Can Impulsive Aggression Provide Pleasure?

J. Martin Ramírez[1], Marie-Claude Bonniot-Cabanac[2], and Michel Cabanac[3]

[1]Departamento de Psicobiología, Facultad de Psicología, Universidad Complutense, Madrid, Spain
[2]Département de physiologie, Faculté de médecine, Université Laval, Québec, QC, Canada
[3]Center de recheche de l'hopital Laval, Québec, QC, Canada

Abstract. We investigated the pleasurability of aggressive behavioral decisions. Four questionnaires (on hedonicity, decision making, justification of aggression, and impulsiveness) were given to 50 participants of both sexes, ranging from 16 to 80 years old. Most participants avoided unpleasant behaviors as part of a trend to maximize pleasure and to minimize displeasure. Mean hedonicity ratings followed a bell curve with increasing levels of aggressiveness ($p < .0001$). Thus, the participants chose neither passive nor highly aggressive responses to social conflicts, with both extremes receiving the most unpleasant ratings. The results offer empirical support for an interesting point: People may derive pleasure from aggression as long as it is exhibited on a low to medium level. More precisely, people associate pleasure with aggression up to a certain point: Aggressive responses of medium intensity were rated significantly less unpleasant than the most passive and most aggressive ones, which were associated with less pleasure. Conclusion: In social conflicts, behavior tends to maximize experienced pleasure; and impulsive aggression produces pleasure in the aggressor, except at extreme intensities. The point that mild to moderate aggression brings pleasure, whereas extreme or severe aggression does not, provides a perspective that may reconcile conflicting observations in the literature.

Keywords: aggressiveness, impulsiveness, decision making, pleasure, age.

This study focuses on hedonicity and aggression to explore a neglected aspect of aggression theory and research: the pleasure that people might derive from acting or responding aggressively.

Pleasure maximization appears to be a prerational decision-making mechanism that serves to optimize behavior. This conclusion was reached from results obtained by Cabanac's lab with sensory pleasure as well as pleasure aroused by purely mental work, such as playing a video game or solving grammatical or mathematical problems (Cabanac, 1971; Cabanac et al., 1997; Balaskó & Cabanac, 1998; Cabanac et al., 2002). To explore the hypothesis that hedonicity strongly affects decision making in social situations, pleasure was analyzed in relation to interpersonal aggression.

Aggression encompasses a wide variety of meanings, including different categories with different functions and antecedents (see among others Ramírez 1996, 1998). For instance, Mandel (1959), after observing 9–16-year-old boys at a boarding school, listed 2205 specific aggressive behavior types. Whether or not aggression is a deliberate attempt to injure someone, there seems to be a common dichotomy, in terms of purpose or goal, inferred or otherwise, between (1) instrumental aggression, which is anger-free and chiefly aims to obtain an object, such as some reward or advantage for the aggressor; and (2) hostile aggression, which is closer to anger because its primary goal is to hurt the victim (Feshbach, 1964; Hartup, 1974). The latter is also known as impulsive/expressive aggression: Actions are carried out involuntarily, in a burst of rage, with no weighing of costs and benefits but only a desire to injure or kill.

Many authors have proposed other classifications of human aggression, which use different terms but consistently follow the same dichotomy, depending on whether the primary *intent* is distress or harm. On the one hand, there is the *instrumental/controlled/proactive/cold-blooded/offensive/predatory/premeditated* type. On the other hand, there is the *hostile/impulsive/reactive/hot-blooded/defensive/affective/emotional*, relatively involuntary type (Ramirez & Andreu, 2003). Recent studies (Lansford et al., 2002; Poulin, Dishion, & Boivin, 2002) have even proposed the existence of *positive* aggression (leadership, socialization, reciprocal relationship and friendship with other proactive children, aggressive models . . .) and *negative* aggression (disruptive behavior, hostile attribution biases, internalizing problems, such as depression or somatization, and victimization).

In this study, we explored only relations between hedonicity, and impulsive aggressive actions were the most genuinely aggressive ones, with no other apparent desire than to hurt. Even though reward may be typical of in-

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strumental aggression, it is not necessarily absent from impulsive aggression. Our hypothesis was that people tend to make not only instrumental decisions but also impulsive ones as a function of the resulting pleasure they receive. We asked two main questions. First, can aggression be pleasurable? Second, because many aggressive behaviors are impulsive in nature, is there a relationship between impulsiveness and the tendency to maximize pleasure?

To clarify any possible correlations between hedonicity and aggression, we examined how pleasure relates to several aggression-related variables. We selected these variables to represent three possible components of aggression: affective feelings *(anger)* cognition and temperament *(impulsiveness)* and overt behavior *(justification of aggression)*.

By understanding the role of emotions in social aggression, we may better understand its developmental origins and outcomes. Social aggression has usually been investigated independently of emotions, and this seems unfortunate. *Anger* represents the emotional or affective component of aggressive behavior, or at least of some kinds of it. Anger escalates if the source is seen to be intentional, preventable, unjustified, and blameworthy, and when values are compromised, promises broken, expectations not met, rules violated, and personal freedom and rights infringed upon. Anger proneness may be seen as a personality trait that differs between individuals in the frequency over time of angry appraisals of emotional situations (anger experience) and angry responses (readiness to act angrily) (Ramirez, Alvarado, & Santisteban, 2004; Ramirez, Fujihara, & Van Goozen, 2001; Ramirez, Fujihara, Van Goozen, & Santisteban, 2001; Ramirez, Santisteban, Fujihara, & Van Goozen, 2002; Van Goozen, Fridja, Kindt, & Van de Poll, 1994a; Van Goozen, Fridja, & Van de Poll, 1994b).

Impulsiveness is a multidimensional concept that involves weak restraint of personal behavior, poor coordination of different emotions, rapid processing of information, novelty seeking, and low ability to delay gratification. The balance of countervailing forces determines the resulting behavior. Impulsiveness has also been recognized as a general process that underlies such major social problems as drug abuse, aggressive behavior, and suicide (Horesh, Rolnick, Iancu, Dannon, Lepkifker, Apter, & Kotler, 1997).

Obviously, it would be better to show that pleasure increases during or just after actual aggressive acts, as opposed to simply reporting hypothetical responses to *aggression*. Furthermore, some authors doubt the validity of self-report in response to vaguely defined or hypothetical scenarios, arguing that self-report is distorted by a desire to give socially desirable responses or to enhance self-presentation. That is, when dealing with a socially unacceptable behavior such as aggression, respondents may be reluctant to admit the full extent of the behavior out of concern for the opinions of others and fear of disapproval if they admit to engaging in aggressive action. It is possible to minimize this source of distortion by designing procedures and instructions to suggest that such behavior might be acceptable or justified and by concealing the respondent's identity. Nonetheless, distortion may persist because the hypothetical anger-provoking situation is rare or absent in the respondent's own life or because risky aggressive response would in reality be inhibited by its high cost-to-benefit ratio (Björkqvist, Österman, & Lagerspetz, 1994). Talk is cheap, and imagination is even cheaper (O'Connor, Archer, & Wu, 2001).

Besides the ethical advantage of not inflicting unnecessary harm, self-report has proven itself in empirical measurement of aggression-related issues (Richardson & Green, 2003; Ramirez & Andreu, in press). We accept that respondents may not be honest about their aggressive behavior and may deny the extent of their aggressiveness (Österman, Björkqvist, Lagerstetz, Kaukiainen, Huesmann, & Fraçzek, 1994). Richardson and Green (2003) examined this potential self-protecting bias in self-report by comparing self-report data with data from a peer who knew the respondent and reported on that person's behavior. Self-reports of aggression were found to be moderately and significantly correlated with peer-reports of aggression (r = .55 and .58). Thus, there appears to be some hesitancy to admit to aggressive behavior, but self-report does not "wipe out" occurrence of aggression via a floor effect. Although the reported level of aggression is lower for self-report than for peer-report, there is enough variability to reveal patterns among variables. Self-report agrees with peer report, and similar patterns arise whether people report on the behavior of others or on their own. The same should hold true for anger and impulsiveness. Therefore, self-report seems to be an adequate approach.

For this analysis, many possible self-report questionnaires might be chosen. We selected three kinds, developed for small groups, which we have used in our field research over the last two decades and which are specifically designed to assess different attitudes to interpersonal aggression. The three kinds are: CAMA, which in Spanish means Questionnaire on Moral Attitudes to Aggression (see: Ramírez & Folgado, 1985); an adaptation of the Anger Situation Questionnaire (ASQ; VanGoozen et al., 1994a) to measure experienced anger and its expression in assertive or aggressive ways; and the Barratt Impulsiveness Scale (BIS; Barratt, 1994).

To investigate attitudes to interpersonal aggression, and its degree of approval in different situations, the *CAMA* questionnaire was chosen, given its basic reliability and high internal consistency. It has been adminis-

tered to about 3000 respondents from 12 to 90 years old and from diverse cultural backgrounds, with scores ranging from .77 to .91 using Cronbach's α coefficient. CAMA has been used to investigate personal attitudes to interpersonal aggression and normative beliefs about justifications for aggression in various situations in a wide range of societies including: Finland (Lagerspetz & Westman, 1980; Lagerspetz et al., 1988), Great Britain (Benton et al., 1982), Poland (Fraçzek et al., 1897; Fraçzek, 1985), Spain (Ramírez, 1986, 1991, 1993; Andreu, 2000), Japan and the U.S.A. (Ramírez & Fujihara, 1997; Fujihara et al., 1999), Iran (Musazadeh, 1999), and South Africa (Theron et al., 2001) (for a review see: Ramirez, 2000; and Ramirez & Andreu, in press).

The *ASQ,* rather than measuring actual anger, uses scenarios to assess how people feel about angry responses to a standard set of anger-provoking situations (VanGoozen et al., 1994a, 1994b; Ramírez et al., 2001; Ramírez et al., 2002). Our Questionnaire 1 is inspired by this approach and measures the amount of pleasure/displeasure that participants feel when shown varying degrees of aggressive response to social stress in everyday life.

The *BIS* is the first self-report technique developed specifically to measure impulsiveness (Barratt, 1959). We used the 11th version: BIS 11 (Barratt, 1994). The total score of BIS-11 is an internally consistent measure of impulsiveness (Cronbach's α = .82 in normals and .83 in psychiatric patients; Patton, Stanford, & Barratt, 1995). The BIS has found three subcomponents of impulsiveness: (a) Motor impulsiveness *(Im)*, defined as acting without thinking (e.g., "I do things without thinking", "I act on the spur of the moment"); (b) Cognitive impulsiveness *(Ic),* making up one's mind quickly (e.g., "I have racing thoughts"); and (c) Unplanned impulsiveness *(Inp),* characterized as "present orientation" or "lack of futuring" (e.g., "I am more interested in the present than in the future") (Barratt, 1985).

Methods

Participants

Fifty adult participants, 25 women and 25 men, were randomly recruited on campus. They were invited to participate when they happened to pass the department door. The only selection was to recruit equal numbers of men and women, with similar mean ages. The participants included students, technicians, clerks, and academics. The ages ranged from 16 to 80 with a mean of 39.0 ± 3.3 for the women and 39.4 ± 3.4 for the men (Student's t= 0.076, n.s.). The participants responded anonymously to all four questionnaires.

Procedures

Hedonicity of Aggressiveness

Questionnaire 1 measured the pleasure/displeasure that the participants felt with respect to varying levels of aggressive response to everyday social stress. It described 17 hypothetical scenarios from daily life in which the participant would encounter annoying people. Each scenario offered the participant five possible responses, from doing nothing and passively accepting the annoyance to reacting vigorously and aggressively (see Appendix 1 for an example). The five levels of aggressive response were: (1) minimal (complete passivity), (2) low, (3) medium, (4) high, and (5) very high. There were 17 scenarios, each one offering five possible responses for a total of 85 items (17 × 5). To ensure randomness, the items were presented in varying orders of aggressiveness level. The same 17 scenarios were presented five times with five different sets of responses. To control for sequence effects, they were presented to half the participants (13 women and 12 men) with Items 1 to 85 (Questionnaire 1a) and to the other half (12 women and 13 men) with Items 85 to1 (Questionnaire 1b).

After reading each scenario and response, the participants rated their pleasure/displeasure. This experience was rated on a scale of magnitude starting at zero = indifferent. No further instructions were given as the actual self-selected magnitude was of no importance. Each participant was to be compared with her/himself. Such a within-subject approach gives each participant total freedom to choose, thus strengthening the validity of the results. Most participants spontaneously used a range ca. –20 to +20.

Preference for Pleasure

Questionnaire 2 was multiple choice and, thus, provided ordinal data: Each scenario of Questionnaire 1 was immediately followed by its five possible responses; the participant marked the one she/he would actually adopt. The participants who had received the reverse sequence of Questionnaire 1b also received Questionnaire 2b with a reverse sequence of the 17 scenarios. When debriefed, the participants did not seem to have been influenced by the sequence of Questionnaire 1 when filling out Questionnaire 2, as most of them were unaware that they had selected, on Questionnaire 2, the item they had enjoyed the most from Questionnaire 1. Several declared spontaneously: "I don't know what you re looking for, but I'm sure I've ruined your experiment." This unawareness was probably due to the high number of items (85) on Questionnaire 1. In addition, for reasons of time availability, six participants answered Questionnaire 2 one day after Questionnaire 1. As their results were no differ-

ent from the others, it is likely that the sequence did not influence the results.

Similar methods have been successfully used with grammatical decision making (Balaskó & Cabanac, 1998), mathematical decision making (Cabanac et al., 2002), video game playing, and enjoyment of poetry (Cabanac et al., 1997).

Impulsiveness and Aggressiveness

After Questionnaire 1 and before Questionnaire 2, the participants received another two questionnaires to test impulsiveness and attitudes to aggression.

Questionnaire 3: Attitudes to interpersonal aggression were measured with the CAMA test, which contained 48 entries of aggressive behavior of different intensity: (1) a passive aggressive act (hindering), (2–4) verbal aggression (shouting, being ironic, or rage, all three being at a similar level), (5) threat, (6) physical aggression (hitting), and (7–8) physical aggression (killing or torturing, both being at a similar level) (Ramírez et al., 2001). The participants were asked whether these responses would be appropriate in: (1) self-defence, (2) protection of somebody else, (3) severed communication, (4) anger, (5) defence of one's property, and (6) punishment (See Appendix 2). They, thus, assessed their personal degree of approval of aggression in specific circumstances, and the recorded response provided an ordinal estimate.

Questionnaire 4: The BIS 11 was used to explore impulsiveness. There were 30 items: 11 explored unplanned impulsiveness; 10, motor impulsiveness; and 9, cognitive impulsiveness. The recorded responses also provided an ordinal estimate.

Statistical Analysis

All results were analyzed by ANOVA (Statview_). Post hoc Fisher's PLSD or Student's *t* was used to compare individual means. Group results were compared as means in the case of parametric data, as were magnitude estimates; then, Student's *t* was applied post hoc. With nonparametric data, such as frequencies, nonparametric post hoc tests were applied, as with the results of Questionnaires 3 (CAMA) and 4 (Barratt).

Results

We analyzed the Questionnaire 1 ratings and their consistency with the subsequent Questionnaire 2 choices. All results were tested for possible sex differences. There were no significant differences between male and female means for any of the four questionnaires, so the results were pooled with male and female participants treated as a single group in the following analyses.

Hedonicity and Aggressive Behavior

The ranges of pleasure/displeasure ratings for Questionnaire 1 items differed little from participant to participant. Although no prior instruction was given about the range of the scale, the participants all spontaneously gave ratings within similar ranges. The Questionnaire 1 results are presented, therefore, as crude means, taking into account that all participants were their own controls (Figure 1). The suggested responses were generally rated unpleasant. The most unpleasant ratings were assigned to the passive responses, i.e., the ones ranking the lowest in level of aggressiveness. Significantly less unpleasant were the medium-to-high responses (Levels 3 and 4). Ratings increased again in unpleasantness for the very high responses (Level 5).

The results for each participant were condensed into one number that was the simple sum of the ratings for the five levels of aggressiveness in the 17 scenarios. The rating values given to all items were averaged for all 50 participants: The most aggressive responses had been given a mean rating of 3.10 ± 0.10, which was slightly but not significantly above the median of possible ratings

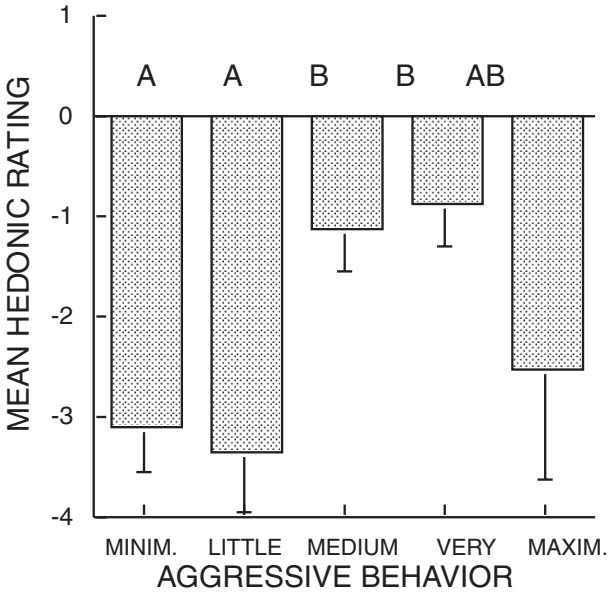

Figure 1. Mean results of Questionnaire 1. Each column is the mean of 17 × 50 ratings. Group means (± s.e.) of individual mean ratings by all 50 participants to all 85 items of Questionnaire 1. The mean results are negative because the majority of participants assigned unpleasant ratings. Identical symbols (A, B) are placed above columns that are not significantly different (ANOVA 4–245, $F = 2.83$, $p < .05$).

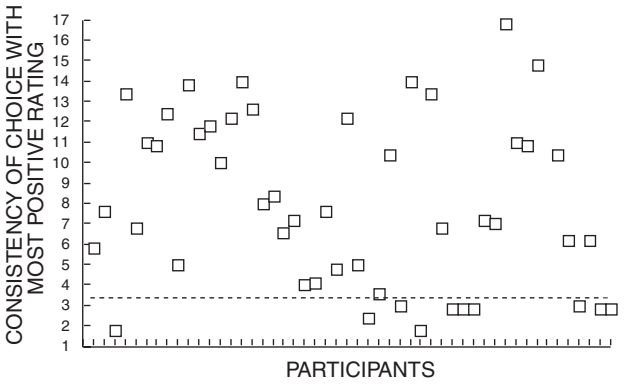

Figure 2. Individual results of Questionnaire 2. Each dot represents one participant ($n = 50$). The ordinate indicates the number of times that the choices (17) on Questionnaire 2 were consistent with the most positive hedonic ratings on Questionnaire 1. The overall mean choice was significantly higher than chance (Student's $t = 7.69$, $p < .0001$).

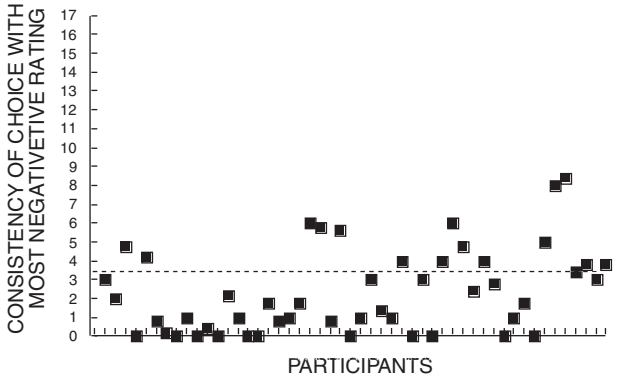

Figure 3. Individual results of Questionnaire 2. Each dot represents one participant ($n = 50$). The ordinate indicates the number of times that the choices (17) on Questionnaire 2 were consistent with the most negative hedonic ratings on Questionnaire 1. The dashed line indicates chance coincidence ($1/5 \times 17 = 3.4$). The overall mean choice was significantly lower than chance (Student's $t = -4.44$, $p < .0001$).

(3.00; Student's paired t test: 0.98, n.s.) as can be seen indirectly in Figure 1.

Decision Making and Aggressiveness

Figures 2 and 3 show the relationship between the choices of individual participants on Questionnaire 2 and their pleasure/displeasure recorded on Questionnaire 1. There were 17 multiple-choice questions, each with five possible answers. If the participants had chosen randomly, they would have chosen the highest rating (or any rating) 3.4 times, i.e., 17/5. The highest rating was in fact chosen a mean of 7.9 ± 0.6 times, which is twice greater than chance (Student's $t = 7.69$, $p < .0001$; Figure 2). Conversely, the lowest rating was chosen a mean of 2.1 ± 0.3 times, which was also significantly below chance (Student's $t = 4.44$, $p < .0001$; Figure 3).

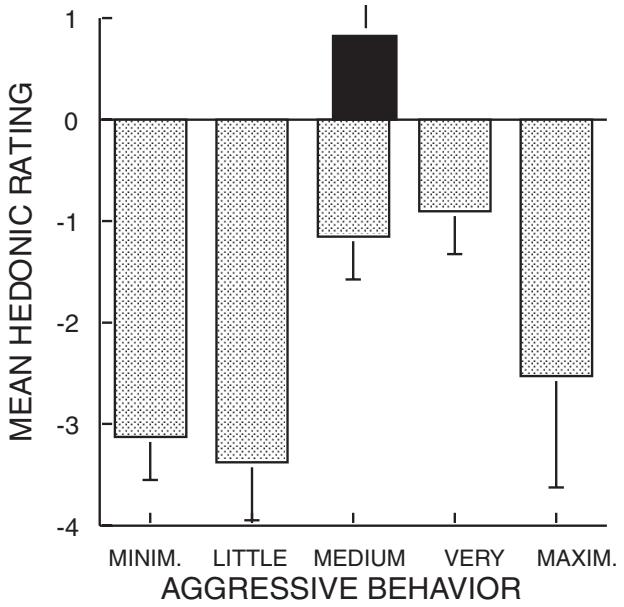

Figure 4. This figure shows how and where the behaviors selected from Questionnaire 2 stand in comparison to the overall mean from Questionnaire 1. Dotted columns present the results of Figure 1 and the black column the results of Figure 2. The selected behaviors were described as slightly pleasant (+0.8 ± 0.7) and ranked slightly (but not significantly) above median aggressiveness. This column is different from all others except the "VERY" aggressive one (ANOVA 5–294, $F = 5.55$, $p < .0001$).

There was, thus, a consistency between the pleasure described for the 17 scenarios presented in 85 combinations on Questionnaire 1 and the behavior selected on Questionnaire 2. Participants tended to select more frequently than chance the behaviors they had most highly rated out of the five possible responses. Conversely, behaviors selected the least frequently on Questionnaire 2, and below chance, received the lowest ratings on Questionnaire 1. Most participants, therefore, avoided the behaviors that were unpleasurable.

The overall mean choices are presented in Figure 4. The mean level chosen by the 50 participants was 3.2 ± 0.1. This was significantly above chance, with 1 being the least aggressive response, 5 being the most aggressive response, and 3 being the mean if chance were the only factor (Student's $t = 2.58$, $p < .05$).

There was a significant negative correlation between, on the one hand, consistency in rating most highly the most pleasurable behavior and, on the other, consistency in rating least highly the least pleasurable ($Z = -5.85$, $p < .0001$). The participants who maximized pleasure tended to be the same as those who minimized displeasure, and the more they sought pleasure, the more they avoided discomfort.

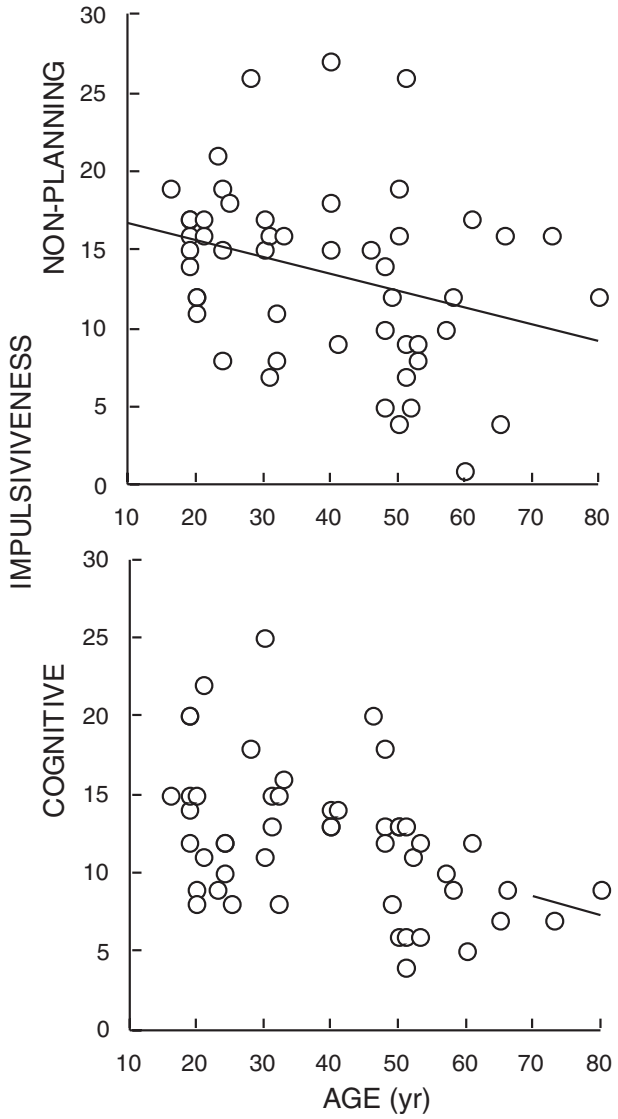

Figure 5. Impulsiveness tended to decrease with age. Each dot represents one participant. Top: unplanned impulsiveness ($Z = -2.25$, $p < .05$). Below: cognitive impulsiveness ($Z = -3.237$, $p < .002$).

Aggressiveness and Hedonicity

There was no significant correlation between justification of aggression and pleasure maximization. There was, however, a significant positive correlation between justification of aggression and displeasure minimization ($Z = 2.24$, $p < .05$).

Impulsiveness and Hedonicity

No correlation was found between pleasure maximization, when making a choice among several possible responses, and participant impulsiveness.

Influence of Age

There was a positive correlation between aging and justification of aggression as measured by the CAMA test ($Z = 2.18$, $p < .05$), and a negative correlation between aging and impulsiveness, as measured by the Barratt tests (unplanned $Z = -2.25$, $p < .05$; cognitive $Z = -3.24$, $p = .01$; Figure 5). Yet this did not seem to influence the participants' choices because age failed to correlate with either pleasure maximization or displeasure minimization.

Discussion

Hedonicity and aggression are both deeply rooted in biology and have a long evolutionary history. Aggressive displays are present throughout practically the entire animal kingdom (Lorenz, 1963), and sensory hedonicity appears to go as far back as the reptiles in evolutionary history (Balaskó & Cabanac, 1998; Paradis & Cabanac, 2002).

The present study aims to explore the relationship between these two variables, to verify whether pleasure might serve aggression, or vice versa, and whether this interrelationship persists over a life span. This reward of moderate aggression – "aggression makes oneself feel better," in the words of Bushman, Baumeister, and Phillips (2001) – was present in our results. The results show that pleasure does correlate with cognitive impulsiveness and aggressive behavior in response to mild social stress, but not extreme or severe aggression.

Such a correlation between pleasure and behavioral choice may appear obvious. Yet this relationship is neither obvious nor inevitable, as shown by the very fact that only one participant chose the most pleasurable behaviors 100% of the time (Figure 2), that two participants systematically avoided the most pleasurable behaviors (Figure 2) and, finally, that two participants repeatedly chose the most unpleasant behaviors (Figure 3).

Hedonicity and Experienced Aggressiveness

The pursuit of pleasure does not necessarily lead to increasingly aggressive behavior. Indeed, although the participants chose aggressive responses, they did not choose the most aggressive ones. Thus, the correlation between pleasure and aggressiveness was not linear (Figure 1): A positive correlation existed up to a certain point, but further increments in aggressiveness were actually less pleasurable. Undoubtedly, the choices were influenced

by other outcomes, such as social acceptance, and probably moral constraints.

The preference for aggressive responses may be supported not only by external rewards, as emphasized in Bandura's social learning theory (1977, 1986), but also by internal cognitive factors, as suggested in his subsequent formulation, under the name of "social cognitive theory", which stresses the more explicit role of mental structures in guiding action (processes such as imitation, tuition, and feedback from one's own behavior all guide self-regulatory mental processes) (Bandura, 1989; Bussey & Bandura, 1999), as well as in Berkowitz's cognitive-neoassociationistic analysis (1990, 1993, 2000) e.g., an aggressor may derive pleasure from the tension reduction resulting from awareness of injury to an antagonist. Feelings, like pleasure, can influence thought, memory, and action. Pursuing this line of research, Bushman et al. (2001) tried to prove Geen and Quanty's catharsis hypothesis (1977): After giving some participants a bogus mood-freezing pill that supposedly made affect-regulation ineffective, they found that many people might engage in aggression to improve their own affective state.

Hedonicity and Usefulness

Motivation theorists are fundamentally interested in identifying the motivational process that is assumed to be present whenever some behavior occurs. It has been argued, for example, that the motivational processes underlying the development of any skill are "feelings of efficacy" (White, 1959) or that what motivates us to develop conceptual systems is the "positive affect" associated with the moderate levels of arousal that frequently accompany information processing (Berlyne, 1960). Here, we might say that what motivates us to develop justified aggressive responses would be "feelings of pleasure." Or, at least partially, because any given behavior is not necessarily governed by a single motive (Cabanac, 1992).

All organisms are motivated to maximize their individual and inclusive fitness, by means of a series of mechanisms oriented to finding effective solutions in the struggle for survival. We seek food, water, shelter, comfort . . . and we may also seek gratification or pleasure. In fact, our previous research has shown that pleasure optimizes behavior. Maximization of sensory pleasure produces behaviors that are optimal for survival and reproduction (Cabanac, 1971), and maximization of mental pleasure guides decision making for video games (Cabanac et al., 1997), ethics, grammar (Balaskó & Cabanac, 1998), and mathematics (Cabanac et al., 2002). Pleasure seeking, thus, seems to be a universal mechanism inherited by humans via natural selection to make prerational decisions.

Ethologists have traditionally viewed aggression as an adaptive behavior. Certain behaviors are required if the animal is to survive. The fact that certain behaviors harm other animals is secondary to the survival instinct. There is no intentional motivation to harm the other animal. According to ethologists, aggression evolved in order to ensure the survival not only of the individual but also of the species (Tinbergen, 1951; Lorenz, 1963; Eibl-Eibesfeldt, 1970; Hinde, 1970). If aggressive behavior stops the behavior of an attacker, for example, it is likely that the tendency to engage in a similar kind of defence will increase (Hokanson & Edelman, 1966). Also, if aggressive behavior is adaptive, it should also be rewarding: Engaging in aggressive behavior can lead to a reward, to pleasure, which in turn will increase the tendency to be aggressive. It is not surprising, therefore, that people will often react aggressively, because many aggressive acts produce some pleasure. If we refer to Schacter-Singer's (1962) theory on emotions (even if essentially cognitive, emotions are linked in their intensity to physiological responses), and the evolutionary perspective on optimism by Tiger (1979), it might be suggested that engagement in adaptive behavior, such as justified moderate aggression, should also increase a rewarding feeling, such as pleasure.

Humans have been viewed as having certain biological capacities that need to be exercised if they are to experience basic satisfaction with day-to-day existence (Maslow, 1970; Csikszentmihalyi, 1990). It may well be that certain aggressive behaviors represent an attempt to control the environment or to make it predictable. If we are threatened in some way, for example, our immediate reaction could be to regain control. We may tend to retaliate in kind, especially if we have found that this strategy worked in the past. Given that mild aggressiveness elicited by social stress arouses pleasure, such as in the present study, it may be concluded that such aggressive attitudes, which lead to positive affect, may also be, or at least were in our more primitive ancestors, an efficacious and rewarding tool in our social interactions. This conclusion bears no moral content, of course.

Hedonicity and Rationality

Even if it seems quite clear that the roots of human aggression run deep in evolution, the present civilized level of interpersonal relations have produced interesting modulations. Although most aggressive behaviors are in retaliation for provocation by the actions of others, and some are considered socially acceptable or even desirable, we are usually conscious that other, better, more

sophisticated – and more pleasurable – ways exist to solve social problems, achieve goals, and carry out threats than through physical or direct aggression (Ramírez, 1996). Such restraint is not exclusive to humans; it has also been observed in other animal species; e.g., aggression interferes with cooperation in rats (Schuster et al., 1993). However, when these alternative responses have proven to be ineffective, aggression can be used as "a last resort." Aggression may then be used to a rational end, being effective and consequently adaptive (Ramírez, 1996, 1998).

Impulsiveness

Common sense says that highly impulsive individuals are generally disadvantaged relative to others: They have a less than optimal strategy, reacting with little thought to the impulse-eliciting stimuli and without considering the socially defined appropriateness of their reaction (Wicks-Nerlson & Israel, 1997). Obviously, such individuals differ in this tendency, as to be expected from differences in their respective aggressive personalities (Berkowitz, 1998), but this does not seem to influence their decisions.

The results (see Figure 5) show that aggressiveness tends to rise with age and impulsiveness tends to decrease. It is likely, therefore, that aggressiveness is not a result of impulsiveness. Mischel et al. (1989) characterized infants as impulse-driven, unable to delay gratification, and suggested that future-oriented self-control develops with maturation. Although adults have a higher level of aggressiveness, they also should show more cognitive control, leading to suppression of excessive impulsiveness, unjustified aggression and extreme violence, or even immediate pleasure if it is more convenient to wait.

Age

Age is still a neglected variable in research on individual differences in pleasure and aggression, there being only a handful of psychological studies. The possible development of pleasure, impulsiveness, and aggression throughout our life span was not considered as a hypothesis in the present experiment, and consequently no previous literature on the topic was reviewed. Our present findings, however, show that aggressiveness tends to increase with age and impulsiveness tends to decrease. Future researchers in this area should be aware that a bigger sample size and age distribution will be needed for more clearcut conclusions.

As we age, we become more experienced, more mature and, hopefully, more sophisticated. Consequently, we are expected to be in a better position to select those behaviors and feelings that better fit our desires. Specifically, we suggest that as people age they tend to maximize pleasure, to have more rewarding and pleasant experiences, to use better adaptive strategies, including milder and more sophisticated kinds of aggression, and, at the same time, to decrease cognitive impulsiveness and the more disruptive forms of extreme violence.

This is to be considered in the light of some recent reports on human aggression: An inverse association between self-reported aggression and age, with lower values at older ages among adults (see Archer, 2000; O'Connor et al., 2001). Explanations for the apparent contradiction may range from Quetelet's (1833) emphasis on declining physical strength (both strength and intermale homicides peak between 25 and 30 years of age) and "passion", to Daly and Wilson's view (1988) that young men's aggression represents reproductive competition arising from sexual selection. However, another explanation might be offered for the above contradiction. It may be hypothesized that learning and maturation, i.e., deeper awareness that aggressive behavior provides cognitive pleasure, contributes to the increase in aggressiveness; indeed, a better estimate of risk and benefit gradually develops with age.

Justification of extremely violent acts is much lower in adults: Most people find them utterly repugnant, unethical, unacceptable, and not so easily forgiven by society (Ramírez, 1986, 1991; Ramírez & Fujihara, 1997; Ramírez et al., 2001). Extremely disruptive aggression, therefore, tends to become less frequent with age.

In animals, too, the frequency of direct aggression, which includes both overt threats and actual contact, decreases with age. Since animals become stronger with increasing age, fighting becomes riskier and consequently is avoided (Geist, 1971; Walther, 1974; Schaller, 1977; Alvarez, 1993).

Conclusions

Pleasure is, thus, a universal mechanism inherited by humans to make prerational decisions (Cabanac, 1992; Ramírez & Cabanac, 2003; Slovic, Finucane, Peters, & McGregor 2002; Finucane, Peters, & Slovic, 2003). A parallel position has been adopted by Mellers, who proposes an account of emotional experiences associated with decision outcomes called "decision affect theory." It incorporates utilities, expectations, and counterfactual comparisons into hedonic responses. That is, people choose the risky options for which they expect to feel better on average (Mellers, 2000; Mellers et al., 1997). Our present results show (a) that aggressiveness in situations of

mild social stress can arouse pleasure even in impulsive people whereas extreme or severe aggression does not, and (b) that people tend to bring their behavioral decisions into line with their experience of pleasure. Thus, they respond aggressively to mild social stress, but avoid both passive and very aggressive responses. This point helps put things in perspective and potentially can reconcile conflicting observations. It may be concluded, therefore, that such an attitude has been evolutionarily adaptive.

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About the authors

J. Martín Ramírez studied in his native city Madrid. He is a doctor of Medicine and Surgery (Neurosciences) and of Philosophy (Education), and has a diploma in High Studies on Defense. He has held positions at a number of major institutions throughout Europe and in the USA. At present, he is head of Psychobiology at the Institute for Biofunctional Studies, Universidad Complutense, Madrid, Spain. His main scientific field of interest is research on aggression from an interdisciplinary perspective, which he has studied in very different animal species (from birds to primates) and, within the human species, in many different cultures (Europe, Iran, Japan, Southern Africa, and Canada).

Address for correspondence

J.M. Ramirez
Psychobiology Department, & Institute for Biofunctional Studies
Universidad Complutense Madrid
PO Box 2
E-28792 Miraflores de la Sierra
Spain
Tel. +34 91 844-4695
Fax +34 91 394-3069
E-mail mramirez@med.ucm.es

