, (2) interpretation, (3) response consideration, (4) response decision, and (5) enactment. Biased or deficient processing at each of the steps will contribute to deviant or aggressive behavior. Skillful processing at each step will lead to socially competent performance within the situation. The current study examined the social skills of fifty-four domestically violent and nonviolent men. The participants read thirteen scenarios depicting problematic hypothetical situations involving either the participant or his wife, or the participant and a non-intimate female associate. Open-ended reports of behavioral response were rated for presence of skillful processing at various steps within the model. Differences were found between the violent and nonviolent groups at certain processing steps. Domestically violent men were less likely to attribute the cause of the negative interaction to nonhostile social cues than their nonviolent counterparts. They were less likely to attribute the cause of the problem to circumstances beyond the other person's control. Domestically violent men were also less likely to choose a prosocial response option, such as proposing a problem-solving strategy or using open direct communication than their nonviolent counterparts. They were more likely to choose a response that was inept, such as sulking or doing nothing. In addition, when asked to recall information about the social interaction, violent men had more difficulty remembering critical details of the interaction. These processing patterns were similar in both types of social relationships. In addition, the patterns were similar regardless of the level of negative emotional arousal. Based on the results of this study, it is suggested that treatment for domestically violent men include training in social cue reading and recall, and behavioral role plays of prosocial interactions.

### P-26.- **A REVIEW OF THE PRINCIPAL THEORETICAL MODELS USED TO EXPLAIN AGGRESSIVE BEHAVIOUR TODAY AND ROAD SAFETY APPLICATIONS**

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In our society today, unfortunately, few topics are as popular as human violence and aggression. It is undeniable that we are immersed in a highly aggressive social environment in which violent behaviour is frequently used to gain one's objectives, and with consequences that can often be quite serious. The road environment is not exempt from the expression of violent behaviour. It is not uncommon to encounter drivers who are hostile at the wheel, whose conduct can contribute to traffic conflicts and accidents. Psychologists have developed theories that can predict and to a large extent explain violent behaviour. Within the behavioural sciences, few topics have produced such fierce debate during the last decades as the study of human aggression. The enormous quantity of publications produced and during the last few years, and that continue to be published, is proof of the amount of interest that this topic has attracted. The objective of this investigation is to provide evidence of the interest and concern for the topic of aggression and violence that exists in the behavioural sciences in general and within the field of Road Safety in particular. This study is based on a review of the literature published during the past 30 years which is referenced in the computerised database Psyclit. The bibliographic analysis of these publications provides the following information: (a) the major authors within this field, (b) the principal proponents of each psychological theory, (c) the major journals within this field. In addition, the publications will be classified into one of two major categories, depending on whether they place more emphasis on individuals innate character traits or on the social environment that surrounds the subject as the origin of the aggression. Lastly, the theories and models that have been proposed to explain aggression and violence on the road will be described.

P-27.- **EFFECTS OF N6-CYCLOHEXYL-ADENOSINE (CHA) ON ISOLATION-INDUCED AGGRESSION IN MALE MICE**

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Adenosine exerts numerous physiological actions in the central nervous system, being its effects mediated through four receptor subtypes: A1, A2a, A2b and A3. Several studies have suggested an involvement of adenosine receptors in the modulation of aggressive behaviour. However, the influence of adenosine A<sub>1</sub> agonists on aggression is scarcely known. In this study, we examined the effect of N6-cyclohexyl-adenosine (CHA; 0.025-0.4, i.p.), a selective adenosine A<sub>1</sub> receptor agonist, on agonistic behaviour elicited by isolation in male mice. Individually housed mice were exposed to anosmic "standard opponents" 60 min after drug administration, and the encounters were videotaped and evaluated using an ethologically based analysis. CHA exhibited an ethopharmacological profile characterised by a selective decrease of offensive behaviours (threat and attack) at intermediate dose (0.1 mg/kg), without impairment of motor activity. In contrast, the antiaggressive action of the highest doses used (0.2 and 0.4 mg/kg) was accompanied by a marked increase of immobility. Although inhibition of aggression in isolated male mice could be a direct effect on the neuron via altered levels of cAMP, or a result of alterations in intracellular Ca<sup>++</sup> levels, the behavioural effects observed in this study could be also related to an adenosine modulatory action on other neurotransmitter systems. In this study could be also related to an adenosine modulatory action on other neurotransmitter systems. In this sense, it is known that adenosine agonists may inhibit the release of dopamine and increase the release of serotonin, two neurotransmitters which have been classically implicated in aggression. In fact, it has been widely documented that dopaminergic antagonists and serotonergic agonists reduce aggressive behaviour in numerous animal models (1-3). Further studies are required to evaluate the effects of the interaction between adenosine A<sub>1</sub> agonists and dopaminergic/serotonergic compounds on aggression. Manzanque JM, Navarro JF (1999). *Aggressive Behavior*, 25, 225-232. Navarro JF, Maldonado E (1999). *Progress in Neuropsychopharmacology & Biological Psychiatry*, 23, 327-334. Navarro JF et al. (2000). *Progress in Neuropsychopharmacology & Biological Psychiatry*, 24, 131-142.

P-28.- **SPATIAL LEARNING IN ISOLATED- AND SOCIAL-REARED MICE WITH SHORT AND LONG ATTACK LATENCIES: EFFECTS OF NICOTINE**

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Previous studies have shown that aggressive mice show better performance in some learning tasks than non aggressive ones. In addition, male mice of different social status and with diverse aggressive characteristics display variations in their reactions to novelty. The main aim of the present study was to investigate whether there were differences in the acquisition and retention of the Morris water maze between NMRI mice with "short attack latency" (SAL) and "long attack latency" (LAL). This strain was used since isolation rearing may induce high levels of aggressive behavior in some animals and they also show a good spatial learning. Two hundred NMRI male mice were randomly assigned to two experimental housing conditions: grouped or isolated for 5 weeks. After this period an aggression test took place in order to classify the animals into SAL (latency to the first attack shorter than 150 sec) and LAL mice (latency to the first attack longer than 240 sec). Three groups were obtained: isolated-SAL (ISO-SAL), isolated-LAL (ISO-LAL), and grouped-LAL (GR-LAL). The effects of a daily sc injection of nicotine (0.175 mg/kg) or saline administered 15 min before the performance of the water maze, were compared in each group. In the acquisition of this spatial task animals must reach a platform submerged in the water and in the retention, mice are evaluated in a probe trial, a test in which the platform is removed. It was observed that there were no significant differences between groups in the acquisition of this spatial task. However, when the retention of the task was evaluated in a probe trial, results indicated that both saline-treated ISO-SAL and ISO-LAL had a better performance than saline-treated GR-LAL. No significant differences were observed in the nicotine-treated groups. In conclusion, our data suggest that isolated mice show a better retention of the platform location than grouped mice, although differences in attack latencies in NMRI mice do not seem to be correlated with spatial learning ability.

P-29.- **DIRECT AND INDIRECT AGGRESSION:  
A COMPARISON BETWEEN IRANIAN AND SPANISH STUDENTS**

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Different forms of aggression have been classified into two types: Direct Aggression (such as physical attack, hitting, and verbal abuse), and a more subtle Indirect Aggression (such as intimidation of your opponent, social isolation, or no face-to-face contact). It is of interest to find out if there are sexual differences between these two kinds of aggression. Björkquist's scale of direct and indirect aggression (D.I.A.S) was applied to 1050 students (457 boys and 595 girls) of various educational levels (College and University) in Iran and Spain. The average age was 18 years old. Factor analysis confirmed the factorial structure of the questionnaire in both populations.

- 1) Direct Aggression and Indirect Aggression, as well as the degree of justification of aggressive acts (presented in a different paper) were all positively correlated with the level of aggressiveness of the subjects.
- 2) Sexual differences suggested in previous studies were confirmed. The level of direct aggression was higher in males, whereas females showed more indirect aggression, in both countries.
- 3) Another important factor was age. In both populations, the younger College students showed higher level of both, Direct and Indirect Aggression, than the older University students, in Iran and in Spain.
- 4) Finally, Spanish students, both boys and girls, showed a higher level of aggression than Iranian students of both sexes.

In few words, age, sex, and culture seem to influence in the level and kind of aggression.

P-30.- **VOCAL COMMUNICATION IN TREE SHREWS: DO CHANGES IN  
VOCAL PATTERNS CORRELATE WITH AGONISTIC BEHAVIOR?**

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Tree shrews live solitary and defend territories against conspecifics of the same sex. Under laboratory conditions housing of two males in one cage results in a stable dominance hierarchy. The agonistic encounters between the two males are accompanied by reciprocal vocalization and vary in the behavior displayed. This study aimed to analyze the behavioral repertoire of tree shrews (*Tupaia belangeri*) during dyadic agonistic interactions and the communicative function of the related calls. Agonistic behavior was induced according to our standard protocol (1). An adult male was introduced into the cage ('territory') of a socially experienced conspecific ('dominant'). Video and digital audio tape (DAT) recordings were made during and after the encounters and following parameters were quantified: amount of agonistic behavior, percentage of behavior categories, and the number of approaches. Call parameters were measured to describe selected sound structures. Agonistic interactions consisted of chasing, threatening, and fighting. The amount of agonistic behavior and the percentage of chasing were significantly larger in interactions with a more aggressive dominant. During encounters, both animals uttered a characteristic call type, the "squeak". Dominants' and subordinates' "squeaks" showed significant differences in several parameters. However, these differences were influenced by individual characteristics and the rival an animal was confronted with. Besides, changes in subordinates' "squeaks" correlated significantly with the number of the dominants' aggressive approaches. Physical causes of call parameters were excluded, since there was no correlation with body mass. Behavioral and vocal patterns in male tree shrews depend on the dominance status, but also on individual characteristics and the aggressive motivation towards a rival. Changes in call parameters correspond to motivation structural code (2), e.g. increasing pitch indicates increasing fear, while decreasing pitch indicates increasing aggression. It is concluded that structural changes of threat calls in tree shrews correspond to specific motivational states.

- 1) Fuchs, E. et al., *Pharmacol. Biochem. Behav.* 54: 219-228, 1996.
- 2) Morton, E.S. *Am. Naturalist*, 111: 855-869, 1977.

P-31.- **ANGER, HOSTILITY AND AGGRESSION AMONG JAPANESE, IRANIAN AND SPANISH STUDENTS: A CROSS-CULTURAL COMPARISON**

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This paper reports on a cross-cultural investigation into the nature of different styles of aggression and emotions related to aggressive behavior. In the study of aggression and violence, it is important to differentiate between objective behavior (aggression) and subjective emotions and cognitions (anger and hostility). A cross-cultural approach can estimate with greater accuracy the relationships between these components. A representative sample of undergraduate students in Japan, Iran and Spain completed the Aggression Questionnaire (Buss & Perry, 1992). Factor analysis confirmed the factorial structure of the questionnaire in these countries. The ANOVA of the physical aggression factor score showed a significant main effect between countries, sexes and also interaction between both these factors. The ANOVA of the hostility factor score only indicated a significant main effect of sex. The ANOVA of anger and verbal aggression factor scores showed a significant main effect of country. Finally, a new factor labeled "hostile aggression" was found. The ANOVA of hostile aggression factor score resulted in a significant main effect of country, sex and country x sex interaction. These results showed the complex modulation of aggression, anger and hostility by both factors of sex and culture.

P-32.- **THE IMPACT OF PRIOR RELATIONSHIP ON ANGER-RELATED COGNITIONS**

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Hostile attributional bias refers to the tendency among aggressive persons to interpret the behaviors of others as hostile. First demonstrated by Dodge and Newman (1981) among children and in situations where social cues for intent were ambiguous, the construct was recently extended. Epps & Kendall (1995) demonstrated hostile attributional bias in young adults, in situations that not only portrayed intent as ambiguous, but in more clearly hostile and benign situations as well. The present study used preterated scenarios to investigate hostile attributional bias as a function of two situational cues: (a) presence vs. absence of previous social relationship, and (b) degree of objectively preterated hostile intent of a provocateur. Participants (n=172) completed Spielberger's State-Trait Anger Expression Inventory, with highest and lowest 30 males and females on the Trait Anger subscale labeled the high and low Trait-Anger group, respectively. They then responded to scenarios depicting negative social outcomes resulting from another's actions. The scenarios were preterated as reflecting hostile, ambiguous or benign intent, and known or unknown protagonist. Participants indicated how angry they would be in that situation, the degree of hostility they attributed to the protagonist's intent, and how they would respond. Across all conditions, high Trait anger participants attributed more hostility, and reported more anger and aggressive responding than low Trait anger persons. When social cues were clearly hostile, both high and low Trait angry persons attributed more hostility to strangers than to acquaintances. They rated their anger and aggressiveness of response as greater for strangers than acquaintances. High anger persons responded to acquaintances much the same as low anger participants responded to strangers. Conversely, when social cues were ambiguous or benign, both high and low Trait Angry persons attributed more hostility toward acquaintances than strangers, and rated their anger and aggressive responses accordingly. High anger persons' responses to strangers were the equal of low anger participants' responses to acquaintances. Findings indicate that hostile attributional bias predicts situational anger and aggression across varying patterns of situational variables. Findings further underscore the need to control for relationship issues when studying anger and aggression.

P-33.- **SEXUAL HARASSMENT ON CAMPUS: A PRELIMINARY STUDY IN THE UNIVERSITY OF BALEARIC ISLANDS**

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On May 1996, the Spanish penal code was changed to include new offences and to remove others. One of these novelties was the consideration of sexual harassment as an offence, both in work place and academic site. This investigation tries to identify which behaviours are considered as sexual harassment in academic site. We elaborated a 38 items questionnaire about different personal interaction events (between students and teachers). The continuum went from normal to sexual harassment situations. The subject had to include every item in one of this categories: A) sexual harassment, b) other offences, c) rude behaviour, d) normal interaction behaviour. We administrated this questionnaire to 897 students and 53 teachers in our University. Gender and professional differences were obtained throughout the data analysis. Women and teachers defined behaviours that constitute sexual harassment in a wide way but more accurately than men and students. The data analysis confirms the literature revised. Defining sexual harassment is not easy for all groups. These results evidence that gender plays a definitive role in the sexual harassment definition. The women have a higher tendency to consider many of the items as sexual harassment compared with men that assess more items as rude behaviours but not offences. Managing the two variables at the same time the group of female teachers is the most strict in their assessment and the group of male students the less severe.

P-34.- **PRONENESS TO ANGER AND AGGRESSION IN JAPANESE AND SPANISH STUDENTS, MEASURED BY THE ANGER SITUATION QUESTIONNAIRE**

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The purpose of the study was to study the eventual relationship between subjective disposition to anger and objective aggressive expressions; more specifically, if anger proneness is predictive of anger arousal and aggression. 425 University students in both sexes and cultures (195 in Japan: 48 males and 147 females; and 230 in Spain: 56 males and 174 females) completed a vignette measure of anger proneness, the Anger Situation Questionnaire (Van Goozen et al., 1994 a, b). Subjects were asked to imagine being in each of the situations described, and to indicate which emotion they would experience, its intensity, and what they would feel inclined to do in that situation. The differences were viewed as consisting of a tendency to react angrily to various types of events, and as comprising of: (a) differences in the tendency to appraise emotional situations in angry terms, and (b) differences in thresholds for angry and aggressive responding. Some cultural differences in anger and aggressive tendencies might be expected comparing Japanese and Spanish populations. Our data showed that: 1) aggression resulted from the individual's disposition to react aggressively to such events; 2) no significant sex differences were found in any of the samples for either anger or aggression proneness; 3) anger proneness was also not significantly different in both samples; but 4) aggression proneness was significantly higher in the Japanese students than in the Spanish ones. It may be concluded that the proneness toward feelings of anger and angry responding is rather universal, even if open to minor peculiar characteristics for the different sexes and cultures.

P-35.- **BEHAVIOURAL ADAPTATION IN MALE RATS EXPOSED TO SOCIAL STRESS IN THE RESIDENT/INTRUDER PARADIGM**

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Defeat resulting from intraspecific encounters between male rats represents a biologically relevant form of social stress that induces profound changes in behaviour, endocrinology, neurochemistry, and immunology. The resident/intruder paradigm is one of the most used animal models to induce social stress in rats. The aim of the present study was to establish the behavioural adaptation of male rats exposed to repeated defeat experience. To this purpose, Lister hooded male rats were exposed to the attack of a larger male along 1, 2, 5, 10 or 20 consecutive days in the latter's home cage. The aggressive encounter had a duration of 20 min and was divided into two phases: a pre-defeat phase (10 min) in which animals remained separated by a perforated transparent partition, and a defeat phase (10 min) in which animals were allowed to interact. The duration, latency and frequency of the behaviours of the defeated animals during the pre-defeat (locomotion, rear, sniffing the resident, close to the partition, freezing, body care) and defeat phases (upright defensive posture, on the back, escape and freezing) were recorded. The results show that during the pre-defeat phase defeated rats increased the time spent in body care and freezing, and the frequency of freezing across the days, while the time spent close to the partition and locomotion, the frequency of sniffing the resident, and the latency to freezing decreased. During the defeat phase, an increase in the time spent in upright defensive posture was observed after 5 days of defeat, and a decrease in the latency to freezing after 20 days. In summary, the adaptation in the behaviour of defeated animals along days was characterised by the increase in passive coping strategies (i.e. a decrease in social and non-social exploratory behaviours, and an increase in freezing and submissive behaviours). Furthermore, these results suggest that the pre-defeat phase is more appropriate than the defeat phase to determine the behavioural adaptation to repeated social stress, indicating a learned fear response.

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P-36.- **EFFECT OF THE EXPOSURE OF MALE RATS TO A DOMINANT MALE ON BEHAVIOR AND C-FOS EXPRESSION IN THE BRAIN**

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The dominance/subordination relationship involves the attack by the dominant male but also the fear induced by his presence in the subordinate. The aim of this study was to determine the effect that the mere presence of the dominant male has on brain activity and behavior of the subordinate rat. To this purpose, Lister hooded male rats were exposed to an aggressive Wild-type male rat during 20 minutes in the home cage of the latter, being defeated by him. The following day, defeated males were exposed to the dominant in the same cage during 20 minutes but separated from him by a perforated transparent partition. There were two control groups: a) animals exposed on day 1 to the home cage of an aggressive male that has been removed, and on day 2 to this unknown male separated from him by the partition; b) animals exposed to an clean empty cage on day 1, and to the same cage with the partition in it on day 2. Both the behavior of the animals during day 2 and the expression of c-fos in brain areas related to stress were analysed. Animals exposed to the dominant male spent less time in approaching the partition, showed freezing more frequently, and had a longer latency to body care than the controls exposed to an empty cage. Similar differences were observed in the latency to body care and frequency of freezing between animals exposed to the dominant and the other control animals. On the other hand, exposure to the dominant rat increased the expression of c-fos in the central grey, locus ceruleus and dorsal raphe areas in comparison to the other groups. However, the two groups exposed to another male on day 2 showed more c-fos expression in the lateral septum and the lateral hypothalamic area than the other control group. In conclusion, the exposure to the dominant male has effects on both the behavior and the activity of the brain. However, some of these effects are induced just by the mere presence of another conspecific male. This study was supported by the University of Valencia (ref: 2212).