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### **Final Project Report to WADA**

**Project title:** “A cross-cultural investigation of the effects of coach motivational strategies on athlete doping behaviors: Direct and indirect relations”; World Anti-Doping Agency (WADA) Social Science Research Grants 2014

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**Summary:** This was a 2-year project, which started on September 1, 2014. It consisted of two studies, each taking place in Australia and Greece. Study 1 was qualitative in methodology and used semi-structured interviews. The overarching aim of Study 1 was to provide rich data on how athletes and coaches view the role of a variety of coach motivational strategies in promoting or preventing doping behavior in athletes, as well as how other variables (e.g., psychological needs, prosocial and antisocial moral attitudes, or additional variables emerging from the interviews) act as potential mediators of coach influence on athletes' doping behavior. Study 2 was a quantitative study and used a longitudinal survey methodology. The aim of that study was to collect data from athletes on motivation and doping-related variables at the beginning and end of the sport season and test a hypothesized model linking motivational variables to doping intentions and behavior. This is a report on the methodology, results, and implications of each of the two studies.

## Background

A recent meta-analysis of the psychological literature on doping (Ntoumanis, Ng, Barkoukis, & Backhouse, 2014) showed that the literature has primarily focused on the role of personal variables (e.g., attitudes, beliefs, perfectionism) in predicting doping intentions and doping use. The research evidence on socio-contextual factor is comparatively less extensive and has primarily focused on the role of prevailing social norms (cf. theory of planned behavior; Ajzen, 1991) in condoning or sanctioning doping behavior (e.g., Lazuras et al., 2010; Lucidi et al., 2008). However, this work, although important in identifying the influence of the social environment in condoning or disapproving doping, has somewhat limited applied use. This is because such research does not highlight the behaviors and processes (direct and indirect) by which the social environment impacts on athletes' intentions and decisions to engage or not in doping.

Although there are various influential social factors in sport, undoubtedly coaches play the most important role in shaping the psychological experiences and behaviors of their athletes (Bartholomew, Ntoumanis, Thøgersen-Ntoumani, 2009; Mageau & Vallerand, 2003). In fact, conceptual models of doping behavior (e.g., Johnson, 2012; Petróczi & Aidman, 2008) acknowledge the important role of the motivational atmosphere created by coaches. Coaches instruct and try to motivate their athletes in ways in which they see as most appropriate and effective, or perceive as culturally sanctioned (e.g., being distant and assertive, demanding obedience) and indicative of competent and authoritative instruction (Reeve, 2009). However, research has shown that not all coach behaviors are adaptive. Many researchers have utilized self-determination theory (SDT; Deci & Ryan, 2002), one of the most widely applied theories of motivation in sport settings (for a review, see Ntoumanis, 2012), to differentiate between adaptive and maladaptive coach motivational strategies, and to investigate the effects of these strategies on athlete motivation, psychological well-being, and behavior.

In SDT research, a broad distinction has been made between autonomous/need supportive motivational strategies (also called coach behaviors/interpersonal style) and controlling motivational strategies. Autonomy-supportive strategies support self-initiated strivings and create conditions for athletes to experience a sense of volition, choice, and self-endorsement. Examples include provision of choice, rationale, and opportunities for initiative and independent work, taking others' perspective into account, acknowledging their feelings,

and providing feedback on competence that does not control others' actions (Reeve, 2009). Such behaviors result in increased athlete motivation, psychological well-being, and prosocial behavior (Hodge & Lonsdale, 2011; Ntoumanis & Standage, 2009). Despite the label, autonomy-supportive behaviors are theorized and have been empirically shown (cf. Ntoumanis, 2012) to predict the satisfaction of not just the basic need for autonomy (feeling control over one's behavior), but also the basic needs for competence (feeling effective in producing desired outcomes) and relatedness (feeling connected with and accepted by others).

In contrast, controlling motivational strategies are in operation when coaches behave in a coercive, pressuring, and authoritarian way in order to impose a specific and preconceived way of thinking and behaving upon their athletes. As a consequence, athletes often comply but do not endorse the requested behaviors. Sometimes, coach control can be more subtle, for example, by showing affection and support only when athletes behave in ways in which conform to coaches' expectations, and by showing indifference or rejection when athletes do not behave in such ways. Bartholomew et al. (2009) were the first to systematically review the various facets of controlling instructional styles and their potential applications in sport in terms of explaining certain types of coach behavior. Bartholomew et al. (2010, 2011) subsequently showed that controlling coaching environments can frustrate athletes' psychological needs, and result in negative emotions, feelings of burnout, and disordered eating. The link between coach autonomy supportive and controlling behaviors with athletes' perceptions of need satisfaction and frustration is important, because according to Basic Needs Theory, a mini-theory of SDT, psychological well-being and optimal functioning are dependent on the satisfaction of the three aforementioned needs. Hence, contexts that support versus thwart these needs should invariantly affect psychological and physical wellness. For example, self-destructive behaviors are evident when individuals' experience hostile social environments that thwart their needs (Deci & Ryan, 2002). Although there is limited evidence (e.g., Barkoukis, Lazuras, Tsorbatzoudis, & Rodafinos, 2011) to suggest that adaptive types of personal motivation are negatively related to doping intention and use, there is no research that has examined the role of coach behaviors (adaptive and maladaptive) that predict, directly or indirectly via personal motivational factors, substance abuse, such as doping.

Motivation variables can also predict doping-related variables via the promotion of prosocial or antisocial moral attitudes and behaviors. For instance, Ntoumanis and Standage

(2009) tested a SDT-based model of morality in sport which showed that autonomy supportive coaching and satisfaction of athletes' psychological needs were positively related to adaptive motivation and prosocial moral attitudes (e.g., helping opponents), and were negatively related to the endorsement of cheating as well as the violation of unwritten rules and ethical codes (i.e., gamesmanship). Such findings are important, given that Ntoumanis et al.'s (2012) meta-analysis found moderate effect sizes linking moral attitudes and beliefs with doping intention and use. Two other morality-related variables relevant to the current study are the moral attitude to keep winning in proportion and moral disengagement related to doping. Keeping winning in proportion represents the attitude that winning should not be achieved by any means and that losing and winning are part of life. Lee, Whitehead and Ntoumanis (2007) showed that higher scores on this variable were positively associated with more sportpersonship behaviors (e.g., respect for conventions and rules). Moral disengagement with regard to doping refers to cognitively restructuring and discounting doping and its consequences. Kavussanu, Hatzigeorgiadis, Elbe, and Ring (2016) showed that athletes with higher moral disengagement in regard to doping reported higher likelihood to dope. Further, Hodge, Hargreaves, Gerrard, and Lonsdale (2013) reported that general moral disengagement in sport (not specific to doping) was correlated with more pro-doping attitudes and susceptibility to doping, as well as with controlling coach and teammate behaviors.

## **Study 1**

### **Aim**

This was a qualitative study using semi-structured focus group interviews. The conceptual framework that informed the selection of questions for the interview schedule and, to some extent, the interpretation of the raw data themes was SDT (Deci & Ryan, 2002). The overarching aim of Study 1 was to provide rich data on how athletes and coaches viewed the role of a variety of coach motivational strategies in promoting or preventing doping behavior in athletes, as well as how other variables (e.g., prosocial and antisocial moral attitudes or additional variables emerging from the interviews) act as potential mediators of coach influence on athletes' doping behavior.

## Method

### Participants

Male and female athletes, between the ages of 18 and 35 years, who train three times a week or more and compete in regional or higher level competitions were selected to be interviewed. Athletes with a less than one-year history of working with their current coach were excluded. Male and female coaches within the same level and type of sport with at least five years of coaching experience were also selected.

**Australian Participants:** Eleven Australian athletes (9 male, 2 female) from the sports of Australian football (3), rugby (1), men's basketball (1), women's basketball (1), women's netball (1), and athletics (1) participated. The Australian coach participants ( $n=8$ ; 7 male, 1 female) represented the sports of Australian football (4), rugby (3), basketball (2; 1 female), and athletics (2; 1 female). Athletes ranged in age from 20-32 ( $M_{age}= 28.00$  years,  $SD = 3.7$ ), and coaches ranged in age from 31-70 ( $M_{age} = 44.5$  years,  $SD = 14.3$ ). The athletes averaged 12.00 years of competing in their sport, with a mean of 3.00 years working with their current coach. Coaches averaged 20.25 ( $SD = 14.8$ ) total years of coaching in their sport.

**Greek Participants:** Ten Greek athletes (8 male, 2 female) and 10 Greek coaches (all male) were interviewed. The athletes played soccer (1), basketball (2), volleyball (1), athletics (2 females), swimming (1), handball (2), and cycling (1). The coaches were from the sports of men's basketball (2), men's and women's volleyball (2) weight-lifting (1), swimming (2), and athletics (3). Coaches ranged in age from 43 to 63 years ( $M_{age} = 48.1$ ,  $SD = 6.34$ ); athletes ranged in age from 21 to 32 years ( $M_{age} = 26.1$ ,  $SD = 3.40$ ). Coaches on average had coached for 25.6 years ( $SD = 6.70$ ), and athletes had competed in their sport on average for 10.7 years ( $SD = 3.19$ ), with an average of 3.00 years working with their current coach.

### Procedure

This study was approved by the Curtin University Human Research Ethics Committee and then subsequently approved by the Aristotle University of Thessaloniki ethics committee. The recruitment process was facilitated through established contacts within the universities and the researchers. Participants were recruited by ways of phone calls and e-mails to local

(Perth, Australia and Thessaloniki, Greece) sport teams and organizations meeting the aforementioned selection criteria. Interested parties received an e-mail containing an information sheet regarding the study. All participants signed an informed consent and completed a demographics questionnaire. Recruitment was conducted on a rolling basis, and concluded when data saturation was reached. Data saturation was determined when no apparent new and relevant data were being collected, with attention to the guidelines noted by O'Reilly and Parker (2012). Confidence with the degree of saturation relied in part on the deep immersion of the researchers with the data, and an effort to assess the data inductively (data-driven vs. research-question driven), rather than simply accept saturation to have been reached once it appeared that the original research questions could be answered.

**Interviews:** Two research assistants, one in each country, were trained to conduct the interviews via face-to-face and Skype meetings with the project's investigators. A semi-structured interview format was selected for its ability to collect information surrounding the research questions, while encouraging participants to describe their own specific experiences and understandings (Sparkes & Smith, 2014). The interview guide consisted of semi-structured questions with numerous probes, and were designed to capture how athletes and coaches view the role of a variety of coach motivational strategies in promoting or preventing doping behavior in athletes, as well as how other variables (e.g. psychological needs, prosocial and antisocial moral attitudes, or additional variables emerging from the interviews) act as potential mediators of coach influence on athletes' doping behavior. Following the suggestions of Sparkes and Smith (2014), the interview guide was designed to encourage talk and interviewers were trained to use tactics such as open-ended questions, relating current relevant events (e.g. a recent doping scandal) or personal understanding when appropriate, and empathetic listening. Furthermore, considering the sensitive nature of doping in sport, questions relating to performance enhancing drug use were asked in the second half of the interview. Athletes were asked questions such as "How does your coach build and maintain relationships with you and other athletes on the team?" or "Some athletes think its fine to take drugs to enhance their performance. Others though are really against it. What do you feel about these two stances?" Coaches were asked similar questions, including "Do you think it is important for you to give your athletes independence?", and "From your experience, what are the best ways of motivating athletes?" Probing follow-up expansion questions grounded in curiosity were asked to elicit meaningful and authentic information (Sparkes & Smith, 2014). For example, if a coach responded that it is important to give athletes independence,

questions such as “What does independence mean to you?”, “What would that look like?”, and “Can you give me an example of this?” would be asked. The interview scripts were a modified version of previous scripts that have been used to assess Physical Education Teachers’ motivational strategies (Taylor et al., 2009), and athletes’ perceptions of coach controlling motivational strategies in sport (Bartholomew et al., 2010). The interviews lasted an average of 75 minutes, and were conducted face-to-face in a private setting chosen by the participant (café, office, gymnasium, etc.). All interviews were audio recorded.

### **Data Analysis and Validity**

The audio recordings of the Australian interview were transcribed using a professional service. For the Greek data, the interviews were translated from Greek to English by research assistants as they were transcribed. The researchers used NVivo 10 software to organise and analyse the data through a thematic analysis conceptual framework. Thematic analysis was chosen for its ability to generate key patterns in the data and create a rich and detailed picture of a complex information. A six-step process was followed as outlined by Braun and Clark (2006): 1) familiarization with data, 2) initial code generation, 3) theme search, 4) theme review, 5) theme definition and naming, and 6) report production. First, researchers immersed themselves in data by empathetically reviewing it and taking rough notes. It is important to note that the same researcher who conducted the interviews also conducted the analysis, allowing for greater immersion. Next, meaningful data segments were systematically coded and codes were collated and then organised into initial themes. Code generation and the initial theme search was done in an inductive matter- that is, with an effort to allow the data rather than the research questions to drive the process. This was followed by a review of the initial themes in which the research questions were brought into the process to deductively organize and name the themes. Additionally, these themes were reviewed against the transcripts and the original codes to allow space for themes that emerged inductively. That is to say, the process was grounded in an inductive approach, but deductive processes were used to refine the themes. Next, the themes were named and defined, with attention given to the language used within the Self-Determination Theory literature. Coach and athlete data were analysed separately, and themes were combined where appropriate. Up until this point, the Greek and Australian data were analysed completely separately so as to eliminate bias by letting analysis of one data set guide the other. The themes for the respective data sets were



then shared and discussed over multiple meetings, and themes were compared. Overlapping themes were combined and differences noted. Themes were reviewed and renamed and/or redefined to represent the combined data sets. Additional sub-themes, such as Cultural Differences emerged solely from the process of combining the two data sets. From this process, 4 themes and 9 subthemes emerged.

Lastly, the report writing process included open dialogue between the researchers from each country, and sought to reflect the relativist approach employed by the researchers throughout the study. In other words, instead of following universal guidelines, an unfixed and open set of criteria was utilised to guide the standard of the work (Sparkes & Smith, 2009), seeking validity. For this study, following the open framework suggested by Tracy (2010), such criteria included, but were not limited to, rich rigor (e.g. immersion within both the field and theoretical constructs), sincerity (e.g. awareness and openness of biases and challenges; practicing self-reflexivity), credibility (e.g. triangulation/convergence of analysis and theoretical underpinnings), resonance (e.g. transferability), and meaningful coherence (e.g. utilising concepts and framework that fit the goals of the project). Furthermore, the report writing process sought to shine light on the researchers' endeavour toward a connoisseur approach. That is, as Smith and Sparkes (2009) remind us, utilising finely-tuned and open minded discrimination tactics to examine the complexity and subtlety of not only the information gained from interaction within the researcher, participants, and subject matter, but also of the inherent dynamics between the three.

As a result of the data analysis and cultural collation process, four final themes and nine subthemes emerged. The main themes are as follows: *Doping Stigma*, *Cheating in Sport*, *Direct Predictors of Doping*, and *Indirect Predictors of Doping*. The themes represent a combination of responses from Australian and Greek participants, athletes and coaches, males and females, and those from individual and team sports. Relevant differences will be noted where appropriate. Please note that this is a preliminary analysis and there will be further modifications to it during the second year of the project.

## **Doping stigma**

It is commonly understood and documented that doping in sport is a sensitive and controversial issue. Despite practices embedded in this study to address this, the stigma

around doping was a common thread throughout. This was first evident in the recruitment process. Recruitment for this project was challenging. Few people responded to various forms of recruitment efforts. However, when recruitment efforts were more vague, the response rate went up, but many interested parties declined to move forward once they heard of the nature of the study. Although difficult to verify, this could be related to the stigma surrounding doping and individuals' subsequent resistance to talk about the topic for fear of being considered guilty. Recruitment was most successful when friends and colleagues of the researchers were utilised, possibly suggesting that the trust in the established relationship enabled more freedom from the stigma surrounding doping in sport. In the interview process, participants appeared hesitant to talk about doping once it was brought up, and a general shift in their comfort level was noticed by the researchers. It was very common for the participants to make clear "how little" they know of doping and its culture. The initial response from the participants regarding doping was predominantly a very clear and straight-forward anti-doping stance. However, this initial clear line generally blurred quickly when probed further. This is not to say that participants eventually revealed a pro-doping response, but upon further reflection, participants acknowledged the complexity and "grey area" nature of the issue. Furthermore, this is not to imply that the participants were being dishonest at first, but more that their natural conditioned response to performance-enhancing drug use is a very clear anti-doping stance, possibly speaking to the stigma around doping. Often, participants made conflicting statements regarding their perceptions on doping or struggled to respond to deeper questions regarding their perception and policy regarding doping. Furthermore, this notion seemed to be reinforced through the discussions, or lack thereof, between coaches and athletes regarding doping. While all of the coaches reported a clear anti-doping approach, coaches declared that they don't clearly discuss anti-doping or organize any related activities beyond what is required by the sport. Many stated that they are able to create an anti-doping in their teams/groups without bringing up this issue. This could be ascribed to the fact that doping is a stigmatized behavior and talking about it may give the impression that the coach promotes doping use.

*Practical implications:* The data suggests that the stigma surrounding doping may lead to an automatic clear anti-doping response from the participants, but the subsequent ambiguity and inconsistencies indicates that the stigma surrounding doping may create barriers to anti-doping campaigns. Participants' responses to questions regarding doping often reflected an unformed stance, indicating the possible need for more education and self-

reflection for both coaches and athletes on the matter. The data suggests that athletes may need more support in navigating this complex issue, and the coach may be able to play a role in this. However, the data indicates that the coaches are not having these conversations with the athletes. With this current approach, the issue could be stigmatized further and athletes may not be sure about the coach's doping position, limiting the potential for the coach to influence doping behaviour positively. Thus, it seems important to persuade coaches to talk about and organize actions against doping use in order to confirm his/her anti-doping culture. However, in anti-doping efforts, a balance between being respectful of the stigma and working to break the barriers the stigma creates should be sought so that the message can be heard.

### **Cheating in sport and doping as cheating**

All participants voiced a strong anti-doping position that doping is cheating. In general, the participants perceived doping as an immoral behavior but perceived other forms of cheating in sport were not as immoral but 'part of the game'. Even those who would accept rule violations in their sport felt that doping is an unacceptable and unethical behavior. However, when they were probed about the moral issues some of them couldn't provide convincing arguments and were left confused and unable to articulate the difference between "acceptable" forms of cheating and doping. Conversely, some participants were very clear with the differences between the two.

*Practical implications:* The conversations around cheating indicated a strong anti-doping culture which makes sport people perceive doping as cheating. However, participants sometimes lacked a strong argumentation to back up this position. Unformed arguments may further reflect the stigma and the need to have deeper and more meaningful conversations about the subject, rather than just present the rules and the ramifications. Perhaps anti-doping campaigns should provide solid arguments on the moral hazards of doping use as well as pose deeper questions to encourage reflexive conversations reflecting the complex nature of the subject.

## **Direct predictors of Doping**

The participants reported several variables they perceived to be predictors of doping, including doping risk factors and doping deterrents. These predictors, many of which echo previous literature, are worth mentioning, but do not constitute the heart of this study's findings, which lie in the indirect predictors of doping.

### *Doping Risk Factors*

The participants indicated that the following factors would put individuals more at risk of engaging in doping behaviour: a high-pressure environment, win-at-all cost culture, lack of education, external rewards (fame, money), successful examples, pressure from peers/coach. While these factors were present across both data sets, the Australian participants put more weight in the first three (a high-pressure environment, win-at-all cost culture, lack of education), whereas the Greek participants saw the latter three (external rewards (fame, money), successful examples, pressure from peers/coach) as more of a risk.

### *Doping Deterrents*

The participants perceived several factors to deter doping behaviors and intentions, and these were more distinct across the Greek and Australian data sets. The Australian data revealed that clear team morals, strong team leaders and role models, strong moral values from upbringing, health consequences, strong support system and resources within team, and a low-pressure environment may protect against doping intentions or behaviour. The Greek data, on the other hand, exposed that participants perceived the health consequences, lack of monetary and other (e.g. getting in the university) incentives, peer and coach influence, positive role models in the close environment, more frequent doping controls, lack of trust in doping efficacy, healthy alternatives (e.g. training, diet, nutritional supplements), and social stigmatization to deter doping behaviour and intentions. While there is some overlap between the two lists, the differences are interesting to note.

### *Cultural Differences*

The most significant differences within the doping deterrents between the two data sets were in regards to morals, health, and resources. The Australian participants placed a strong emphasis on the morals- from their team, coach, and upbringing- as protectors against doping. Health was also an important deterrent in the Australian data as well, but was most

often mentioned after moral values. Conversely, while the Greek participants discussed that moral values shape doping behaviour, this came second to the health risks of performance enhancing substances. Furthermore, Australian participants mentioned team resources (e.g. nutritionist, physio, sport psych, etc) as a doping deterrent more often than Greek participants. This may be indicative of the fact that Greece's sporting system has less resources than Australia's.

*Practical Implications:* When designing anti-doping interventions, these cultural differences should be considered. For example, a health-risk focused program may have more of an impact on a Greek population, whereas Australians may respond more to a moral-based program.

#### *Individual vs. Team Differences*

By in large, the results for both the team and individual athletes/coaches paralleled each other, however there were some important differences. While the differences discussed below were reflected in the data from both countries, the small sample size from Australian individual sport should be considered. It is important to note that the Australian study only included data from 2 individual athletes and 1 individual sport coach, whereas the Greek study included data from 4 individual athletes and 6 individual sport coaches. First, team sport athletes were more firm and consistent in their negative attitude towards doping. Conversely, individual sport athletes, after probing and offering hypothetical situations, were more likely to report start thinking about doping use. Next, in team sports athletes reported that they could be influenced to dope or not by a teammate more than an opponent, and that the team culture was an important protector against doping that individual athletes may not have. In individual sports, however, the improvement of an opponent was reported more frequently as a factor that could make them think about using doping than that of the success of a peer. Furthermore, in individual sports, the influence of the coach in the decision making process was reported to be stronger than in team sports. Similarly, coach-athlete relations were stronger in individual sports rather than team sports. Also, only in the Greek data, in individual sports there were more attempts by the coach to establish good coach-athlete and athlete-athlete relationship, whereas in individual sports coaches were more interested in the personal development and well-being of the athletes. In regards to perceptions about cheating in sport, team sport participants generally reported that doping is cheating but other forms of

rule violations were 'part of the game' and not immoral. Conversely, in individual sports participants were stricter that rule violations were cheating.

*Practical Implications:* Future research should include a more balanced sample to further tease out differences, especially those that are culture (nationality) based. Even still, these results can inform anti-doping interventions by providing some insight into how to relate to individuals in individual vs. team sports. For example, encouraging reflexive conversations about the difference between cheating in terms of standard rule violations vs. performance enhancing drug may have more utility in a team sport setting.

## **Indirect Predictors of Doping**

### *Relationships*

The weight of this study's findings lies in the indirect predictors of doping. At the heart of such predictors is the concept of relationships. The data strongly indicates that relationships are a critical component in both coaches' coaching philosophy and athletes' experience in sport. Furthermore, the data highlights that it is the strength and quality of the coach-athlete relationship that unlocks the potential for a coach to have influence over an athlete's beliefs, choices, and behaviours, including those relating to doping. Both countries' data indicated that the degree of trust and respect the athlete holds for the coach moderates the athlete's susceptibility to influence- whatever the direction- from the coach. To state it simply, the most significant finding of this study is that the athlete-coach relationship creates a pathway of potential for the coach to influence the doping intentions and behaviours of athletes. However, how the relationships are formed and nurtured is not only meaningful, but critical in regards to the purpose of this study and such influence to be possible. Using the Self-Determination framework (Deci & Ryan, 2012), this study found that in both countries, a coach-athlete relationship with the potential to influence is shaped through a need-supportive coaching style. A coach builds a need-supportive culture through practices that are autonomy supportive, relatedness supportive, and competence supportive. These tenets enable the psychological need satisfaction of the athlete, which in turn builds a strong trust between coach and athlete, thus creating potential for the coach to influence the athlete's doping intentions behaviours. It is important to note that this potential to influence is non-directional- that is, depending on the coach's beliefs and actions, the athlete could be directed

in pro- or anti-doping direction. In other words, the need-supportive culture builds the relationship between coach athlete that encourages the athlete to internalise and display morals and standards as developed by the coach and the team. Interestingly, the data suggested that without the need-supportive culture, the effect is that that the coach's potential to influence the athletes is lost as the necessary relationship and subsequent trust and respect is absent.

### *Autonomy-Supportive*

The elements of an autonomy-supportive culture evident in this study were a coach who supports the athlete as an individual, seeks out the athlete's opinion and gives some ownership over training and supports intrinsic goal setting. Additionally, for the Australian data only, a coach who develops and nurtures strong leadership structure within the team was an important component of this type of culture. This is not to say that a coach doesn't maintain some control within an autonomous-supportive environment. Even the athletes who expressed the deepest feelings of autonomy noted the importance for the coach to have control over certain elements such as game plan, training drills, nutrition, etc. Furthermore, in both countries, the importance of the illusion of control was commonly discussed by the coaches and occasionally the athletes. That is, some coaches said that there are times that, in giving autonomy, they are actually allowing the athlete to believe that they have the "control," when really they coach feels as though they are maintaining the control. For example, a coach may ask an athlete's opinion on what to do for training that day so that the athlete feels a sense of autonomy, but really the coach has no intention to deviate from the original plan of the day.

### *Relatedness-Supportive*

The coaches and athletes in the study all expressed the importance of a relatedness-supportive environment in building the trust and respect between coach and athlete, as well as between teammates. Key components of this climate evident in the study were a coach who supports the athlete as an individual and develops a personal relationship with the athlete, who seeks to understand and meet the individual learning styles of each athlete, and who respects the athlete's opinion. An additional component to a relatedness-supportive culture in the Australian data was the notion of the coach earning the athletes' trust through integrity, or "walking the talk". Furthermore, for both countries, relatedness was supported when the coach encouraged relationships amongst athletes. This was evidenced through a coach who

creates opportunities for team bonding and discussion, and models respect for all team members. The Australian data also emphasized the importance of the creation of a clear team culture and strong leadership group.

### *Competence-Supportive*

Competence-supportive tendencies proved in the data to be an important tenet of the need-supportive culture. However, here the two countries varied quite a bit. The Australian participants saw competence building through role clarity, multiple resources (physio, nutritionist, etc.), and support of the individual's learning style. On the other hand, the Greek participants defined a competence-supportive culture as one that includes verbal motivation and training and instruction. Participants from both countries emphasized the importance for goal-setting and video feedback to build competence.

### *Perception of Coach's Potential to Influence*

While the data conveys that the participants perceive there to be an influence on athletes' doping perceptions and behaviors from the coach, most were unable to articulate how this might happen. Furthermore, the coaches suggested that much of the responsibility for doping education lies within the structure of sport and, for the Australian data, other team members (e.g. trainer, medical staff, nutritionist, ASADA website, etc).

### *Practical Implications*

When the psychological needs of autonomy, relatedness, and competence are met, it appears that athletes are likely to internalize and display the morals and standards developed by the coach and the team. If such morals and values relate to doping expectations, then the data suggests that athletes' doping intentions and behaviours will be influenced by such expectations. However, this influence could be either against or in favor of doping use. Moreover, the potential to influence at all could be negated if the athletes' psychological needs are thwarted, which may be a potential doping risk factor. Thus, if coaches are to influence athletes' doping behaviour, it seems imperative that coaches are not only encouraged to develop a need-supportive environment, but also are educated on how to clearly articulate an anti-doping position, and build a culture mirroring this sentiment.

The results of this study illustrate a potential pathway of influence between coach and athlete in regards to doping. Understanding and nurturing this pathway is important, but the



next, and possibly even more critical, step is to maximise this potential to influence. The fact that the participants were unable clearly to articulate the discussed pathway may be a window into an opportunity for doping prevention. This study highlights the notion that the issue of doping in sport is not black and white, but operates in shades of grey. As such, anti-doping interventions should acknowledge this when seeking to make the most of the coach's potential to influence the athlete. Rather than a black and white approach of stating the rules and directing athletes to websites or external resources/staff, perhaps future research could explore interventions that tackle the more subtle and complex nuances of the issue. For example, activities, guest speakers, coach-led discussions, etc., could seek to elicit deeper, more meaningful, reflexive conversations between coach and athlete(s), leadership groups, and amongst athletes to address the more complicated grey areas (e.g. Are there some forms of cheating that are acceptable in sport, and how does doping differ from those? or Beyond the law, why should one avoid doping? ). Such work should be aware of cultural idiosyncrasies discussed. For example, work with Australian athletes may focus more on morals and team values (Who in your family do you respect the most, and what would they tell you about the importance of playing clean sport? or What does it mean to who we are as a team that we play clean sport?). Similarly, those working with Greek athletes may take a more health-focused approach while digging deeper (e.g. How will your 60 year old self thank you for playing clean sport?). Moreover, in future research and interventions, one should be mindful of the stigma around doping, striking a balance between seeking to lessen it, while also respecting its presence. On this note, researchers should be aware of their own belief system and biases when addressing such a sensitive topic.

## **Study 2**

### **Aim**

The first aim of this study was to bring together various lines of work on motivation, morality, and doping and examine a process model linking contextual and personal motivational variables, moral attitudes, moral disengagement, doping intentions, and doping use. In our hypothesized model (see Figure 1a) we proposed that perceptions of coach autonomy supportive behaviors would positively predict athletes' psychological need

satisfaction and negatively predict psychological need frustration. In contrast, it was expected that coach controlling behaviors would negatively predict psychological need satisfaction and positively predict need frustration. Endorsement of cheating and gamesmanship as well as moral disengagement in doping were expected to be positively predicted by controlling coaching and need frustration and negatively predicted by autonomy support and need satisfaction. The moral attitude of keeping winning in proportion was hypothesized to be positively predicted by autonomy support and need satisfaction and negatively by need frustration and controlling coaching. We also expected that cheating, gamesmanship and moral disengagement in doping would be positive predictors of doping intention, controlling for self-reported past doping behavior. In contrast, keeping winning in proportion was expected to negatively predict doping intentions.

Our secondary aim was to test the cross-cultural invariance of these relations with Australian and Greek athletes. Given that Deci and Ryan (2002) argued for the cross-cultural generalizability of the motivational processes described in SDT that link the social environment with individuals' motivation, cognition and behavior, we consider it important to empirically test such a proposition. Based on SDT propositions, we expected that the process structural model linking coach motivational strategies and doping behaviors via the motivation and morality variables would be invariant across Australia and Greece. Our third aim was to test a slightly expanded version of Figure 1a (see Figure 1b) by collecting data on doping use at two time points (beginning and end of sport season). We predicted that doping intentions would negatively predict new users (i.e., doping users at time 2 but not time 1) and positively predict continued users (doping users at both time points).

## **Method**

### **Participants**

*Australian athletes.* The Australian sample ( $n = 211$ ) comprised 153 male and 58 female athletes aged between 15 and 55 years ( $M = 23.65$ ,  $SD = 5.84$ ). The primary sports represented in this sample included Australian Rules football (47.4%), netball (15.6%),

athletics (15.2%), and basketball (9%). Additional demographic information captured athletes' time in their sport ( $M = 11.69$  years,  $SD = 5.26$ ), on their current team or squad ( $M = 3.16$  years,  $SD = 2.87$ ), and with their current coach ( $M = 1.85$ ,  $SD = 1.92$ ). At the time of completing the survey, athletes reported spending between 1.5 and 25 hours per week training for their sport ( $M = 8.01$ ,  $SD = 4.60$ ), and were primarily engaged in competitions at regional (68.7%) or national (13.7%) levels.

**Greek athletes.** The Greek sample ( $n = 257$ ) comprised 159 male and 98 female athletes aged between 15 and 36 years ( $M = 21.79$ ,  $SD = 3.84$ ). The primary sports represented in this sample included football/soccer (32.3%), rowing (19.5%), handball (13.2%), volleyball (10.9%), and swimming (9.3%). Demographic information captured athletes' time in their sport ( $M = 9.33$  years,  $SD = 4.18$ ), on their current team or squad ( $M = 4.32$  years,  $SD = 3.35$ ), and with their current coach ( $M = 2.76$ ,  $SD = 2.32$ ). At the time of completing the survey, athletes reported spending between 0.5 and 35 hours per week training for their sport ( $M = 14.74$ ,  $SD = 6.12$ ), and were primarily engaged in competitions at national (79%) or international (18.3%) levels.

## Measures

With the exception of doping intentions, for all 7-point scales listed below the following anchors were used: 1 (*strongly disagree*), 2 (*disagree*), 3 (*slightly disagree*), 4 (*neutral*), 5 (*slightly agree*), 6 (*agree*), and 7 (*strongly agree*).

**Autonomy-supportive climate.** Athletes' perceptions of autonomy support provided by their coach was assessed using the 6-item Health Care Climate Questionnaire (Williams et al., 1996); the original items were adapted to capture the coach as the key social agent (e.g., "I feel that my coach provides me choices and options"). Despite its label, the questionnaire includes items that also capture competence and relatedness support.

**Controlling climate.** Athletes' perceptions of their coach's controlling use of rewards (e.g., "My coach tries to motivate me by promising to reward me if I do well"), negative

conditional regard (e.g., “My coach is less supportive of me when I am not training and competing well”), intimidation (e.g., “My coach threatens to punish me to keep me in line during training”), and excessive personal control (e.g., “My coach expects my whole life to center on my sport participation”) were captured using the 15-item Controlling Coach Behaviors Scale (Bartholomew et al., 2010).

***Psychological needs satisfaction.*** Items were collated from three surveys to assess athletes’ perceptions of the degree to which they experienced satisfaction of the three psychological needs of autonomy (5 items, e.g., “I have some choice in what I want to do in my sport”; Standage et al., 2003), competence (5 items, e.g., “I think I am pretty good at my sport”; McAuley et al., 1989) and relatedness (5 items, e.g., “When participating in my sport I feel supported”; Richer & Vallerand, 1998) within their sport.

***Psychological needs thwarting.*** The 12-item Psychological Need Thwarting Scale (Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011) was used to assess athletes’ perceptions of the degree to which they experienced frustration of the three psychological needs of autonomy (e.g., “I feel forced to follow training decisions made for me”), competence (e.g., “There are times when I am told things that make me feel incompetent”) and relatedness (e.g., “I feel I am rejected by those around me”) within their sport.

***Attitudes to moral decision-making.*** Athletes’ attitudes towards the acceptance of cheating (e.g., “I would cheat if I thought it would help me win”), keeping winning in proportion (e.g., “Winning and losing are a part of life”), and acceptance of gamesmanship (e.g., “I sometimes try to wind up the opposition) were tapped using an 9-item scale of attitudes to moral-decision making (Lee et al., 2007). Responses were rated on a 5-point scale with the following anchors: 1 (*strongly disagree*), 2 (*disagree*), 3 (*neutral*), 4 (*agree*), and 5 (*strongly agree*).

***Moral disengagement in doping.*** The degree to which athletes’ endorse psychological mechanisms designed to disengage from moral self-sanctions associated with

doping behavior were captured using a 6-item scale (e.g., “Doping is alright because it helps your team”; Mallia et al., 2016).

***Doping intentions.*** Athletes’ intentions to use prohibited substances during the upcoming season were captured using a 3-item scale (e.g., “I intend to use prohibited substances to enhance my performance during this season”; Barkoukis et al., 2013). Responses were recorded using a 7-point scale with the following anchors: 1 (*extremely unlikely*), 2 (*very unlikely*), 3 (*unlikely*), 4 (*neutral*), 5 (*likely*), 6 (*very likely*), and 7 (*extremely likely*).

***Doping behavior.*** Following the procedure by Lucidi et al. (2008), we presented athletes with a list of substances, including five of the most common legal nutritional supplements (i.e., protein and aminoacids, vitamins and minerals, glutamine, creatine, and Tribulus, ZMA, HMB or other testosterone boosters) and five of the most common doping substances (i.e., testosterone and by-products, growth hormone and IGF-1, beta blockers, erythropoietin, and anabolic steroids). Participants responded in a yes-no format as to whether or not they had used each of these substances in the past six months with the intention of improving their performance. We asked athletes to report on the use of both legal and illegal substances in an effort to minimize social desirability in reporting. However, for the purposes of this study, we included only the data regarding illegal substances. In the cross-sectional analyses of time 1 data, we created a binary doping behavior variable to classify athletes who reported using at least illegal substance as a user and all others participants as a non-user (0 = non-user, 1 = user). At time 2, we created two outcome variables based on athletes’ responses to their use of illegal substances at times 1 and 2: (i) ‘new user’ represented athletes who had reported using illegal doping substances at time 2 but not time 1 (0 = no, 1 = yes); and (ii) ‘continued user’ encompassed athletes who reported using illegal doping substances at both times 1 and 2 (0 = no, 1 = yes).

## **Procedures**

Ethical approval for this study was obtained from a university human ethics committee in both Australia and Greece. The recruitment of athletes occurred after permission was obtained from team managers and coaches. Athletes were informed about the aim and procedures of the study. They were reassured about the anonymity of their responses and that the surveys will be used solely for research purposes. Participation in the study was voluntary and athletes were informed that they could withdraw any time they wish. The survey items were counterbalanced and administered to the athletes at the training courts immediately before or immediately after a training session by trained personnel. Completion of surveys lasted approximately 25 minutes. All questionnaires were completed at the beginning of the competitive season. Doping behavior was assessed at the beginning and the end of the competitive season.

## **Data Analyses**

*Time 1 responses.* Due to a disproportionate ratio of sample size to the number of multi-item latent factors, item parcels were used as manifest indicators of several latent variables to reduce the number of parameters estimated and, therefore, model complexity. When compared with individual items, item parcels produce more reliable latent variables, greater communality, and minimize distributional violations, sources of sampling error, and likelihood of correlated residuals (Little, Cunnigham, Shahar, & Widaman, 2002; Little, Rhemtulla, Gibson, & Schoemann, 2013). Parcels were created using two different methods so that each latent factor was defined by at least three parcels (Little, 2013). For the unidimensional constructs of autonomy-supportive climate and doping moral disengagement, we considered shared item content and ordering within the questionnaire package so that items adjacent to each other were not parceled together. Factor analyses of the controlling climate, psychological needs satisfaction, and psychological needs frustration scales indicated that the subcomponents of each construct were highly correlated and that a general factor provided an adequate representation of the data. Thus, we created a single parcel to represent each facet of these latent variables whereby the controlling climate latent factor was defined by four parcels, and both needs satisfaction and frustration were each represented by three

parcels. Attitudes to moral decision-making and doping intentions were modeled using their original items to preserve the recommendation of at least three indicators per latent factor.

We performed the analyses with *Mplus* 7.4 (Muthén & Muthén, 1998-2015) using a maximum likelihood estimator with bootstrapping, which is a nonparametric resampling procedure that does not rely on a normal distribution (Preacher & Hayes, 2008)<sup>1</sup>. Bias-corrected bootstrapped 95 % confidence intervals of the indirect effects were constructed from 5,000 resamples (Preacher & Hayes, 2008). An indirect effect differs significantly from zero when its 95% confidence interval does not encompass zero. Within the context of a structural equation modeling framework, a sequential model testing approach was followed to examine the invariance of the hypothesized theoretical sequence depicted in Figure 1a between the Australian and Greek athletes (Vandenberg & Lance, 2000). First, we tested a *baseline model* separately in each sample, which is necessary prerequisite for multigroup invariance analyses. The focus at this stage was to identify a well-fitting model in each sample that would be the focus for invariance testing. Second, we analyzed a *configural invariance model* to examine if the number of factors and corresponding items per factor is the same across both groups; this model does not include any equality constraints between groups. Third, the hypothesis that the strength of association between an item indicator and its corresponding factor are the same for Australian and Greek athletes was examined; in this *metric invariance model*, factor loadings are forced to be equal across groups. Typically, scalar invariance is the next stage with invariance testing (i.e., intercepts of item indicators on their latent factor are the same across groups); however, we did not examine this model because our primary interest related to the structural paths of the model and establishment of metric invariance is sufficient for this purpose (Dimitrov, 2010). Finally, we tested a *structural invariance model* where we forced covariances and structural paths between latent variables and the observed score for past doping behavior to be equal across both groups.

***Time 1 and 2 responses.*** All analytical features were the same as in time 1 analyses.

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<sup>1</sup> Due to a disproportionate ratio of clusters (i.e., teams) to parameters in the model, the TYPE = COMPLEX function in *Mplus* did not allow us to adjust the standard errors and, therefore, minimize the influence of this non-independence in the data (i.e., non-positive definite matrix).

**Assessment of model fit.** Model-data fit for all analyses was assessed using multiple indices and typical interpretation guidelines, namely the  $\chi^2$  goodness-of-fit index, comparative fit index (CFI), Tucker-Lewis index (TLI), and root mean square error of approximation (RMSEA), with evidence of adequate fit indicated by CFI/TLI  $\geq$  .90 and RMSEA  $\leq$  .08 (Marsh, Hau, & Grayson, 2005). Given the sensitivity of  $\chi^2$  to sample size and minor model misspecifications, we prioritized approximate fit indices for interpretations regarding competing models of the sequential invariance model testing approach. Guided by commonly adopted recommendations, a reduction of .01 or less in the CFI and an increase of .015 or less in the RMSEA were used as indications that the invariance hypothesis should not be rejected (Chen, 2007). Latent factor reliability estimates were computed using McDonald's (1970) omega ( $\omega$ ), which takes into account the magnitude of the association between constructs and their indicators as well as measurement error of items. All *Mplus* output files and associated syntaxes are provided as supplementary material.

## **Results**

### **Preliminary Analyses**

At time 1, there were 72 missing data points at the item level (<0.40%). The exclusion of participants with missing responses on all three doping intention items ( $n = 5$ ) or past doping behavior ( $n = 3$ ) resulted in a valid sample of 460. With regard to self-reported doping behavior, of the 204 Australian athletes who provided useable data, 8 individuals (3.92%) reported using one illegal substance in the past 6 months. For the Greek athletes, of the 256 participants who provided useable data, 33 athletes (12.90%) reported use of 1 substance, 13 athletes (5.08%) of 2 substances, and 5 athletes (1.95%) of 3 substances.

Only 39 of the 211 Australian athletes from time 1 provided a measure of doping behavior at time 2 (i.e., 18.48% retention). The primary reasons for dropout included refusal by the coach to grant access again to their team and to a far lesser extent athletes being inaccessible to complete the questionnaire at time 2. Given the substantial attrition rate, we did not use the Australian data for the longitudinal analyses. With regard to the Greek



athletes, 166 of the 257 participants from time 1 completed the measure of doping behavior at time 2 (i.e., 64.59% retention)<sup>2</sup>. In total, 16 athletes (10%) were classified as a new user, whereas 12 athletes (7.23%) were classified as a continued user.

### **Cross-Sectional, Single Sample Analyses of the Theoretical Sequence**

The initial analysis of the baseline model in the Australian athletes indicated a not positive definite matrix, owing to a negative residual variance of one doping intention item (“I plan to use prohibited substances to enhance my performance during this season”); as this value was small (-.009) we forced it to zero in subsequent analyses. Single sample analyses indicated acceptable model-data fit of the baseline model with the Australian athletes,  $\chi^2(350) = 575.62, p < .001, CFI = .945, TLI = .936, RMSEA = .056$  (90% CI = .048 to .064). Estimates of latent variable reliability for the Australian athletes were: autonomy-supportive climate ( $\omega = .95$ ), controlling climate ( $\omega = .85$ ), needs satisfaction ( $\omega = .91$ ), needs frustration ( $\omega = .90$ ), doping moral disengagement ( $\omega = .76$ ), acceptance of cheating ( $\omega = .86$ ), keeping winning in proportion ( $\omega = .66$ ), acceptance of gamesmanship ( $\omega = .87$ ), and doping intentions ( $\omega = .92$ ). The baseline model also exhibited adequate model-data fit in the Greek athletes,  $\chi^2(349) = 694.58, p < .001, CFI = .935, TLI = .924, RMSEA = .062$  (90% CI = .055 to .069). Estimates of latent variable reliability for the Greek athletes were: autonomy-supportive climate ( $\omega = .88$ ), controlling climate ( $\omega = .87$ ), needs satisfaction ( $\omega = .83$ ), needs frustration ( $\omega = .87$ ), doping moral disengagement ( $\omega = .90$ ), acceptance of cheating ( $\omega = .84$ ), keeping winning in proportion ( $\omega = .92$ ), acceptance of gamesmanship ( $\omega = .79$ ), and doping intentions ( $\omega = .97$ ).

### **Cross-Sectional, Multigroup Analysis of the Theoretical Sequence**

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<sup>2</sup> When compared with Greek participants who completed assessments at both time points, Greek athletes who dropped out of the study after time 1 were more experienced ( $M_{\text{dropout}} = 10.39$  years,  $SD = 4.93$ ;  $M_{\text{retained}} = 8.73$  years,  $SD = 3.58$ ;  $F_{1, 246} = 9.32, p = .003$ ), had been with their current team for a shorter amount of time ( $M_{\text{dropout}} = 3.42$  years,  $SD = 3.30$ ;  $M_{\text{retained}} = 4.83$  years,  $SD = 3.28$ ;  $F_{1, 250} = 10.59, p = .001$ ), spent less time training per week ( $M_{\text{dropout}} = 12.37$  hours,  $SD = 4.46$ ;  $M_{\text{retained}} = 16.07$  years,  $SD = 6.52$ ;  $F_{1, 249} = 22.94, p < .001$ ), and reported lower doping intentions at time 1 ( $M_{\text{dropout}} = 1.60, SD = 1.27$ ;  $M_{\text{retained}} = 2.16, SD = 1.48$ ;  $F_{1, 255} = 9.03, p = .003$ )

Model-data fit indices supported the adequacy of the configural invariance model,  $\chi^2(699) = 1270.21, p < .001, CFI = .939, TLI = .929, RMSEA = .060$  (90% CI = .054 to .065). The metric invariance model exhibited adequate model-data fit,  $\chi^2(718) = 1380.61, p < .001, CFI = .930, TLI = .920, RMSEA = .063$  (90% CI = .058 to .068). Changes in approximate fit indices between the configural and metric invariance models ( $\Delta CFI = .009, \Delta RMSEA = .003$ ) indicated that the invariance hypothesis should not be rejected. Analyses indicated acceptable model-data fit for the structural invariance model,  $\chi^2(747) = 1537.57, p < .001, CFI = .916, TLI = .909, RMSEA = .068$  (90% CI = .063 to .073). Changes in approximate fit indices between the metric and structural invariance models indicated that the additional constraints associated with latent factor covariances and structural paths were not invariant across Australian and Greek athletes ( $\Delta CFI = .014, \Delta RMSEA = .005$ ). As such, we released equality constraints on structural paths where there was a large difference between the groups (Byrne, Shavelson, & Muthén, 1989). The release of equality constraints for four structural parameters resulted in an acceptable model-data fit,  $\chi^2(743) = 1444.84, p < .001, CFI = .925, TLI = .918, RMSEA = .064$  (90% CI = .059 to .069), which did not differ substantially from the fit of the metric invariance model ( $\Delta CFI = .005, \Delta RMSEA = .001$ ). These paths included autonomy support  $\rightarrow$  basic psychological need frustration, basic psychological need frustration  $\rightarrow$  doping moral disengagement, doping moral disengagement  $\rightarrow$  doping intentions, past doping behavior  $\rightarrow$  doping moral disengagement, and the correlation between acceptance of gamesmanship and keeping winning in proportion.

An overview of standardized parameter estimates of direct paths in the final partial structural invariance model is provided in Table 1. The amount of variance explained in the latent variables were as follows: needs satisfaction (AUS  $r^2 = .33$ ; GRC  $r^2 = .32$ ), needs frustration (AUS  $r^2 = .53$ ; GRC  $r^2 = .42$ ), doping moral disengagement (AUS  $r^2 = .08$ ; GRC  $r^2 = .39$ ), acceptance of cheating (AUS  $r^2 = .07$ ; GRC  $r^2 = .12$ ), keeping winning in proportion (AUS  $r^2 = .17$ ; GRC  $r^2 = .03$ ), acceptance of gamesmanship (AUS  $r^2 = .02$ ; GRC  $r^2 = .07$ ), and doping intentions (AUS  $r^2 = .08$ ; GRC  $r^2 = .60$ ). Several of the indirect effects differed significantly from zero: total indirect effect from autonomy support to doping intentions

( $\beta_{AUS} = -.029$ , 95% CI =  $-.058, -.009$ ); total indirect effect from controlling coaching to doping intentions were ( $\beta_{AUS} = .026$ , 95% CI =  $.004, .058$ ;  $\beta_{GRC} = .253$ , 95% CI =  $.157, .372$ ); specific indirect effect of autonomy support to doping intentions via needs frustration and acceptance of cheating ( $\beta_{AUS} = -.007$ , 95% CI =  $-.021, -.002$ ); specific indirect effect of autonomy support to doping intentions via needs frustration and keeping winning in proportion ( $\beta_{AUS} = -.008$ , 95% CI =  $-.026, -.001$ ); specific indirect effect of controlling coaching to doping intentions via needs frustration and acceptance of cheating ( $\beta_{AUS} = .013$ , 95% CI =  $.003, .036$ ;  $\beta_{GRC} = .013$ , 95% CI =  $.003, .036$ ); specific indirect effect of controlling coaching to doping intentions via needs frustration and keeping winning in proportion ( $\beta_{AUS} = .014$ , 95% CI =  $.003, .031$ ;  $\beta_{GRC} = .014$ , 95% CI =  $.003, .031$ ); and specific indirect effect of controlling coaching to doping intentions via needs frustration and doping moral disengagement ( $\beta_{GRC} = .228$ , 95% CI =  $.135, .346$ ). All other indirect effects were not significantly different from zero.

### **Longitudinal Analysis of the Theoretical Sequence**

The model exhibited adequate fit with the responses of the Greek athletes:  $\chi^2(380) = 703.35$ ,  $p < .001$ , CFI =  $.916$ , TLI =  $.904$ , RMSEA =  $.072$  (90% CI =  $.063$  to  $.080$ ). Overall, the direct paths were similar in magnitude and strength to the full sample of Greek athletes who completed the survey package at time 1. Doping intentions were a predictor of new users ( $\beta = -.16$ ,  $p < .001$ , 95% CI =  $-.24, -.08$ ) and continued users ( $\beta = .39$ ,  $p < .001$ , 95% CI =  $.24, .54$ ). There was a specific indirect effect of autonomy support to new users via needs satisfaction, keeping winning in proportion, and doping intentions ( $\beta = .004$ , 95% CI =  $.001, .011$ ). This effect was positive because it was partly composed of two negative indirect effects: winning  $\rightarrow$  intentions ( $\square = -.18$ ) x intentions  $\rightarrow$  new users ( $\square = -.16$ ).

The total effect of controlling coaching on new users ( $\beta = -.042$ , 95% CI =  $-.083, -.015$ ) encompassed two specific indirect effects: controlling coaching  $\rightarrow$  needs frustration  $\rightarrow$  moral disengagement  $\rightarrow$  doping intentions  $\rightarrow$  new user ( $\beta = -.034$ , 95% CI =  $-.073, -.013$ ); and controlling coaching  $\rightarrow$  needs frustration  $\rightarrow$  acceptance of cheating  $\rightarrow$  doping intentions

→ new users ( $\beta = -.009$ , 95% CI = -.029, -.002). With regard to continued users, there was a specific indirect of autonomy support via needs satisfaction, keeping winning in proportion, and doping intentions ( $\beta = -.009$ , 95% CI = -.025, -.004). The total effect of controlling coaching was significant ( $\beta = .098$ , 95% CI = .047, .176), and included two specific indirect effects: controlling coaching → needs frustration → moral disengagement → doping intentions → continued user ( $\beta = .080$ , 95% CI = .037, .156); and controlling coaching → needs frustration → acceptance of cheating → doping intentions → continued user ( $\beta = .021$ , 95% CI = .005, .061).

## **Discussion**

The purpose of this study was to test a process model linking contextual and personal motivational variables, moral attitudes, moral disengagement for doping, and doping intentions. Such relations have not been previously examined in an integrative fashion. A secondary purpose was to test the cross-cultural invariance of this model in Australia and Greece. A third purpose of the study was to test the ability of the variables in the model to predict directly and indirectly, over the course of one competitive season, use of doping in sport. Below we discuss the findings pertaining to each aim, and their implications.

### **Testing the Cross-Sectional Model in the Two Countries**

Perceptions of need supportive coaching environment were positive predictors of need satisfaction (in both samples) and negative predictors of need frustration (Australians only). In contrast, perceptions of controlling coaching environment were associated with reports of need frustration and were unrelated to need satisfaction (in both samples). These findings are in line with our hypotheses and previous work in the SDT literature highlighting that the coach motivational environment can potentially have both facilitating and undermining aspects with respect to athletes' psychological needs (Bartholomew et al. 2011a, 2011b).

Athletes' need frustration was a positive predictor of favorable attitudes toward cheating and moral disengagement for doping, although the latter effect was much stronger in

the Greek sample. Need frustration was also a negative predictor of holding a 'keeping winning in proportion' moral attitude in both countries. Although need frustration did not predict gamesmanship, the predictive effects were positive and marginal in terms of statistical significance ( $p$ 's=.06 to .08). Taken together, these findings indicate that when athletes experience frustration of their basic psychological needs, they are more likely to endorse more dysfunctional moral attitudes and cognitions. There is increasing empirical evidence documenting the maladaptive correlates of need frustration in athletes and other populations (e.g., Ntoumanis, 2012; Vansteenkiste & Ryan, 2011). Our study is the first to show that need frustration might have implications for moral functioning, both in terms of sport participation and specifically with respect to doping.

Contrary to need frustration, need satisfaction did not predict any of the moral variables in this study, although the expected positive relations between need satisfaction and keeping winning in proportion approached significance ( $p$ 's=.08 to .09). Similar null findings between need satisfaction and anti-social moral variables have also been reported by Hodge and Gucciardi (2015). Interestingly, Hodge and Lonsdale (2011) and Hodge et al. (2013) also found non-significant relations between autonomous motivation (an outcome of need satisfaction) and antisocial moral variables. These findings, viewed in conjunction with our findings for need frustration, provide further support to arguments made by Bartholomew et al. (2011a, b) that to understand diminished compromised functioning (moral in the case of our study), measures of need frustration hold greater explanatory capability than measures of need satisfaction.

The focal variable of interest in the cross-sectional model (Figure 1a) was intentions to dope. A number of variables emerged as predictors of this variable, even after controlling for past doping use. Favorable attitudes toward cheating were a positive direct predictor of doping intentions, whereas the keeping winning in proportion attitude was a direct negative predictor. These findings are in line with the Sport Drug Control Model which postulates personal morality as an antecedent of doping intentions (Donovan, Egger, Kapernick, & Mendoza, 2002). They also corroborate previous evidence linking positive attitudes (moral

and non-moral specific) toward doping and endorsements of scenarios describing doping use (Lucidi et al., 2008; Vargo et al., 2014). Our findings also provide support for Barkoukis et al.'s (2013) argument that interventions for clean athletes should foster attitudes about the unethical nature of doping use. The moral attitude of gamesmanship was not a significant predictor of doping intentions. This finding is probably because gamesmanship refers to situations in which athletes break the spirit of the game (e.g., winding up the opposition) but not the rules, hence, gamesmanship might not be a direct predictor of doping-related cognitions.

Moral disengagement toward doping was also a strong positive predictor of doping intentions, much stronger than moral attitudes were, but, surprisingly, this relation was not significant in the Australian sample. The findings pertaining to this relation in the Greek sample are in line with past evidence suggesting that moral disengagement (specific to doping but also more generally with regard to sport participation) is an important antecedent of doping intentions (Kavussanu et al., 2016; Lucidi et al., 2008). Thus, cognitive and affective disengagement from the moral, health and interpersonal consequences of antisocial behavior in general as well as doping use in particular, can be precursors of athletes' intentions to act in a self-serving manner by taking illegal performance enhancing substances.

A number of interesting indirect effects also emerged. Doping intentions were indirectly and negatively predicted by coach perceptions of autonomy support and positively predicted by coach perceptions of coach controlling behaviors, via a sequence of indirect effects involving psychological need frustration, moral attitudes, and moral disengagement for doping. There were no significant indirect effects from perceived coaching behaviors on doping intentions via psychological need satisfaction, which is unsurprising in view of the lack of significant direct effects from the latter variable on moral attitudes and moral disengagement for doping. Taken together, these findings are in line with past work linking coaching behaviors with athletes' moral functioning and doping. Such work has shown environments characterized by pressure, contingent approval, preoccupation with winning, and low inclusion and caring for athletes can facilitate moral disengagement in sport, low

sportspersonship, and willingness to cheat in order to achieve desired outcome (Hodge & Lonsdale, 2011; Ommundsen Roberts, Lemyre & Treasure, 2003; Yukhymenko-Lescroart, Brown, & Paskus, 2015). Our findings support and extend this past work by showing that such effects of the social environment are mediated by perceptions of athletes' psychological needs frustration in these environments.

The testing for structural invariance in the cross-sectional model indicated that most paths were invariant between the two countries, however, autonomy support was a stronger negative predictor of need frustration in the Australian sample than the Greek sample. It is possible that in a more individualistic culture, such as the Australian, the support of one's autonomy is more protective of perceptions of one's psychological needs being undermined, compared to a less individualistic culture such as the Greek one. In contrast, and in agreement with Deci and Ryan (2002), autonomy support was equally important for the experience of need satisfaction in both samples. The differential role of need satisfaction vs. need frustration in the SDT literature, particularly with regard to cross-cultural differences in how they relate to other variables, warrants further attention.

Another path that was not invariant between the two samples was the coefficient from need frustration to moral disengagement for doping. In both countries the path was positive, but it was considerably stronger in the Greek sample. Further, the link between moral disengagement for doping and doping intentions was much stronger in the Greek sample, whereas it was near zero in the Australian sample. We believe that the reason for the non-significant findings in the Australian sample was the very limited variability in the moral disengagement for doping scores in this sample ( $M = 1.66$ ,  $SD = .81$ ); whereas in the Greek sample  $M = 2.30$ ,  $SD = 1.20$ ). Other studies with Australian athletes that have better variability in moral disengagement in sport (not doping-specific) have shown this variable is related to antisocial behavior (Boardley & Jackson, 2012). Whether Australian athletes are less likely to be upfront about moral disengagement when it is specific to doping as opposed to antisocial behavior in general, particularly in view of recent high profile cases of doping in Australia (e.g., Essendon football club), is an empirical question to be tested.

## **Predicting Continuous and New Doping Use Across a Sport Season**

The third aim of our study was to test whether the motivation, morality, and intention variables in our study could predict athletes who would report at the beginning and the end of the sport season that they had recently taken banned substances ('continued users'), and also athletes who reported so only at the latter time point ('new users'). Such longitudinal effects have not been tested previously and can provide insight into the uptake and maintenance of doping behavior. We expanded the model in Figure 1a by adding these two categorical outcomes (see Figure 1b). We were able to test this model only with the Greek sample as it was not possible to access most of the Australian athletes at the end of the season. The primary obstacle we faced was the refusal of coaches to grant us access again for data collection purposes, which we suspect was because of the emphasis of the survey on the reporting of doping substance use at a time when a high profile doping case in the Australian Football League captured the media attention for several weeks ("Essendon drug scandal").

The findings with the Greek sample showed doping intentions to directly predict the continued use of doping in a positive fashion. Continued use was also predicted indirectly and in a negative fashion by perceptions of autonomy support via the moral attitude of 'keeping winning in proportion'. In contrast, perceptions of controlling coaching were positive indirect predictors of continued doping use via psychological need frustration, moral disengagement for doping, and endorsement of cheating. These results extend the findings of the cross-sectional model by showing that controlling coaching environments that frustrate athletes' psychological needs have the potential to foster low moral functioning and positive intentions toward doping, which in turn can result in sustained doping behavior.

With regard to predicting new doping use, our findings show that even athletes who reported at the beginning of the season low doping intentions and no doping use may be involved in doping use later on in the season. During a competitive season there are many situations that could predispose an athlete in favor of doping use, such as injuries or failure to achieve important goals. When these situations are experienced, particularly when athletes



are placed in a controlling coaching environment which motivates by pressure and guilt, athletes might endorse cheating and moral disengagement for doping (see indirect effects in the Results). Hence, athletes with initially low intentions to dope may eventually engage in this behavior to achieve desired objectives. Alternatively, it is possible that some of the new users might have taken a banned substance by accident for a variety of reasons (cf. the work of Chan et al., 2016, on the psychology of the avoidance of unintentional doping).

### **Study Limitations and Implications**

This study had a number of limitations. For example, the dropout in the Australian sample prevented us from testing the longitudinal aspect of the study across both cultures. Also, we could have potentially included more assessments of all variables throughout the competitive season to capture more accurately changes (both linear and non-linear) in doping intention and behavior, however, this was not deemed pragmatic in terms of obtaining clubs approval. Lastly, given that peer influence is potentially important in terms of doping-related cognitions (Hodge & Gucciardi, 2015), we could have included measures of peer autonomy support and control. Despite these limitations, the present study offers several unique contributions to the literature by bringing together (and testing cross-culturally) independent but complementary lines of work on motivation, moral attitudes, and doping in sport in an integrative model. We added to the SDT literature (sport-specific and wider) by showing how controlling climates and need frustration can predict low moral functioning and doping-related outcomes. We also contributed to the doping literature by testing longitudinally predictors of continued and new doping use, and by examining behaviors and processes (direct and indirect) by which the social environment impacts on athletes' intentions and decisions to engage or not in doping. This project serves the basis for developing anti-doping education programs for coaches (who are traditionally absent from such programs) with the aims of training them in more need supportive and less controlling behaviors in general, but also specifically training coaches to communicate to athletes information about doping using a more need supportive style. Our findings suggest that such programs should focus primarily

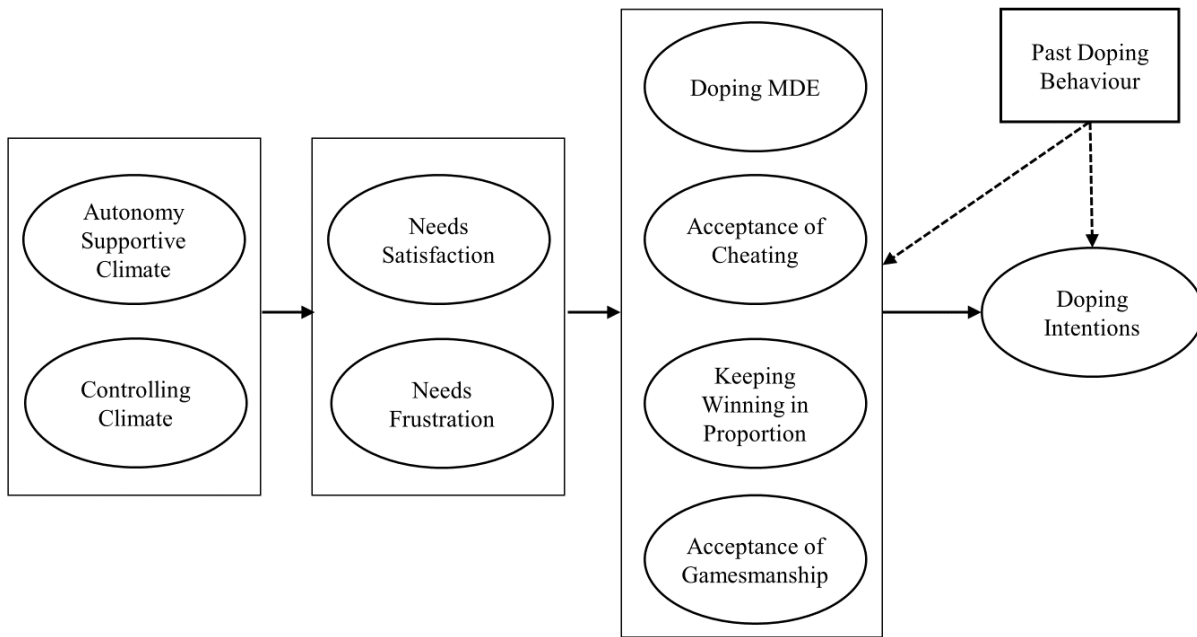
on reducing experiences of psychological need frustration and tackling moral disengagement for doping, and, to a lesser extent, creating more prosocial moral attitudes.

Table 1

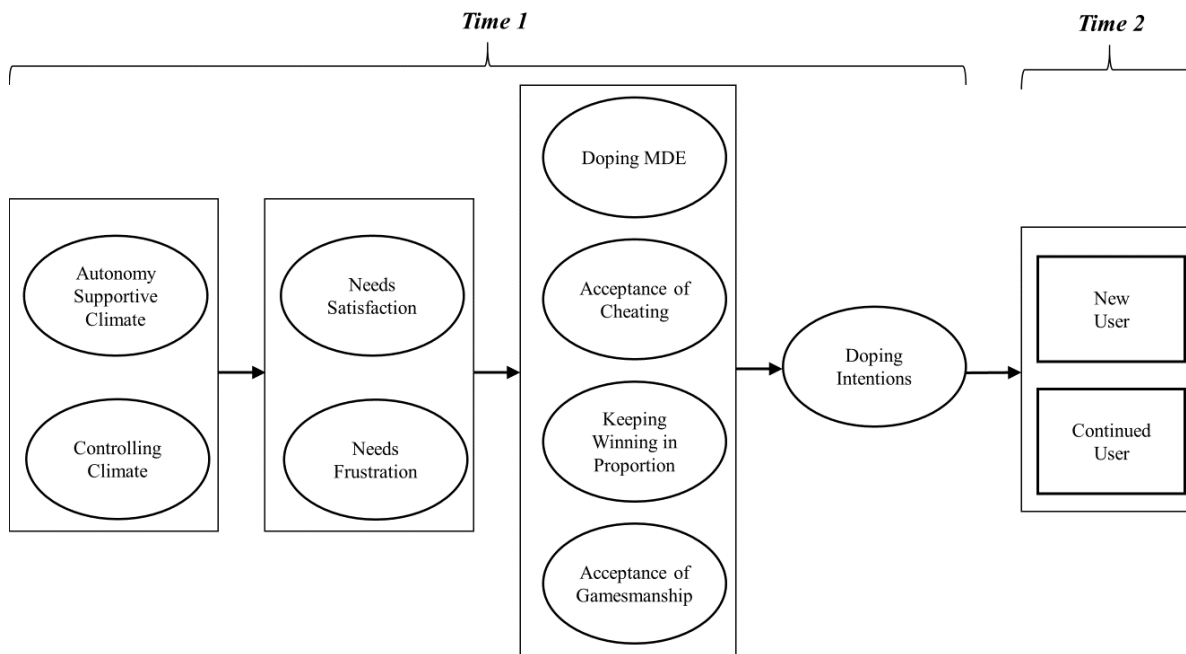
*Standardized Parameter Estimates from the Final Partial Structural Invariance Model for Australian and Greek Athletes*

Structural Paths	Australian Athletes			Greek Athletes		
	$\beta$	95% CI	<i>p</i>	$\beta$	95% CI	<i>p</i>
Autonomy → Needs satisfaction	.56	.40, .70	.001	.54	.36, .68	.001
Control → Needs satisfaction	-.04	-.19, .09	.59	-.05	-.22, .11	.58
Autonomy → Needs frustration	-.33	-.53, -.15	.001	-.05	-.17, .06	.40
Control → Needs frustration	.52	.38, .67	.001	.62	.48, .74	.001
Needs satisfaction → Doping MDE	-.02	-.18, .11	.77	-.02	-.11, .08	.76
Needs frustration → Doping MDE	.15	.00, .29	.05	.51	.38, .63	.001
Needs satisfaction → Cheating	-.03	-.16, .09	.66	-.02	-.14, .08	.67
Needs frustration → Cheating	.20	.08, .32	.001	.18	.06, .31	.01
Needs satisfaction → Winning	.24	-.02, .50	.08	.11	-.01, .25	.09
Needs frustration → Winning	-.26	-.50, -.02	.04	-.13	-.24, -.01	.03
Needs satisfaction → Gamesmanship	.06	-.06, .19	.33	.08	-.07, .23	.32
Needs frustration → Gamesmanship	.11	-.02, .20	.06	.14	-.02, .28	.08
Doping MDE → Doping intentions	.01	-.15, .23	.92	.60	.48, .71	.001
Cheating → Doping intentions	.15	.02, .32	.04	.10	.02, .19	.02
Winning → Doping intentions	-.13	-.26, -.05	.02	-.16	-.25, -.07	.001
Gamesmanship → Doping intentions	-.08	-.18, .04	.18	-.03	-.08, .01	.17
Past behavior → Doping MDE	.24	.15, .36	.001	.36	.23, .49	.001
Past behavior → Cheating	.16	.09, .25	.001	.30	.16, .44	.001
Past behavior → Winning	-.04	-.16, .07	.51	-.04	-.15, .06	.49
Past behavior → Gamesmanship	.08	.04, .14	.001	.23	.10, .35	.001
Past behavior → Doping intentions	.16	.07, .33	.01	.19	.08, .31	.001
Autonomy ↔ Control	-.43	-.58, -.28	.001	-.41	-.51, -.30	.001
Needs satisfaction ↔ Needs frustration	.03	-.17, .22	.76	.03	-.13, .23	.75
Doping MDE ↔ Cheating	.55	.40, .70	.001	.45	.32, .59	.001
Doping MDE ↔ Winning	-.08	-.30, .14	.47	-.03	-.10, .05	.41
Doping MDE ↔ Gamesmanship	.16	.04, .28	.01	.19	.06, .32	.01
Cheating ↔ Winning	-.11	-.38, .10	.37	-.05	-.13, .04	.28
Cheating ↔ Gamesmanship	.35	.26, .43	.001	.45	.33, .57	.001
Winning ↔ Gamesmanship	.20	-.08, .45	.16	.30	.16, .43	.001

*MDE = moral disengagement; grey shade = equality constraint released in final model*



*Figure 1a.* Visual display of hypothesized theoretical sequence for time 1 data. Dotted line represents the controlling effect of past doping behavior. Rectangles encompass latent variables that are correlated with each other. Parcels and item indicators are excluded for visual clarity. MDE = moral disengagement.



*Figure 1b.* Visual display of hypothesized theoretical sequence for time 1 and 2 data. Rectangles encompass latent variables that are correlated with each other. MDE = moral disengagement.

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**Appendix (Questionnaire Pack, Information Sheets, Consent Forms, Interview Guides and Ethics Approval)**



**School of Psychology and Speech Pathology**

Thank you for your interest in this project. Just to remind you, the data you provide in the course of this project will be treated in the strictest confidence and will be used for research purposes only.

Furthermore, as a participant in this research you will never be identified in any outputs (e.g., reports, research articles) that arise from this project and your data will never be identifiable or viewed by any other party outside the research team.

**CONSENT FORM**

*(The participant should complete the whole of this sheet himself/herself. )*

**Title of Project:** A cross-cultural investigation of the effects of coach motivational strategies on athlete doping behaviors: Direct and indirect relations

**Name of Researchers:** Nikos Ntoumanis

**Please tick boxes**

- |   |                          |
|---|--------------------------|
| 1. I confirm that I have read and understand the information sheet for the above study                                    | <input type="checkbox"/> |
| 2. I have had opportunities to ask questions and my questions have fully been answered.                                   | <input type="checkbox"/> |
| 3. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason. | <input type="checkbox"/> |
| 4. I have received enough information about the study.  | <input type="checkbox"/> |
| 5. I agree to take part in the above study.   | <input type="checkbox"/> |

“This study has been explained to me to my satisfaction, and I agree to take part. I understand that I am free to withdraw at any time.”

Name of Participant ( in block capitals)	Date	Signature
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I have explained the study to the above participant and he/she has agreed to take part.

Name of Researcher	Date	Signature
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## School of Psychology and Speech Pathology

### Participant Information Sheet-Study 1

**Title of Project:** A cross-cultural investigation of the effects of coach motivational strategies on athlete doping behaviours: Direct and indirect relations

You are being invited to take part in a research project. Before you decide whether or not to take part, it is important for you to understand why the research is being conducted and what it will involve. Please take the time to read the following information carefully and decide if you want to take part in this study. Please feel free to ask if there is anything that is not clear or if you would like more information.

**Purpose:** The study aims to examine the relation between coach motivational strategies and athletes' intentions and self-reported use of performance enhancing substances.

**Procedure:** You are asked to participate in either a one-to-one or group interviews. The questions will focus on the motivational strategies that your coach use, your motivation to participate in your sport, and your attitudes and intentions toward doping use. We will ask you whether you are taking or have taken any performance-enhancing substances in order to improve your sport performance. You are free not to refuse any questions; all your answers will be kept strictly confidential and will not be shared with third parties (see below). The same project takes place in Greece and the aim is to compare the results between the two countries. This project is funded by the World Anti- Doping Agency. This study will require approximately 30-45 minutes of your time. If you have any questions, please do not hesitate to ask.

**Risks and Benefits:** Although there are no known physical, psychological, economic, or social risks associated with participation in this study, appropriate support (e.g., counselling) will be offered should any unusual discomforts arise. Additionally, participants will be provided with a summary of the studies' results upon completion of the research.

### Do I have to take part?

Participation in this study is totally voluntary, you are under no obligation to take part in this study. You are free to withdraw your consent and discontinue with your participation at any time for any reason and you do not need to justify your decision. Refusal to participate or withdrawal from this study at any time will in no way affect your treatment on your team. However, if you decide to take part in the study and you do not subsequently withdraw your participation, you will be eligible to take part in a prize draw for \$10 iTunes vouchers. You will have a 1 in 2 chance of winning one of these vouchers.

The data that you provide will be very useful for our study. If you decide to take part you will be given this information sheet to keep and will be asked to sign a consent form.

### What happens to the information I provide?

Participation in this study guarantees the confidentiality of the information you provide. No one apart from the researcher and principal investigator (names given below) will have access

to the information you provide. Your consent form will be kept separate from the observations collected during the course of the study. Data will be stored for a maximum of five years in accordance with Curtin University's data storage policy. Once the data is analysed a report of the findings may be submitted for publication. Only broad trends will be reported and it will not be possible to identify any individuals. Any extracts from your interviews will be anonymised. A summary of the results will be available from the researcher on request once the study is complete.

If you have any questions or require any further information, please contact the researcher or principal investigators.

Name of principal investigators: Prof. Nikos Ntoumanis

E-mail: [Nikos.Ntoumanis@curtin.edu.au](mailto:Nikos.Ntoumanis@curtin.edu.au)

Thank you for taking the time to read this Participant Information Form and considering taking part in the study. This Participant Information Form is for you to keep. If you do wish to take part in the study, please sign the consent form.

We hope that you feel able to help us with this study.

*This study has been approved by the Curtin University Human Research Ethics Committee (Approval Number Psych & SP xxxx). If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth, 6845, by telephoning 9266 2784 or emailing [hrec@curtin.edu.au](mailto:hrec@curtin.edu.au)*



## School of Psychology and Speech Pathology

### Participant Information Sheet-Study 2

**Title of Project:** A cross-cultural investigation of the effects of coach motivational strategies on athlete doping behaviours: Direct and indirect relations

You are being invited to take part in a research project. Before you decide whether or not to take part, it is important for you to understand why the research is being conducted and what it will involve. Please take the time to read the following information carefully and decide if you want to take part in this study. Please feel free to ask if there is anything that is not clear or if you would like more information.

**Purpose:** The study aims to examine the relation between coach motivational strategies and athletes' intentions and self-reported use of performance enhancing substances.

**Procedure:** You are asked to complete a questionnaire at the beginning of the sport season and at the end of the season. The questions will focus on the motivational strategies that your coach use, your motivation to participate in your sport, and your attitudes and intentions toward doping use. We will ask you whether you are taking or have taken any performance-enhancing substances in order to improve your sport performance. You are free not to refuse any questions; all your answers will be kept strictly confidential and will not be shared with third parties (see below). The same project takes place in Greece and the aim is to compare the results between the two countries. This project is funded by the World Anti-Doping Agency. This study will require approximately 20 minutes of your time for each questionnaire completion. We will issue you with a code to match up your responses at the beginning and the end of the season. This code will be linked back to your name in a spreadsheet that will be stored in a password-protected computer at the University of Curtin. If you have any questions, please do not hesitate to ask.

**Risks and Benefits:** Although there are no known physical, psychological, economic, or social risks associated with participation in this study, appropriate support (e.g., counselling) will be offered should any unusual discomforts arise. Additionally, participants will be provided with a summary of the studies' results upon completion of the research.

### Do I have to take part?

Participation in this study is totally voluntary, you are under no obligation to take part in this study. You are free to withdraw your consent and discontinue with your participation at any time for any reason and you do not need to justify your decision. Refusal to participate or withdrawal from this study at any time will in no way affect your treatment on your team. However, if you decide to take part in the study and you do not subsequently withdraw your participation, you will be eligible to take part in a prize draw for \$10 iTunes vouchers. You will have a 1 in 2 chance of winning one of these vouchers.

The data that you provide will be very useful for our study. If you decide to take part you will be given this information sheet to keep and will be asked to sign a consent form.

### What happens to the information I provide?

Participation in this study guarantees the confidentiality of the information you provide. No one apart from the researcher and principal investigator (names given below) will have access to the information you provide. Your consent form will be kept separate from the observations collected during the course of the study. Data will be stored for a maximum of five years in accordance with Curtin University's data storage policy. Once the data is analysed a report of the findings may be submitted for publication. Only broad trends will be reported and it will not be possible to identify any individuals. A summary of the results will be available from the researcher on request once the study is complete.

If you have any questions or require any further information, please contact the researcher or principal investigators.

Name of principal investigator: Prof. Nikos Ntoumanis

E-mail: [Nikos.Ntoumanis@curtin.edu.au](mailto:Nikos.Ntoumanis@curtin.edu.au)

Thank you for taking the time to read this Participant Information Form and considering taking part in the study. This Participant Information Form is for you to keep. If you do wish to take part in the study, please sign the consent form.

We hope that you feel able to help us with this study.

*This study has been approved by the Curtin University Human Research Ethics Committee (Approval Number Psych & SP xxxx). If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth, 6845, by telephoning 9266 2784 or emailing [hrec@curtin.edu.au](mailto:hrec@curtin.edu.au)*



## Study 1 Interview guide for athletes and coaches

### Athlete Demographics Questionnaire

1. Please enter your birthday here: \_\_\_\_ (D) / \_\_\_\_ (M) / \_\_\_\_ (Y)
2. How long have you been a member of your current team? \_\_\_\_ Years \_\_\_\_ Month
3. How many years have you engaged competitively in your sport (include time outside this club)? \_\_\_\_ Years
4. What is the highest competitive level you have competed in your sport (not necessarily as part of your current club)? \_\_\_\_\_
5. How long have you been coached by your current coach? \_\_\_\_\_ years  
\_\_\_\_\_ months
6. On average, how many hours per week do you train? \_\_\_\_\_ .hours per week

**Note to Research Assistants:** Questionnaire items (study 2) could be used as prompts for some of the questions below. Please familiarise yourselves with the study proposal and the constructs indicated in the annotated on the right hand-side.

#### Questions for the Athletes:

We would like to hear more about your sport experiences. There are no right or wrong answers. We would like to learn from your experiences as an athlete. We want to learn from you.

1. What do you think a coach might do to control his/her athletes? – probe for what control means to them.
2. How much control does your coach have over you? Is this also the case for the other athletes on the team?
3. How much independence and opportunities to take initiative does he/she give you? Is this also the case for the other athletes on the team? Probe for what independence means to them, whether they feel independent within their team, whether what the coach does makes to make them feel independent works, and whether they would do anything differently.
4. How does your coach build and maintain relationships with you and other athletes on the team? Probe how close they feel to their coach, whether what the coach does to build relationships is effective and whether they would do it anything differently.
5. Can you describe any moments when your coach undermined his/her relationships with you or other athletes?
6. How does your coach support and develop yours and your fellow athletes' efforts to improve your skills and become better athletes? Probe how competent they feel within their team, whether what the coach does to make them feel competent is effective and whether they would do anything differently.

7. How does your coach undermine yours and your fellow athletes' opportunities to improve your skills and become better athletes?
8. What, in your view, are some of the best ways for a coach to motivate his/her athletes?
9. How do athletes on your team interact with each other? Probe for support networks and rivalries among athletes. How close do you feel to your teammates?
10. Tell us a little more about yourself. What are your major goals in life (e.g., make lots of money, be famous, be healthy, etc.)? Please explain in more detail these goals and why they are important to you.

### Break if needed

We now like to ask you a few questions about the use of performance enhancing drugs (PED) in sport.

1. Some athletes think its fine to take drugs to enhance their performance. Others though are really against it. What do feel about these two stances? Probe for where they sit.
2. Have you ever come/if you were to come across any instances in which you were lead to believe that one of your teammates had used a PED (performance enhancing drug)? What did/would you do in such a case? Would that make you more willing/less willing to use PED? Probe for why.
3. How other athletes on your team have reacted or would react in the same situation?
4. Would knowing that an opponent takes/does not take a PED influence your decision of taking/not taking a PED? Probe for why.
5. Do you talk about PEDs with your fellow athletes? Do you have any interactions with other athletes that make you more or less likely to take PEDs? Can you describe these interactions in more detail?
6. More widely, and outside using PED, is it OK to cheat in sport sometimes (e.g., break official rules of the game)? If so, when and why?
7. Does your team have certain rules, structures, or practices in place which guide team members' behaviour with regard to what is "right or wrong" or what one "ought or ought not to do"?
8. Earlier on we discussed different ways in which coaches interact with their athletes (e.g., being in control versus offering a lot of choice and independence, being close vs. distant to the athletes). How do you think these different types of interactions might be linked with willingness to cheat in their sport or to use PED?
9. In which ways coaches can deter PED use in sport? In which ways coaches can enhance PED use in sport?
10. In which ways fellow athletes can deter PED use in sport? In which ways fellow athletes can enhance PED use in sport?

## Coach Demographics Questionnaire

1. Please enter your birthday here: \_\_\_\_ (D) / \_\_\_\_ (M) / \_\_\_\_ (Y)
2. What is your gender?      Female       Male
3. What is the main sport you are currently coaching? \_\_\_\_\_
4. How many years have you been coaching this sport? \_\_\_\_\_
5. How many years have you been coaching your current team? \_\_\_\_\_
6. How many hours per week (on average) do you spend coaching your current team? \_\_\_\_\_
7. What is the level of sport you are currently coaching (e.g., national, international)?  
\_\_\_\_\_
8. How many years have you been involved in coaching altogether (including other sports if applicable)? \_\_\_\_\_
9. What coaching qualifications do you have (please give full name and awarding body)

**Note to Research Assistants:** Questionnaire items (study 2) could be used as prompts for some of the questions below. Please familiarise yourselves with the study proposal and the constructs indicated in the annotated on the right hand-side.

## Questions for the Coaches:

We would like to hear more about your coaching experiences. There are no right or wrong answers. We would like to learn from your experiences as someone who coaches athletes. We want to learn from you.

1. From your experience, what are the best ways of motivating athletes?
2. Do you think it is important for you to give your athletes independence? Probe for what independence means and how much independence they give to their athletes, and why.
3. Do you think that you should control your athletes? If so, how and when. Probe for how much and if it is perceived as 'good' or bad'. Probe for how they react when their athletes do not follow their instructions.
4. Do you feel you are close to your athletes? Probe for how close they are to their athletes and how they maintain relationships with them.
5. How do you support your athletes' efforts to get better in their sport?
6. How do your athletes interact with each other? Probe for support networks and rivalries among athletes.

Break if needed

We now like to ask you a few questions about the use of performance enhancing drugs (PED) in sport.

7. Some coaches think its fine for athletes to take drugs to enhance their performance. Others though are really against it. What do feel about these two stances? Probe for where they sit.
8. Have you ever come/if you were to come across any instances in which you were lead to believe that one of your athletes had used a PED (performance enhancing drug)? What did/would you do in such a case? Probe for why.
9. How other athletes on your team have reacted or would react in the same situation?
10. More widely, and outside using PED, is it OK to cheat in sport sometimes (e.g., break official rules of the game)? If so, when and why?
11. Does your team have certain rules, structures, or practices in place which guide team members' behaviour with regard to what is "right or wrong" or what one "ought or ought not to do"?
12. Earlier on we discussed different ways in which coaches interact with their athletes (e.g., being in control versus offering a lot of choice and independence, being close vs. distant to the athletes). How do you think these different types of interactions might be linked with willingness to cheat in their sport or to use PED?
13. In which ways coaches can deter PED use in sport? In which ways coaches can enhance PED use in sport?
14. In which ways fellow athletes can deter PED use in sport? In which ways fellow athletes can enhance PED use in sport?

**Questionnaire Study 2 (Time 1 and Time 2 questionnaires are identical)**



**There are no right or wrong answers for any question, so please be as honest as you can;** ask the researcher if you don't understand something. **The answers will be kept secret and will NOT be shown to your coach or teammates. Don't get confused if some questions seem similar.** Please answer all of them! Remember, those athletes who complete properly the whole questionnaire pack will enter into a prize draw for various vouchers!

For this questionnaire, please answer each question by circling one answer only per question and please make sure you answer all questions.

**Section A: My Coach**

The following statements relate to your general experiences with your **current main coach**. Each coach has a different style and no one style is necessarily better than another. Remember, there are no right or wrong answers; **please be honest**. Please indicate how much you agree or disagree with each statement by **circling one number per statement**.

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1. I feel that my coach provides me choices and options	1	2	3	4	5	6	7
2. I feel understood by my coach.	1	2	3	4	5	6	7
3. My coach conveyed confidence in my ability to do well in my sport	1	2	3	4	5	6	7
4. My coach encouraged me to ask questions.	1	2	3	4	5	6	7
5. My coach listens to how I would like to do things.	1	2	3	4	5	6	7
6. My coach tries to understand how I see things before suggesting a new way to do things.	1	2	3	4	5	6	7
7. My coach is less friendly with me if I don't make the effort to see things his/her way.	1	2	3	4	5	6	7
8. My coach shouts at me in front of others to make me do certain things.	1	2	3	4	5	6	7
9. My coach only uses rewards/praise so that I stay focused on tasks during training.	1	2	3	4	5	6	7
10. My coach is less supportive of me when I am not training and competing well.	1	2	3	4	5	6	7
11. My coach tries to control what I do during my free time.	1	2	3	4	5	6	7
12. My coach threatens to punish me to keep me in	1	2	3	4	5	6	7

line during training.							
13. My coach tries to motivate me by promising to reward me if I do well.	1	2	3	4	5	6	7
14. My coach pays me less attention if I have displeased him/her.	1	2	3	4	5	6	7
15. My coach intimidates me into doing the things that he/she wants me to do.	1	2	3	4	5	6	7
16. My coach tries to interfere in aspects of my life outside of my sport.	1	2	3	4	5	6	7
17. My coach only uses rewards/praise so that I complete all the tasks he/she sets during training.	1	2	3	4	5	6	7
18. My coach is less accepting of me if I have disappointed him/her.	1	2	3	4	5	6	7
19. My coach embarrasses me in front of others if I do not do the things he/she wants me to do.	1	2	3	4	5	6	7
20. My coach only uses rewards/praise to make me train harder.	1	2	3	4	5	6	7
21. My coach expects my whole life to centre on my sport participation.	1	2	3	4	5	6	7

### **Section B: My sport experiences**

The following statements relate to the general experiences you have whilst in your sport. Remember, there are no right or wrong answers; **please be honest**.

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1. I feel that I participate in my sport because I want to.	1	2	3	4	5	6	7
2. I am satisfied with what I can do in my sport.	1	2	3	4	5	6	7
3. When participating in my sport I feel supported.	1	2	3	4	5	6	7
4. I have some choice in what I want to do in my sport.	1	2	3	4	5	6	7
5. After training at my sport for a while I feel pretty competent.	1	2	3	4	5	6	7
6. When participating in my sport I feel understood.	1	2	3	4	5	6	7
7. I have a say regarding what skills I want to practice in my sport.	1	2	3	4	5	6	7
8. I think I do pretty well at my sport compared to other players/athletes.	1	2	3	4	5	6	7
9. When participating in my sport I feel listened to.	1	2	3	4	5	6	7
10. I feel a certain freedom of action in my sport.	1	2	3	4	5	6	7
11. I think I am pretty good at my sport.	1	2	3	4	5	6	7
12. When participating in my sport I feel valued.	1	2	3	4	5	6	7
13. I can decide which activities I want to practice in my sport.	1	2	3	4	5	6	7
14. I am pretty skilled at my sport.	1	2	3	4	5	6	7

15. When participating in my sport I feel safe.	1	2	3	4	5	6	7
16. I feel prevented from making choices with regard to the way I train.	1	2	3	4	5	6	7
17. There are situations where I am made to feel inadequate.	1	2	3	4	5	6	7
18. I feel pushed to behave in certain ways.	1	2	3	4	5	6	7
19. I feel I am rejected by those around me.	1	2	3	4	5	6	7
20. I feel forced to follow training decisions made for me.	1	2	3	4	5	6	7
21. I feel inadequate because I am not given opportunities to fulfil my potential.	1	2	3	4	5	6	7
22. I feel under pressure to agree with the training regime I am provided.	1	2	3	4	5	6	7
23. I feel others can be dismissive of me.	1	2	3	4	5	6	7
24. Situations occur in which I am made to feel incapable.	1	2	3	4	5	6	7
25. I feel other people dislike me.	1	2	3	4	5	6	7
26. There are times when I am told things that make me feel incompetent.	1	2	3	4	5	6	7
27. I feel that other people are envious when I achieve success.	1	2	3	4	5	6	7

### **Section C: The ethics of sport**

The items below describe different types of opinions that athletes like yourself might have in sport.

Remember, there are no right or wrong answers; **please be honest.**

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. I would cheat if I thought it would help me win.	1	2	3	4	5
2. It is OK to cheat if nobody knows.	1	2	3	4	5
3. If other people are cheating, I think I can too.	1	2	3	4	5
4. Winning and losing are a part of life.	1	2	3	4	5
5. It is OK to lose sometimes because in life you don't win everything.	1	2	3	4	5
6. If you win properly it feels better than if you did it dishonestly.	1	2	3	4	5
7. It is acceptable to try to wind up the opposition.	1	2	3	4	5
8. It is not against the rules to psyche people out so it's OK to do it.	1	2	3	4	5
9. It is OK to waste time to unsettle the opposition.	1	2	3	4	5

Athletes have different views about doping (i.e., the use of banned performance enhancing substances) in sport. Listed below are a number of statements describing some of these views. Remember, there are no right or wrong answers; **please be honest.**

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1. Compared to the illegal things people do in everyday life, doping in sport is not very serious	1	2	3	4	5	6	7
2. It is okay for players to use doping substances to help their team	1	2	3	4	5	6	7
3. Doping is just a way to “maximize your potential”	1	2	3	4	5	6	7
4. Players cannot be blamed for doping if their teammates pressure them to do it	1	2	3	4	5	6	7
5. Doping does not really hurt anyone	1	2	3	4	5	6	7
6. An individual player should not be blamed for doping if everyone on the team is doing it	1	2	3	4	5	6	7
7. Doping is alright because it helps your team	1	2	3	4	5	6	7
8. Doping before one game is no big deal when others do it all the time	1	2	3	4	5	6	7
9. It is okay to use doping substances because they don’t cause any harm	1	2	3	4	5	6	7
10. A player is not responsible for using doping substances if asked to do so by his/her coach	1	2	3	4	5	6	7
11. Doping helps you become the “best you can be”	1	2	3	4	5	6	7
12. If a team decides collectively to use doping substances, it is unfair to blame any individual player in the team for using them	1	2	3	4	5	6	7

#### **Section D: Substance use in my sport**

The use of prohibited substances to enhance my performance during this season is... (please circle the number that best describes your answer and circle ONE number on EACH line).

<b>Bad</b>	1	2	3	4	5	6	7	<b>Good</b>
<b>Useless</b>	1	2	3	4	5	6	7	<b>Useful</b>
<b>Harmful</b>	1	2	3	4	5	6	7	<b>Beneficial</b>
<b>Unethical</b>	1	2	3	4	5	6	7	<b>Ethical</b>
<b>Unsafe</b>	1	2	3	4	5	6	7	<b>Safe</b>
<b>Unhealthy</b>	1	2	3	4	5	6	7	<b>Healthy</b>
<b>Wrong</b>	1	2	3	4	5	6	7	<b>Right</b>
<b>Unacceptable</b>	1	2	3	4	5	6	7	<b>Acceptable</b>



	Definitely NO						Definitely YES
1. Do your teammates approve of doping use for performance-enhancement reasons?	1	2	3	4	5	6	7
2. I believe that my teammates find it OK to use doping substances to enhance performance	1	2	3	4	5	6	7
3. My coach holds a permissive attitude towards doping use	1	2	3	4	5	6	7
4. My teammates would want me to use doping for performance enhancement reasons	1	2	3	4	5	6	7
5. My coach would want me to use doping for performance enhancement reasons	1	2	3	4	5	6	7
6. My family will feel alright if I used doping substances to enhance my performance	1	2	3	4	5	6	7
7. My boy/girlfriend would approve my doping use for performance enhancement reasons	1	2	3	4	5	6	7

<b>For each statement, indicate to what extent YOU WOULD BE ABLE TO RESIST the temptation to use prohibited substances.</b>							Not at all Capable	Completely capable
<i>I would be able to resist the temptation to use doping substances:</i>								
1. ...even in the case in which all my teammates are using these substances.	1	2	3	4	5	6	7	
2. ...even if this would mean to lose my starter position on the team.	1	2	3	4	5	6	7	
3. ...even when my team captain is the one asking me to do so.	1	2	3	4	5	6	7	
4. ...even when my coach is the one asking me to do so.	1	2	3	4	5	6	7	
5. ...even in the case in which I realized that my teammates are becoming better than me because of doping use.	1	2	3	4	5	6	7	
6. ...even if I thought that it was the only way to step up for the team.	1	2	3	4	5	6	7	
<b>Please continue to think about you and your team in situations concerning doping.</b>								
<i>In my team, we would be able to:</i>								
7. ...avoid using doping substances, even if we believed or knew that other teams were using them	1	2	3	4	5	6	7	
8. ...to recognize our limits and avoid overcoming them by the use of doping substances	1	2	3	4	5	6	7	
9. ...to discourage those teammates who would be willing to use doping substances to win	1	2	3	4	5	6	7	
10. ...to protect each other against the risk to use doping	1	2	3	4	5	6	7	
11. ...to make clear to everyone that our team is against any form	1	2	3	4	5	6	7	

of doping							
12. ...to face difficult times without taking shortcuts such as doping	1	2	3	4	5	6	7

	Extremely Unlikely	Very Unlikely	Unlikely	Neutral	Likely	Very Likely	Extremely Likely
1. I intend to use prohibited substances to enhance my performance during this season	1	2	3	4	5	6	7
2. I plan to use prohibited substances to enhance my performance during this season.	1	2	3	4	5	6	7
3. I expect I will use prohibited substances to enhance my performance during this season	1	2	3	4	5	6	7

Have you ever used prohibited substances to enhance your performance? Please tick one box only:

- No, I have never used prohibited substances to enhance my performance
- Yes, I have used prohibited substances to enhance my performance once, but not ever since
- Yes, I use prohibited substances occasionally to enhance my performance
- Yes, I use prohibited substances systematically to enhance my performance

### Current behavior

Below we list a number of legal and prohibited substances. Have you used any of those in the past 6 months to increase your performance?

1. Protein or amino acids	Yes	No
2. Testosterone or its products	Yes	No
3. Vitamins and minerals	Yes	No
4. Growth hormone or IGF-1	Yes	No
5. Glutamine	Yes	No
6. Beta blockers	Yes	No
7. Creatine	Yes	No
8. Erythropoietin	Yes	No
9. Tribulus, ZMA, HMB or other testosterone boosters	Yes	No
10. Anabolic steroids	Yes	No

### Section E: My Goals in Life

This set of questions asks you about goals you may have for the future. Please read these statements carefully and indicate **how important each goal is to you by circling one number per statement**. Try to use the entire scale when rating the items. Remember, there are no right or wrong answers; **please be honest**.

	<b>Not at all</b>			<b>Moderate</b>					<b>Extremely</b>
1. My image will be one other's find appealing.	1	2	3	4	5	6	7	6	7
2. I will choose what I do, instead of being pushed along by life.	1	2	3	4	5	6	7	6	7
3. I will have many expensive possessions.	1	2	3	4	5	6	7	6	7
4. I will achieve the "look" I've been after.	1	2	3	4	5	6	7	6	7
5. I will be admired by many people.	1	2	3	4	5	6	7	6	7
6. I will be polite and obedient	1	2	3	4	5	6	7	6	7
7. I will feel free.	1	2	3	4	5	6	7	6	7
8. My name will be known by many different people.	1	2	3	4	5	6	7	6	7
9. I will be in good physical shape.	1	2	3	4	5	6	7	6	7
10. I will live up to the expectations of my society.	1	2	3	4	5	6	7	6	7
11. I will deal effectively with problems in my life.	1	2	3	4	5	6	7	6	7
12. People will often comment about how attractive I look.	1	2	3	4	5	6	7	6	7
13. I will feel good about my level of physical fitness.	1	2	3	4	5	6	7	6	7
14. I will be financially successful	1	2	3	4	5	6	7	6	7
15. Most everyone who knows me will like me.	1	2	3	4	5	6	7	6	7
16. I will feel good about my abilities.	1	2	3	4	5	6	7	6	7
17. I will successfully hide the signs of aging.	1	2	3	4	5	6	7	6	7
18. I will be relatively free from sickness.	1	2	3	4	5	6	7	6	7
19. My desires and tastes will be similar to those of other people.	1	2	3	4	5	6	7	6	7
20. I will have enough money to buy everything I want.	1	2	3	4	5	6	7	6	7
21. I will overcome the challenges that life presents me.	1	2	3	4	5	6	7	6	7

22. I will have insight into why I do the things I do.	1	2	3	4	5	6	7	6	7
23. I will have a job that pays well.	1	2	3	4	5	6	7	6	7
24. I will "fit in" with others.	1	2	3	4	5	6	7	6	7
25. I will be physically healthy.	1	2	3	4	5	6	7	6	7
26. I will keep up with fashions in clothing and hair.	1	2	3	4	5	6	7	6	7
27. I will feel energetic and full of life.	1	2	3	4	5	6	7	6	7

### **Section F: Personal Information**

**Please enter your date of birth followed by your initials. For example, Peter J. Smith, born on 1<sup>st</sup> August 1993 would have the code 010893PJS. Please enter yours in the box below:**

1. Gender:      Male    Female    (Please circle)

2. Ethnicity: (please circle).

Aboriginal and Torres Strait  
Islander

Arab

Australian

British

Chinese

European

Irish

Japanese

Jewish

Melanesian and Papuan

Micronesian

New Zealand

North African

North American

Pacific Islander

Polynesian

South African

South American

OTHER (please indicate)\_\_\_\_\_

3. How long have you been a member of your current team? \_\_\_\_ Years \_\_\_\_ Month

4. How many years have you engaged competitively in your sport (include time outside this club)? \_\_\_\_\_ Years

5. What is the highest competitive level you have competed in your sport (not necessarily as part of your current club)? \_\_\_\_\_

6. How long have you been coached by your current coach? \_\_\_\_\_years  
\_\_\_\_\_months

7. On average, how many hours per week do you train? \_\_\_\_\_hours  
per week

**PLEASE MAKE SURE YOU HAVE ANSWERED ALL THE QUESTIONS,  
AND THAT YOU ONLY HAVE ONE ANSWER TO EACH QUESTION.  
THANK YOU VERY MUCH FOR YOUR PARTICIPATION!**

### Coach Questionnaire

1. Please enter your birthday here: \_\_\_\_ (D) / \_\_\_\_ (M) / \_\_\_\_ (Y)
2. What is your gender?      Female       Male
3. What is the main sport you are currently coaching? \_\_\_\_\_
4. How many years have you been coaching this sport? \_\_\_\_\_
5. How many years have you been coaching your current team? \_\_\_\_\_
6. How many hours per week (on average) do you spend coaching your current team? \_\_\_\_\_
7. What is the level of sport you are currently coaching (e.g., national, international)?  
\_\_\_\_\_
8. How many years have you been involved in coaching altogether (including other sports if applicable)? \_\_\_\_\_
9. What coaching qualifications do you have (please give full name and awarding body)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The use of prohibited substances to enhance athlete performance during this season is...  
(please circle the number that best describes your answer and circle ONE number on EACH line).

<b>Bad</b>	1	2	3	4	5	6	7	<b>Good</b>
<b>Useless</b>	1	2	3	4	5	6	7	<b>Useful</b>
<b>Harmful</b>	1	2	3	4	5	6	7	<b>Beneficial</b>
<b>Unethical</b>	1	2	3	4	5	6	7	<b>Ethical</b>
<b>Unsafe</b>	1	2	3	4	5	6	7	<b>Safe</b>
<b>Unhealthy</b>	1	2	3	4	5	6	7	<b>Healthy</b>
<b>Wrong</b>	1	2	3	4	5	6	7	<b>Right</b>
<b>Unacceptable</b>	1	2	3	4	5	6	7	<b>Acceptable</b>



## Memorandum

<b>To</b>	Professor Nikos Ntoumanis
<b>From</b>	Dr Moira O'Connor
<b>Subject</b>	Approval for form C ethics
<b>Date</b>	20 February 2014
<b>Copy</b>	Vassilis Barkoukis, Brett Smith, Daniel Gucciardi

Office of Research and Development  
 Human Research Ethics Committee  
 Telephone 9266 2784  
 Facsimile 9266 3793  
 Email hrec@curtin.edu.au

Thank you for your Form C Application for Approval of Research with Low Risk (Ethical Requirements) for the project titled: "A cross-cultural investigation of the effects of coach motivational strategies on athlete doping behaviors: Direct and indirect relations ". On behalf of the Human Research Ethics Committee, I am authorised to inform you that the project is approved.

Approval of this project is for a period of 4 years 20<sup>th</sup> February 2014 to 20<sup>th</sup> February 2018.

Your approval has the following conditions:

- (i) Annual progress reports on the project must be submitted to the Ethics Office.
- (ii) It is your responsibility, as the researcher, to meet the conditions outlined above and to retain the necessary records demonstrating that these have been completed.

The approval number for your project is PSYCH SP 2014-01. Please quote this number in any future correspondence. If at any time during the approval term changes/amendments occur, or if a serious or unexpected adverse event occurs, please advise me immediately.

Dr Moira O'Connor  
 Senior Research Fellow  
 School of Psychology and Speech Pathology | Faculty of Health Sciences

Curtin University  
 Tel | +61 8 9266 3450  
 Mobile | 0415 338 546

Email | [m.oconnor@curtin.edu.au](mailto:m.oconnor@curtin.edu.au)

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**Please Note:** The following standard statement must be included in the information sheet to participants:  
*This study has been approved under Curtin University's process for lower-risk Studies (Approval Number xxxx). This process complies with the National Statement on Ethical Conduct in Human Research (Chapter 5.1.7 and Chapters 5.1.18-5.1.21). For further information on this study contact the researchers named above or the Curtin University Human Research Ethics Committee. c/- Office of Research and Development, Curtin University, GPO Box U1987, Perth 6845 or by telephoning 9266 9223 or by emailing hrec@curtin.edu.au.*