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**Personal Values and Unsanctioned Aggression Inherent in Contact Sports: The Role of
Self-Regulatory Mechanisms, Aggressiveness, and Demographic Variables**

**Les valeurs personnelles et l'agression sanctionnée inhérentes aux sports de contact : Le
rôle des mécanismes sociocognitifs d'autorégulation, de l'agressivité et des variables
démographiques**

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1 **Abstract:**

2 **Introduction:** To date, research examining factors related to the sociocognitive self-
3 regulatory mechanisms governing unsanctioned aggression have received scant attention in
4 applied sport psychology. **Objective:** A mediating model as influenced by various
5 demographic variables was applied to explore the relationships between athletes' personal
6 values and their unsanctioned aggression directly and indirectly through the mediating role of
7 resistive self-regulatory efficacy, moral disengagement, and aggressiveness. **Method:** A
8 sample of 301 French competitors of different ages (young: n=200 and adult: n=101),
9 genders (male: n=172 and female: n=129), types of sport (high: n=131 and low contact:
10 n=170), level of competition (beginner: n=115, intermediate: n=110, and advanced: n=76),
11 and length of practice (brief: n=109, intermediate: n=49, and extensive: n=143) completed a
12 questionnaire assessing the aforementioned variables. **Results:** Structural equation modelling
13 demonstrates that self-transcendence and self-enhancement values have only indirect negative
14 and positive effects, respectively, on unsanctioned aggression through the full mediating effect
15 of the mediators. Also, age, genders, and types of sport were predictive only of some personal
16 values and mediators. **Conclusion:** These findings offer evidence that resistive self-regulatory
17 efficacy, moral disengagement, and aggressiveness are mediators that fully govern the impact of
18 athletes' personal values and certain demographic variables on their unsanctioned aggression.
19 Several limitations, implications and suggestions for further research are discussed.

20

21 **Keywords:** Unsanctioned aggression, athletes' personal values, sociocognitive self-regulatory
22 mechanisms, aggressiveness, demographic variables, mediational analyses

1 **Résumé :**

2 **Introduction :** A ce jour, peu d'attention a été aperçue sur les facteurs liés aux mécanismes
3 sociocognitifs gouvernant l'agression sanctionnée en psychologie du sport appliquée.

4 **Objectif :** Un modèle de médiation lié aux variables démographiques influant a été appliqué
5 pour explorer le rôle de l'efficacité autorégulatrice, le désengagement moral et l'agressivité,
6 dans la relation entre les valeurs personnelles des athlètes et leur agression sanctionnée.

7 **Méthode :** Un échantillon de 301 compétiteurs Français de différent âge (jeune : n= 200 et
8 adulte : n= 101), genre (homme : n= 172 et femme: n= 129), types de sport (contact élevé :
9 n=131 et contact faible : n= 170), niveaux de compétition (débutant : n= 115, intermédiaire :
10 n= 110 et avancé : n= 76) et durée de pratique (courte : n= 109, intermédiaire : n= 49 et

11 longue : n= 143) a complété des mesures évaluant les variables testées. **Résultats :** La
12 modélisation de l'équation structurelle montre que les valeurs personnelles de la
13 transcendance de soi et celles de l'affirmation de soi n'ont que des effets indirects (négatifs et
14 positifs, respectivement) sur l'agression sanctionnée à travers de l'effet complet des
15 médiateurs, mais l'âge, les genres ou les types de sport étaient uniquement prédictives pour
16 certaines valeurs personnelles et médiateurs. **Conclusion :** Ces résultats suggèrent que les
17 l'efficacité autorégulatrice, le désengagement moral et l'agressivité ont été des médiateurs
18 successifs qui gouvernent pleinement à la fois les impacts des valeurs personnelles et celles de
19 certaines variables démographiques sur l'agression sanctionnée de l'athlète. Ainsi, les implications
20 pratiques, les limites et les nouvelles perspectives ont été discutées.

21 **Mots clés :** Agression sanctionnée, valeurs personnelles de l'athlète, mécanismes
22 sociocognitifs d'autorégulation, agressivité, variables démographiques, analyse médiationnelle

1 **1. Introduction**

2 Human aggression means different things to individuals from different social,
3 educational or sport contexts, as it is underpinned by different motives and mechanisms, and
4 at the same time it is related to various personal values and demographic variables (Bandura,
5 Caprara, Barbanelli, Pastorelli, & Reggalia, 2001; Bushman & Anderson 2002; Conroy, Silva,
6 Newcomer, Walker, & Johnson, 2001; Danioni & Barni, 2019). However, the factors related
7 to the sociocognitive self-regulatory mechanisms governing unsanctioned aggression have
8 received scant attention in applied sport psychology. The current research, therefore, was
9 designed to develop a coherent mediating model unifying demographics variables, personal
10 values, and sociocognitive self-regulatory mechanisms underlying unsanctioned aggression in
11 contact sports.

12 We begin by presenting the conceptual definitions of tested psychological constructs.
13 Next, we illustrate the purpose, hypotheses, and mediating model of this research. Then, we
14 test our hypotheses and mediating model through different statistical analyses. Finally, we
15 discuss the results, limitations, implications and several possibilities for future studies.

16 *1.1. Conceptual Definitions*

17 *1.1.1. Unsanctioned Aggression*

18 Before anything else, human aggression was defined as “any behaviour directed
19 toward another individual that is carried out with the proximate (immediate) intent to cause
20 harm. In addition, the perpetrator must believe that the behaviour will harm the target, and
21 that the target is motivated to avoid the behaviour” (Anderson & Bushman, 2002, p. 28).
22 Regarding this definition, the intent of the perpetrator is to harm the target and the motive of
23 the target is to avoid this dangerous act or not get in harm’s way; both are central elements in
24 a consideration of the act as aggression in a social setting. However, in a contact sport
25 context, athletes’ involvement in the field of boxing, rugby union, or judo may result in
26 considerable harm, even injury, but they are not considered victims of aggression. As the
27 athletes are governed in their acts by the official “rules of play,” aggression is considered to

1 take place when certain rules of the game are broken by verbal or physical confrontation
2 between opponents, for example, a rabbit punch in boxing, tackling above the shoulders or
3 verbal abuse of officials in rugby union, and so on. These acts are officially considered as
4 “illegal” or “unsanctioned” aggression, and thus when they are observed they are penalised by
5 referees (Bushman & Wells, 1998; Maxwell & Visek, 2009).

6 Other types of aggression (i.e., “hostile” or “instrumental”) have been considered in
7 both social (Bushman & Anderson 2001; Buss, 1961) and sport contexts (Keeler, 2007).
8 Hostile aggression is generally reactive, angry, emotional, impulsive, or automatic, and it is
9 intended to harm an opponent. This type is more frequent in contact sports between beginners
10 or young athletes who fail to control their reactive conduct, particularly when the victory or
11 “win-at-all-costs” philosophy becomes a must, and the frustration and pressure of a particular
12 game or competition are overwhelming (Conroy et al., 2001; Keeler, 2007). In contrast,
13 instrumental aggression is controlled, planned, or motivated to gain a competitive advantage.
14 Also, instrumental aggression is more frequent and observed at high competitive level than
15 hostile aggression in team sport’ players (Coulomb-Cabagno & Rasclé, 2006).

16 However, the same motives can underline these types of aggression. “Many aggressive
17 behaviours are mixtures of hostile and instrumental aggression” (Bushman & Anderson 2001,
18 p. 276). Also, some young elite athletes may be pressured by their parents, peers, or coaches
19 to win in a transgressive manner (e.g., by cheating or aggression) **during the competition**
20 (Danioni & Barni, 2019; Long, Pantaléon, Bruant, & d’Arripe-Longueville, 2006).

21 Actually, unsanctioned aggression has been defined as consisting of “any acts falling
22 outside the rules of the game and potentially harmful to another individual” (Spaija &
23 Schailéc, 2019, p. 36) and much research has shown that penalties, as well as physical and
24 psychological hurt as a result of unsanctioned aggression, are still one of the most delicate
25 problems in competitive sports (Bushman & Wells, 1998; Maxwell & Visek, 2009; Spaija &
26 Schailéc, 2019) and are transferred to other life contexts (Bredemeier, Weiss, Shields, &
27 Cooper, 1986; Keeler, 2007).

1 *1.1.2. Aggressiveness*

2 High trait aggressiveness has been identified as an important antecedent of
3 unsanctioned aggression. Accordingly, aggressiveness in competitive sport has been defined
4 as the “disposition to become aggressive” or “a willingness or attitude of acceptance toward
5 aggression both physically and verbally, to gain a competitive advantage” (Maxwell &
6 Moores, 2007, p. 185); thus, it can increase the likelihood of unsanctioned aggression being
7 displayed in competitive sports and it could be used to predict athletes’ unsanctioned
8 aggression in any type of sport (Maxwell & Visek, 2009). A number of quantitative studies
9 have utilised self-report measures to examine aggressiveness, particularly to predict athletes’
10 aggressive behaviour on the field (e.g., Bushman & Wells, 1998; Kimble, Russo, Bergman, &
11 Galindo, 2010; Maxwell & Visek, 2009). Accordingly, the Competitive Aggressiveness and
12 Anger Scale (CAAS; Maxwell & Moores, 2007) “will be more appropriate in a variety of
13 sports in measuring the traits of aggressiveness and anger than other standard aggressiveness
14 measures that have been criticized for their poor validity in sports” (Albouza & Chazaud,
15 2019, p.318). For example, Maxwell and Visek (2009) using the CAAS and found that higher
16 competitive aggressiveness and professionalisation scores predicted past hostile and
17 unsanctioned aggression among male Hong Kong rugby players. In addition, Sofia and Cruz,
18 (2017) demonstrated strong relationships between both competitive aggressiveness and anger
19 and the aggressive-related variables (i.e., anti-social behaviour, provocation, and anger
20 rumination), and they confirmed that both beginners and young athletes in high contact sports
21 were more aggressive than advanced or elite athletes in low contact sports.

22 *1.1.3. Resistive Self-regulatory Efficacy and Moral Disengagement*

23 Based on Bandura et al.’s (2001) model, the athletes’ resistive self-regulatory efficacy
24 was defined as “individuals’ belief in their capabilities to achieve personal control over their
25 behaviour when facing social pressure to behave in a transgressive manner” (Corrion,
26 Gernigon, Debois, & d’Arripe-Longueville, 2013, p. 129), and moral disengagement was
27 considered as “the self-regulatory process by which individuals cognitively restructure their

1 inhumane conduct, their role in causing harm, the negative effects of their actions, or the targets of
2 their transgressive acts” (d’Arripe-Longueville, [Corrion, Scoffier, Roussel, & Chalabaev,](#)
3 2010, p. 597). For instance, elite athletes account for their moral disengagement through two
4 main mechanisms: “Minimization of transgressions” and their consequences (e.g., *it is not*
5 *serious*) and “Projection of fault onto others” (e.g., *it is not my fault*) (Corrion, Long, Smith,
6 & d’Arripe-Longueville, 2009).

7 Many studies have confirmed a negative influence of self-regulatory efficacy on moral
8 disengagement, and the latter has been positively and systematically associated with
9 transgressive behaviours in both society (Bandura, 1991; Bandura et al., 2001) and in the field
10 of sport (Corrion, [Gernigon, Debois, & d’Arripe-Longueville, 2013](#); d’Arripe-Longueville et
11 al., 2010; Ring & Kavussanu, 2017). Also, they have demonstrated a mediating role for moral
12 disengagement in the link between athletes’ resistive self-regulatory efficacy and their
13 transgressive behaviour (d’Arripe-Longueville et al., 2010; Ring & Kavussanu, 2017).
14 Moreover, Ring, Kavussanu, Simms, and Mazanov’s (2018) cross-sectional study confirmed
15 that self-regulatory efficacy and moral disengagement were strong subsequent mediators in
16 the relationship between the athletes’ moral identity and their transgressive behaviour (e.g., a
17 doping likelihood for both situational benefits and costs). In addition, research in a social
18 setting has attested to the effects that *self-transcendence* values have an important role in
19 regulating the individuals’ prosocial behaviours both directly or through the mediating role of
20 self-efficacy belief (Caprara & Steca, 2007). Furthermore, Šukys and Jansonienė (2012)
21 indicated that moral disengagement was negatively related to moral values, whereas moral
22 disengagement was unrelated to status and competence values. Also, they suggested that
23 moral disengagement as a mediator variable in the athletes’ values–behaviours relationship,
24 but they recommended testing this link in a future study.

25 *1.1.4. Personal Values*

26 [According to psychological perspective account of human aggression the values were](#)
27 [considered as a central element to predict the cross-national differences in aggression, also the](#)

1 values were considered as an important element of socialization across different countries
2 and cultures (e.g., Aplin & Saunders, 2009; Bandura, 1973; Bergeron & Schneider, 2005). For
3 examples: ‘‘A culture can produce highly aggressive people by valuing aggressive
4 accomplishment, furnishing successful models, and ensuring that aggressive actions secure
5 rewarding effects’’ (Bandura, 1973, p. 59).

6 Also, Bergeron and Schneider, (2005) found a lower level of aggression in the
7 collectivistic cultures (e.g., China) in which individuals’ priority values were high moral
8 discipline, high level of conservatism or heavily Confucian’ values, while they found high
9 level of aggression in individualistic cultures (e.g., United States) in which individuals’
10 priority values were power, masculinity and mastery.

11 As well, Aplin and Saunders, (2009), showed a strong cultural difference in values
12 systems between young elite swimmers from different countries: Australian swimmers placed
13 more emphasis on *self-enhancement* values (i.e., achievement), hedonism, stimulation, and
14 self-direction than their Singaporean counterparts, who placed more emphasis on *self-*
15 *transcendence* values (e.g., universalism and benevolence), tradition, and conformity. They
16 also showed how these different personal values interact with other variables (e.g., age and
17 level of completion) to guide decision-making, commitment and performance at each stage of
18 training and competition.

19 In addition, based on Schwartz’s (1992) model, personal values can be defined as
20 cognitive constructs, guiding principles that transcend specific situations and determine both
21 individual priorities and moral conducts, and that vary in importance. Many studies in both
22 social (e.g., Seddig & Davidov, 2018; Benish-Weisman, 2015; Tremblay & Ewart, 2005) and
23 sport psychology (e.g., Danioni & Barni, 2019) have established that one of the functions of
24 attitudes towards assault or unsanctioned aggression is to evince the more general standards
25 presented in different personal values (Schwartz, 1992). In the everyday lives of young
26 German people, Seddig and Davidov (2018) demonstrated that some *self-enhancement* values
27 (i.e., power) positively predict unsanctioned aggression indirectly through attitudes toward

1 unsanctioned aggression as a mediator. In contrast, some *self-transcendence* values (e.g.,
2 universalism and benevolence) negatively predict unsanctioned aggression both directly and
3 indirectly through attitudes toward unsanctioned aggression as a mediator (Seddig & Davidov,
4 2018). Also, Danioni and Barni's (2019) cross-sectional study indicated that *self-enhancement*
5 values positively predict unsanctioned aggressive behaviour towards opposing players in
6 different team sports. Also, the authors showed a moderation effect of paternal pressure on
7 some value-behaviour relationships (Danioni & Barni, 2019).

8 Furthermore, in the **General Model of Aggression** (GAM; Anderson & Bushman,
9 2002), personal values were conceptualised as a stable personological variable that
10 individuals use to interpret events in their social world and to guide their aggressive
11 behaviour. Therefore, they suggested that personnel value and others demographic or
12 situational variables play an indirect role in aggression preparedness, whereby the effects of
13 these variables on aggressive behaviour operate by affecting cognitive, emotional, and/or
14 arousal mechanisms (Anderson & Bushman, 2002). Bandura (1991) and Bandura et al. (2001)
15 indicated that individuals' self-moral standards were usually adapted to correspond to the
16 main values in their society, by which they regulate (inhibit or reinforce) their different moral
17 and transgressive behaviours. Furthermore, Paciello et al.'s (2017) cross-sectional study of 83
18 adolescents including 30 participants with disruptive behaviour disorders (e.g., temper
19 tantrums, serious violations, physical aggression, destructiveness, and stealing) in Italy found
20 that personal values of *self-enhancement* were (positively) and *self-transcendence* were
21 (negatively) related to all moral disengagement, unsanctioned aggression, and rule-breaking
22 behaviours.

23 *1.1.5. Demographic Variables*

24 Although early studies in sport psychology essentially emphasised the demographic
25 dimensions (e.g., type of sport, genders, level of play, method of training, and seniority of
26 practice) to examine the differences in both aggressive behaviour and other moral or
27 personnel variables, contradictory results and conclusions were common. For example,

1 Maxwell and Visek, (2009) found that past hostile and unsanctioned aggression among male
2 Hong Kong rugby players was not predicted by demographic variables such as age, playing
3 position, or level of play. In contrast, Conroy et al. (2001) indicated that older Hispanic males,
4 contact sports athletes in high level competition and rather than collision and non-contact
5 athletes as well as non-athletes, were more likely to legitimise aggressive sport behaviour.
6 However, Keeler, (2007) showed that there are no differences in perception of both sport
7 hostile and instrumental aggression across genders and types of sport. In contrast, Sofia and
8 Cruz, (2017) confirmed that young athletes have a higher level of competitive aggression than
9 adult athletes, whereas there is no significant difference across their age. Also, Šukys and
10 Jansonienė, (2012) showed that there is no difference in moral disengagement across gender,
11 length of practice, or level of competition, but there are significant differences in some moral
12 and competence values across genders and level of competition. Finally, some studies have
13 showed that an increase in age was positively associated with *self-transcendence* values, and
14 males consistently possess higher levels of *self-enhancement* values and social influence than
15 females (e.g., Schwartz, 1992, 2006).

16 *1.2. Purpose and Hypotheses*

17 As was noted earlier Unsanctioned aggression remains one of the most difficult
18 problems for coaches and sport psychologists involved in the management of the development
19 of athletes and competitive sports (see Maxwell & Visek, 2009; Spaaija & Schaillec, 2019).
20 Based both on the results herein and the conclusions of several studies, it seems appropriate to
21 report the importance of the development of a coherent model unifying the different
22 demographics and personal variables and sociocognitive self-regulatory mechanisms
23 underlying unsanctioned aggression (e.g., Anderson & Bushman, 2002; Bandura et al., 2001;
24 Ring et al., 2018; Seddig & Davidov, 2018; Sofia & Cruz, 2017). The current research,
25 therefore, was designed to test simultaneous relationships between demographic variables,
26 athletes' personal values, sociocognitive self-regulatory mechanisms, aggressiveness, and
27 unsanctioned aggression through an integrated multi-theory model (Anderson & Bushman,

1 2002; Bandura et al., 2001; Schwartz, 1992). We thus tested a hypothesised mediating model
2 that links both demographic variables (i.e., age, type of sport, gender, level of competition,
3 and length of practice) and athletes' personal values (i.e., *self-enhancement* and *self-*
4 *transcendence*) to their unsanctioned aggression both directly and indirectly through the
5 mediating role of resistive self-regulatory efficacy, moral disengagement, and aggressiveness
6 as sequential mediating variables (Bandura et al., 2001; Caprara & Steca, 2007; d'Arripe-
7 Longueville et al., 2010; Ring & Kavussanu, 2017; Ring et al., 2018; Seddig & Davidov,
8 2018). The links between certain demographics variables and athletes' personal values were
9 also examined.

10 Specifically, our literature review suggested that *self-transcendence* values would be
11 (positively) linked to resistive self-regulatory efficacy and (negatively) to all moral
12 disengagement, aggressiveness, and unsanctioned aggression. In contrast, *self-enhancement*
13 values should be (negatively) linked to resistive self-regulatory efficacy, and (positively)
14 associated to all moral disengagement, aggressiveness, and unsanctioned aggression. In
15 addition, we hypothesised that resistive self-regulatory efficacy would be negatively
16 associated with unsanctioned aggression both directly and indirectly through the mediating
17 role of both moral disengagement and aggressiveness. In addition, moral disengagement
18 would be positively linked to unsanctioned aggression both directly and indirectly through
19 aggressiveness, which in turn would be positively related to unsanctioned aggression (see
20 figure 1). Also, gender would be negatively associated to unsanctioned aggression,
21 aggressiveness, moral disengagement, and *self-enhancement* values. Age would be
22 (positively) associated to *self-transcendence* values and (negatively) associated with both
23 moral disengagement and unsanctioned aggression. Next, the type of sport would be
24 (negatively) associated with moral disengagement and (positively) associated with both
25 resistive self-regulatory efficacy and unsanctioned aggression. Moreover, length of practice
26 would be (positively) associated with both resistive self-regulatory and (negatively) associated
27 to unsanctioned aggression. Finally, level of competition would be (positively) associated

1 with both *self-enhancement* values and unsanctioned aggression. All of these hypotheses are
2 presented in our hypothesised mediating model (Figure 1).

3 **“(Insert Figure 1 here)”**

4 **2. Method**

5 *2.1. Participants and Procedure*

6 We used a sample of 301 French competitors ($M_{\text{age}} = 17.97$ years; $SD = 6.14$). These
7 participants were different from their age (young and adult), genders (male and female),
8 types of contact sport: high contact (e.g., boxing, judo, and rugby union) and low contact
9 (e.g., handball, basketball, and football), at three level of competition (beginner, intermediate,
10 and advanced), and length of practice (brief, intermediate, and extensive) ($M_{\text{length of practice}} =$
11 7.34 years; $SD = 5.58$). The athlete’s sample distribution and descriptive statistics are
12 presented in Table I. The athletes completed questionnaire assessing all tested variables in
13 their clubs at the presence of their coach and /or primary investigator. To prevent of both
14 exercise and order effects, athletes completed the questionnaires before and /or after the
15 training, and we randomized the order of these questionnaires. This research was conducted
16 in compliance with the ethical principles of psychologists and code of conduct of the
17 American Psychological Association (2002) and it was approved by a committee of experts
18 (i.e., three researchers in the field of social psychology applied to sport). All participants were
19 volunteers, all young athletes (under18 years) provided their parental authorization, and the
20 data of this study was strictly confidential and used for research purposes only.

21 **“(Insert Table I here)”**

22 *2.2. Measures*

23 *2.2.1. Athletes’ personal values*

24 The athletes’ personal values were assessed using the responses of 301 participants
25 who completed a shortened version (21 items) of the French version of Portrait Values
26 Questionnaire (PVQ; Wach & Hammer, 2003; Schwartz, Melech, Lehmann, Burgess, &

1 Harris, 2001), which has been included in the semiannual European Social Survey (ESS;
2 Cieciuch & Davidov, 2012; Schwartz, 2003). The items scored on a Likert scale from (1) ‘not
3 like me at all’ to (6) ‘very much like me’ to measured the individual’s value system of 10
4 value types (i.e., self-direction, hedonism, stimulation, tradition, conformity, security, power,
5 achievement, benevolence and universalism). Typically, each value was measured by two
6 items with the exception of universalism which was measured by three items (Cieciuch &
7 Davidov, 2012; Danioni & Barni, 2019; Schwartz, 2003; Seddig & Davidov, 2018).

8 In accordance with purpose and hypotheses of the present study, we took into account
9 9-items of power, achievement, benevolence and universalism values, which were related and
10 aggregated to opposite higher-order dimensions of personal values (i.e. *self-enhancement* and
11 *self-transcendence*) according to theoretical considerations (Schwartz, 1992, 2003), as they
12 were expected to have the strongest influence on the athletes’ unsanctioned aggression-related
13 variables in competitive sport (e.g., Danioni & Barni, 2019).

14 Consequently, the first dimension subscale is, *self-enhancement values*, including
15 power (2 items) and achievement (2 items), highlighted the goal of individualistic dominance
16 and self-success (e.g., “*Getting ahead in life is important to him. He/She strives to do better*
17 *than others*”) provided a good internal consistency ($\alpha = .75$). The second dimension subscale
18 is, *self-transcendence values*, including universalism (3 items) and benevolence (2 items),
19 emphasize concern with the welfare, interests and rights of others (e.g., “*It is important to him*
20 *to be loyal to his friends. He/She wants to devote himself to people close to him.*”) provided a
21 good internal consistency ($\alpha = .78$). Finally, the 9 items-model with two dimension subscales
22 had a good fit to the data ($\chi^2 (26) = 38.25; p = .06; CFI = .97; TLI = .96; RMSEA = .04; CI$
23 $RMSEA\ 90\% = .00/.06$).

24 2.2.2. Resistive Self-Regulatory Efficacy

25 The athletes’ resistive self-regulatory efficacy was assessed using the responses of 301
26 participants who completed a validated French version of Self-Regulatory Scale in sport
27 context (Corrion et al., 2013). This scale consists of six items (e.g., “*How well do you resist*

1 *the pressure from someone who pushes you to attack an opponent physically?”*), scored on a
2 Likert scale from (1) *“not at all capable”* to (6) *“totally capable”*. This scale had a very
3 good internal consistency ($\alpha = .91$) and an acceptable fit: ($X^2 (8) = 82.39$; $p = < .01$; CFI =
4 $.98$; TLI = $.97$; RMSEA = $.08$; CI RMSEA 90% = $.04/.11$).

5 2.2.3. Moral disengagement

6 The athletes' moral disengagement was evaluated using the responses of 301
7 participants who completed a short French questionnaire of moral disengagement in sport
8 (Corrion, Scoffier, Gernigon, Cury, & d'Arripe-Longueville, 2010). This scale consists of
9 three items measuring Minimization of transgressions and their consequences (e.g., *It's not*
10 *serious if I behave badly [cheating or aggression] because all manners are good to achieve*
11 *victory.*) and three measuring Projection of fault onto others (e.g., *It is not my fault, if I behave*
12 *badly [cheating or aggression] when the referee whistles almost no fault of the opposing*
13 *team.*) on a Likert scale from (1) *“Do not at all agree”* to (6) *“Completely agree”*. In this
14 study, the internal consistency was good for both subscales (Minimization of transgressions: α
15 = $.90$ and Projection of fault onto others: $\alpha = .79$). Also, the scale as a whole had a very good
16 internal consistency ($\alpha = .86$) and an acceptable fit: ($X^2 (3) = 9.63$; $p = .02$; CFI = $.99$; TLI =
17 $.96$; RMSEA = $.08$; CI RMSEA 90% = $.02/.14$).

18 2.2.4. Aggressiveness

19 The athletes' Aggressiveness was evaluated using the responses of 301 participants
20 who completed a French Validation of the Competitive Aggressiveness and Anger Scale
21 (FVCAAS; Albouza & Chazaud, 2019). This scale consists of six items measuring
22 Competitive Anger and their consequences (e.g., *I feel bitter towards my opponent if I lose*)
23 and six measuring Competitive Aggressiveness against others (e.g., *Violent behavior,*
24 *directed towards an opponent, is acceptable.*) on a Likert scale from (1) *“Almost never”* to
25 (5) *“Almost always”*. The internal consistency was good for both subscales (Anger: $\alpha = .76$;
26 Aggressiveness: $\alpha = .76$) Also, the scale as a whole had a good internal consistency ($\alpha = .80$)

1 and an acceptable fit: (X^2 (53) = 147.08; $p < .01$; CFI = .92; TLI = .90; RMSEA = .07; CI
2 RMSEA 90% = .06/.0).

3 2.2.5. *Unsanctioned aggression*

4 The athletes' unsanctioned aggression was assessed using the responses of 301
5 participants who completed a French version of two questions that assess both past aggressive
6 history and experiences in contact sports (Maxwell & Visek, 2009). The athletes were asked
7 "Have you ever used excessive force, illegal within the laws of your sport [e.g., rugby union,
8 boxing, judo, and football or handball] against your opponent just for the sake of inflicting
9 pain or injury?" with players indicating a "Yes" (n = 105: 35%) or "No" (n = 196: 65%)
10 response. A second question (i.e., taught aggressive behavior) asked "[During the past 12
11 months], have you been taught how to execute illegal aggressive behaviors against your
12 opponent without being detected by officials?" with players indicating a "Yes" (n = 111:
13 36%) or "No" (n = 190: 64%) response. Basing in the literature in both social and sport
14 psychology (e.g., Maxwell & Visek, 2009; Seddig & Davidov, 2018), the athletes'
15 unsanctioned aggression was evaluated as binary dependent variable, and thus the players'
16 self-reported answers were coded (i.e., Yes =1, No= 0).

17 2.2.6. *Demographic variables*

18 All participants (n= 301) completed five demographic questionnaires that assessed
19 their age, type of sport, genders, level of competition, and the amount of time participants
20 spent in their sport (i.e., length of practice). For examples: participants were asked to ranked
21 their category of age as young or adult athletes and to mention their birthday. Also they
22 ranked their level of competition as beginner (e.g., local or club), intermediate (e.g.,
23 departmental or regional), or advanced (e.g., national or international) and their gender as
24 male or female athletes, etc. In this study, these five demographic variables were also
25 considered as predictive variables and coded by the way: age (young =1, adult =2), gender
26 (male =1, female =2), type of sport (low contact =1, high contact =2), level of competition

1 (beginner =1, intermediate =2, advanced =3), and length of practice (brief =1, intermediate
2 =2, extensive =3).

3 2.3. Statistical Procedure

4 First, the descriptive data and preliminary analyses (i.e., means, standard deviations,
5 and internal consistency) have been done. We also used the General Linear Model (GLM;
6 Rutherford, 2001) as a useful framework for controlling and comparing how demographic
7 variables (i.e., age, type of sport, genders, level of competition, and length of practice) affect
8 as possible the others tested variables (i.e., *self-transcendence* values, *self-enhancement*
9 values, resistive self-regulatory efficacy, moral disengagement, aggressiveness, and
10 unsanctioned aggression) in the development of our preliminary mediating model. In this
11 mediated model, there are five observed variables (i.e., age, type of sport, genders, level of
12 competition, and length of practice) and five latent variables (i.e., *self-transcendence* values,
13 *self-enhancement* values, resistive self-regulatory efficacy, moral disengagement,
14 aggressiveness), and one dependent variable (i.e., unsanctioned aggression).

15 Next, a matrix of factor correlations was computed to assess the relationships among
16 retained demographics and others tested variables, as such, we checked the multicollinearity
17 among predictive variables (i.e., retained demographics variables, *self-transcendence* values,
18 *self-enhancement* values, resistive self-regulatory efficacy, moral disengagement, and
19 aggressiveness).

20 Subsequently, a series of multiple regression analysis was computed to test our
21 hypotheses given in the introduction, while also to explore whether others alternative models
22 could be identified. However, to protect against the inflation of Type I statistical error
23 (Tabachnick & Fidell, 1996), only retained demographic variables that previously displayed a
24 significant correlation with one or more of others variables in matrix correlation were entered
25 into the regression design.

26 Finally, the hypothesized mediated model was tested with Structural Equation
27 Modeling (SEM) analysis with the robust maximum likelihood estimate and bootstrap method

1 (Bollen, 1987; Byrne, 2005; Hayes, 2013). The hypothesized mediating model was designed
2 to illustrate the initial relationships between the athletes' personal values-unsanctioned
3 aggression, and the influences of both mediating and demographic variables (Figure 1),
4 however only retained demographic variables from pervious analysis were entered into the
5 SEM. The appropriateness of the mediated model must be assessed with global indices of
6 goodness-of-fit to the data. Four indices were employed: chi-square (χ^2), the Root-Mean
7 Square Error of Approximation (RMSEA), the Bentler Comparative Fit Index (CFI), and the
8 Tucker-Lewis Index (TLI). RMSEA values $\leq .08$ at 90% Confidence Interval (RMSEA CI
9 90%) in combination with a value for CFI or TLI $\geq .90$ suggest an acceptable model fit
10 (Byrne, 2005; Hu & Bentler, 1999). The direct and total indirect effects, as well as total effects
11 that comprising of the direct paths and all indirect paths from one variable to another, for the
12 mediated model were calculated (Bollen, 1987; Byrne, 2005; Preacher & Hayes, 2008). The
13 different effects and their corresponding 95% CIs were calculated because of it capability to
14 estimate the direct, indirect and total effects for multiple mediator models, using
15 bootstrapping and providing bias-corrected (BC) 95% CIs, also others model' parameters as
16 RMSEA were calculated at 95% CI (Preacher & Hayes, 2008). The number of bootstrap
17 draws was 10,000, as recommended by Hayes, (2013). A variable with a point estimate within
18 the zero-interval is considered statistically insignificant. The IBM SPSS Amos 24.0 software
19 (Arbuckle, 2016) was used in this analysis.

20 **3. Results**

21 *3.1. Descriptive statistics and preliminary analyses*

22 First, we initially evaluated and compared the effects of five demographic
23 "independent" variables (i.e., age, type of sport, genders, level of competition, and length of
24 practice) on all others tested "dependent" variables (i.e., *self-transcendence*, *self-*
25 *enhancement*, resistive self-regulatory efficacy, moral disengagement, aggressiveness, and
26 unsanctioned aggression) through the GLM' tests. The multivariate tests of the GLM revealed

1 that a significant main effect for age [Wilks's $\lambda = .96$, $F(6, 290) = 2.11$, $p = .04$, $\eta^2 = .04$],
2 gender [Wilks's $\lambda = .94$, $F(6, 290) = 2.98$, $p < .01$, $\eta^2 = .06$], and type of sport [Wilks's $\lambda = .95$,
3 $F(6, 290) = 2.28$, $p = .03$, $\eta^2 = .04$], but not did for both level of competition, [Wilks's $\lambda = .99$,
4 $F(6, 290) = 0.75$, $p = .60$, $\eta^2 = .02$], and length of practice [Wilks's $\lambda = .97$, $F(6, 290) = 1.57$, p
5 $= .16$, $\eta^2 = .03$]. Univariate analysis showed age difference only in *self-transcendence* values
6 [F(1, 295) = 04.88, $p = .02$, $\eta^2 = .06$], gender differences in all of *self-enhancement* values
7 [F(1, 295) = 08. 88, $p < .01$, $\eta^2 = .08$], moral disengagement [F(1, 295) = 06.44, $p = .02$, $\eta^2 =$
8 $.07$], aggressiveness [F(1, 295) = 11.74, $p < .001$, $\eta^2 = .09$] and unsanctioned aggression [F(1,
9 295) = 02.17, $p = .04$, $\eta^2 = .07$], and type of sport only in resistive self-regulatory efficacy [F(1,
10 295) = 04.86, $p = .03$, $\eta^2 = .07$]. Tukey's post hoc test revealed that adult athletes have a higher
11 level of *self-transcendence* values than young athletes; as such male athletes have higher level
12 of all *self-enhancement values*, aggressiveness and unsanctioned aggression, also athletes in
13 high contact sport have a low level in resistive self-regulatory efficacy than athletes in low
14 contact sport (Table I). However, as significant effects of both demographic variables (i.e.,
15 level of competition and length of practice) on the others tested variables could not be
16 demonstrated these two demographic variables were removed from subsequent correlation
17 analysis.

18 Second, as seen in Table II, many significant factor correlations ranged in magnitude
19 from low to high and were in the theoretically expected (r : from $-.21$, $p < .01$, to $.66$, $p < .01$;
20 see Table II) and non case of multicollinearity was found, as all correlations entre all
21 predictive variables were less $.70$. Hence, we entered into the regression design the three
22 retained demographic variables (i.e., age, genders, and type of sport), *self-transcendence*, *self-*
23 *enhancement* values, resistive self-regulatory efficacy, moral disengagement, aggressiveness,
24 and unsanctioned aggression.

25 **“(Insert Table II here)”**

26 Third, as seen in Table III, the results of a five-model multiple regression analysis
27 generally validated ours hypothesis. We also don't recognize any other alternative models.

1 Precisely, in the first model, we begin by testing the predictive effects of three retained
2 demographic variables (i.e., age, genders, and type of sport) on others tested variables (i.e.,
3 *self-transcendence*, *self-enhancement* values, resistive self-regulatory efficacy, moral
4 disengagement, aggressiveness, and unsanctioned aggression). As hypothesized, age
5 positively predicted *self-transcendence* values ($\beta = .14$, $p = .04$). Also, gender negatively
6 predicted *self-enhancement* values ($\beta = -.18$, $p = .04$), moral disengagement ($\beta = -.15$, $p = .04$),
7 aggressiveness ($\beta = -.21$, $p < .01$) and unsanctioned aggression ($\beta = -.21$, $p = .03$). In addition,
8 type of sport positively predicted resistive self-regulatory efficacy ($\beta = .13$, $p = .04$), but
9 contrary to our hypotheses neither age or type of sport was related to both moral
10 disengagement and unsanctioned aggression ($p > .05$). In the second model, we have added the
11 athletes' personal values to the three predictive variables of model 1. As hypothesized, self-
12 transcendence values predicted positively resistive self-regulatory efficacy ($\beta = .16$, $p < .01$)
13 and negatively both moral disengagement ($\beta = -.22$, $p < .001$), aggressiveness ($\beta = -.15$, $p <$
14 $.01$), but contrary to our hypotheses they not related to unsanctioned aggression ($p > .05$). In
15 addition, self-enhancement values negatively predicted resistive self-regulatory efficacy ($\beta = -$
16 $.22$, $p < .01$) and positively all of moral disengagement ($\beta = .27$, $p < .001$), aggressiveness (β
17 $= .34$, $p < .01$) and unsanctioned aggression ($\beta = .28$, $p < .01$). However, the significant effects
18 of type of sport on resistive self-regulatory efficacy and that of the gender on unsanctioned
19 aggression (see, Table III, model 1) could not be demonstrated in this model when we
20 controlled the athletes' personnel values. In the third model, we have added the resistive self-
21 regulatory efficacy to five predictive variables of model 2. As hypothesized, the resistive self-
22 regulatory efficacy negatively predicted all moral disengagement ($\beta = -.18$, $p < .001$),
23 aggressiveness ($\beta = -.28$, $p < .001$) and unsanctioned aggression ($\beta = -.12$, $p < .001$). In the
24 fourth model, we have added moral disengagement to six predictive variables of model 3. As
25 hypothesized, moral disengagement positively predicted both aggressiveness ($\beta = .60$, $p < .01$)
26 and unsanctioned aggression ($\beta = .38$, $p < .001$). Also, a significant effect of type of sport on
27 unsanctioned aggression could be demonstrated ($\beta = -.14$, $p < .001$), but the effects of resistive

1 self-regulatory efficacy on unsanctioned aggression could not be demonstrated ($\beta = -.05, p >$
2 $.05$). In the fiftieth model, aggressiveness was added to seven predictive variables of model 4.
3 As hypothesized, aggressiveness positively and strongly predicted unsanctioned aggression (β
4 $=.64, p < .001$). However, the significant effects of the self-enhancement values (Table III,
5 model 2, 3, 4), resistive self-regulatory efficacy (Table III, model 3), and moral disengagement
6 (Table III, model 4) on unsanctioned aggression could not be demonstrated ($p > .05$) in this
7 model when we controlled the aggressiveness.

8 All of these results initially evidenced that unsanctioned aggression could be predicted
9 both directly by some athletes' personal values and some retained demographic values, and/or
10 indirectly through the effects of several mediators of resistive self-regulatory efficacy, moral
11 disengagement and aggressiveness. Also, they indicated that the effects of some retained
12 demographic variables on both athletes' personal values and several mediating variables
13 could be demonstrated. Hence, our hypothesized mediating model (Figure 1) with retained
14 demographic variables (i.e., age, genders, and type of sport) could be tested through the SEM.

15 **“(Insert Table III here)”**

16 *3.2. Testing the hypothesized mediating model*

17 The final step involved testing our hypothesized mediating model with retained
18 demographic variables through the SEM analyses *via the robust maximum likelihood estimate*
19 *and bootstrap method*. The SEM results showed *an acceptable* fit index for the mediated
20 model: ($X^2(11) = 27.94; p = .03; CFI = .97; TLI = .90; RMSEA = .07; CI RMSEA 95\% =$
21 $.04/.10$), which explained 43.00% of the variance of unsanctioned aggression. The SEM
22 results strongly confirmed several results of both correlation and multiple regression analysis,
23 they also indicated strong support existed for several study hypotheses, as both significant and
24 insignificant coefficients were displayed in Figure 2.

25 **“(Insert Figure 2 here)”**

1 Also, the direct, total indirect and total effects are provided in Table IV. First, as
2 hypothesized, many significant direct effects were confirmed. Age positively predicted *self-*
3 *transcendence* values ($\beta = .13$, $SE = .06$, $Z = 2.17$, $p = .03$). Also, gender negatively predicted
4 self-enhancement values ($\beta = -.16$, $SE = .06$, $Z = -2.67$, $p < .01$), aggressiveness ($\beta = -.11$, $SE =$
5 $.04$, $Z = -2.75$, $p = .04$). In addition, type of sport positively predicted resistive self-regulatory
6 efficacy ($\beta = .12$, $SE = .06$, $Z = 2.00$, $p = .03$). Self-transcendence values were positively
7 predicted the resistive self-regulatory efficacy ($\beta = .16$, $SE = .06$, $Z = 2.67$, $p < .01$) and
8 negatively associated to moral disengagement ($\beta = -.19$, $SE = .06$, $Z = -3.17$, $p < .01$), whereas
9 self-enhancement values were negatively related to resistive self-regulatory efficacy ($\beta = -.21$,
10 $SE = .05$, $Z = -4.20$, $p < .001$) and positively to both moral disengagement ($\beta = .23$, $SE = .06$, Z
11 $= 3.83$, $p < .001$) and aggressiveness ($\beta = .15$, $SE = .05$, $Z = 3.00$, $p < .001$). In addition,
12 resistive self-regulatory efficacy was negatively related to moral disengagement ($\beta = -.18$, $SE =$
13 $.07$, $Z = -2.57$, $p < .01$). As well, moral disengagement was positively related to aggressiveness
14 ($\beta = .59$, $SE = .05$, $Z = 11.80$, $p < .01$), and the latter was positively associated with
15 unsanctioned aggression ($\beta = .64$, $SE = .06$, $Z = 10.67$, $p < .001$). However, contrary to our
16 hypothesis, none of the direct effect of self-transcendence values ($\beta = -.00$, $SE = .04$, $Z = 0$, $p =$
17 $.83$), self-enhancement values ($\beta = .07$, $SE = .04$, $Z = 1.75$, $p = .14$), resistive self-regulatory
18 efficacy ($\beta = .00$, $SE = .06$, $Z = 0.00$, $p = .80$), moral disengagement ($\beta = -.01$, $SE = .07$, $Z =$
19 0.14 , $p = .86$), age ($\beta = -.08$, $SE = .07$, $Z = -1.14$, $p = .12$), gender ($\beta = .02$, $SE = .04$, $Z = 0.50$, p
20 $= .07$), and type of sport ($\beta = .09$, $SE = .05$, $Z = 1.80$, $p = .06$) on unsanctioned aggression was
21 significant. As well, the direct effect of age ($\beta = -.08$, $SE = .05$, $Z = -2.00$, $p = .07$), gender ($\beta =$
22 $.10$, $SE = .06$, $Z = -1.67$, $p = .06$), and sport type ($\beta = -.08$, $SE = .07$, $Z = -1.14$, $p = .10$) on
23 moral disengagement and the direct effect of resistive self-regulatory efficacy on
24 aggressiveness were only marginal ($\beta = -.08$, $SE = .05$, $Z = 1.60$, $p = .07$).

25 Second, as hypothesized, many significant indirect effects were confirmed. For examples:
26 the total indirect effect of gender and *self-transcendence* values on unsanctioned aggression
27 through resistive self-regulatory efficacy, moral disengagement and aggressiveness was negative

1 and significant ($\beta = -.15$; 95% BCa CI [-.22; -.10] and $\beta = -.08$; 95% BCa CI [-.14; -.03],
2 respectively). In contrast, the indirect effect of self-enhancement values on unsanctioned
3 aggression through resistive self-regulatory efficacy, moral disengagement and aggressiveness
4 was positive and significant ($\beta = .20$; 95% BCa CI [.14; .26]). In addition, the total indirect effect of
5 resistive self-regulatory efficacy on unsanctioned aggression through moral disengagement and
6 aggressiveness was negative and significant ($\beta = -.12$; 95% BCa CI [-.19; -.04]) Furthermore, the
7 indirect effect of moral disengagement on unsanctioned aggression through aggressiveness was
8 positive and significant ($\beta = .38$; 95% BCa CI [.31; .47]).

9 Third, many significant total effects were confirmed. For examples, the total effect of both
10 age and gender on unsanctioned aggression was negative and significant ($\beta = -.13$; 95% BCa CI
11 [-.23; -.03] and $\beta = -.13$; 95% BCa CI [-.201; -.03], respectively), Also, total effect of both self-
12 enhancement values and moral disengagement on unsanctioned aggression was positive and
13 significant ($\beta = .27$; 95% BCa CI [.07; .14] and $\beta = .37$; 95% BCa CI [.10; .19], respectively).
14 However, the total effect of type of sport, self-transcendence values and resistive self-regulatory
15 efficacy on unsanctioned aggression was marginal, positive or negative ($\beta = .05$; 95% BCa CI [-
16 .06; .14], $\beta = -.08$; 95% BCa CI [-.08; .00] and $\beta = -.11$; 95% BCa CI [-.07; .00], respectively).

17 Thus, the serial multiple mediation pathways between personal values, demographic
18 variables and unsanctioned aggression via resistive self-regulatory efficacy, moral
19 disengagement and aggressiveness were fully supported (see Figure 2 and Table IV).

20 These findings confirmed the significant and subsequent mediating role of resistive
21 self-regulatory efficacy, moral disengagement and aggressiveness in the relationships between
22 both personal values (i.e., *self-transcendence* and *self-enhancement* values), some
23 demographic variables (i.e., age, genders, and type of sport), and unsanctioned aggression as
24 presented in our final mediating model (Figure 2).

25 **“(Insert Table IV here)”**

26 **4. Discussion**

1 The main objective of this study was to apply a mediating model as influenced by
2 various demographic variables to explore the relationships between athletes' personal values
3 and their unsanctioned aggression directly and indirectly through the mediating role of
4 resistive self-regulatory efficacy, moral disengagement, and aggressiveness in competitive
5 contact athletes. Specifically, we illustrated the eventual impact of demographic variables
6 (i.e., age, type of sport, gender, level of competition, and length of practice) on this mediating
7 model, which was specified to explore how personal values (i.e., *self-transcendence* and *self-*
8 *enhancement*; Schwartz, 1992), operates in concert with both sociocognitive self-regulatory
9 mechanisms (i.e., resistive self-regulatory efficacy and moral disengagement) (Bandura et al.,
10 2001) and aggressiveness as an important antecedent of unsanctioned aggression (Maxwell &
11 Moores, 2007; Maxwell & Visek, 2009).

12 Several initial types of statistical analysis (i.e., generalised linear model and
13 correlation and regression analysis) were conducted to control the effects of demographic
14 variables on other tested variables and to explore the relationships between them in relation to
15 our hypotheses. Then, structured equation modelling (SEM) was performed to verify the
16 initial results and to test our hypothesised mediating model.

17 In contradistinction to our hypotheses, the results of the GLM confirmed insignificant
18 main effects for two demographics variables (level of competition and length of practice) on
19 all testing variables in the mediating model, as only 25.25% of the athletes' sample were at an
20 advanced level and the average time (hours per week) of participation in different contact
21 sport was not controlled. However, our findings are in line with the results of research
22 suggesting that unsanctioned aggression were not predicted by demographic variables, such as
23 age, playing position, or level of play (Maxwell & Visek, 2009).

24 Then, correlation and regression analysis generally confirmed our hypotheses and
25 showed that other alternative models were not identified, and thus they supported the view
26 that our mediating model could be tested through SEM. Subsequent SEM analysis
27 demonstrated that resistive self-regulatory efficacy, moral disengagement, and aggressiveness

1 were mediators that fully govern the impact of both athletes' personal values and certain
2 demographic variables on unsanctioned aggression.

3 Specifically, the SEM analysis confirmed that significant direct effects of athletes'
4 personal values of *self-transcendence* and *self-enhancement* and of demographic variables
5 (i.e., age, type of sport, and gender) on unsanctioned aggression could not be established, but
6 their influence was confirmed indirectly through their direct effects on resistive self-regulatory
7 efficacy, moral disengagement, and aggressiveness. Our results are in line with the results of
8 research suggesting that the effects of personal values on aggressive behaviour operate by
9 affecting different mediating variables such as cognitive, emotional, and/or arousal
10 mechanisms (Anderson & Bushman, 2002; Rohan, 2000), resistive self-regulatory efficacy
11 and moral disengagement (Bandura et al, 2001; Paciello et al., 2017; Šukys & Jansonienė,
12 2012), and attitudes toward unsanctioned aggression (Seddig & Davidov, 2018).

13 In addition, as was expected, our results showed that *self-transcendence* values were
14 linked negatively and indirectly to unsanctioned aggression through a full serial mediation of
15 resistive self-regulatory and moral disengagement and aggressiveness. The *self-transcendence*
16 values were positively associated with resistive self-regulatory efficacy and negatively
17 associated with moral disengagement, which in turn were positively associated with
18 aggressiveness, and the latter was positively associated with unsanctioned aggression. These
19 findings suggested that *self-transcendence* values perhaps improve the sociocognitive self-
20 regulatory mechanisms governing unsanctioned aggression in competitive athletes. These
21 findings were fully consistent with previous studies which have reported that *self-*
22 *transcendence* or moral values in sport (i.e., preserving and enhancing the welfare of all
23 people, fairness, tolerance, and being helpful; see Bardi & Schwartz, 2013) exert a negative
24 impact on both antisocial attitudes (Lee et al., 2008) and moral disengagement, which in turn
25 can be a mediating variable in regulating the athletes' aggressive acts (Paciello et al., 2017;
26 Šukys & Jansonienė, 2012). In this indirect self-regulation, *self-transcendence* values direct
27 attention to others' needs and pro-social or cooperative behaviour (Bardi & Schwartz, 2013;

1 Caprara & Steca, 2007) and prevent aggressive behaviour (e.g., Danioni & Barni, 2019;
2 Seddig & Davidov, 2018). Thus, athletes who were motivated to cater to the needs of others
3 and to accommodate moral norms within the rules of the game were more likely to preserve
4 and maintain their resistive self-regulatory efficacy and inhibit their moral disengagement,
5 aggressiveness, and unsanctioned aggression, and to be less aggressive toward others.

6 Moreover, as expected, our results showed that *self-enhancement* values were linked to
7 unsanctioned aggression positively and indirectly through a full serial multiple mediation of
8 resistive self-regulatory, moral disengagement, and aggressiveness variables. Specifically, the
9 athletes' *self-enhancement* values were negatively associated with resistive self-regulatory
10 efficacy and positively linked with both moral disengagement and aggressiveness, and the
11 latter was positively related with unsanctioned aggression. Our findings were fully consistent
12 with previous studies that have reported that *self-enhancement* values are positively and
13 directly associated with both attitudes toward aggressive behaviours (e.g., Danioni & Barni,
14 2019; Seddig & Davidov, 2018) and moral disengagement, which were both considered as
15 mediators in the relationship between personal values and aggressive behaviours (Paciello et al.,
16 2017; Seddig & Davidov, 2018; Šukys & Jansonienė, 2012). These findings suggested that
17 higher *self-enhancement* or status values in sport (i.e., social status, winning, dominance over
18 people, and resources; see Bardi & Schwartz, 2013; Lee et al., 2008) may be related to the
19 general context of lower resistive self-regulatory efficacy and higher moral disengagement,
20 aggressiveness, and level of unsanctioned aggression (Paciello et al., 2017; Šukys &
21 Jansonienė, 2012), in particular when there is increasing pressure to “win-at-all-costs” even in
22 a transgressive manner (e.g., cheating or aggression) that would be beyond the rules of
23 fairness (Long et al., 2006; Danioni & Barni, 2019). Indeed, the pressure to win point
24 implicitly to the importance of *self-enhancement* values that have led to greater pressure on
25 athletes to favour aggressive behaviour (Danioni & Barni, 2019) as a way to perform in
26 contact sports (Baird, 2009; Danioni & Barni, 2019; Maxwell & Moores, 2007; Maxwell &
27 Visek, 2009). Thus, athletes who were motivated to promote their own interests and advance

1 themselves to control and dominate their peers were more likely to adopt the mechanism of
2 moral disengagement than resistive self-regulatory efficacy, and to be more aggressive
3 towards others.

4 Also, and in line with the existing literature (Bandura et al., 2001; d'Arripe-
5 Longueville et al., 2010; Ring & Kavussanu, 2017), our findings showed a significant and
6 negative association between resistive self-regulatory efficacy and moral disengagement,
7 which in turn was positively linked with aggressiveness, and the latter was itself positively
8 associated with unsanctioned aggression (Maxwell & Visek, 2009).

9 Furthermore, our findings showed that age positively predicted *self-transcendence*
10 values, as mature adult athletes showed higher levels of morale, cooperation with others, or
11 altruistic goals than young athletes (e.g., Schwartz, 1992, 2006). Gender predicted negative
12 *self-enhancement* values and unsanctioned aggression along with several underlying
13 mechanisms, such as moral disengagement and aggressiveness. *Self-enhancement* values,
14 moral disengagement, and aggressiveness scores were significantly higher in male athletes
15 than in female athletes. These findings are in line with the sociological literature showing that
16 men placed more importance in power or *self-enhancement* values, whereas women emphasised
17 *self-transcendence* values (Schwartz, 2006). Therefore, our findings are perhaps related to the
18 cultural influence on athletes and their socialisation into and through sport, where female
19 athletes have a greater opportunity to preserve their moral, social, or womanly public image
20 compared with male athletes, while status values are integral to male identity and the
21 meanings of masculinity throughout contemporary society generally. It is important that this
22 aspect be explored in more detail in future studies.

23 Finally, our analysis revealed that the type of sport positively predicted resistive self-
24 regulatory efficacy. Our findings indicated that low contact sport offers perhaps a greater
25 opportunity for players to improve their resistive self-regulatory efficacy by respecting the
26 rules of play in their own particular area (e.g., it is illegal to touch the opponent during a game
27 in basketball), compared to athletes involved in high contact sports as these sports have the

1 inherent potential for injury (e.g., Bredemeier et al., 1986; Maxwell & Visek, 2009), with
2 lower level of resistive self-regulatory aggressive acts (e.g., it is legal to hit the opponent's
3 face directly in a boxing match). It will be important to examine this aspect more deeply in
4 future studies.

5 *4.1. Strengths, Limitations, Implications and Perspectives*

6 Our empirical study extends the existing literature on the sociocognitive self-
7 regulatory mechanisms governing aggressive behaviour in two ways. First, it demonstrates
8 that both Schwartz's (1992) personal values model and Bandura et al.'s (2001) social
9 cognitive model, which were first tested in daily life (e.g., Bandura et al., 2003; Seddig &
10 Davidov, 2018) and then applied in a sports context (e.g., Danioni & Barni, 2019; d'Arripe-
11 Longueville et al., 2010), can be combined in an integrative model and subsequently extended
12 to the specific context of unsanctioned aggression in competitive athletes. These findings
13 provide support for and extend the initial findings of Lee et al. (2008) and Šukys and
14 Jansonienė, (2012) by evidencing the positive role of athletes' values of *self-transcendence* in
15 sociocognitive self-regulatory mechanisms of unsanctioned aggression, as well as the
16 negative role of *self-enhancement* values. Second, they corroborate earlier results showing
17 that *self-transcendence* improves one's self-efficacy in pro-social behaviours (Caprara &
18 Steca, 2007), and extends them to the context of unsanctioned aggression in competitive
19 sport; consequently, *self-transcendence* improves resistive self-regulatory efficacy in the
20 athletes' personal values–self-regulatory relationship. In addition, our empirical study
21 demonstrated simultaneous relationships among demographic variables, athletes' personal
22 values, sociocognitive self-regulatory mechanisms, aggressiveness, and unsanctioned
23 aggression. Therefore, our study provides empirical support for the GAM (Anderson and
24 Bushman, 2002), which recommends testing the simultaneous influences of various personal
25 and demographic or situational variables on cognitive, emotional, and/or arousal mechanisms
26 underlying unsanctioned human aggression (Anderson & Bushman, 2002; Maxwell & Visek,
27 2009).

1 Several limitations should be considered when interpreting these findings. First, the
2 percentage of positive answers (i.e., *yes*) for two unsanctioned aggression questions was only
3 35% and 36%, respectively. There may be two reasons for this. Respondents in a self-report
4 questionnaire may hide their true or “positive” view because unsanctioned aggression is
5 socially undesirable (Seddig & Davidov, 2018). However, empirical studies on athletes’
6 morale variables (i.e., personal values and both antisocial or prosocial attitudes) revealed a
7 low correlation between social desirability and athletes’ values (Lee et al., 2008).
8 Furthermore, to control for social desirability, the questionnaires were administered with the
9 assurance of anonymity (Seddig & Davidov, 2018), and respondents were encouraged to
10 answer truthfully and were reminded to report their own personal thoughts and feelings; they
11 were also told that there were no right or wrong answers (d’Arripe-Longueville et al., 2010),
12 which may have reduced social desirability to a minimum (but did not exclude it). In addition,
13 the sport psychology literature confirmed that athletes’ perceptions of their coach’s character-
14 building competency and the type of training method influence the athletes’ personal
15 development and negative attitudes towards unsanctioned aggression (Boardley & Kavussanu,
16 2009; Nosanchuck & MacNeil, 1989). It will be important to deepen this analysis in future
17 studies to understand their impact on both athletes’ personal values and sociocognitive
18 mechanisms of unsanctioned aggression. Thus, future research could include more implicit
19 and explicit unsanctioned aggression questions, interviews with coaches, and observations of
20 the athletes to overcome this bias and to gain a better insight into unsanctioned aggression in
21 sport, rather than relying solely on the subjective interpretation of the athletes (Maxwell &
22 Moores, 2007; Maxwell & Visek, 2009).

23 Second, given the limited number of athletes volunteers who were at an advanced
24 level in their sport (25.25%), this study could be developed to include larger samples of
25 volunteers at an advanced level and controlling their average (hours per week) of
26 participation in different contact sports in order to retest and generalise our results to the
27 wider arena of competitive sport. Therefore, future studies in different cultures with many

1 more advanced competitors, should be conducted to encourage the development of the
2 integrative model that enhances further our understanding on the mediating role of resistive
3 self-regulatory efficacy, moral disengagement, and aggressiveness that fully or partially
4 govern the impact of athletes' personal values and demographic variables on the unsanctioned
5 aggression.

6 Third, the self-report measures and cross-sectional design of this study were used for
7 analytical purpose of establishing associations between tested moral variables. This design
8 raises significant concerns about shared method variance (Seddig & Davidov, 2018). Hence,
9 our study cannot be assumed to have discovered made causal relationships, unless perhaps the
10 results remained stable over time. However, both social and sport psychology show that self-
11 report measures and cross-sectional design have been used in several empirical studies testing
12 the relationships among moral variables and unsanctioned and other transgressive behaviours
13 (Danioni & Barni, 2019; d'Arripe-Longueville et al., 2010; Lee et al., 2008; Maxwell &
14 Visek, 2009; Paciello et al., 2017; Ring & Kavussanu, 2017; Seddig & Davidov, 2018; Šukys
15 & Jansonienė, 2012). In addition, it seems to us that with the present data, a good first step
16 would be to construct a longitudinal measurement model. Therefore, longitudinal researches
17 should be conducted to establish whether our results can be replicated. For example,
18 longitudinal studies should be conducted to examine the influence of pedagogical prevention
19 programmes that teach and transmit prosocial values and their related behaviours through
20 competitive situations and moral dilemmas, for example the Football 4 Peace campaign (see
21 Lambert, 2013), should be considered. This potentially leading educational programme could
22 enhance the effects of both personal values (e.g., *self-transcendence*) and self-regulation skills
23 (e.g., resistive self-regulatory efficacy), as well as decreasing the effects of *self-enhancement*
24 values and moral disengagement during aggressive conduct. However, it is important to
25 establish under what conditions personal values and sport behaviours are related (Lee et al.,
26 2008; Schwartz, 1992). Moreover, it must be acknowledged that “positive reinforcement is
27 regarded as preferable to the aversive control of behaviour, as it has consistently been

1 demonstrated to be most effective, especially with young people” (Lambert, 2013, p. 159).
2 Thus, this pedagogical prevention programme is particularly significant for athletes in their
3 early or mid-adolescence who display generally favourable ethical values and attitudes, and so
4 is an important avenue for future research.

5 Fourth, the athlete’s cultural background was not controlled in the current study, as the
6 majority of young competitors have a similar French cultural background, since they are from
7 old stock rather than immigrant origin. Also, this factor is beyond the scope of the current
8 study. Further investigation on possible influence of cultural background factor on moral
9 variables (e.g., personal values and aggression) may be warranted (Aplin & Saunders, 2009;
10 Bandura, 1973; Bergeron & Schneider, 2005; Mokoukolo, 2006; Spaaija & Schaillec,
11 2019).

12 Finally, the present findings could be expanded to provide new information for
13 coaches and sport psychologists involved in regulating unsanctioned aggression. More studies
14 could be conducted to examine the joint role of the affective variable mediators reported in
15 the literature: (a) negative affective self-regulatory efficacy (d’Arripe-Longueville et al.,
16 2010); and (b) aggressive provocative tendencies in terms of experienced emotion and action
17 readiness in response to a set of competitive provocative situations (Pahlavan, Amirrezvani, &
18 O’Connor, 2012).

19 **5. Conclusion**

20 Despite its stated limitations, the current study is one of the first to present an
21 integrative theoretical model to identify simultaneously the role of certain demographic
22 variables and personal values in both sociocognitive self-regulatory mechanisms and
23 aggressiveness. Through this, the positive role of athletes’ values of *self-transcendence* and
24 low contact sports as well as the negative role of *self-enhancement* values and high contact
25 sports in sociocognitive self-regulatory mechanisms of unsanctioned aggression is stressed.
26 Thus, our pilot study provides strong support for the subsequent mediating role of resistive
27 self-regulatory efficacy, moral disengagement, and aggressiveness in the relationship between

1 both athletes' personal values and certain demographic variables and the athletes' unsanctioned
2 aggression. Therefore, coaches, sport psychologists, and athletes are invited to contribute to
3 the development and refinement of this knowledge. It emphasises the importance of
4 considering athletes' personal values with respect to their training methods in order to
5 enhance sociocognitive self-regulatory mechanisms governing unsanctioned aggression.

6 **Conflict of interest 'none':**

7 The authors declare that they have no links of interest.

8 **Acknowledgement:**

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11 order to reach the participants.

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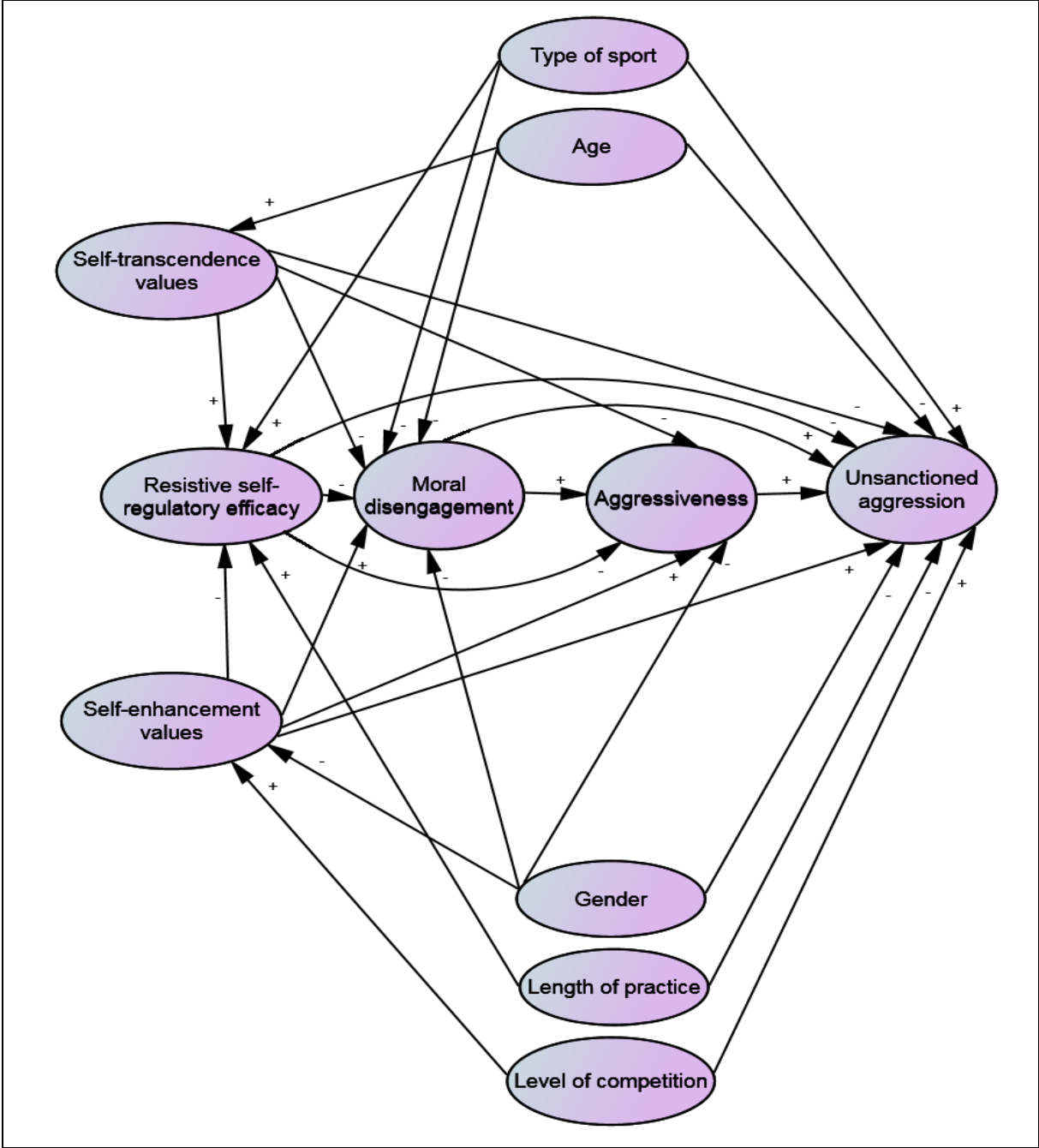
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Figure captions

- 1
- 2 Figure 1: proposes un hypothesized model to assess the effects of the athletes' personal values
3 (*self-enhancement* and *self-transcendence* values) and demographic variables (age, type of
4 sport, gender, level of competition and length of practice) on unsanctioned aggression, both
5 directly and indirectly through the mediating role of resistive self-regulatory efficacy, moral
6 disengagement and aggressiveness.
- 7 Table I: presents demographic characteristics of the sample and descriptive statistics.
- 8 Table II: presents correlations among three retained demographic variables (age, type of sport,
9 and gender), two personnel values (*self-enhancement* and *self-transcendence* values), three
10 mediating variables (resistive self-regulatory efficacy, moral disengagement and
11 aggressiveness), and unsanctioned aggression.
- 12 Table III: presents the results of the multiple regressions analysis for retained variables.
- 13 Figure 2: confirms by structural equation modelling analysis the sequential mediating role of
14 resistive self-regulatory efficacy, moral disengagement and aggressiveness in the pathways
15 from both athletes' personal values and some demographic variables to unsanctioned
16 aggression.
- 17 Table IV: presents all direct, total indirect and total effects of athletes' personal values (*self-*
18 *enhancement* and *self-transcendence*), and some demographic variables (age, type of sport and
19 gender) on the resistive self-regulatory efficacy, moral disengagement, aggressiveness and
20 unsanctioned aggression.

Figure 1. Hypothesized mediating model of the relationships between the athletes' personal values-unsanctioned aggression, and the influences of both mediating and demographic variables

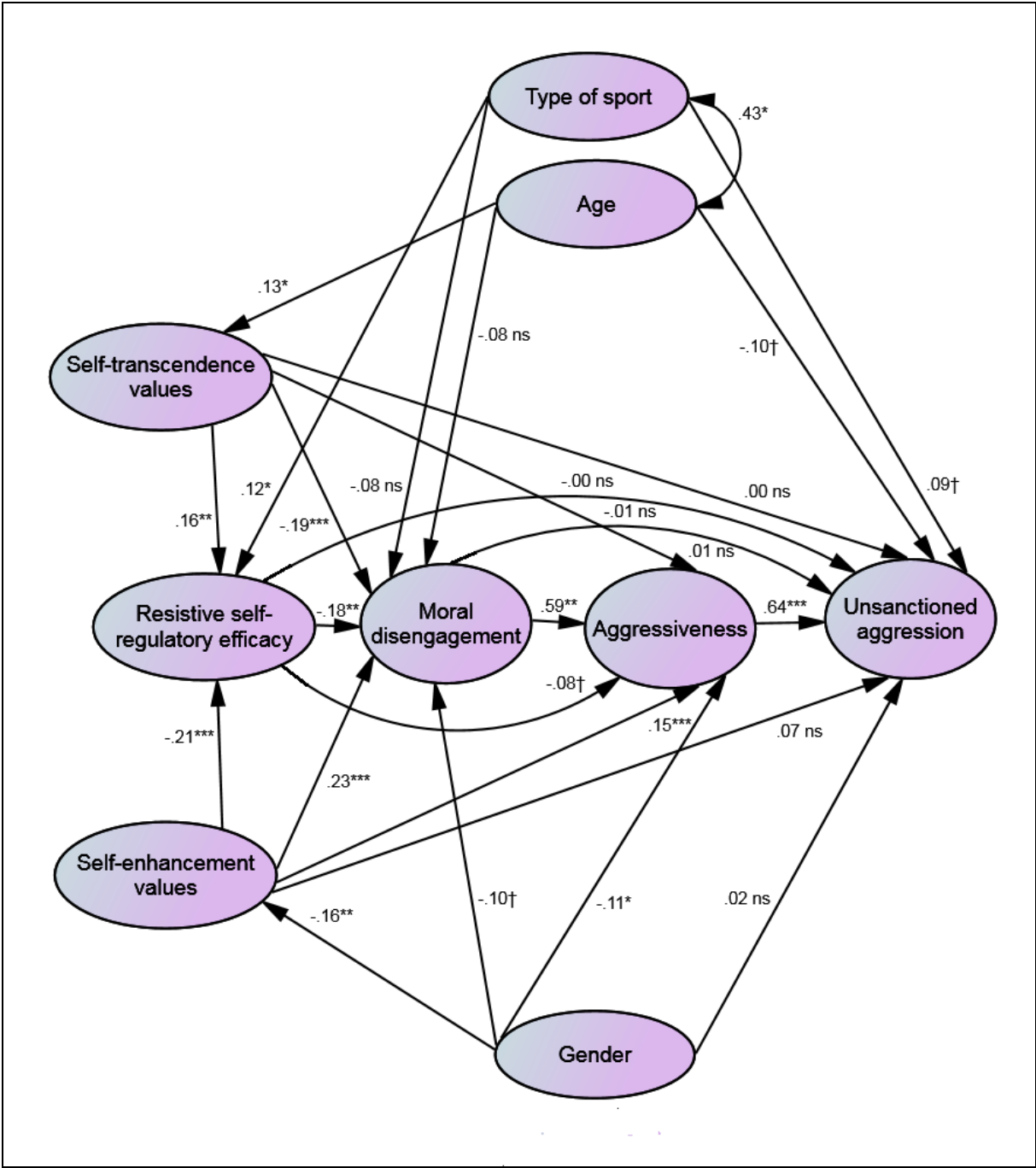
Figure 1. Modèle médiationnel hypothétique des relations entre les valeurs personnelles des athlètes et l'agression sanctionnée, avec les influences des variables médiatrices et démographiques



Notes. Resistive self-regulatory efficacy, Moral disengagement, and Aggressiveness were (mediating), as such Gender; Age; Type of sport; Level of competition and Length of practice were (demographic) variables.

Figure 2. The mediating variables govern both the impacts of the athletes' personal values and demographic variables on their unsanctioned aggression

Figure 2. Les variables médiatrices gouvernent à la fois les impacts des valeurs personnelles et variables démographiques des athlètes sur leur agression sanctionnée



Notes. Resistive self-regulatory efficacy, Moral disengagement, and Aggressiveness were (mediating), as such Gender, Age, and Type of sport were (demographic) variables of the mediational analysis. † $p \leq .07$; * $p < .05$; ** $p < .01$; *** $p < .001$; ns: not significant.

TABLE I. Demographic characteristics of the sample and descriptive statistics
TABLE I. Caractéristiques démographiques de l'échantillon et statistiques descriptives

Variables	N	%	STV	SEV	RSRES	MD	AG	^a UG	
			M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	
All athletes	301	100	4.56 (0.98)	3.62 (1.19)	4.88 (1.42)	2.27 (1.20)	2.17 (0.86)	0.34 (0.48)	
^a AGE	Young (12-17 years)	200	66.45%	4.48 (1.02)	3.66 (1.17)	1.44 (0.10)	2.39* (1.15)	2.17 (0.86)	0.37 (0.48)
M (SD)	Adult (18-36 years)	101	33.55%	4.74* (0.88)	3.53 (1.13)	1.38 (0.14)	2.03 (1.28)	2.17 (0.87)	0.31 (0.46)
1.36 (0.70)									
^a GN	Males	172	57.14%	4.54 (0.99)	3.77* (1.13)	4.90 (1.36)	2.38* (1.26)	2.31* (0.91)	0.39* (0.49)
M (SD)	Females	129	42.86%	4.59 (0.98)	3.41 (1.16)	4.85 (1.50)	2.11 (1.11)	1.97 (0.77)	0.28 (0.45)
1.43 (0.96)									
^a TS	High contact	131	43.52%	4.52 (1.02)	3.70 (1.16)	4.64 (1.55)	2.46 (1.21)	2.15 (0.91)	0.32 (0.46)
M (SD)	Low contact	170	56.48%	4.59 (0.95)	3.55 (1.16)	5.05* (1.28)	2.12 (1.18)	2.18 (0.82)	0.37 (0.48)
2.65 (0.50)									
^a LC	Beginner	115	38.21%	4.53 (0.97)	3.67 (1.78)	4.99 (1.35)	2.27 (1.14)	2.15 (0.87)	0.39 (0.48)
M (SD)	Intermediate	110	36.67%	4.52 (0.98)	3.40 (1.17)	4.88 (1.39)	2.23 (1.16)	2.07 (0.88)	0.27 (0.44)
1.86 (0.73)	Advanced	76	25.25%	4.68 (0.99)	3.84 (1.06)	4.70 (1.59)	2.31 (1.36)	2.32 (0.82)	0.47 (0.50)
^a LP	Brief (≥ 5 years)	109	36.21%	4.40 (1.05)	3.51 (1.17)	4.93 (1.41)	2.16 (0.96)	2.14 (0.86)	0.37 (0.48)
M (SD)	Intermediate (6-10 years)	49	16.28%	4.71 (1.02)	3.97 (1.21)	4.58 (1.51)	2.58 (1.51)	2.26 (0.98)	0.38 (0.49)
2.11 (0.91)	Extensive (11-30 years)	143	47.50%	4.64 (0.90)	3.57 (1.12)	4.94 (1.36)	2.24 (1.24)	2.15 (0.83)	0.32 (0.47)

Notes. M: Means; (SD): Standard Deviations; STV: Self-Transcendence values; SEV: Self-Enhancement values; SRE: Resistive Self-Regulatory Efficacy; MD: Moral Disengagement; AG: Aggressiveness; UG: Unsanctioned Aggression; AGE: Age; GN: Gender; TS: Type of sport; LC: Level of competition; LP: Length of practice. ^aBinary variables were coded for unsanctioned Aggression: (yes =1, no = 0); Age (young =1, adult =2); Gender (male =1, female =2); Type of sport (low contact =1, high contact =2); as such the ordinal variables were coded for Level of competition (beginner =1, intermediate =2, advanced =3); and Length of practice (brief =1, intermediate =2, extensive =3). **p* <.05.

TABLE II. Correlation matrix among retained tested variables (N= 301 athletes)**TABLE II.** Matrice de corrélation entre les variables testées et retenues (N= 301 athlètes)

Variables	M	SD	1	2	3	4	5	6	7	8	9
1. STV	4.56	0.98	(.78)								
2. SEV	3.62	1.19	.09	(.75)							
3. RSRE	4.88	1.42	.15**	-.20**	(.86)						
4. MD	2.27	1.20	-.21**	.27**	-.27**	(.86)					
5. AG	2.17	0.86	-.21**	.34**	-.27**	.66**	(.87)				
6. UG ^{a,b}	0.34	0.48	-.09	.07	-.17**	.43**	.65**	–			
7. AGE ^{a,b}	1.36	0.70	.13*	-0.05	0.08	-0.14**	0.00	-0.06	–		
8. GN ^{a,b}	1.43	0.96	0.03	-0.16**	-0.02	-0.11	-0.20**	-0.11	-0.16**	–	
9. TS ^{a,b}	1.56	0.50	0.04	-0.07	0.14**	-0.14**	0.02	0.05	0.43**	0.13**	–

Notes. M: Means; SD: Standard Deviations; STV: Self-Transcendence values; SEV: Self-Enhancement values; RSRE: Resistive Self-Regulatory Efficacy; MD: Moral Disengagement; AG: Aggressiveness; UG: Unsanctioned Aggression; AGE: Age; GN: Gender; TS: Type of sport; Values in parentheses are alpha coefficients. ^aBinary variables were coded for unsanctioned aggression: (yes =1, no = 0); age (young =1, adult =2); genders (male =1, female =2); type of sport (low contact =1, high contact =2). ^bAny coding of a binary variable that preserves the order of the categories (e.g., unsanctioned aggression: (yes =1, no = 0 or yes =2, no =1) will not affect the strength or significance of correlation of the binary variables with other variables. The ordinal variables as level of competition and length of practice were removed of correlational and final analyzes, * $p < .05$, ** $p < .01$.

TABLE II. Multiple regressions analysis of predictive relationships for retained variables
TABLE II. Analyse des régressions multiples des relations prédictives pour les variables retenues

Model 1	STV		SEV		RSRES		MD		AG		UG	
	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>
1. AGE	0.14*	2.23*	-0.05	-0.71	0.03	0.49	-0.11	-1.88	-0.03	-0.54	-0.11	0.06
2. GN	0.04	0.84	-0.18*	-3.02*	0.01	0.17	-0.15*	-2.59*	-0.21**	-3.46**	-0.21*	-2.00*
3. TS	-0.02	-0.22	-0.07	1.21	0.13*	2.02*	-0.11	-1.84	-0.01	-0.08	-0.08	1.26
	$R^2 = 0.01$		$R^2 = 0.03^*$		$R^2 = 0.02$		$R^2 = 0.05^{**}$		$R^2 = 0.04^{**}$		$R^2 = 0.02^\dagger$	
	$F = 1.93$		$F = 3.54^*$		$F = 2.08$		$F = 5.18^{**}$		$F = 4.04^{**}$		$F = 2.49^\dagger$	
Model 2	RSRES		MD		AG		UG					
	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>				
1. AGE	-0.00	-0.02	-0.08	-1.64	0.01	0.10	-0.09	-0.45				
2. GN	-0.03	-0.06	-0.09	-1.25	-0.13**	-2.43**	-0.06	-1.12				
3. TS	0.12	1.85	-0.09	-1.64	0.02	0.31	0.10	1.63				
4. STV	0.16**	2.88**	-0.22***	-3.99***	-0.15**	-2.70**	-0.09	-0.62				
5. SEV	-0.22**	-3.76**	0.27***	4.87***	0.34**	6.18**	0.28**	4.91**				
	$R^2 = 0.08^{**}$		$R^2 = 0.15^{***}$		$R^2 = 0.16^{**}$		$R^2 = 0.12^{**}$					
	$F = 5.32^{**}$		$F = 10.65^{***}$		$F = 19.21^{**}$		$F = 6.67^{**}$					
Model 3	MD		AG		UG							
	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>						
1. AGE	-0.08	-1.28	0.01	0.10	-0.09	-1.47						
2. GN	-0.10	-1.79	-0.14***	-2.60***	-0.07	-1.19						
3. TS	0.08	-1.35	0.04	0.74	0.11	1.85						
4. STV	-0.19***	-3.46***	-0.11***	-2.11***	-0.07	-1.27						
5. SEV	0.23***	4.16***	0.29***	5.38***	0.25***	4.39***						
6. RSRES	-0.18***	-3.25***	-0.28***	-3.70***	-0.12***	-2.05***						
	$R^2 = 0.18^{***}$		$R^2 = 0.20^{***}$		$R^2 = 0.11^{***}$							
	$F = 10.92^{***}$		$F = 12.02^{***}$		$F = 6.31^{***}$							
Model 4	AG		UG									
	β	<i>t</i>	β	<i>t</i>								
1. AGE	0.05	1.11	-0.06	-1.07								
2. GN	-0.08	-1.90	-0.03	0.57								
3. TS	0.09	1.91	-0.14***	-2.50***								
4. STV	0.00	0.01	-0.00	-0.01								
5. SEV	0.15**	3.49***	0.17**	3.00**								
6. RSRES	-0.09**	-2.12**	-0.05	-0.90								
7. MD	0.60**	13.42**	0.38**	6.72***								
	$R^2 = 0.50^{***}$		$R^2 = 0.23^{***}$									
	$F = 41.45^{***}$		$F = 12.69^{***}$									
Model 5	UG											
	β	<i>t</i>										
1. AGE	-0.09	-01.92										
2. GN	0.02	1.47										
3. TS	0.09	1.91										
4. STV	-0.00	0.01										
5. SEV	0.07	1.35										
6. RSRES	0.01	0.02										
7. MD	-0.01	-0.12										
8. AG	0.64***	10.35***										
	$R^2 = 0.44^{***}$											
	$F = 28.50^{***}$											

Notes. β : Standardized coefficient; STV: Self-Transcendence values; SEV: Self-Enhancement values; RSRE: Resistive Self-Regulatory Efficacy; MD: Moral Disengagement; AG: Aggressiveness; UG: Unsanctioned Aggression; AGE: Age; GN: Gender; TS: Type of sport. $^\dagger p \leq .06$; * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE II. Direct, total indirect and total effects of the mediational analysis
TABLE II. Effets directs, indirects totaux et totaux de l'analyse médiationnelle

Type of effects	β^a	SE ^b	Z ^c	BCa 95% CI ^d	b ^e
Direct effects					
AGE →STV	.13*	.06	2.17	[.02; .21]	.23*
AGE →MD	-.08 ns	.07	-1.14	[-.21; .02]	-.19 ns
AGE →UG	-.10†	.05	-2.00	[-.17; .02]	.07†
GN→ SEV	-.16*	.06	-2.67	[-.25; -.06]	-.36**
GN→ MD	-.10†	.06	-1.67	[-.18; -.00]	.24†
GN→ AG	-.11*	.04	-2.75	[-.18; -.03]	-.19*
GN→ UG	.02 ns	.04	0.50	[-.05; .10]	.02 ns
TS→ RSRE	.12*	.06	2.00	[.17; .22]	.23*
TS→ MD	-.08 ns	.07	-1.14	[.19; .06]	-.19 ns
TS→ UG	.09†	.05	1.80	[-.01; .17]	.08†
STV→RSRE	.16**	.06	2.67	[.05; .26]	.23**
SEV→RSRE	-.21***	.05	-4.20	[-.30; -.11]	-.25***
STV→MD	-.19***	.06	-3.17	[-.30; -.08]	-.23***
SEV→MD	.23**	.06	3.83	[.12; .31]	.24***
STV→AG	.01 ns	.04	0.25	[-.07; .09]	.01 ns
SEV→AG	.15***	.05	3.00	[.05; .23]	.11***
STV→UG	-.00 ns	.04	0.00	[-.07; .06]	.00 ns
SEV→UG	.07 ns	.04	1.75	[-.01; .18]	.03 ns
RSRE→MD	-.18**	.07	-2.57	[-.30; -.06]	-.15**
RSRE→AG	-.08†	.05	-1.60	[-.16; -.00]	-.05†
RSRE→UG	-.00 ns	.06	0.00	[-.07; .10]	.01 ns
MD→AG	.59**	.05	11.80	[.49; .65]	.42**
MD→UG	-.01 ns	.07	0.14	[-.11; .12]	.01 ns
AG→UG	.64***	.06	10.67	[.52; .73]	.35***
Total Indirect effects (via all mediators)					
AGE →STV→RSRE→MD→AG→UG	.04 ns	.03	-1.33	[-.09; -.01]	-.04 ns
GN→ SEV→ RSRE→MD→AG→UG	-.15**	.04	-3.75	[-.22; -.10]	-.14**
TS→ RSRE→MD→AG→UG	-.04 ns	.03	-1.33	[-.08; .01]	-.04 ns
STV→ RSRE→MD→AG→UG	-.08*	.03	-2.67	[-.14; -.03]	-.04*
SEV→ RSRE→MD→AG→UG	.20*	.04	5.00	[.14; .26]	.08*
RSRE→MD→AG→UG	-.12*	.04	-5.25	[-.19; -.04]	-.04*
MD→AG→UG	.38**	.05	7.60	[.31; .47]	.15**
Total effects (Direct + Total Indirect effects)					
AGE→ UG, AGE →STV→RSRE→MD→AG→UG	-.13*	.06	-2.17	[-.23; -.03]	.13*
GS→UG, GN→ SEV→ RSRE→MD→AG→UG	-.13*	.06	-2.17	[-.21; -.03]	.12*
TS →UG, TS→ RSRE→MD→AG→UG	.05 ns	.06	0.83	[-.06; .14]	.04
STV→UG, STV→ RSRE→MD→AG→UG	-.08†	.05	-1.60	[-.08; -.00]	-.04†
SEV→UG, SEV→ RSRE→MD→AG→UG	.27**	.05	5.40	[.07; .14]	.11*
RSRE →UG, RSRE→MD→AG→UG	-.11 ns	.06	-1.83	[-.07; .00]	-.04 ns
MD→UG, MD→AG→UG	.37**	.06	6.17	[.10; .19]	.15**

Notes. ^aStandardized coefficients; ^bStandard error; ^cZ-value; ^dLower and upper bound of bias-corrected 95% confidence interval with 10,000 bootstrap samples; ^eUnstandardized coefficients; STV: Self-Transcendence values; SEV: Self-Enhancement values; RSRE: Resistive Self-Regulatory Efficacy; MD: Moral Disengagement; AG: Aggressiveness; UG: Unsanctioned Aggression AGE: Age; GN: Gender; TS: Type of sport. ns: not significant; † $p \leq .08$; * $p < .05$; ** $p < .01$; *** $p < .001$.