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Mapping Adults' and Young Athletes' Views Regarding How Acceptable It Is to Use a
Nutritional Supplement in Sport

Eric Fruchart¹, Patricia Rulence-Pâques² and Etienne Mullet³.

University of Perpignan Via Domitia, France

University of Lille III, France

Institute of Advanced Studies, France

Abstract

The study aimed to map different ethical positions regarding the way in which 107 adolescent athletes ($M_{age} = 13.64$, $SD = 1.64$) and 157 adults including 44 non-athletes ($M_{age} = 20.56$, $SD = 2.98$), 94 amateur athletes ($M_{age} = 20.61$, $SD = 2.77$), and 19 professional athletes ($M_{age} = 20.52$, $SD = 2.52$) used different informational cues (the consequences for health, the level of detectability, the short term outcome, and the coach's attitude) for judging how acceptable it is to use a nutritional supplement in sport. The participants indicated their judgment of acceptability in 36 scenarios constructed from the combination of these information cues. Cluster analyses, ANOVAs, and chi-square tests were done. From the total number of participants, two different ethical positions were found according to the age. The adolescents (61%) judged that using a nutritional supplement is acceptable when the negative consequences for health are low, the coach's attitude is favourable, and the expectation of short-term success is high. The adults (70%) judged that the use of a nutritional supplement is acceptable only when the negative consequences for health are low. Among the adults, different ethical positions were found but they were not linked with the involvement in sport.

Keywords: Mapping; Nutritional Supplement; Doping; Ethical Judgment; Sport

Word count: 6702

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Doping in sport may be viewed in an ethical perspective. According to World Anti-Doping Agency (WADA, 2015) the spirit of sport and ethical values are the celebration of the human spirit, body and mind. The reasons given against doping are that, it skews a level playing field, it can threaten the health of the athletes, it is against the spirit of sport and it is incompatible with the concept of the athlete as a role model. McNamee (2012) argued that the spirit of sport is an important component of the fight against doping in sport. Loland and McNamee (2016) considered the ethical aspects that underpin the justification of WADA's anti-doping efforts. They criticized the criteria by which substances and methods may be prohibited, and offered a more detailed ethical interpretation of the ideal of the spirit of sport.

One common perspective to investigate the ethical issue of doping is to consider that doping is cheating and that it breaks the rules or the laws in sport (e.g., Kirkwood, 2012). Researchers were interested in athletes' beliefs about the use of banned substances in sport (e.g., Morente-Sánchez & Zabala, 2013). Other investigations were interested in legal substances such as nutritional supplements (Bloodworth, Petróczi, Bailey, Pearce, & McNamee, 2012; Dodge & Jaccard, 2006; Lucidi et al., 2008; Papadopoulou, Skalkidis, Parkkari, & Petridou, 2006). Nutritional supplements refer to vitamins, proteins, amino-acids, creatine, and herbal products that are not banned and are also more likely to engage in doping practices (e.g., Bloodworth et al., 2012). It is important to study nutritional supplements because they are potential gateway to doping (Barkoukis, Lazarus, Lucidi, & Tsorbatzoudis, 2015).

As aggressive behaviour reflect individual differences in moral functioning (e.g., Romand, Pantaléon, & Cabagno 2009), doping may also reflect individual differences in moral functioning. Some studies have examined moral judgment in sports' literature: in Rest's (1984) moral functioning framework, moral judgment is one of the main processes of

transgressive behaviour regulation. It is defined as a prescriptive judgment on the acceptability or legitimacy of a particular action with reference to a moral ideal. The difference in moral judgment may be explained by the individuals' age but the works have shown conflicting results. Some of them underlined no effect of the person's age (e.g., Stephens & 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). This approach of moral judgment may be connected to doping as well as its potential applicability in anti-doping efforts.

Different sport-factors are important in anti-doping efforts (e.g., Morente-Sánchez & Zabala, 2013). For athletes, achievement of sport result, financial gain, improving recovery or performance, prevention of nutritional deficiencies, and the idea that others use illegal substances are some reasons to use banned products (e.g., Striegel, Vollkommer, & Dickhuth, 2002). Medical staff does not appear as principal advisor whereas coaches seem to be the main influence and source of information for athletes (e.g., Nieper, 2005). Some differences between sports were identified. Individual self-paced sports could be more impacted by doping practices than team-based sports or sports requiring motor skills, and the use of illegal substances could vary according to the demand of the specific sport (e.g., Lazarus, Barkoukis, Rodafinos, & Tzorbatzoudis, 2010). Experience in sport may be taken into consideration. For instance, Chester, Reilly, and Mottram (2003) showed differences in doping beliefs between non-athletes and athletes of different level of practice. Some of factors could have an impact on ethical judgment to use nutritional supplements in sport.

Recently, some investigations showed various positions in ethical judgments in sport (Fruchart & Rulence-Pâques, 2014, 2016). Different views towards the act of aggression were mapped. Fruchart and Rulence-Pâques (2014) examined the mental processes by which a population of professional athletes, amateur athletes, and 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 ethical positions were identified. 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. Both positions on moral judgment were observed according to the involvement in the practice of sport. Professional handball players, more frequently than lay people or amateurs, supported the view that pushing an opponent can sometimes be condonable. Fruchart and Rulence-Pâques (2016) confirmed different views' regarding condoning aggressive behaviour in a cross-sectional research in few consecutive age categories. Two different ethical positions were found and the clusters' composition was linked to the participants' age. The majority of younger athletes considered an aggressive act to be sometimes condonable and the majority of older athletes judged that aggression is never condonable. The findings confirmed that ethical judgment differs across age. They showed the important place of the theory of information integration (Anderson, 2008) in studying moral development in sport and in mapping ethical judgment in sport.

This theory of information integration (Anderson, in press) assumes that all ethical perception, thought or action is goal-oriented and depends on the integration of different information; the theory of information integration (Anderson, 2008) focuses on the processes by which various information is integrated into a judgment. It aims to highlight the cognitive psychological laws of the treatment and the integration of several stimuli. When an individual integrates information to make an ethical final judgment, a field of ethical external stimuli undergoes three successive operations that are directed by the purposes of the subject: (1) a valuation operation that transforms ethical factors into ethical subjective representations; (2) an integration operation that transforms these ethical subjective representations into ethical internal responses; (3) an action operation that transforms ethical internal responses into observed ethical responses. Often, it consists of selecting a graduation along a scale of ethical

judgment. In the same manner that this theory was applied to study ethical judgment in sports aggression, it could be applied to doping in sport.

The present study aimed to map individuals' ethical positions according to the use of a nutritional supplement in sport. Doping is an issue that concerns professionals and amateurs (e.g., Lazarus, Barkoukis, Rodafinos, & Tzorbatzoudis, 2010), non-athletes (e.g., Vangrunderbeek & Tolleneer, 2011), and adolescent athletes (e.g., Bloodworth et al., 2012), so these populations were considered. This investigation applied Anderson's theoretical framework (1996) to highlight the mental process, i.e, the manner in which the participants integrate different information cues to judge how acceptable it would be to use a nutritional supplement in sport.

We have considered four information cues. Their choice was guided by the literature available about doping in sport. The first one was the performance, which is enhanced for a short time and the second was the potential harm to athletes through the negative consequences to health. Johnson (2011) defined doping as the use of a medical technique or substance in order to improve performance and such usage may do harm to the user. WADA (2015) decided to ban a substance or device if it must meet any two of the following three criteria: (1) it enhances or has the potential to enhance performance, (2) it is potentially harmful to sportsmen, and (3) it violates the spirit of sport defined by WADA (Malloy, Kell, & Kelln, 2007) which has an ethical value (WADA, 2015). Using nutritional supplements may have negative outcomes for the health. Some marketed may be contaminated with toxic ingredients such as heavy metals (e.g., Kohler et al., 2010). Taking nutritional supplements lead individuals to reduce exercise and to prefer unhealthy snacks (Chiou, Yang, & Wan, 2011).

The level of detectability was the third information cue. Innovative and undetectable doping methods are constantly introduced and sometimes the conditions of testing such as the period of sampling or the analytical requirements may put the reliability of the results in

question (Lippi, Banfi, Franchini, & Guidi, 2008). For Kayser and Broers (2012) an unknown number of athletes remain undiscovered and get away with various forms of doping. This may occur because of the limits on surveillance and laboratory testing technology. Using nutritional supplements may lead to a positive doping test because certain supplements contain banned substances without declaring them on their label (De Hon & Coumans, 2007).

The social environment, i.e, the attitude of the coach regarding the use of the substance was the fourth information cue. Doping may be influenced by the perceived behaviour of social environment (e.g., friends and other competitors). Papadopoulos et al. (2006) found that students whose friends doped, were more likely to have used doping products. Boardley, Grix and Dewar (2014) showed that bodybuilders rationalize their performance-enhancing drugs use with two themes family or friend and sliding scale, and six mechanisms of moral disengagement: moral justification, euphemistic labelling, advantageous comparison, displacement of responsibility, diffusion of responsibility and distortion of consequences. Lucidi, Zelli and Mallia (2013) reinforced the importance of moral disengagement in the psychological variables that can influence the decision of using performance-enhancing drugs among adolescents. Furthermore, Stephens and Bredemeier (1996) found that the player's perception of their coach was a stronger predictor of their likelihood to engage in unfair behaviour. These findings support the contention that the coach plays a prominent role in shaping the athletes' norms.

The main hypothesis of the present study was that various individual ethical positions would be shown by analysing the integration of these four information cues (Fruchart & Rulence-Pâques, 2014, 2016). We expected to identify two positions: The members of the first position would estimate that the use of doping is more acceptable than the members of the second position (Fruchart & Rulence-Pâques, 2014, 2016). The second hypothesis was that the different ethical positions from all participants would be linked to age. As younger athletes estimated that an aggressive act is more condonable than the older athletes (Fruchart

& Rulence-Pâques, 2016), we supposed that the younger participants would judge doping more acceptable than the older participants. The third hypothesis, which was based on the Fruchart and Rulence-Pâques's findings (2014), was that different ethical positions would be found according to the level of involvement in sport among adult participants. The professional players who are more involved in sport would consider doping as more acceptable than the amateurs and the non-athletes.

Method

Participants

The participants were recruited and tested by the authors. They were contacted at the universities or at the sports centers. The study was explained and they were asked to participate. If they agreed, we arranged an appointment. All participants were unpaid volunteers. The participants are 264 volunteers living in the North of France. They were separated into two groups: 157 adults ($M = 20.58$, $SD = 2.79$) and 107 young athletes ($M = 13.64$, $SD = 1.64$). The young athletes were male teenagers practising their sport at a regional level. They trained at least two times a week. The group of adults were composed of 19 professionals ($M = 20.52$, $SD = 2.52$), 94 amateur players ($M = 20.61$, $SD = 2.77$), 44 non-athletes ($M = 20.56$, $SD = 2.98$). The adult athletes (the professionals and the amateurs) were all male members of collective teams. They were seniors with different practice levels. Nineteen participants played at a national level. They trained eight or nine times a week. They were approached by one of the authors who was himself a senior player. Ninety-four amateurs played at district and league level. They trained at least three times a week. The 44 non-athletes practised team sport occasionally during leisure time, and as a result, were able to respond to the questionnaire.

Material

The material consisted of 36 cards. Each card contained a hypothetical scenario of about eight lines, a question and a response scale. One example of card is presented in Figure

1. In the scenario, a high-level athlete, member of a renowned national club decided to regularly take a nutritional supplement that significantly increases muscular mass and vital capacity. The use of this supplement is not banned. Each scenario was designed with regard to the following four factors: (a) the level of detectability (undetectable versus detectable with difficulty), (b) the consequences for health (very negative, suspected negative or no negative), (c) the nature of short-term outcomes (success versus no success) and (d) the coach's attitude according to the supplement (encouragement, not against, the athlete is not sure the coach agrees). All possible combinations of these types of information yielded $2 \times 3 \times 2 \times 3 = 36$ scenarios. The scenarios were built to obtain an ecological validity, i.e., each of them corresponds to a real sports situation. The question was « to what extent do you think that the use of TOPFORME is acceptable? ». Beneath each scenario was an 11-point response scale with « completely acceptable » indicated on the right and « not at all acceptable » indicated on the left. Each scenario concerned an athlete with a different name and a nutritional supplement with a different name.

Procedure

The procedure was in accordance with the ethical standards of the institutional and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. For the experimentation, the adolescents' parents, the coaches, and the dean of the university gave their consent and their approval. Each participant answered individually by putting marks on the response scale at the location they felt appropriate between the two anchors. Participants worked in a quiet room at the club house or at the university, or on another site depending on what the particular participant found most convenient. Usually the participant immediately accompanied the experimenter to the chosen site. The experimenter explained the procedure to each participant individually. He had to read each of the 36 stories describing the intention of an athlete in the use of a nutritional supplement in concrete situations and to rate his degree of agreement with it. Participants responded individually.

According to the methodology of Anderson (1996), the test was administered in two phases. In the first or familiarization phase, their task was to identify with the player described and to express an opinion about the acceptability of using the nutritional supplement in each case. Each participant was presented with the 8 scenarios taken randomly from the set of 36 to permit participants to familiarize themselves with the task, the procedure and the test materials (Anderson, 2008). The choice of the 8 scenarios was guided so as to expose participants to the full range of stimuli. Subsequently, participants provided the required ratings. During the following experimental or second phase, the 36 scenarios were administered to participants. Participants provided their ratings at their own pace. The participants took approximately 35 minutes ($M = 35.42$, $SD = 1.36$) to complete the questionnaire.

Data analysis

Each rating by each participant was converted to a numerical value expressing the distance (number of points, from 0 to 10) between the left anchor, serving as the origin and the point which has been checked on the response scale by the participant. These numerical values were then subjected to graphic and statistical analyses.

As we thought that participants were going to respond in very different ways from one another, two cluster analyses were performed. To verify our first and second expectations, a first cluster analysis was performed on the raw data from all the participants, namely “Cluster Analysis All Participants”. To verify our third expectation a second cluster analysis was performed on the raw data from adults, namely “Cluster Analysis Adults”.

Each 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). 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 integration rules and scale values.

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

Results

Cluster analysis on the raw data from all the participants: “Cluster Analysis All Participants”

The results of the hierarchical cluster analysis suggested the tenability of a two-cluster solution ($K = 2$). The subgroups of two-cluster solution were not significantly different on detectability, $F(1, 262) = 1.94$, $p < .164$, $\eta^2_p = .01$. On the other hand, they were significantly different on the short-term outcomes, $F(1, 261) = 49.34$, $p < .001$, $\eta^2_p = .22$, the coach's attitude, $F(2, 261) = 30.66$, $p < .001$, $\eta^2_p = .19$, and the consequence, $F(1, 261) = 32.89$, $p < .001$, $\eta^2_p = .20$, thus providing a solid indication for its tenability.

Cluster I ($N = 116$) is shown in Figure 2 (top panel). It was termed « Consequences For Health + Coach's Attitude + Short-Time Outcomes » since the curves are parallel. The members of this cluster applied an additive rule. The curves slope sharply. These two patterns of curves grew from “very negative consequence for health” to “no negative consequence for health”. The three curves on the left graph are higher than those on the right graph and showed that the success influenced these participants' judgments. One curve was clearly distinct from the two others and concerns the coach's attitude. When the coach encourages or is not against, the judgments are higher than when the athlete does not know if the coach is favourable. The curves have the same aspect in each panel. Overall, judgment was above the

middle of the scale ($M = 5.70$, $SD = 0.08$). The participants in Cluster I decided they would judge the use as acceptable because they based their judgment principally on considering consequences for health, coach's attitude and short-times outcomes. These results are shown in Table 1 and Table 2. They showed the effects of three factors were significant ($p < .001$ is significant): the short-time outcomes, the consequences for health, and the coach's attitude.

Cluster II ($N = 148$) is shown in Figure 2 (bottom panel) and was termed « No Negative Consequences For Health ». The curves extend from 2 to 6 in the middle of both graphs. They form a fan open to the right. Overall, judgment was below the middle of the scale ($M = 3.40$, $SD = 0.07$). The impact of the factor Consequences for Health was less important than in the first cluster. The people in Cluster II judged the use to be acceptable only if there were no negative consequences for health. They applied a conjunctive rule. These results are shown in Table 1 and Table 2. They showed the effects of two factors were significant: the consequences for health and the coach's attitude.

Table 3 shows the composition of each cluster in terms of participants' status. The 2 (Age of participants) \times 2 (Cluster) Pearson's chi-square test was significant, $\chi^2(1) = 30.84$, $p = .000$. Young sports participants (65%) were significantly more numerous in the Consequences For Health + Coach's Attitude + Short-Time Outcomes cluster than adults (30%). Adults (70%) were significantly more numerous in the No Negative Consequences For Health cluster than young sports participants (39%).

Cluster analysis on the raw data from all the adults: "Cluster Analysis Adults"

The results of the hierarchical cluster analysis suggested the tenability of a three-cluster solution ($K = 3$). The subgroups of three-cluster solution were not significantly different on the detectability, $F(2, 154) = 2.16$, $p < .119$, $\eta^2_p = .03$. On the other hand, they were significantly different on the short-term outcomes, $F(2, 154) = 33.43$, $p < .001$, $\eta^2_p = .18$, the coach's attitude, $F(4, 308) = 12.55$, $p < .001$, $\eta^2_p = .14$, and the consequence, $F(4, 308) = 44.07$, $p < .001$, $\eta^2_p = .36$, thus providing a solid indication for its tenability.

Cluster I ($N = 32$) is shown in Figure 3 (top panel). It was termed « Sometimes Acceptable » since the curves slope sharply, close to each other and have the same aspect in each panel. Overall, judgment was relatively high ($M = 5.68$, $SD = 0.11$). The subjects in Cluster I decided they would judge the use of a supplement as acceptable because they based their judgment on consequences for health. These results are shown in Table 4 and Table 5.

Cluster II ($N = 62$) is shown in Figure 3 (middle panel) and was termed « Moderately Acceptable ». The curves extend from 2 to 7 in the middle of both graphs. Overall, judgment was moderately high ($M = 4.23$, $SD = 0.07$). The impact of the factor Consequences For Health was less important than in the first cluster. The people in Cluster II judged the use of supplement to be acceptable only if there were no negative consequences for health. These results are shown in Table 4 and Table 5.

Cluster III ($N = 63$) is shown in Figure 3 (bottom panel). It was termed « Seldom Acceptable » since the mean response was near the bottom of the scale. Overall, judgment was relatively low ($M = 2.76$, $SD = 0.09$). The curves are in the low part of the graph. Whatever the situation, the members of Cluster III judged the use of a supplement to be rarely acceptable. These results are shown in Table 4 and Table 5.

Table 6 shows the composition of each cluster in terms of adult participants' status. The 3 (Type of adults) \times 3 (Cluster) Pearson's chi-square test was not significant, $\chi^2(4) = 4.302$, $p = .367$.

Discussion

The present study applied the theory of integration of information in order to map different ethical positions according to the judgment of acceptability for an athlete who uses a nutritional supplement. The main hypothesis was that different ethical positions would be found. This hypothesis was confirmed since two clusters have been highlighted in the totality of participants ("Cluster Analysis All Participants") and three clusters have been found in adults ("Cluster Analysis Adults").

In “Cluster Analysis All Participants”, the participants of first cluster applied an additive rule: Judgment of Acceptability = f (Consequences For Health + Coach’s Attitude + Short-Time Outcomes). It is possible to state that (1) the greater the negative consequences for health, (2) the more disfavoured the coach's attitude, (3) the lower the expectation of short-term success, the more one considers using a nutritional supplement as not acceptable. These participants judged that the use of supplement is more acceptable than the participants of cluster II. These ones applied a non-additive rule. This rule is a rule stipulating that the use of supplement is acceptable only when several requirements are met simultaneously. The impact of the coach is under the influence of the consequence. When the consequence is very negative it is given heavy weight, and the relative weight of the coach is proportionally reduced. The results in Romand and al. (2009) showed that aggressive behaviour reflects individual differences in moral functioning. The findings of the present study confirmed that using nutritional supplements reflects also individual differences in moral functioning. The theory of integration information (Anderson, 2008) highlights these differences. The cognitive psychological rules of the treatment of many stimuli have been shown in Fruchart and Rulence-Pâques’s (2014, 2016) studies of the act of aggression.

In “Cluster Analysis Adults”, the adults of the first two clusters considered essentially the consequence to health in order to estimate what was the most important factor. For these individuals, using a supplement was considered acceptable if it was not dangerous for the athlete. This result confirms the previous investigations about how important it is to fight the use of substances by taking into account the harmful effects on health (Kirkwood, 2009) and the importance of health in sport in the war against doping (Mazanov, Huybers, & Connor, 2012). From a moral theoretical point of view, these two clusters are very close to the consequentialism or teleology (McDonald & Beck-Dudley, 1994). This perspective considers that the consequences of our actions must constitute the basis of all moral judgment of our actions. Here, behaviour is considered morally acceptable if it is behaviour in which the

consequence for health is small. The participants of the second cluster were distinguished principally from the members of cluster I by judging that using a nutritional supplement is acceptable only if there were no negative consequences on health. In the third cluster, whatever the context the participants did not judge the use of a supplement as acceptable. These participants presented the characteristic of a classical approach to morality, termed non-consequentialism (or deontology). This approach is focused on people's duty to adhere to codes, principles, and policies committed by a group (e.g., the WADA). Here, the participants judge the use of a substance according to the spirit of sport, by taking a little less into consideration the consequence for health than the two first clusters' members.

Our second hypothesis was that the different ethical positions from all participants would be linked to age. It was supported by the data. Adolescents considered the use of a nutritional supplement to be more acceptable than the adults. The second cluster from "cluster analysis all participants" is principally composed of adults (70%). They judged that the use of a supplement is acceptable principally when the negative consequences for health are low. The first cluster from "cluster analysis all participants" is principally composed of adolescents (61%). For them, the use of supplement is sometimes acceptable. As well as the consequence to health, other factors were taken into account by adolescents. The success influenced their ethical judgments. When the success was present, they judged the use of a supplement to be acceptable. This result would signify that young players develop a dominant controlled motivation with the outcome of the game as a priority (Hodge, Hargreaves, Gerrard, & Lonsdale, 2013). Furthermore, they judged the outcome as an important criterion for what is considered acceptable; in this sense they manifested a teleological morality (Malloy et al., 2007). The coach's attitude had an impact on adolescents' moral judgments. The coach's approval concerning the use of a supplement encourages one to judge this use as more acceptable. This finding can be explained by the mechanisms of "moral disengagement" as an individual's means to selectively deactivate internal censures (Boardley et al., 2014;

Lucidi et al., 2008; Lucidi et al., 2013). They are personal things by which moral self-sanctions become disengaged, giving way to misbehaviours that carry no moral concern for the person. This means that if the young athlete knows the coach agrees with this substance, one sort of disengagement mechanism operates by minimizing the role of this substance by displacement of responsibility. So, the harmful effect is minimized. This result raises the question of moral reasoning development of young athletes: what do they think about the consequences of actions to respect the principles of sport ethics (Kohlberg, 1981)? In summary, this finding reinforces the general studies that have been done about the psychological processes possibly regulating adolescents' use of doping substances (e.g., Lucidi et al., 2008) and the duty for researchers to be interested by the young athletes. Future studies on ethical judgment in sport using the theory of information integration (Anderson, 2008) would take a developmental direction.

Our third hypothesis was that different ethical positions would be found according to the level of involvement in sport among adult participants. This hypothesis was not supported by the data. Any of these three clusters from “cluster analysis adults” did not correspond particularly to a type of adult participant (athletes, amateurs, non-athletes). These findings are not consistent with those of Fruchart and Rulence-Pâques (2014). In this present study, the level of involvement does not intervene in moral judgment. This difference may be explained by the effect of the implication on the ground. Aggression is behaviour on the sports field whereas using nutritional supplement is behaviour off the sports field. Further investigations are needed to better understand the role of the level of involvement in sport which will influence one's moral judgment. Using Anderson's (2008) method, other scenarios could describe various forms of sports deviant behaviour that took place on the playing field like feigning an injury to gain time. Thus, it may be that the forms of judgments of acceptability of using a substance that is not banned, like moral judgments are not influenced by the moral structure of sport. Here, there is no moral deviation and no psychological transformation,

precipitated by game involvement, contrary to the findings about moral judgment regarding the legitimacy of sanctioned transgressive behaviour (e.g., Bredemeier & Shield, 1986).

However, we can identify some limitations in our study. First, a methodological limitation concerns the factor Detectability which does not really affect participants' judgments. Perhaps it would have been more significant if we had chosen to test the effect of the detectability of a nutritional supplement that contains banned substances (Chiou et al., 2011). Secondly, we regret the lack of consideration shown in certain factors which could influence ethical judgment on the use of doping: such as aesthetic quality (to see Johnson's definition, 2011) or reducing the pain (e.g., Schmitz, Vierhaus, & Lohaus, 2013), the kind of sport (Schneider & Hong, 2007), cultural norms (Johnson, 2012), or the means to improve the performance, for instance hypoxic environments such as altitude training as opposed to blood doping (Malloy et al., 2007). Thirdly, the bias of social desirability was not considered in the present study. Gucciardi, Jalleh and Donovan (2010) showed the necessity of controlling for social desirability when obtaining athletes' self-reported attitudes toward doping and their susceptibility for engaging in doping in sport. These weaknesses could be considered in later investigations. In the future, we could compare the athletes' judgment on doping in the sport domain with people's judgment on doping in another domain like taking drugs during academic exams (Dodge, Williams, Marzell, & Turrisi, 2012). We could also compare athlete adolescents' judgments on doping in sport with non-athlete adolescents' judgments.

Finally, this study suggested that preventive interventions should also focus on the processes of social influence. Regularly, athletes are indicated because of urine traces of cannabis metabolites, which may remain measurable up to weeks after use (Elbe & Brand, 2014). The public announcement of such cases often leads to important media coverage, strongly condemning the athlete (Kayser & Broers, 2012). Many younger people admire successful professional athletes and dream of a similar future. Since athletic careers often start very early, the protection of the health of young athletes is important and everyone

involved in sport must increase efforts to eliminate performance enhancing drugs for any athlete. The current study has evidenced that coaches are of the utmost importance in social networks in sport and exert a real influence in regulating athletes' behaviour. From an ethical point of view, athletes may justify unethical behaviour if the coaches suggest it (e.g., Hodge et al., 2013). The coach's role in doping has been studied (for a review, Backhouse & McKenna, 2012). For instance, coaches believed they had a role to play in preventing doping: doping should not be allowed because of the risk to the health of the users (Fjledheim, 1992). One expects a coach to create the motivational climate that discourages athletes to use doping substances (Petróczi & Aidman, 2008). The findings may have implications for coaches. They may make them aware of their responsibility to guide young athletes. Coaches are important for young talents who want to improve their performance. Young people grant their coach a great credibility and trust. Thus, coaches must increase their vigilance and have an educational mission about the effect of doping substances. This topic could be included in future educational programs.

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Table 1

Means and SDs for Each Factor for the Two Clusters from “Cluster Analysis All Participants”

Factor	Cluster I (N = 116)		Cluster II (N = 148)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Short-Term Outcomes				
Succes	6.05	0.09	3.43	0.07
No succes	5.34	0.08	3.36	0.08
Coach's Attitude				
Encouragement	6.32	0.10	3.56	0.08
Not Against	6.04	0.09	3.59	0.08
The athlete is not sure the coach approves	4.74	0.10	3.03	0.08
Consequence				
Very negative	3.27	0.14	1.66	0.05
Suspected negative	5.70	0.12	2.96	0.09
Not negative	8.13	0.10	5.57	0.14
Detectability				
Undetectable	5.76	0.09	3.41	0.07
Detectable with difficulty	5.64	0.08	3.38	0.07

Table 2

Main Results of the ANOVAs Performed on Cluster I and Cluster II from “Cluster Analysis All Participants”

Factor	Effect		Error		<i>F</i>	<i>p</i>	η^2_p
	<i>df</i>	<i>MS</i>	<i>df</i>	<i>MS</i>			
CLUSTER I							
Short-term Outcomes (O)	1	526.65	115	5.66	95.95	.000	.45
Coach's Attitude (CA)	2	982.58	230	6.92	141.88	.000	.55
Consequence (C)	2	8192.62	230	17.89	466.60	.000	.80
Detectability (D)	1	17.33	115	3.34	5.19	.025	.04
CLUSTER II							
Short-term Outcomes (O)	1	7.06	147	4.15	1.70	.194	.01
Coach's Attitude (CA)	2	178.41	294	2.48	64.94	.000	.31
Consequence (C)	2	7070.17	294	12.97	545.26	.000	.79
Detectability (D)	1	1.80	147	1.93	0.93	.335	.00

Table 3

Composition of the Clusters from “Cluster Analysis All Participants” in Terms of Participant’s Age

Participants	Cluster		Total
	Consequences	No Negative Consequences	
	For Health + Coach's Attitude + Short-Time Outcomes	For Health	
Adolescents	69 (65%)	38 (35%)	107
Adults	47 (30%)	110 (70%)	157
Total	116	148	264

Note: Percentages are significant at $p < .000$ in the 2 (Type of participants) x 2 (Cluster)

Pearson’s chi-square test.

Table 4

Means and SDs for Each Factor for the Three Clusters from “Cluster Analysis Adults”

Factor	Cluster I		Cluster II		Cluster III	
	(N = 32)		(N = 62)		(N = 63)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Short-Term Outcomes						
Succes	5.92	0.13	4.38	0.08	2.80	0.10
No succes	5.44	0.11	4.08	0.07	2.72	0.10
Coach's Attitude						
Encouragement	6.44	0.16	4.48	0.08	2.90	0.10
Not Against	5.98	0.12	4.49	0.06	2.89	0.11
The athlete is not sure the coach approves	4.63	0.14	3.75	0.10	2.49	0.10
Consequence						
Very negative	2.61	0.20	1.77	0.08	1.43	0.08
Suspected negative	6.06	0.19	3.52	0.12	2.43	0.13
Not negative	8.38	0.18	7.39	0.16	4.42	0.16
Detectability						
Undetectable	5.78	0.12	4.29	0.07	2.77	0.10
Detectable with difficulty	5.59	0.11	4.16	0.07	2.75	0.09

Table 5

Main Results of the ANOVAs Performed on Cluster I, Cluster II, and Cluster III from “Cluster Analysis Adults”

Factor	Effect		Error		<i>F</i>	<i>p</i>	η^2_p
	<i>df</i>	<i>MS</i>	<i>df</i>	<i>MS</i>			
CLUSTER I							
Short-term Outcomes (O)	1	66.61	31	3.73	17.87	.000	.37
Coach's Attitude (CA)	2	338.79	62	4.73	71.56	.000	.70
Consequence (C)	2	3240.24	62	14.40	225.06	.000	.88
Detectability (D)	1	10.31	31	2.49	4.15	.050	.118
CLUSTER II							
Short-term Outcomes (O)	1	50.58	61	3.87	13.07	.001	.18
Coach's Attitude (CA)	2	126.08	122	2.89	43.57	.000	.42
Consequence (C)	2	6169.69	122	12.48	496.06	.000	.89
Detectability (D)	1	9.29	61	2.21	4.19	.045	.06
CLUSTER III							
Short-term Outcomes (O)	1	2.82	63	2.01	1.40	.241	.02
Coach's Attitude (CA)	2	40.49	124	2.16	18.77	.000	.232
Consequence (C)	2	1760.00	124	7.68	229.17	.000	.787
Detectability (D)	1	0.09	62	0.65	0.13	.717	.00

Table 6

Composition of the Clusters from “Cluster Analysis Adults” in Terms of Adults’ Status

Participants	Sometimes	Moderately	Seldom	Total
	Acceptable	Acceptable	Acceptable	
non-athletes	6 (14%)	20 (45%)	18 (41%)	44
amateurs	24 (26%)	33 (35%)	37 (39%)	94
professionnals	2 (11%)	9 (47%)	8 (42 %)	19
Total	32	62	63	157

Note: Percentages are not significant at $p < .367$ in the 3 (Type of adults) x 3 (Cluster)

Pearson’s chi-square test.

Maël is a high-level athlete, member of a renowned national club. He decided to absorb regularly doses of TOPFORME, a nutritional supplement which significantly increases muscular mass and vital capacity. The use of this supplement is not banned. It is totally undetectable. In the long term, this product has no known negative effects on health. In the short term, it enhances performance and guarantees immediate success. Maël is encouraged to use this supplement by his coach.

To what extent do you think that the use of TOPFORME is acceptable?

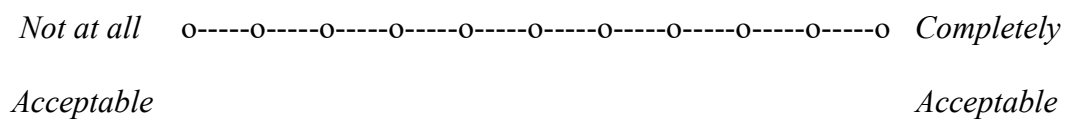
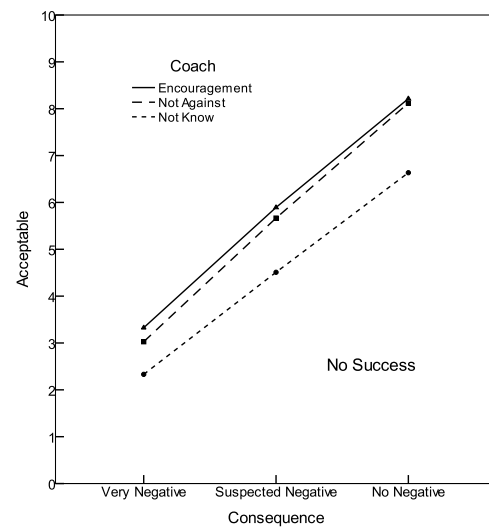
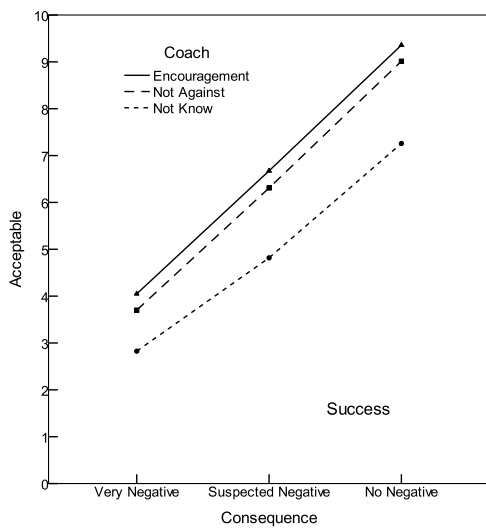


Figure 1. A sample card of the material.

CLUSTER I



CLUSTER II

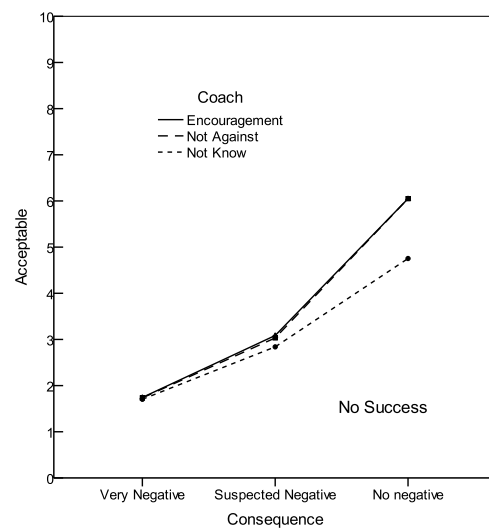
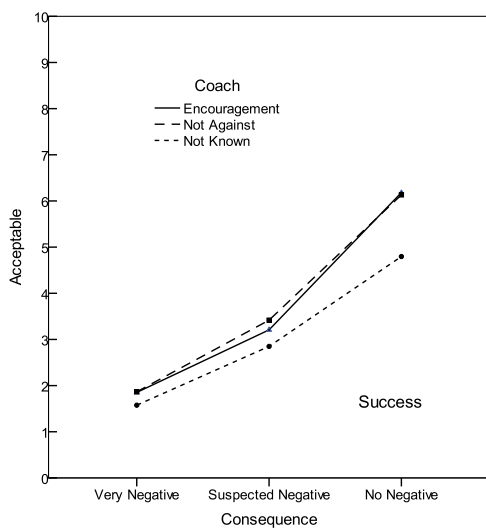
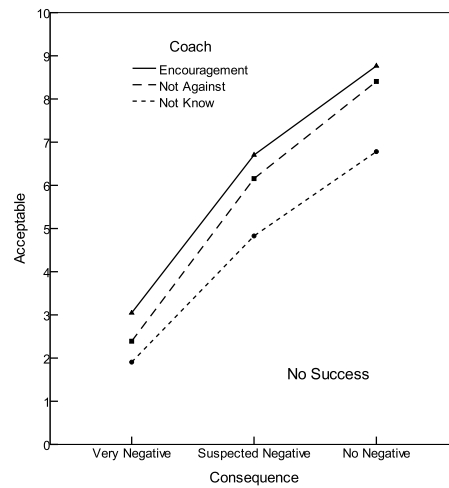
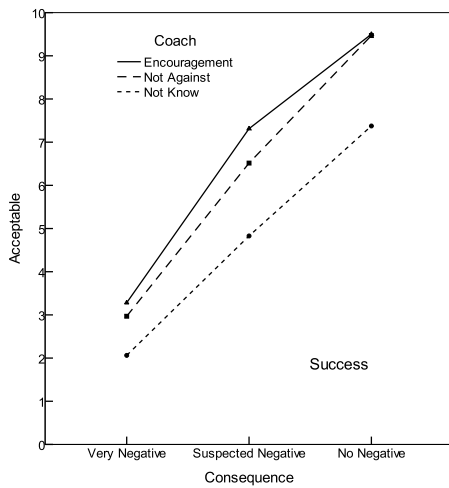


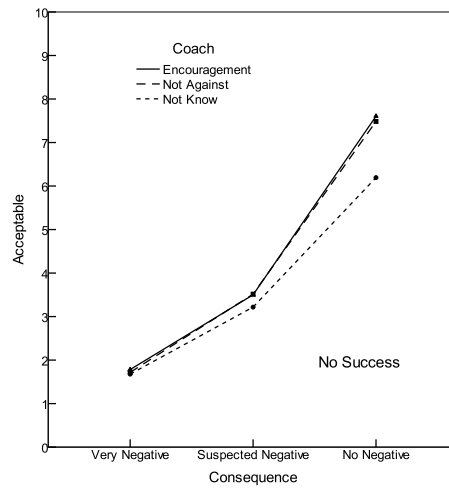
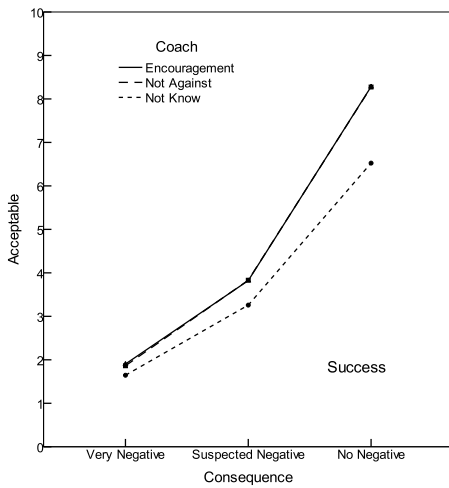
Figure 2. Effect of a short-time outcome, consequence for health, and coach’s attitude on acceptable judgments in two clusters from “Cluster Analysis All Participants”.

Note: The mean ratings are on the y-axis. Each panel corresponds to one level of the short-term outcomes factor. The three levels of importance of consequences for health are on the x axis. Each curve corresponds to one level of the coach’s attitude factor.

CLUSTER I



CLUSTER II



CLUSTER III

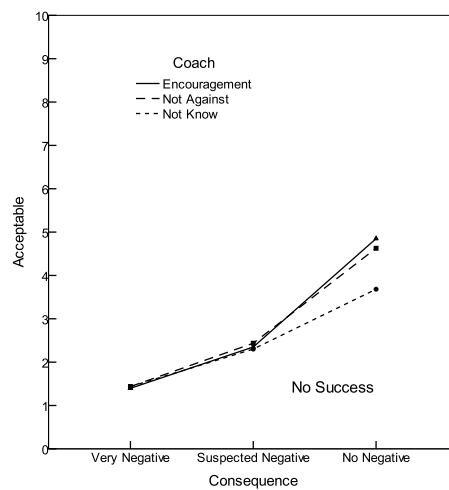
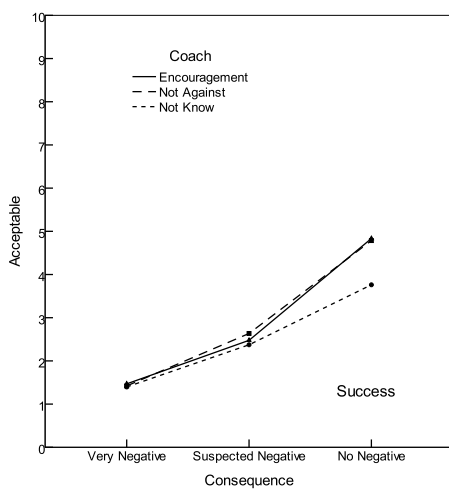


Figure 3. Effect of a short-time outcome, consequence for health, and coach’s attitude on acceptable judgments in three clusters from “Cluster Analysis Adults”