

Aggression, Pleasure, and Cognitive Dissonance

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Abstract: The relationship between aggression, pleasure and decision-making is analyzed applying a mediation model of structural equation modeling (SEM). The study explored it in two samples of similar age: young offenders and university students. A close relationship between aggression and pleasure was found in both populations. But, whereas in the case of university students, this congruence leads to a normal or adjusted behavior, in the case of young offenders, however, a mismatched evaluation of conflict and provocation leads them to make unacceptable violence decisions.

Keywords: Aggression, cognitive dissonance, decision-making, pleasure, structural equation modeling.

INTRODUCTION

The present piece of work explored the association between pleasure and aggression within the frame of a decision-making background, in a ‘normal’ population of university students and in another specific population, such as prison inmates, whose individuals have already demonstrated higher violence or seriously delinquent behavior than the normal population. More specifically it was analyzed whether this association leads towards an adjusted or dissonant behavior, using a structural equation mediation modeling. For this purpose self-report instruments were employed.

Aggression and Pleasure

The study of the aggressive and violent behavior is a complex field, given the interaction of physiological and psychosocial factors, from biology and personality traits to aspects of lifestyle, such as choice of profession, attitude toward life, the specific culture and *Weltanschauung*, and prevailing societal norms [1].

One of the most controversial eventual variables is hedonia or pleasure. In fact, searching of pleasure seems to be one of the basic motives leading to behavior, in general. Cabanac [2-4] suggested its paramount role in all motivations and decisions: maximization of pleasure is the way decisions are made. It has been found in some realms of purely mental functioning optimization activity, such as enjoying poetry or video games, ethics, and mental calculus [5,6].

Previous research of our group documented for the first time that pleasure is also a major factor in social situations

related to interpersonal aggression in ‘normal’ populations [7, 8]. Participants were asked to rate the pleasure or displeasure experienced in several minor conflicting social situations, and to decide how they would solve these situations. Several behavioral alternatives were given, from passive non-aggressive behavior to aggressive responses of rising intensities. People tended to make aggressive behavioral decisions as a function of the resulting pleasure: whereas passive behavior and most aggressive behaviors were rated as unpleasant, mild and moderate aggressive responses provided some pleasure to the aggressor in decisions. The moderate level of aggressiveness was the selected preference when participants were invited to make decisions. This relationship of pleasure with aggressiveness has been recently confirmed by other researchers, showing that aggressive behavior [9-12], and even cruelty [13], can be pleasurable.

Applying the same methodology to inmates, it was shown that their election also shared a higher satisfaction or pleasure, even if this specific population was more prone to violence than the general population: they tended to solve conflicts by more aggressive means [14,15]. Such a result is consistent with a fundamental role of hedonia in decision-making, showing that the trend to maximize pleasure or minimize displeasure when it comes to make an aggressive decision is indeed a deeply rooted mechanism of decision-making that largely transcends cultural biases or pathological borderlines.

Cognitive Dissonance

“The notion of cognitive dissonance as the unpleasant motivational state that results from the inconsistency between people’s behaviors and cognitions was put forward by the Stanford psychologist Leon Festinger about five decades ago [16]. To reduce this dissonance people seek to

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rationalize their behaviors by overvaluing their choices and undervaluing the rejected alternatives (...) Cognitive dissonance plays a key role in people’s behavior when choosing between alternatives. Rejected one is likely to have some desirable properties, making an irreversible choice between them leads to the feeling of discomfort associated to cognitive dissonance” [17, p.57]. Social control would influence on the cognition of the subjects, adapting their behavior to the norms: in case of conflict between what you want to do and what you must do, subjects will opt for adjusting their cognition to the must, coming to think that the most pleasant decision is the behavior they have chosen to do.

The cognitive dissonance plays a key role in people’s behavior when choosing between alternatives, because the selection of an alternative is based in the fact that it is more desirable. Once a decision is made, the assessment of the alternatives change [18-21].

Cabanac and his group [17] suggest that cognitive dissonance may also be a possible mechanism for explaining the results found in our previous studies on the pleasure of aggressive behavior [7, 8, 14, 15, 22]. According to these results, the difference between aggressive and non-aggressive people would partially be found in their values, in their acceptance of the social norms, and consequently in the higher or lower need of reducing the tension caused by discordance between pleasure and aggression.

However, even accepting the above suggestion of a strong relationship between pleasure and aggression, it is not expected a clear relationship between both, given the existence of a mediating variable (MV). The decision about the adequate, socially desirable behavior changes the cognition and causes that people consider as more rewarding what, according to them, society considers a more correct behavior. In our current case, a renounce of violence for reaching their goals (legitimate or not) seems implicit. This explains why it is expected that socially disapproved behaviors may raise a higher level of acceptance and satisfaction among those subjects who skip social precepts or norms, like it would be the case in delinquents or offenders. This matches with previous considerations of other authors: the more violent the inmate, the greater would be the net immediate reinforcement. The benefits from violent behavior would include such immediate ones as intrinsic satisfaction from the violent act itself and such long-term ones as a possibly exciting lifestyle [23, 24].

Based on the above mentioned arguments, the following two hypothesis were proposed: (H1) cognitive dissonance would work via decision-making, as a MV between aggression and pleasure; and (H2) although this principle would be applied to any population, a lower dissonance or tension between will and must would be expected in delinquents, because they value violent behavior more rewarding than ‘normal’ people do.

Models with Mediating Variables

To this end, a mediation structural equation modeling was applied. In the statistical models of regression, a

mediating variable (MV) is defined as the mechanism through which a predictor or independent variable (IV) influences on an outcome or dependent variable (DV).

Baron and Kenny [25] suggest four steps for testing if a variable acts as a mediator. First, verifying if there is any significant relationship between IV and DV; second, if IV is related to MV; third, if DV is related to MV; and fourth, if the relationship between IV and DV becomes significantly lower once the MV is included within the model.

Fig. (1) shows a mediation model adapted to the specific variables of our current experiment: a series of conflictive situations are presented to subjects whose aggressiveness level has been previously evaluated; they have to decide the degree of violence they are ready to apply for preserving their rights.

The first step is to show that IV is related to DV (path a) and to MV (path b). The higher is the original aggressiveness of the subjects, the higher will be the reward or pleasure they say to get with their actions. Then (path c), an interrelationship between MV and DV has to be proved; i.e., non-aggressive behaviors, such as avoiding a conflict, would be felt more unpleasant than other more violent options, whereas the more violent behaviors would be considered more rewarding. Finally, the mediation model will be accepted if, when introduced the three variables in the model, the relationship between the levels of aggression (VI) and pleasure (VD) get smaller in a model of partial mediation, or, even better, if path c becomes statistically non- significant, which would be the ideal case or gold standard of mediation [26].

The procedure of mediation, initially applied by models of regression, nowadays is done by Structural Equation Modeling (SEM), a statistical technique which allows to test the different hypothesis suggested in order to estimate causal relationships. SEM also has other advantages, such as the possibility of analyzing observed and latent variables [27]. Consequently, SEM was applied for testing the mediation model proposed in this experiment.

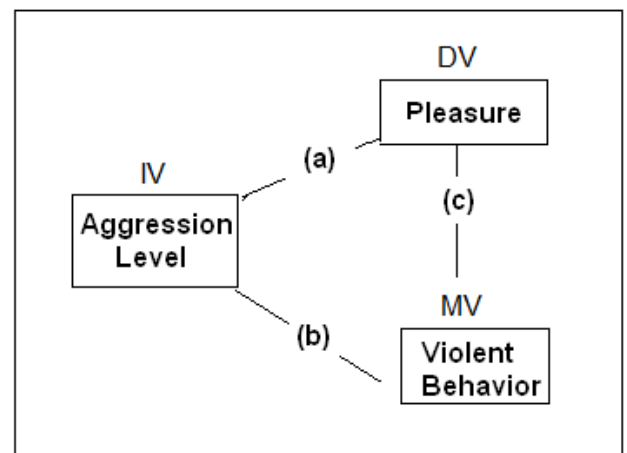


Fig. (1). Mediation model.

METHOD

Participants

Two groups of participants served in the study, with a total of 318 subjects; 48% were males and 52% females. The first group consisted in 177 young offenders with several kinds of crimes, with a mean age of 17.06 years at the time of testing ($SD=1, 27$). They were recruited from reformatories in the surroundings of Madrid. People who were illiterate in Spanish language or possessed psychiatric disturbances were excluded from the study. This group was compared to another one of 141 university students from the same geographical area, with a mean age of 20.56 years ($SD=2.57$). The study was strictly anonymous and their participation was voluntary, receiving no compensation for it.

Instruments

Participants were asked to answer the following self-report questionnaires that explored the pleasure/displeasure of aggressive behavior, and their spontaneous level of aggressiveness:

1. Reactive-Proactive Aggression Questionnaire (RPQ).

It is a brief but reliable and valid self-report instrument designed for assessing the levels of proactive and reactive aggression [28, 29]. In addition to their conceptual relevance to these two forms of aggression, items also reflect either physical or verbal aggression, and its motivation and situational context. A scale from 0 (never) to 3 (often) determines the frequency of the occurrence of each item. Confirmatory factor analysis (CFA) indicates a significant fit for a two-factor proactive-reactive model that replicates from one independent subsample to another. In the original study reliability, estimated by Cronbach's alpha coefficient, was of $\alpha = 0.90$ for the total scale, $\alpha = 0.84$ and $\alpha = 0.86$ for the subscales of reactive and proactive aggression [see Raine *et al.*, 2006]. The Spanish version, utilized in the current study, replicated its bidimensional structure getting high reliability values of $\alpha = 0.91$ for the total scale ($\alpha = 0.84$ y $\alpha = 0.87$ for reactive and proactive aggression, with a correlation coefficient of 0.80 between subscales [30, 31].

2. **Aggressive Behavior and Pleasure questionnaires**, originally designed and repeatedly used in previous research by our group [7, 8, 14, 15, 22]:

a) Pleasure was assessed with a questionnaire on fifteen minor social conflicts, exploring the hedonistic valence they aroused. The items in this questionnaire placed the participants in different conflict situations, describing an incident that could be seen as insulting, upsetting, or offensive. Each situation was presented four times, each time ending with a different behavioral response to the social conflict. The four possible behavioral responses were: non-aggressive (passive, *i.e.*, avoiding confrontation with the perpetrator), slightly aggressive (expressing displeasure or disapproval), mildly aggressive (complaining or reprimanding), or extremely aggressive. The order of presentation was randomized to remove this possible influence on the results (half the participants received the items ordered from 1 to 60, and the other half from 60 to 1). The response sheet had 60

parallel lines, as many as there were items on the questionnaire. Each line was 130 mm long, with zero hedonia indicated in the middle and with pleasure and displeasure indicated on either sides. Participants were instructed to rate the intensity of their pleasure or displeasure while reading each item: a situation followed by a response. They read the item, and then marked the line at their experienced magnitude of pleasure (to the right of the middle) or displeasure (to the left of the middle). We thus obtained a psychophysical analog estimate of the participant's imagined hedonic (positive or negative) experience. The magnitude of aggressiveness was, of course, nonparametric as the four possible responses reflected personal judgment.

b) The degree of association between aggression and pleasure was assessed from a Decision Questionnaire designed also by us [14,15]. To evaluate preference for a given aggressive response to a situation, the same fifteen situations of the Pleasure Questionnaire were presented. The subject had to choose four possible behavioral alternatives (*i.e.*, 15 entries). For instance: You are in a parking lot waiting for a free space. Just when you find a free place, another driver arrives and takes it in your presence. Alternatives: (a) Look for another space (b) Honk your horn to show your displeasure (c) Get out of your car and argue with the person (d) Get out of your car and kick the person's car with your foot. It was thus a multiple-choice test where participants marked the responses they preferred. The order of the responses, and hence the magnitude of aggressiveness, was randomized for each of the 15 situations.

RESULTS

Relationship between Aggression and Pleasure

An analysis of variances (ANOVA) was applied for assessing eventual differences between both samples in the scale pleasure -displeasure in function of four different degrees of aggressiveness of the response: Avoidance, Slight Violence, Moderate Violence, and Strong Violence.

The first ANOVA finding of significance related to pleasure associated to aggressiveness of the response $F(3, 909) = 78.99$, $p < 0.001$, $\eta^2_{\text{partial}} = 0.21$, was that, although all the four responses were considered unpleasant (*i.e.* they showed negative values), the least unpleasant was the option Slight Violence ($M = -2.88$, $Se = 1.63$), followed by the option Moderate Violence ($M = -12.79$, $Se = 1.61$), becoming the most unpleasant ones Avoidance of Conflict ($M = -24.09$, $Se = 1.40$) and Extreme Violence ($M = -29.64$, $Se = 1.74$).

The degree of displeasure was non-significantly higher in university students ($M = -19.33$ $Se = 1.67$) than in young offenders ($M = -15.34$ $Se = 1.43$), $F(1,303) = 3.29$, $p = 0.07$, $\eta^2_{\text{partial}} = .01$. There was, however, a significant interaction group x aggressiveness of the response $F(3, 909) = 36.64$, $p < 0.001$, $\eta^2_{\text{partial}} = 0.11$ (see Fig. 2).

Both groups considered clearly unpleasant the options Avoidance of Conflict which means renounce to a right (about -25 in both samples), and Extreme Violence, but in this last case it was considerably more unpleasant for the

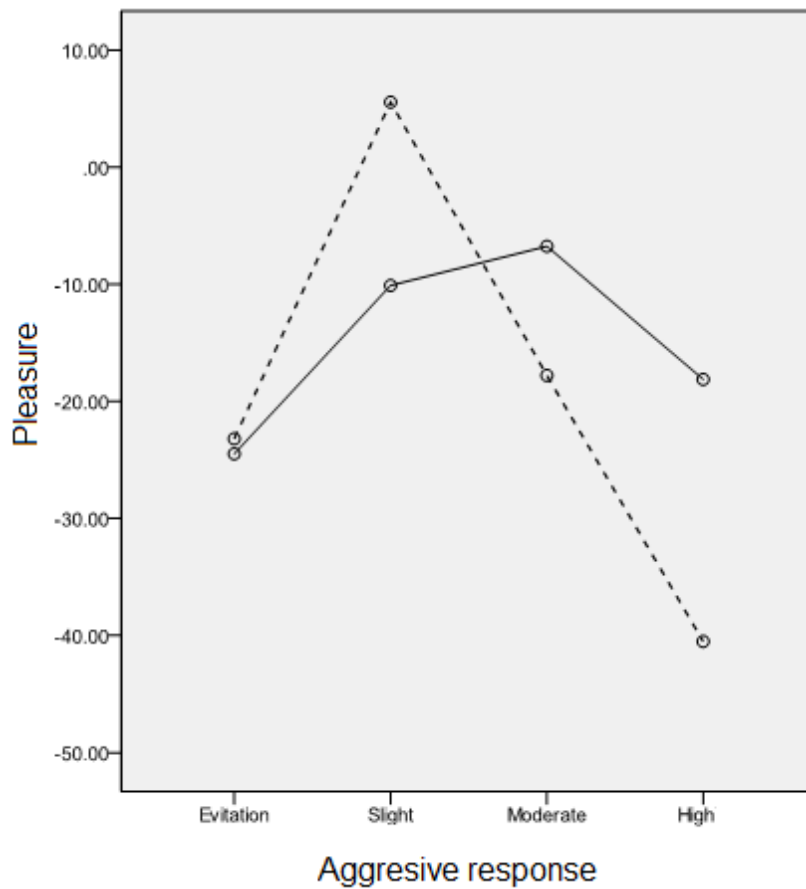


Fig. (2). Level of pleasure-displeasure associated to the different degrees of aggressive responses in each population: university students (dashed line) and young offenders (solid line).

students (about -40) than for the young offenders who even considered it less unpleasant than Avoidance of Conflict. The other alternatives in between –Slight or Moderate Violence- were the best placed by both groups: Moderate Violence was the least unpleasant for the offenders (about -10), whereas the students considered Slight Violence even pleasant (about +5).

Mediation Model

SEM was used for testing the Mediation Model shown in Fig. (1). This model suggests the existence of a relationship between aggression and pleasure, with a MV (the correct decision) that allows an adaptive adjustment of the pleasure by means of a mechanism of reduction of the cognitive dissonance.

The first step for analysis of the mediation was verifying a relationship between the three variables of the model. For this purpose, the variable PLEASURE was codified in four levels (from a minimum pleasure of 1 to a maximum pleasure of 4) according to the value given by the subjects for each conflictive situation and chosen option. The level of proactive and reactive aggression (Table 1) was significantly correlated with level of pleasure and decision ($p < 0.01$). This means that those subjects with higher scoring in RPQ opted for more aggressive or violent decisions and showed higher values in the scale pleasure-displeasure.

The next step was testing the mediation hypothesis using SEM: the introduction of the path aggression-pleasure from the MV to the construct PLEASURE led to a better adjustment of the model; and the introduction of the

Table 1. Relationship between level of aggression (proactive and reactive) with pleasure and decision-making.

	RPQ_RA	Pleasure	Decision (Response)
RPQ_PA	.742*	.284*	.445*
RPQ_RA	----	.262*	.467*
PLEASURE		---	.337*

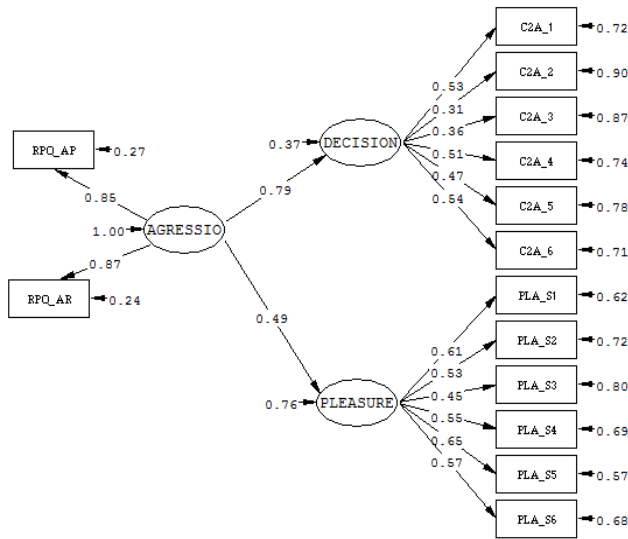
* $p < 0.001$

mediation relationship reduced significantly the path: it went from $r = 0.49$ with $t = 4.91$ $p < 0.001$ to non-significance $r = -0.23$ with $t = -1.12$, n.s. This means a validation of the mediation model: the variable decision explained the relationship aggression-pleasure, improving remarkably the adjustment of the model (see Fig. 3).

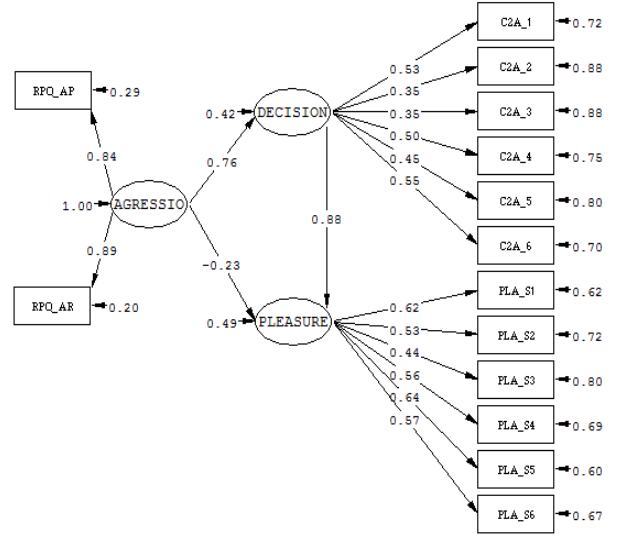
When limiting the analysis of the model to the offender population, results showed the same pattern, with even an improvement of the fit of the models (see χ^2 and the Root Mean Square Error of Approximation (RMSEA) in Fig. 4).

DISCUSSION

The present study evaluates the relationship between aggression level and decision-making pleasure. The first significant finding was that all the predictive factors which were rated showed a high consistency in the level of approval of interpersonal aggression. A quite similar trend was found among young people from quite different backgrounds –university students and young delinquents– when asked for their decision in front of six conflict situations with provocation.

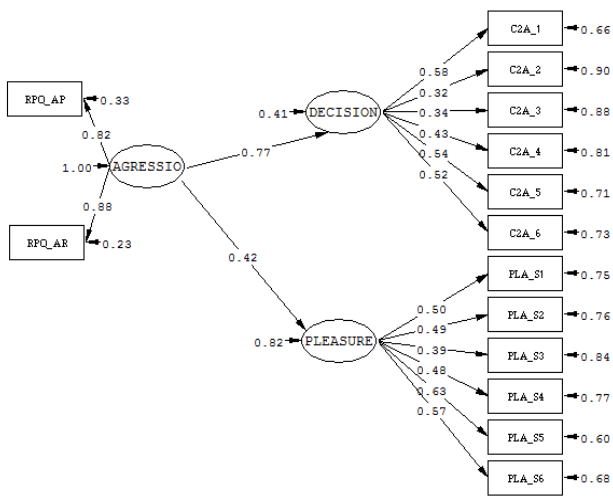


Chi-Square=109.96, df=75, P-value=0.00530, RMSEA=0.049

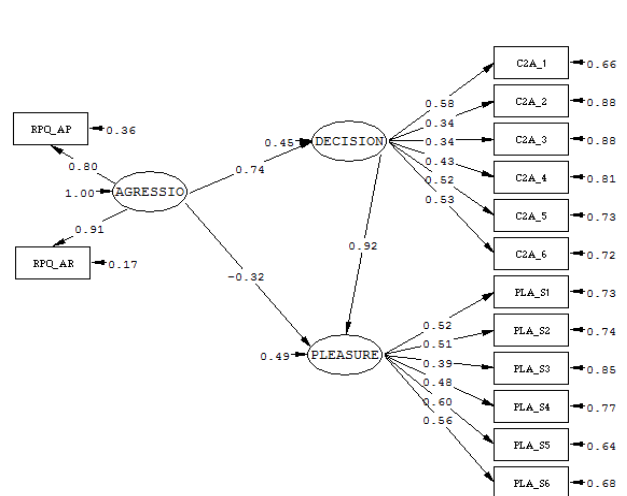


Chi-Square=91.55, df=74, P-value=0.08134, RMSEA=0.035

Fig. (3). Relationship between constructs Aggression, Decision and Pleasure for the total of the simple, without MV (to the left) and with MV (to the right).



Chi-Square=71.83, df=75, P-value=0.58226, RMSEA=0.000



Chi-Square=60.16, df=74, P-value=0.87735, RMSEA=0.000

Fig. (4). Relationship between constructs Aggression, Decision and Pleasure for the Young Offenders, without MV (to the left) and with MV (to the right).

Even if the results only show correlations but not causation, this positive correlation between the level of aggression and the pleasure experienced from decisions in favor of violent behavior confirms that pleasure maximization may be a fundamental motivation for human aggressive behavior too. Hedonia plotted as a function of rising aggressiveness, followed a bell curve. Obviously, the fact of being conflict situations with provocation explains that most subjects considered all the eventual responses as unpleasant (see Fig. 2). But slight and moderate aggressive responses were rated as less unpleasant than passive or highly aggressive responses. Within this context, aggression would give pleasure too, and vice versa, the goal of hedonic maximization may be a cause of aggression, as we previously asserted [7, 8].

The application of SEM mediation models suggests that decision-making acts as a strong moderator blurring the positive relationship between aggression and pleasure. The subjects would adjust their behavior, choosing the alternative that gives them more pleasure or less displeasure. Therefore, our first hypothesis was confirmed: cognitive dissonance works *via* decision-making, as a MV between aggression and pleasure.

Consequently, the level of violence chosen by a subject would depend of the level of pleasure he/she feels. In other words, the decision of choosing one or another level of violence would depend of the level of aggressiveness of the subject. People with good heredity, or good health, or favorable family environment, etc. would more likely display normal and well-adjusted behavior. This explains that even if all participants considered unpleasant the passivity as a response to provocation, our results showed some important differences between both populations. University students felt that the use of slight violence was the most adequate and pleasurable response to a provoked violent situation, while young delinquents chose as more pleasurable –precisely, as less unpleasant- a moderate aggressive response. This leads to the approval of our second hypothesis: although this principle would be applied to any population, a lower dissonance or tension between *will* and *must* would be expected in delinquents, because they value violent behavior more rewarding than ‘normal’ people do. This SSM model, thus, manifested a better adjustment in young delinquents than in university students: their cognition was more simplistic (their decisions were affected by fewer variables than in the case of university students) leading to a higher propensity towards more violent acts or responses.

However, the current study is not without its limitations. For instance, the results obtained with self-report instruments may reflect social desirability or self-presentational biases, given the social control of violence rejection, because people, even if they have an aggressive character, would hardly accept that they use aggression for solving daily problems, and even less that they would feel rewarding a violent behavior. Self-reports thus would have to be treated more cautiously in this kind of study to ensure accuracy, because these questionnaires do not facilitate objective analysis.

Our current research however does not focus on absolute levels of aggressive behavior, but only on the relationship

between the different samples. As we have previously asserted in this same journal, “actual behavior needs not conform to ideal models of conduct [32]. Subjects may give only desirable answers to the hypothetical situations described to them [33]. Also, high self-awareness magnifies the correlates between self-reports and behavior [34]. A meta-analysis has found a positive correlation between aggression, measured by self-reports, and personality dimensions [35]. This assures the usefulness of these instruments in the early identification of individuals with a personality prone to aggression and, consequently, in facilitating appropriate treatment [36]. Moreover, the intrinsic motivation for action may be obscure to independent observers, yet salient to the initiator.” [37, p.70]. This is better measured by self-report scales, such as CAMA [37-41] or RPA [28-31], which provide a brief but reliable and valid instrument to help further in this process of understanding the heterogeneity of aggression, with its critical distinction between instrumental and emotional factors.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

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