Condoning aggressive behaviour in sport: A cross-sectional research in a few consecutive age categories

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Abstract

The aim of this study was to compare the way in which 216 young handball players (*Mage* = 12.79, *SD* = 2.20) of different ages (9-10 years-old, 11-12 years-old, 13-14 years-old, and 15-16 years-old) combined and integrated 5 different information cues (the consequences of the aggression, the current score, the time left to play, the context of the aggression, the relative importance of the game) for judging the extent to which an aggressive act performed by a player during a match in handball could be condoned. The participants indicated their judgment in 48 scenarios constructed from the combination of these information cues. A cluster analysis has been done. Two different positions on moral judgment were observed. The information cues were combined differently and moral judgment increased according the young players' age. The approach of information integration completes the previous studies on developmental moral judgment in sport.

Keywords: sport; moral judgment; moral development; young players; information integration

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Sport is often perceived as an activity that permits children and adolescents to become socialized and acquire rules and values of our society (Weiss, Smith, & Stuntz, 2008). The quality of our relationships with others may have important repercussions on the way we behave in the family, on the way we conceive of the functioning of institutions (e.g., the educational system, the justice system). The social and cultural context may be also have an impact. For instance, the development and reference social moral standards could be different in so-called Western societies and post-communistic or Muslim countries (e.g, Mullet & Azar, 2009; Mullet et al., 2003; Paz, Neto, & Mullet, 2008). Of primary interest in the present study, the quality of the relationships with other may have repercussions on the way we behave on the sports ground. This sportsmanship falls under the great heading of morality which is to adhere to principles, policies and codes (Cleek & Leonard, 1998; Murdock, Miller, & Kohlhardt, 2004). Sportsmanship is based on what a sportsman ought to do (Keating, 1964). In this sense, the sportsman can take loss or defeat without complain or victory without gloating and considers his adverse with fairness, generosity and courtesy. Furthermore, sportsmanship requires that a balance be held between four elements: fairness, equity, good form and the will to win (Abad, 2010).

Unfortunately, sports are often domains where immoral behaviour can be observed too such as aggression or cheating (Kavussanu, 2007). This dichotomy between the “good side” and the “bad side” of sport is an important issue for the sports actors (physical teachers, coaches, educators) who stand up for sport serves as vehicle for moral development. So, the topic of moral development in sport is sometimes discussed in sport psychology (e.g., Romand, Pantaléon, & Cabagno, 2009; Shields & Bredemeier, 2001).

One possible way to study this topic for researchers in psychology is to apply

structural perspective (e.g., Kohlberg, 1976; Piaget, 1965). Structural developmental theories focus on how individuals reason or judge behaviour (Weiss et al., 2008). In concordance with this model, the moral development and the underlying structure of the children's moral reasoning is related to age. Cognitive processes growth, social interaction, and information from the environment are going to lead to a developmental change in moral reasoning, for example judgments about what are right or wrong (Shields & Bredemeier, 2001). Three principal theorists in psychology have laid the foundation for understanding moral developmental structure in sport.

Piaget (1965) has been the pioneer in moral development blame whose work consisted in varying both intention and harm as determinants of blame. In his studies, children were presented with two stories and they have to say which person was the naughtier. His major claim was that younger children centred on a single variable, either intent or harm, and judge on that alone. Another psychological approach to morality has been the theory of Kohlberg (1976). Moral development is postulated to be a sequence of distinct cognitive stages that begin with morality of obedience to authority and culminate in the principled morality of rational, egalitarian cooperation. Kohlberg's theory (1976) used verbal justifications of yes-no choices in standard moral dilemmas. These two first perspectives explain the moral development using the development of moral reasoning or judgment. According to Rest's theory (1983), other factors impact on the relation between morals and actions. He proposed four components that influence moral development: moral interpretation, moral judgment, moral choice, and moral behaviour. Rest (1984) highlighted a moral judgment on the right thing to do by involving both moral judgment (the person's decision on what ought to be done) and moral reasoning (the criteria the individual uses to form a moral judgment).

Studies in sport applied these theories to understand the growth of moral judgment in the sports context (for a review, see Romand et al., 2009). These authors underlined that it

would be interesting to explore more deeply the subject of moral judgment in aggressive acts in sport on the different components defined by Rest (1984). That would allow to achieve a comprehensive understanding of moral development and functioning in the sports context.

Some studies in sport demonstrated differences in moral judgment according to the participants' age, that is, the older participants estimated aggressive behaviour is more legitimate than younger participants (Bredemeier, Weiss, Shields, & Cooper, 1987; Conroy, Silva, Newcomer, Walker, & Johnson, 2001; Romand et al., 2009). Concerning more specifically the effect of age on moral reasoning, the works have shown conflicting results. Some of them underlined no effect of the person's age (e.g., Stephen & Bredemeier, 1996), others found a decrease in moral reasoning with age (e.g., Stephens, 2001) and others indicated an increase in moral reasoning with age (e.g., Rainey, Santilli, & Fallon, 1992). So, the findings of these empirical researches are sometimes contradictory. An investigation on moral structure growth could be done to clarify the issue of developmental moral reasoning or judgment in sport.

Furthermore, the theoretical approaches applied in these studies have controversies (e.g., Arnold, 2001). The main criticism can be related to the role of the integration of information in moral judgment (e.g., Arnold, 2001). Piaget (1965) has found that younger children judge on a single variable, either intent or harm. The other approaches do not allow one to study directly the integration of multiple information contained in the dilemmas, and yet, the importance of integrating multiple determinants was recognized in moral judgment by Kohlberg (Colby, Kohlberg, Gibbs, & Lieberman, 1983, p.7). The framework of the theory of information integration (Anderson, 2008) offers the possibility to take account of this limitation.

The theory of information integration (Anderson, 2008) focuses on the processes by which various information cues is integrated into a judgment. It aims to highlight the

cognitive psychological laws of the treatment and the integration of several stimuli. The goal is to discover what operations the cognitive algebra persons use to process information in different situations. This cognitive algebra, dominated by addition, multiplication and averaging, is not concerned with the actual stimuli but with their psychological consideration or subjective values that the subject gives them. Moral judgment is considered within the framework of the theory of information integration (Anderson, in press). This trend assumes that all moral perception, thought or action is goal oriented and depends on the integration of different information.

When an individual integrates information to make a moral final judgment, a field of moral external stimuli undergoes three successive operations that are directed by the purposes of the subject: (1) an valuation operation that transforms moral stimuli into moral subjective representations; (2) an integration operation that transforms these moral subjective representations into moral internal responses; (3) an action operation that transforms moral internal moral responses into observable moral responses. Often it consists of selecting a level along a scale of moral judgment.

In sport, the theory of integration information has been used to study moral judgment (Fruchart & Rulence-Pâques, 2014). This study examined the mental processes by which 30 professional handball players, 35 amateur handball players, and 48 non-sporting individuals combined five different information cues (consequences of an act of aggression, current score, time left to play, context of the act of aggression and importance of the game) in order to condone “aggressive” acts during a match. Two clusters were identified (K-means, Euclidian distances). For 60% of the participants, violently pushing an opponent was considered as practically never condonable. For 40% of the participants, this behaviour was sometimes condonable. Different positions on moral judgment were observed according to the involvement in the practice of sport. Professional handball players (60%), more frequently

than lay people (27%) or amateurs (34%), supported the view that pushing an opponent can sometimes be condonable.

The theory of integration information can be applied in a cross-sectional research in few consecutive age categories. For instance, Fruchart, Rulence-Pâques, Dru, and Mullet (2010) examined the way in which team sport (football, handball, basket-ball) players of different ages (12-14, 15-16, 17-18 years old and seniors) used different informational cues (current score, time left to play, numerical status of the team) for deciding a quick restart of play during a game. The findings underlined that the knowledge bases at work for judging the appropriateness of this type of sport decisions are structured differently depending of the age groups. According to their age, the players combined differently the various information cues to make their decision. The more experienced the novices, the more they gave importance to the numerical status and the current score for judging the appropriateness of the strategy, and the more the effect of time moderated the effect of current score on the appropriateness judgments. These developmental trends were shown to be various in according the type of practice.

An investigation based on the studies of Fruchart and Rulence-Pâques (2014) and of Fruchart et al. (2010) is proposed. Developmental broadening of moral knowledge systems is important because such knowledge systems continues and improves during elementary school, secondary school, and adult life (Anderson, in press). How do these systems develop in sport contexts? What is their structure? The theory of integration information (Anderson, 1996, 2008) may complete the knowledge of moral judgment in sport by studying the manner in which persons take into account pieces of information of all types and combine them cognitively to arrive at a global moral judgment (Anderson, in press). Previous approaches did not study enough the integration of moral variables and the theory of

integration information (Anderson, 1996) may be one approach to the cognitive structure of moral development in sport when different aged athletes deal with aggression.

The Present Study

The present study in sports psychology applies Anderson's theoretical framework to highlight the issue of moral judgments in sport. The present study has a cross-sectional character in few consecutive age categories: we are concerned with the way cognitive moral processes evolve over time. The same material as the one used in Fruchart and Rulence-Pâques (2014) was presented to different aged young people who practised handball.

The choice of handball was guided by the fact that this sport requires high level of contact and social interactions that can lead to problems of aggressive behaviour. In fact, sports with a high level of contact such as handball allow rough shares (Tucker & Parks, 2001). In handball, frontal physical contacts using the breast are permissible but it is forbidden to push an adverse player with arms. These sports can hinder moral development because the sportsmen's attitudes focus on the combat, which discourages altruistic impulses and promotes a negative perception of others (Bredemeier, Weiss, Shields, & Cooper, 1986, 1987).

Our hypotheses are based on the results shown in Fruchart and Rulence-Pâques (2014) and findings of researches about developmental moral judgment in sport (e.g., Rainey et al., 1992). We expected (a) to find, as in adults in Fruchart and Rulence-Pâques' (2014) findings, different moral positions with regard to the judgment of the legitimacy of an aggressive act in handball in a sample of young participants, (b) to highlight a developmental trend in the manner to combine different information cues between the youngest participants to the oldest ones' to judge an aggressive act in handball and an increase in moral judgment with age.

Method

Participants

The participants were 216 handball young players (*Mage* = 12.79, *SD* = 2.20) who were unpaid volunteers living in the North of France, who played at a regional level and trained at least two times a week. Their ages varied from 9 to 16 years old. They were members of 4 different age categories of handball young players: the first category (9-10 years-old, *n* = 44, *Mage* = 9.59 , *SD* = 0.58), the second category (11-12 years-old, *n* = 52, *Mage* = 11.63, *SD* = 0.49), the third category (13-14 years-old, *n* = 60, *Mage* = 13.48, *SD* = 0.50) and the fourth category (15-16 years-old, *n* = 60, *Mage* = 15.43, *SD* = 0.67). The aim of the study has been explained to the participants who accepted to participate, and then they were given the questionnaire.

Material

In accordance with Anderson's methodology (Anderson, 1996), the material was composed of 48 cards containing a story of a few lines, a question, and a response scale. The material was the same as the one used in Fruchart and Rulence-Pâques (2014) was used and one example card is presented in Figure 1. The stories were composed according to a five within-subject factor design: (a) the consequences of the aggression (the victim is injured and must leave the game or the victim is not injured), (b) the current score (the team is winning or the team is losing), (c) the time left to play (very little time or quite some time), (d) the context of the aggression (the aggressor has been the victim of a previous act of aggression or not), (e) the relative importance of the game (friendly match or competitive match or European match). All possible combinations of these factors yielded $2 \times 2 \times 2 \times 2 \times 3 = 48$ stories.

The question under each story was: "To what extent do you consider that such an act is condonable?". Beneath each story was an 11-point (0-10) response scale with "*Not at all condonable*" indicated on the left of the response scale, and "*Completely condonable*" indicated on the right of the response scale.

Procedure

After having obtained their consent and the approval of their parents, young players were tested individually, generally before or after sports training. Testing took place in a quiet room in the club house. Participants were instructed to read the scenarios (presented one at a time in random order), and to rate their responses along the response scale.

There were two phases: a familiarization phase and an experimental phase (see Anderson, 2008). In the familiarization phase the experimenter explained to each participant what was expected, in particular, that he was going to read a certain number of stories in which a player violently pushes an opponent player, and that he was going to indicate the degree to which he thinks that the act is condonable. During this phase, participants were presented with eight scenarios taken randomly from the set of 48. The choice of these 8 scenarios was guided so as to expose participants to the full range of stimuli. The purpose of this phase was to make the participants as familiar as possible with the procedure, test material and the task (Anderson, 2008). Each story was read aloud and participants provided ratings. They were given an opportunity to compare their responses and make changes if necessary. During the second or experimental phase, participants were presented with the whole set of 48 scenarios. They provided their ratings at their own pace but they were not allowed to compare their responses or to go back and make changes as in the familiarization phase. The whole session lasted about 35 minutes.

Data analysis

Participant's ratings from the experimental phase were converted to numerical value expressing the distance between the point on the response scale, and the left anchor which served as the point of origin. These numerical values were then subjected to statistical and graphical analyses. As we thought that participants were going to respond in very different ways from one another (first expectation), a cluster analysis was performed on the raw data

from all the participants. The cluster analysis consisted of two stages. A hierarchical method was performed to define the number of clusters and, then we used the *k*-means procedure to actually form the clusters.

A hierarchical cluster analysis was conducted using Ward's method with a squared Euclidean distance measure. The number of clusters to be merged from the data was determined with the agglomeration schedule coefficients (Aldenderfer & Blashfield, 1984) and the dendogram. The validity of the cluster solution was inspected using ANOVA, with the cluster membership as an independent variable and information cues as dependent variables (Aldenderfer & Blashfield, 1984).

After having to define the number of clusters, we used a technique that was advocated by Hofmans and Mullet (2013, K-means, Euclidian distances). This approach allows one to identify individual differences in (1) integration rules and scale values, (2) how people value information and (3) general attitudes (Hofmans & Mullet, 2013). In applying the first procedure, in a first step, participants are on the basis of their scale values and in a second step, for every cluster of scale values, individuals are clustered on the basis of their standardized responses. The initial cluster centers in k-mean clustering were specified using a priori cluster centers identified in the hierarchical method.

For this clustering, we used the standardized responses per participant since we search clusters of individuals who have similar scale values for all factors. Standardization of variables is necessary when the dissimilarity measure such as Euclidean distance, is sensitive to differences in the scales of the input variables (Milligan & Cooper, 1988).

To finish the data analysis, separate ANOVAs were conducted on the data of each cluster, chi-square tests, and post-hoc tests were conducted on the data.

Results

The results of the hierarchical cluster analysis suggested the tenability of either a two-

or a four-cluster solution. Owing to the great number of comparisons (31), the significance threshold was set at .001 (.05/31=.0016). In two-cluster solution the independent variable Cluster was significant, $F(1, 214) = 649.37$, $p < .001$, $\eta^2_p = .75$. In four-cluster solution the independent variable Cluster was also significant, $F(3, 212) = 203.59$, $p < .001$, $\eta^2_p = .75$.

On one hand, the subgroups of a two-cluster solution were not significant different on consequence of the aggression, $F(1, 214) = 9.18$, $p = .003$, $\eta^2_p = .04$, score, $F(1, 214) = .21$, $p = .646$, $\eta^2_p = .04$, time left to play, $F(1, 214) = 7.42$, $p = .007$, $\eta^2_p = .03$, context of the aggression, $F(1, 214) = .95$, $p = .331$, $\eta^2_p = .00$, and importance of the game, $F(2, 428) = .31$, $p = .730$, $\eta^2_p = .00$

On the other hand, the subgroups of a four-cluster solution were only not significantly different on score, $F(3, 212) = .22$, $p = .885$, $\eta^2_p = .01$. They were significantly different on consequences of the aggression, $F(3, 212) = 80.97$, $p < .001$, $\eta^2_p = .53$, time left to play, $F(3, 212) = 17.81$, $p < .001$, $\eta^2_p = .20$, context of the aggression, $F(3, 212) = 19.71$, $p < .001$, $\eta^2_p = .22$, and importance of the game, $F(3, 212) = 32.89$, $p < .001$, $\eta^2_p = .20$, thus providing a more solid indication for its tenability than the subgroups of a two-cluster solution.

The four clusters are shown in Figure 2. It presents combined effect of injury, previous aggression, and importance of the game on moral judgments in each cluster. The choice of this interaction was guided by the fact that these factors were significant ($p < .001$) at least in one of the four clusters (see Table 1). The mean ratings of judgments are on the y-axis. The three levels of importance of the game are on the x-axis. Each curve corresponds to one level of the injury factor. Each panel corresponds to one level of the previous aggression factor. The four clusters correspond to different moral positions and are presented in the ascending order (i.e., Cluster 1 corresponds to the lowest level of moral position; Cluster 4 corresponds to the highest level of moral position).

The first cluster (n = 50) was termed “Condonable / No Injury”. This cluster is shown in Figure 2 (high panels). The curves are practically parallel to the x-axis which indicates a very weak effect of the importance of the game. The fact that the curves are so parallel indicates that there was no interaction between factors. The curves are clearly separate, which indicates an important effect of injury. In the left-sided panel, the curves are slightly more elevated in comparison with those in the right panel, which indicates a weak effect of previous aggression. Overall, judgment was close to the middle of the response scale (M = 4.77, SD = 2.28). An ANOVA was conducted on the data from this cluster 1. The main results with effect sizes and margins of errors are shown in Table 1.

The second cluster (n = 56) was termed “Sometimes Condonable / Low Importance Game” (see middle high panels in Figure 2). The curves decrease clearly, which indicates an effect of the importance of the game. The more the game is important, the less aggression is judged condonable. The curves are not really separated, which indicates no effect of injury. The curves are practically at the same level, which indicates no effect of previous aggression. Since the curves are nearly parallel, there was no interaction between factors. Overall, judgment was close to the middle of the response scale (M = 4.94, SD = 0.75). An ANOVA was conducted on the data from this cluster 2. The main results with effect sizes and margins of errors are shown in Table 1.

The third cluster (n = 28) was termed “Sometimes Condonable / Previous Aggression and High Importance Game” (see middle bottom panels in Figure 2). In the panel on the left, the curves are more elevated in relation to the y-axis than the curves in the panel on the right, which indicates an effect of previous aggression. The curves increase clearly, which indicates an effect of the importance of the game. The more the game is important, the more aggression is condonable. Overall, judgment was close to the middle of the response scale (M = 4.74, SD

= 1.62). An ANOVA was conducted on the data from this cluster 3. The main results with effect sizes and margins of errors are shown in Table 1.

The fourth cluster (n = 82) was termed "Practically Never Condonable" since the mean response was always close to the left hand of the scale (M = 1.78 on a 0-10 point scale, SD = 0.57). This cluster is shown in Figure 2 (bottom panels). The curves are separate, which indicates an effect of injury. They are practically at the same level, which indicates no effect of previous aggression. They are practically parallel to the x-axis which indicates a very weak effect of the importance of the game. An ANOVA was conducted on the data from this cluster 4. The main results with effect sizes and margins of errors are shown in Table 1.

In order to compare each cluster to other clusters, we run ANOVA with all four groups at the time and conducted a post-hoc test. The main results for ANOVA with all four groups are presented in Table 2. The Tukey's test revealed a significant difference ($p < .001$) between the cluster 4 (M = 1.78; SD = 0.10) and the three other clusters: cluster 1 (M = 4.77; SD = 0.12), cluster 2 (M = 4.94; SD = 0.12), and the cluster 3 (M = 4.77; SD = 0.12). There was no significant difference between the cluster 1 and the cluster 2 ($p = .748$), the cluster 1 and the cluster 3 ($p = .999$), the cluster 2 and the cluster 3 ($p = .767$). The figure 3 shows the estimated mean for each variable for each cluster.

We also used a discriminant function analysis to depict the cluster group differences (Marsh, Lüdtke, Trautwein, & Morin, 2009). The discriminant analysis based on the set of numericable value was able to correctly classify 100% of the participants into their appropriate cluster (based on the four cluster solution from cluster analyses). All the discriminant functions were statistically significant and the two first discriminant functions were presented in Figure 4. The first discriminant function explained 55 % of variance and the second discriminant function explained 26 % of variance. Inspection of group centroids (the black boxes in Figure 4) for the two functions demonstrated that the first function (x-axis)

represented the scenario where the victim is injured and must leave the game, the team is losing, very little time remained to play, the aggressor has not been the victim of a previous act of aggression, and it is a friendly match. The second function (y-axis) represented the scenario where the victim is not injured, the team is winning, very little time remained to play, the aggressor has been the victim of a previous act of aggression, and it is a European match. For illustration, the most extreme clusters along the x-axis were cluster 4 and cluster 2, and cluster 3 was almost exactly at the intersection of the two axes. On the y-axis, the most extreme clusters were cluster 1 and cluster 2. These results provide strong support for a characterization of the four cluster groups.

Table 3 shows the composition of each cluster in terms of young participants' status. The 4 (Age of Participants) × 4 (Cluster) Pearson's chi-square test was significant, χ^2 (9) = 24.85, p = .003. The overall chi-square test showed that there were some difference between groups, but not necessarily all subgroups differed.

So, we performed the Marascuilo's post-hoc multiple proportion comparisons. This procedure allowed to test the significance between any two groups within the cluster of multiple groups and to depict where specifically there are significant differences in the cluster compositions. The 4 (age of participants) × 2 (cluster 1-cluster 4) Marsacuilo's chi-square test was significant, χ^2 (3) = 9.18, p = .02. The first cluster was significatively made up of the 9-10 year-olds (30 %) and the fourth cluster was significatively made up of the 13-14 year-olds (52%). The 4 (age of participants) × 2 (cluster 2-cluster 3) Marsacuilo's chi-square test was significant, χ^2 (3) = 11.67, p = .008. The second cluster was significatively made up of the 11-12 year-olds (36 %) and the third cluster was significatively made up of the 15-16 year-olds (20%). The 4 (age of participants) × 2 (cluster 2-cluster 4) Marsacuilo's chi-square test was significant, χ^2 (3) = 17.07, p < .001. The second cluster was significatively made up of the 9-

10 year-olds (36 %) and of the 11-12 year-olds (37 %) and the fourth cluster was significatively made up of the 15-16 year-olds (45%).

Discussion

The present study's aim was to compare the way in which young players of different ages used and integrated different information cues for judging an aggressive act in handball and to see if there is a difference in the moral judgment according to the age of these handball players.

Our first hypothesis was that different moral positions with regard to the judgment of the legitimacy of an aggressive act in handball in a sample of young participants would be found. This hypothesis was confirmed. Two very different moral positions were identified. The first moral position was represented by the cluster 4 and the second moral position was represented by the cluster 1, the cluster 2, and the cluster 3. Looking at the first moral position, an aggressive behaviour is practically never condonable whatever the circumstances in which it was performed. This first moral position is similarly to the first moral position that was found in adults in Fruchart et al. (2014).

Concerning the second moral position, the representative participants estimated that an aggressive act in handball is sometimes condonable. This will depend on the circumstances in which it is performed. For the members of the cluster 1, the injury factor was the principal information taken into consideration by the members of this cluster to judge an aggressive act as legitimate. When the consequence of this act is important (injury), this act was considered as practically not condonable, whereas when the consequence of this act is less important (no injury), this act was considered as condonable. The members of the cluster 2 principally judged an aggressive act according to the importance of the game. The less the importance of the game was, the more aggressive behaviour was condoned. The members of the cluster 3 estimated an aggressive act according to a previous aggression and the importance of the

game. An aggressive act is condonable when they have been the victim of a previous aggressive act and when the game is very important. These members of the cluster 3 developed an extremely similar moral position to the second moral position that Fruchart and Rulences-Pâques (2014) found in adults.

This confirms that there are divergences in moral reasoning in young players in sport (e.g., Bredemeier et al., 1987). This finding reinforces the acknowledgement that the theory of information integration can be a judicious way to identify various moral positions in sport already underlined in Fruchart and Rulence-Pâques (2014). It enables one to complete the different theoretical approaches in moral development (Piaget, 1965; Kohlberg, 1976; Rest, 1984) and to understand the individuals' moral structure in their judgment.

Our second hypothesis was that, to judge an aggressive act in handball, different information cues could be combined differently according to age and moral judgment could increase according to age. This hypothesis was supported by the data. The percentage of the younger players (9-10 year-olds) that develop the second moral position in the cluster 1 was higher than the percentage of the players in other categories (i.e., compared to other age groups, cluster 1 included the highest number of 9-10 year-olds). Younger players used an additive rule to judge aggressive behaviour. Two factors were added: the injury and the previous aggression. These younger players were displaying the characteristic of the morality of constraint stage (Piaget, 1965) because they used information about the outcome or the observable consequence of the aggressive act as the determining factor for judging the legitimacy of behaviour. But unlike Piaget (1965), it was not the unique factor that was taken in consideration. They added a second factor: the previous aggression that presumes a pre-conventional moral stage of Kohlberg (1976). They estimated that it was condonable to avenge somebody who attacked them beforehand, so they tackled a moral problem in an egocentric way.

The percentage of the younger players (9-10 year-olds and 11-12 year-olds) that develop the second moral position in the cluster 2 was higher than the percentage of the players in other categories (i.e., compared to other age groups, cluster 2 included the highest number of 9-10 year-olds and 11-12 year-olds). For these younger players, aggressive behaviour was principally condonable when the game is of low importance (friendly match). This finding can be explained by relating it to the conventional level of Kohlberg's theory (1976). Their reasoning was related to the rules of the game that stipulate when a player in handball pushes another player, he will be suspended for two minutes. Thus, his team is in difficulty since it has an inferior number of players in the court. So, if they push a player then their behaviour can have a negative effect on the final team result. Aggressive behaviour would be considered legitimate on the condition that it will have no impact on the group. They oriented their moral judgment toward social approval by members of their team. Social norms and rules have an effect on moral judgment.

The percentage of the older players (15-16 year-olds) that develop the second moral position in the cluster 3 was higher than the percentage of the players in other categories (i.e., compared to other age groups, cluster 3 included the highest number of 15-16 year-olds). The older players have practically integrated moral information cues in the same manner as expert handball players in Fruchart and Rulence-Pâques (2014). These older players would have learnt to reason like experts, i.e., aggressive behaviour is judged sometimes condonable according to the circumstances in which it is performed. This confirms that sports participation has en effect on the moral socialization of players. We can explain this finding by relating it to the theory of the game reasoning (e.g., Shields & Bredemeier, 1995) according to which the sports environment favours those individuals who gain an advantage over their opponents using whatever means they can find.

The percentage of the older players (13-14 year-olds and 15-16 year-olds) that develop

the first moral position in the cluster 4 was higher than the percentage of the players in other categories (i.e., compared to other age groups, cluster 4 included the highest number of 13-14 year-olds and 15-16 year-olds). The older players have practically integrated moral information cues in the same manner as amateur handball players and lay people in Fruchart and Rulence-Pâques (2014). For them, whatever the sports situations, players must not violently push an opponent; this aggressive act is never condonable. This level of moral reasoning corresponds to the post conventional level of Kohlberg (1976).

These results confirm that moral judgment increases with age. They confirm the important place of information integration in studying moral development in sport. Stage theories (Piaget, 1965; Kohlberg, 1976; Rest, 1984) neither considered information integration. Rest (1983), like Kohlberg (1976), recognized the importance of integration but he gave no indication about it. In applying the theory of integration information, integration of moral stimulus is taken into consideration (Anderson, in press). The experimental tasks and the measures of the responses are simple. Thus, very young as well as very old people can participate in a research program and cultural comparison is possible.

However, we can identify some weaknesses in our study. Firstly, factors such as moral interpretation, moral choice, moral behaviour (Rest, 1983) which influence the relation between moral and action, and the moral development have not been considered. Secondly, we could have measured the effect of gender on moral judgement (e.g., Proios, Athanailidis, Wilinska, Vasilia, & Unierzyski, 2011), that could have completed the Gilligan's approach (1982) in moral development. Thirdly, intention seems to be a primordial factor for judging if aggressive behaviour is legitimate in sport (Shields & Bredemeier, 2001) and for deciding whether an act is moral (Piaget, 1965). We can also mention the handball players' experience which is the time of their sporting experience. Maybe, that needs to be taken in consideration (McPherson, 2000; Darnis, Lafont, & Menaut, 2005). To go further, some social and cultural

factors may influence moral development of children and young adolescents (e.g, Mullet & Azar, 2009; Mullet et al., 2003; Paz et al., 2008). Our participants were French ones. Would the results be similar in Chinese children or Turkish ones? These limitations could be considered in later investigations.

The last limitation concerns the cluster analysis. It has one more important weakness, which are the subjective nature and the lack of rigorous guidelines in the selection of cluster solution. Some other analytical techniques available to perform person-centered analysis and derive groups of athletes such as Latent Class Analysis or Latent Profile Analysis for continuous data (e.g., Marsh, Lüdtke, Trautwein, & Morin, 2009). Latent Class Analysis, also referred to as mixture modeling, is a model-based technique. It goes beyond traditional cluster analysis (see Pastor, Barron, Miller, & Davis, 2007 for a detailed discussion) because several statistical indicators are available to compare different solutions and decide on the final number of classes. Using Latent Class Analysis could be direction for future research.

Information from the sports environment was combined and integrated in different ways according to the different ages of the young players, which reflects the different structure of moral development in sport. Other studies are needed by applying the theory of information integration (Anderson, in press) because they will help educators or trainers who have the task of teaching moral virtues (Corlett, 1996). This new approach opens up horizons to the study of how moral judgment develops during the sportsmen's life-span.

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Table 1

Main Results of the ANOVAs Performed on Cluster I, Cluster II, Cluster III, and Cluster IV

	Effect		Error				
Factor	*df*	*MS*	*df*	*MS*	*F*	*p*	η^2_p
CLUSTER I							
Injury (I)	1	11536.93	49	34.85	331.04	.000	.87
Score (S)	1	3.84	49	4.91	0.78	.381	.16
Time (T)	1	3.68	49	5.76	0.64	.428	.01
Previous Aggression (A)	1	325.61	49	20.24	16.09	.000	.25
Importance (G)	2	1.51	98	10.87	0.14	.871	.00
I x A x G	2	8.49	98	3.16	2.69	.073	.05
CLUSTER II							
Injury (I)	1	99.44	55	36.00	2.76	.102	.05
Score (S)	1	0.97	55	4.54	0.21	.646	.00
Time (T)	1	9.405	55	8.68	1.08	.303	.02
Previous Aggression (A)	1	88.23	55	32.31	2.73	.104	.05
Importance (G)	2	555.40	110	21.22	26.18	.000	.32
I x A x G	2	7.48	110	6.84	1.10	.339	.05
CLUSTER III							
Injury (I)	1	88.05	27	36.52	2.41	.132	.08
Score (S)	1	6.85	27	4.92	1.39	.248	.05
Time (T)	1	555.43	27	40.85	13.60	.001	.34
Previous Aggression (A)	1	1316.15	27	48.30	27.25	.000	.50
Importance (G)	2	650.38	54	18.78	34.64	.000	.56
I x A x G	2	2.25	54	2.85	0.79	.459	.03
CLUSTER IV							
Injury (I)	1	1000.06	81	11.10	90.12	.000	.52
Score (S)	1	4.98	81	2.38	2.09	.152	.02
Time (T)	1	24.73	81	4.94	5.00	.028	.06
Previous Aggression (A)	1	168.34	81	6.18	27.25	.000	.25
Importance (G)	2	6.93	162	9.40	0.74	.480	.01
I x A x G	2	1.68	162	1.31	1.28	.280	.02

Table 2

Main Results of the ANOVA with all four clusters

Factor	Effect		Error		F	p	η^2_p
	df	*MS*	*df*	*MS*			
Injury	1	5535.08	212	26.29	210.57	.000	.50
Injury x Cluster	3	2128.47	212	26.29	80.97	.000	.53
Score	1	15.42	212	3.85	4.00	.047	.20
Score x Cluster	3	0.83	212	3.85	0.22	.885	.00
Time	1	165.38	212	10.68	15.49	.000	.07
Time x Cluster	3	190.12	212	10.68	17.81	.000	.20
Previous Aggression	1	1071.31	212	21.58	49.66	.000	.19
Previous Aggression x Cluster	3	425.19	212	21.58	19.71	.000	.22
Importance	2	22.52	424	14.00	1.61	.020	.01
Importance x Cluster	6	398.15	424	14.00	28.44	.000	.29

Table 3

Composition of the Clusters from Analysis Clusters in Terms of Age of Participants

Participants	Clusters				Total
	Cluster I	Cluster II	Cluster III	Cluster IV	
9-10 year-olds	13 (30%)*	16 (36%)*	6 (14%)	9 (20%)	44
11-12 year-olds	13 (25%)	19 (37%)*	5 (10%)	15 (30%)	52
13-14 year-olds	9 (15%)	15 (25%)	5 (8%)	31 (52%)*	60
15-16 year-olds	15 (25%)	6 (10 %)	12 (20%)*	27 (45%)*	60
Total	50 (23%)	56 (26 %)	28 (13%)	82 (38%)	216

Note: Percentages are significant at $p < .003$ in the 4 (Age of Participants) x 4 (Clusters) Pearson's chi-square test.

* significant at $p < .05$ in Marsacuilo's chi-square post-hoc test.

During a friendly handball match, the atmosphere in the hall was electric and Maël, one of the handball players, was doing his best. Maël's team score was one point less than the opposing team's score and very little time remained to play. At the beginning of the match, Maël had had received a hard push from an opposing team player. A few minutes before the end of the match, Maël violently pushed the player who had previously pushed him when this player was in the air. This aggressive act took place near the goal zone of Maël's team; that is, to try to prevent the opposing team from scoring. The opponent, however, got up without any injury.

To what extent do you consider that such an act is condonable?

Not at all Condonable o-----o-----o-----o-----o-----o-----o-----o-----o-----o-----o *Completely Condonable*

Figure 1. A sample card of the material.

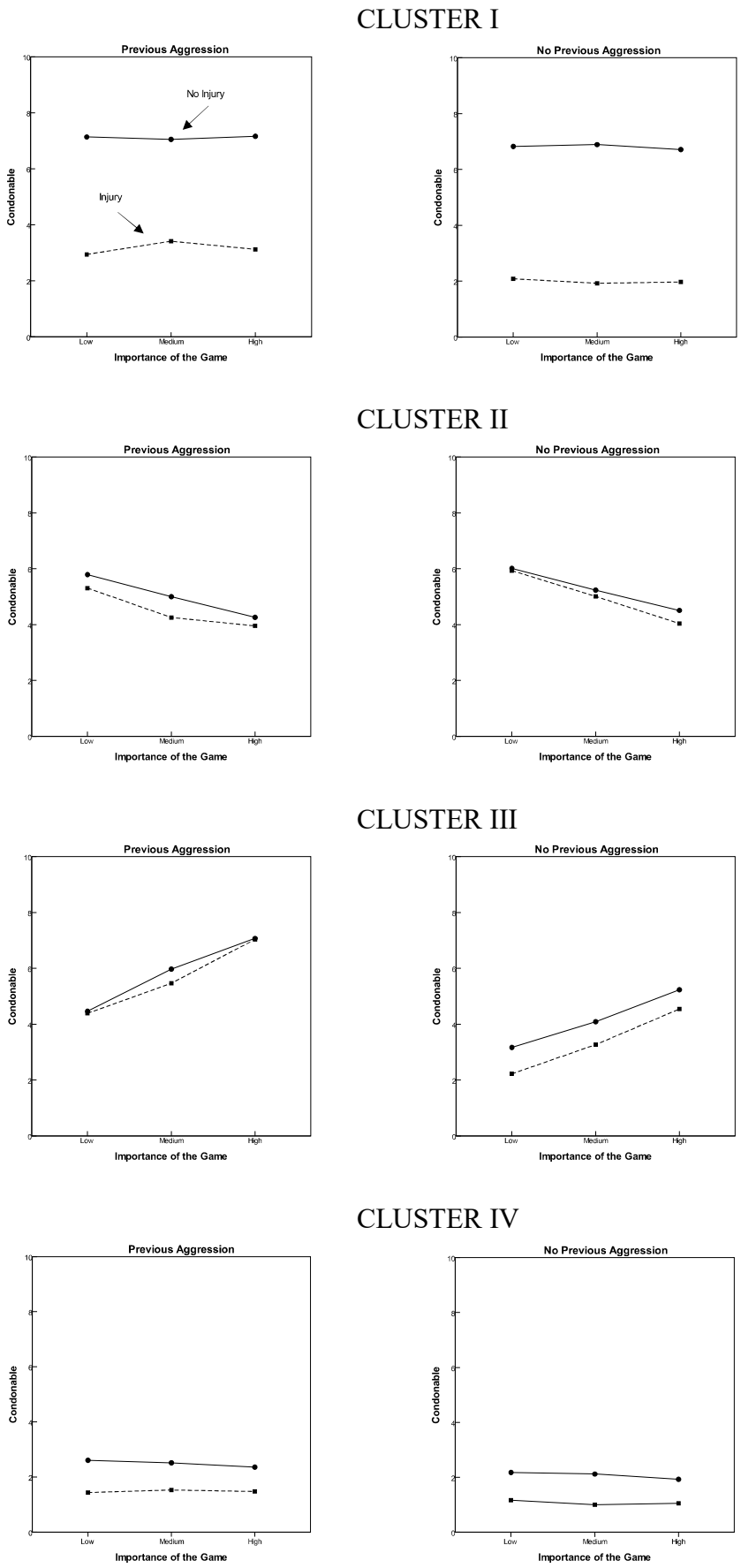

Figure 2. Combined effect of injury, previous aggression, and importance of the game on moral judgments in each cluster.

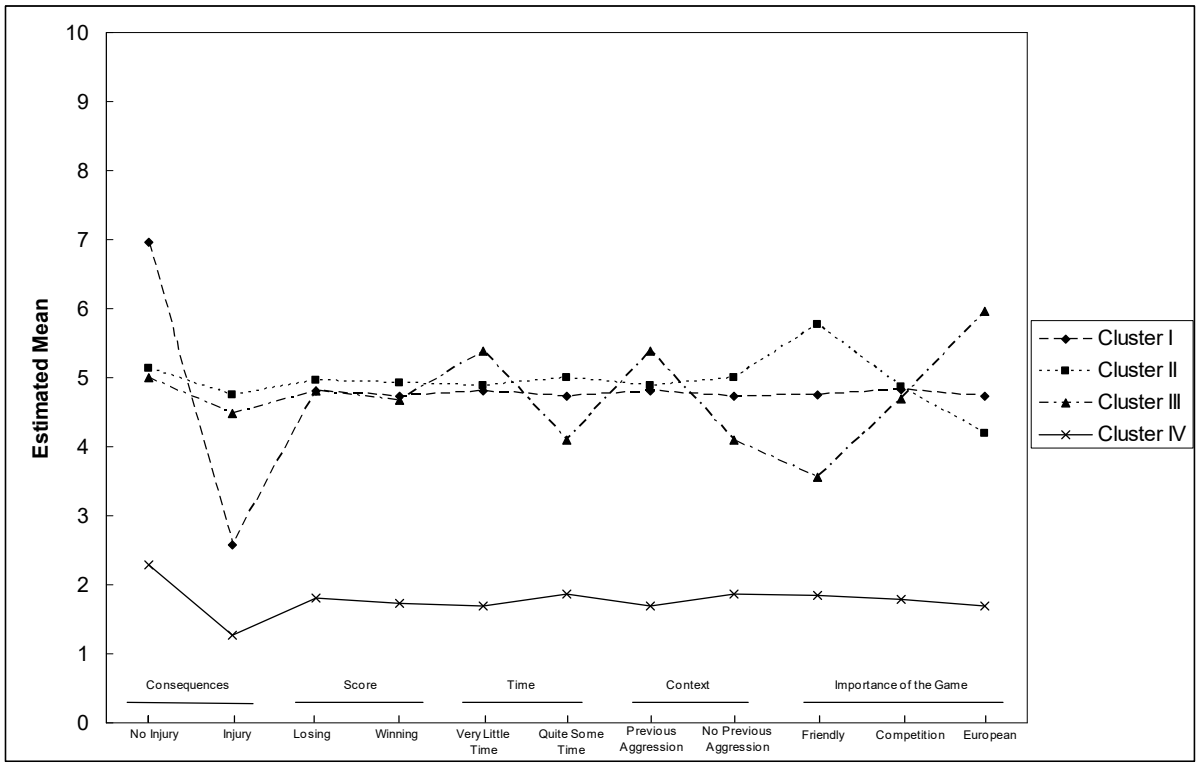

Figure 3: Means for Each Factor for the Four Clusters

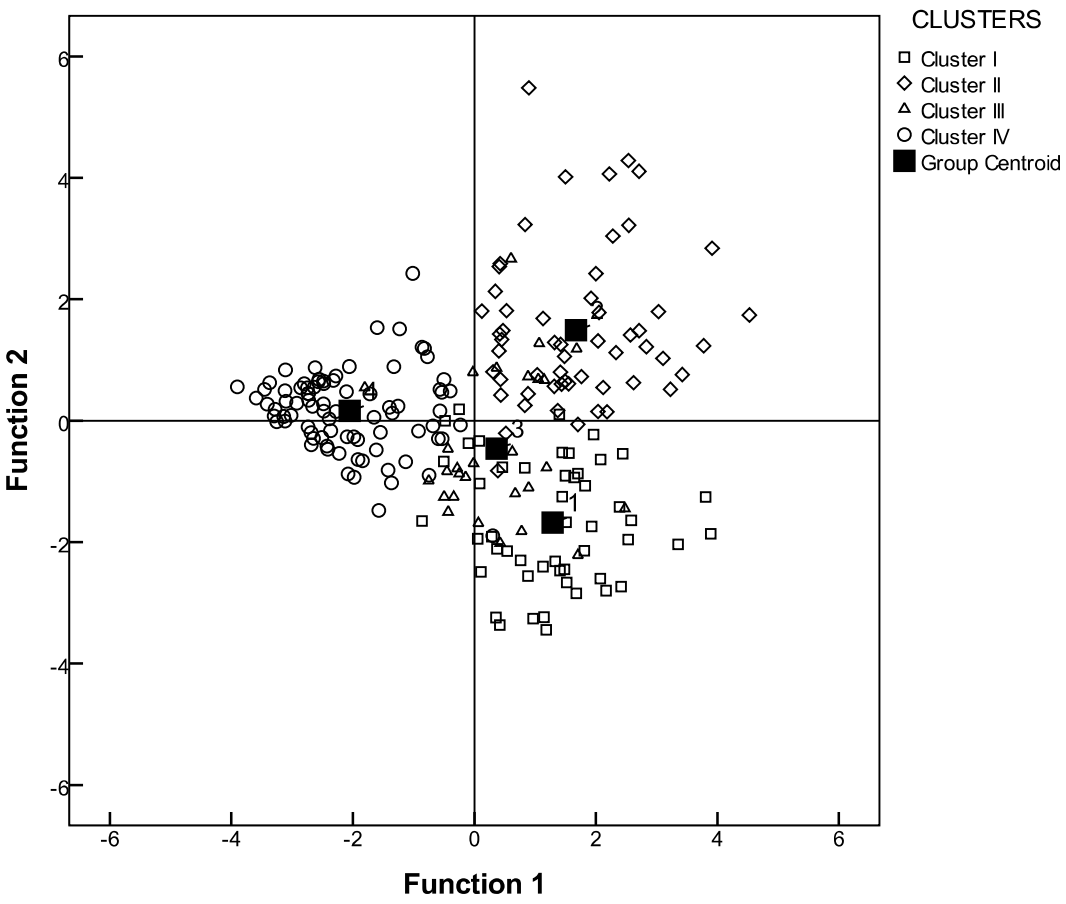

Figure 4: Characterization of the 4 clusters