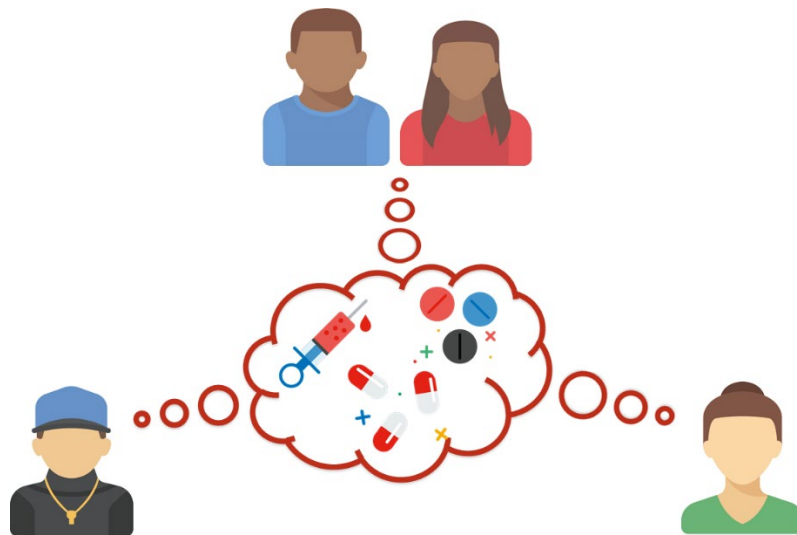


Doping perspectives and intentions of talented adolescent athletes' coaches, parents and peers



Tirza H. J. van Noorden, PhD

Brigitte J. C. Claessens, PhD

Leonie Kienz, MSc

Final report for the World Anti-Doping Agency

Social Science Research Grant (2019-2021)

Original project title: Using the influence of coaches, parents, and peers on adolescent elite athletes' doping cognitions to enhance doping prevention effectiveness

Principal Investigator

Tirza van Noorden, Radboud University

Main collaborators

Brigitte Claessens, Radboud University

Leonie Kienz, Radboud University

With the support of

Erik Duiven, Anti-Doping Authority the Netherlands

Organizations

Work, Health, and Performance Group, Behavioural Science Institute,

Radboud University, The Netherlands

Anti-Doping Authority the Netherlands (Dopingautoriteit), The Netherlands

Radboud University

July 2021

Doping perspectives and intentions of talented adolescent athletes' coaches, parents and peers

Final Report for the World Anti-Doping Agency

Social Science Grant (2019-2021)

© Tirza van Noorden, Brigitte Claessens, & Leonie Kienz, Radboud University

Work, Health, and Performance Group, Behavioural Science Institute,

Radboud University, The Netherlands

Animations: RekelProductions

Table of Contents

Summary.....	5
General Introduction.....	8
The Role of the Social Entourage.....	8
Doping Prevention.....	10
Theory of Planned Behavior & Social-Cognitive Theory.....	12
Present Study.....	13
Study 1.1: Mapping Doping Thoughts and Experiences.....	15
Method.....	15
Results.....	17
Study 1.2: Investigating Responses and Advice on Doping Dilemma's.....	25
Method.....	25
Results.....	27
Study 2: Associations with Doping Intentions.....	43
Method.....	43
Results.....	46
General Discussion.....	49
Main Findings of Study 1.....	49
Main Findings Study 2.....	51
The Social Entourage.....	52
Strengths, Limitations and Future Research.....	53
Practical Implications.....	55
Take-Home Message.....	55
References.....	57
Appendix A: Dilemmas.....	64
Appendix B: Use of Results.....	66
Appendix C: Allocation of Funds.....	68

Summary

Aim of the Research

The overarching goal of the present study was to gain insight in the doping perspectives and intentions of talented adolescent athletes' social entourage (coaches, parents, and peers). We conceptualized this goal into the three aims which we investigated in two studies. The first study was conducted in the Netherlands and addressed the aim to map and compare the doping thoughts and experiences of the adolescent athletes' social entourage (Study 1.1) as well as the aim to investigate the responses of the social entourage to hypothetical doping dilemmas and the advice they would give their adolescent athletes (Study 1.2). The second study was conducted in Germany and addressed the aim to research and compare the associations with doping intentions of the adolescent athletes' social entourage (Study 2). Specifically, we set out to answer the following research question: What are the associations of doping attitudes, moral disengagement, perceived behavioral control, and anticipated guilt with doping intentions in talented adolescent athletes' coaches, parents and peers, and are there differences between the social entourage groups? This research adopted a mixed design method involving quantitative measures in combination with qualitative measures.

Methods

In Study 1.1, participants (109 in total; 19 coaches, 71 parents, 19 peers) were asked whether they consider the sport of the referred athletes as at high risk for doping, whether they worried about doping in general, to what extent they perceived doping to play a role in the lives of their athletes, to what extent they thought that it is their responsibility to discuss doping with their athletes, how often and what they discussed, what kind of advice they gave to their athletes, whether they felt that they have enough information to be able to educate their athletes about doping properly, what kind of knowledge they would like to gain and in what way, whether they had ever attended some kind of information meeting on doping and if so by whom this meeting was hosted, how confident they were that their athletes would tell them if they used doping, how they thought young athletes would gain access to doping, whether they had ever consciously used doping to improve their sports performance, provided or advised doping to a young athlete to improve the athletes' sports performance, or found themselves in a doping-related situation of some sort, and lastly whether they or their athletes felt differently towards doping since the Covid-19 pandemic. In Study 1.2,

participants (69 in total; 14 coaches, 46 parents, 9 peers) were presented three different dilemmas involving an athlete in the position to dope or report doping. Participants were asked to indicate for each of the dilemmas how realistic they thought the scenario was, whether they had ever experienced something similar themselves or someone they knew, what they thought the consequences could be in case the athlete in the dilemma chose to use doping, what they thought the consequences could be in case the athlete decided not to use doping, and what advice they would give to the athlete in the dilemma or an athlete in a similar position. In Study 2, participants (180 in total; 58 coaches, 37 parents, 85 peers) were asked to complete measures of doping attitudes, perceived behavioral control, moral disengagement, anticipated guilt and doping intentions.

Results

Taken together, the present research indicates a large degree of similarity in the perspectives and responses of talented adolescent athletes' coaches, parents and peers. At the same time, clear differences between the entourage groups are demonstrated. Compared to coaches and peers, parents perceived the sport of their athletes to be high at risk for doping less frequently, felt that doping played a smaller role in the lives of their athletes, had attended a doping information meeting less frequently, were more confident that their athletes would tell them if they were using doping, attributed less control over doping use to their athletes, and demonstrated smaller levels of doping moral disengagement. In addition, compared to parents and peers, coaches discussed the topic of doping more often with their athletes and had experienced a doping situation more often. Last, compared to coaches and parents, peers felt less responsible to discuss doping with their athletes, perceived the moral dilemmas to be less realistic, and showed more intention to use doping. Furthermore, the present research reveals similarities and differences between the social entourage and adolescent athletes. That is, the present research demonstrated the social entourage's doping intention to be associated with moral disengagement and anticipated guilt in a similar vein as the athletes' doping intention demonstrated in previous research. In contrast to previous research on athletes, we did not find associations of doping attitudes and perceived behavioral control with doping intention in our social entourage. These differential patterns of associations indicate distinct processes underlying doping intentions in athletes and their social entourage.

Conclusion

By investigating coaches', parents', and peers' perspectives on doping as well as associations of their doping intentions with psychological constructs drawn from the Theory of Planned Behavior and the Social-Cognitive Theory, this studies fills a gap in the existing doping literature. It demonstrates the uniqueness of each social entourage groups and emphasizes the potentially differential role of coaches, parents and peers in adolescent athletes' doping perspectives. Moreover, with the present research, an important first step is taken towards constructively investigating the differential roles of the social entourage in adolescent athletes' doping cognitions, with the ultimate goal of applying the social entourage's influence to strengthen the athletes' anti-doping stance and protect the athletes from doping temptations.

General Introduction

“The athletes have a very complex environment. [...] Ultimately it’s the athlete’s decision to dope, but we have to be realistic because when you have a lot of pressure on you, when you have a lot of people telling you different things, it’s hard to resist temptation sometimes. That’s why we need to start getting to all of the entourage and support personnel.”

~ Rob Koehler, former WADA Deputy Director General

Doping behavior results from a complex interaction of personal and environmental factors (e.g., Dodge & Jaccard, 2007), with an anti-doping culture being fundamental to an athlete’s anti-doping stance (Barkoukis et al., 2019). More specifically, the decision to (not) dope is largely influenced by the social network surrounding the athlete (Waddington, 2000). The impact of the entourage is reflected in the 2021 WADC, which explicitly states that any coach, trainer, manager, agent, team staff, official, medical, paramedical personnel, parent or any other person working with, treating or assisting an athlete has the responsibility “to use their influence on athlete values and behavior to foster anti-doping attitudes” (WADC; article 21.2.3). This responsibility is greatest towards athletes in their adolescence as this is the period in which individuals are particularly susceptible to external influences (e.g., Steinberg & Morris, 2001). During adolescence, athletes might start and stick to doping (Judge et al., 2012), yet they are also receptive to a healthy lifestyle and anti-doping strategies (Blank, Schobersberger, Leichtfried, & Duschek, 2016). For the entourage to actually be able to adhere to their responsibility towards young athletes, we first need to understand the role of the entourage in athletes’ values and behavior. In light of this, we conducted the present research to gain insight in the perspectives of the adolescent athletes’ entourage by mapping their doping *thoughts and experiences*, investigating their *responses and advice* on hypothetical doping dilemmas, and researching the associations with their *doping intentions*. We adopted a mixed method design, combining qualitative and quantitative methods.

The Role of the Social Entourage

The complex social environment poses a constant source of influence on the adolescent athlete. According to Bronfenbrenner’s classical Ecological Systems Theory (1979),

the social environment consists of different levels of influence. The most immediate level of influence includes parents, peers, and teachers. Translated to the context of sports, the role of the teacher is taken on by the coach. In line with the Ecological Systems Theory, parents, peers and coaches (referred to as the social entourage) have been identified as strong influencers on athletes' doping cognitions in the WADA-funded work by Wylleman et al. (2016).

Empirical evidence supports the claim of the importance of the social entourage on doping use and cognitions, with the majority of research focusing on coaches. This is reflected by a very recent systematic review (of 38 papers) on coach perspectives and behaviors regarding (anti)doping by Barnes et al. (in press). The authors concluded that in the anti-doping research addressing coaches, a shift has taken place over the last 20 years from a quantitative focus on knowledge and beliefs to a focus on behavioral and contextual factors using qualitative and mixed-method designs. Their findings emphasize that coaches can facilitate or encourage doping use as well as serve as a protective factor by acknowledging their responsibility to prevent doping (e.g., Erikson et al., 2015; Laure et al., 2001; Ntoumanis et al., 2017). Coaches who have a trusting and close relationship with their athletes are considered the most influential with respect to doping-related decisions and with the absence of such relationship athletes are more susceptible to other influencers (Barkoukis et al., 2019).

In contrast to research involving coaches, research on the role of parents is still in its infancy. In fact, the work of Blank et al. (Blank et al., 2015a; Blank, Leichtfried, Schaiter, Fürhapter, Müller, & Schobersberger, 2015) appears to be the only empirical work actually conducted among parents. Similar to the starting point of research among coaches, these studies focused on parents' knowledge of doping. Overall, parents appear to have good general knowledge of doping, but lack knowledge on the side effects. Moreover, their level of knowledge was not associated with their anti-doping attitude (Blank et al., 2015b). Providing information on the influence of parents on athletes' doping susceptibility, it was found that fathers may act as a protective factor but only if they hold a moderate belief that their child has the potential to become a professional athlete (Blank et al., 2015b). Suggesting a stronger influence, research conducted among adolescent athletes shows that parent-athlete communication about doping (anabolic steroids in particular) predicts the willingness to try a new performance-enhancing substance (but not intentions; Dodge & Clark, 2015). Shedding light on the process of parental influence, interviews with student-athletes (19-26 years old,

M=21) indicate that parents appear to play a key role in forming and shaping athletes' personal morals, which affects the athletes' doping stance (Erikson et al., 2017). This claim is further supported by the recent community-based participatory research of Petróczi et al. (2021), who reported that interviewed athletes emphasized the influence of parents (as well as siblings and teachers) on promoting clean values and morals. In line with this, adolescent athletes are more likely to use doping when they believe significant others in their lives would approve doping use (Lucidi et al, 2008; Zelli et al., 2010).

Demonstrating the influence of peers, a meta-analysis of the personal and psychosocial predictors of doping cognitions and behaviors showed that doping behaviors are more prevalent in athletes who have friends who doped than in those who do not have friends who doped (Ntoumanis et al., 2014). Friends were also identified as the main source of the supply of doping agents in a study among high school students who took part in – weekly – competitions (Laure et al., 2003). Based on observations of young elite cyclists, Ohl et al. (2015) suggested that peer interaction and team culture can influence the decision to dope or not. This claim finds support by interviews with athletes (who were on average in their late 20s) and their coaches, who explicitly emphasize that peers are an important source of influence (Barkoukis et al., 2019). In addition, the interviews suggest that the most important pathway of influence is role modelling, with a particular strong influence on younger athletes.

Ultimately, previous research indicates the importance of coaches, parents and peers on doping. However, it is important to emphasize that most information comes from athletes themselves or coaches. The work of Blank et al. (2015a, 2015b) is the only research that actually involved parents as participants. In a similar vein, most peer-involved research is limited to athletes (who are peers to teammates and opponents) and does not consider non-athlete peers. Moreover, there is no study involving all three social entourage groups, making it impossible to investigate differences between coaches, parents and peers in their perspectives on doping. Therefore, the first aim of the present study is to map and compare the doping thoughts and experiences of adolescent athletes' coaches, parents, and peers.

Doping Prevention

Scientists, athletes, and coaches see an urgent need to include the social entourage in doping prevention programs (e.g., Backhouse & McKenna, 2012; Barkoukis et al., 2019; Barnes et al., in press; Nieper, 2005; Ntoumanis et al., 2014; Sipavičiūtė et al., 2020). There are a

number of coach anti-doping programs, such as CoachTrue (WADA, 2018), Coach Clean (UKAD, 2018), and CoachMADE (Ntoumanis et al, 2018) which mainly aim to raise awareness and increase the coaches' knowledge on doping. Although these programs specifically target the anti-doping stance of coaches, members of the social entourage can actually be 'used' as influencing agents in prevention programs targeting the anti-doping stance of the athletes. One such example is applying peer pressure in a positive way (Fallace et al., 2019). Based on the enduring influence of parents on shaping athletes' attitudes, experiences and behaviors toward doping, it has been argued that parents should be included in doping prevention programs (Dodge et al., 2015; Erickson et al., 2017; Petróczy et a., 2021).

Traditional doping prevention and intervention programs have been primarily aimed at educating individuals on the health consequences of doping-use and enhancing knowledge of banned substances and methods. However, the effects (Elbe et al., 2012) of these programs are rather weak. Nonetheless, preventive programs aimed at changing the cognitive processes that are involved in moral thoughts are much more promising than knowledge-focus programs given the importance of moral values as shown in the recent meta-analyses by Ntoumanis et al. (2014). In line with this finding, Barkoukis et al. (2019) state that morality should be an important pillar in anti-doping prevention education. Based on this conception, Elbe et al. (2012) developed an ethical decision-making training to prevent adolescent elite athletes from doping. This program centers on moral dilemmas involving athletes and their entourage, dealing with the question whether or not to use doping or report doping use. In their study, 18 dilemmas were developed. Based on interviews with talented adolescent athletes, 12 of these dilemmas have been further developed by a WADA funded study of Claessens and van Noorden (2018) to portray more realistic and relatable situations. The intervention programs in which these dilemmas were used did not result in a decrease in adolescent athletes' positive doping attitudes (Elbe et al., 2012; Claessens & van Noorden, 2018). This can largely be explained by a floor effect with the athletes' doping attitudes representing an anti-doping stance even before the start of the program. In addition, it could also be the case that contemplating about hypothetical doping dilemmas by oneself is not enough to make a difference – perhaps this is where the social entourage could play a role by exerting her influence.

In response to the calls to include the social entourage in prevention programs and to base prevention programs on moral values, the present study aims to further develop

materials that could be used in entourage-involved prevention programs for adolescent athletes. More specifically, the second aim of the present study is to investigate coaches', parents' and peers' moral responses to hypothetical doping dilemmas and the advice they would give their adolescent athletes in such situations.

Theory of Planned Behavior & Social-Cognitive Theory

The influence of the social entourage on adolescent athletes may be explained by socialization – the process of adolescents conforming to others and becoming more similar to them in attitudes and behaviors (e.g., Brechwald & Prinstein, 2011). This focus on attitudes and behavior fits with one of the most profound theoretical frameworks to understand doping behavior: The Theory of Planned Behavior (Ajzen, 1991). This theory postulates that one's behavior is best predicted by one's intention, which in turn is determined by one's attitude, subjective norms, and perceived behavioral control. The attitudes represent an individual's evaluation of executing the related behavior. Subjective norms reflect the pressure that individuals perceive from significant others (e.g., coaches, parents, and peers) to (not) engage in the respective behavior. Lastly, perceived behavior control explains the individual's evaluation of his/her capabilities to perform the behavior. Multiple studies have found that the Theory of Planned Behavior is a suitable theoretical model to explain doping intentions and behavior (Ntoumanis et al., 2014; Kirby, Guerin, Moran, & Matthews, 2016), including the intentions of adolescent athletes specifically (e.g., Chan et al., 2015; Lucidi et al., 2004; Lucidi et al., 2008).

Some researchers have noted that the predictive power of the theory could be further enhanced if personal norms and values regarding doping would be included (e.g., Lucidi et al., 2008; Wiefferink et al., 2008). Bandura's Social-Cognitive Theory (1989) provides an ideal addition to the Theory of Planned Behavior as it directly targets moral values. Specifically, the Social-Cognitive Theory postulates that intention is predicted by anticipated guilt. That is, one is likely to refrain from a certain behavior when one expects to feel remorse or guilt as a consequence of that behavior. Anticipated guilt, however, can be avoided when one morally disengages by justifying the behavior. Research supports the added value of incorporating constructs of the Social-Cognitive Theory, identifying moral disengagement as one of the strongest predictors of doping intention in the adult and adolescent athlete population (e.g., Ntoumanis et al., 2014; Zelli et al., 2010). Additionally, anticipated guilt has been found to

mediate the pathway between moral disengagement and doping intentions (Kavussanu et al., 2015; Kavussanu & Ring, 2017; Kavussanu et al., 2020).

To date, predictors of doping intentions are almost exclusively studied in athletes themselves, although the impact of entourage is empathized in past research (Barkoukis et al., 2019). One exception is a study by Fung and Yuan (2006) among community coaches in Hong Kong. Their results showed a positive association between coaches' doping attitudes and intention. Intention was not found to be correlated to the subjective norms – a measure that was later criticized by Backhouse et al. (2007). To the best of our knowledge, there is no empirical research applying the constructs of Social-Cognitive theory to coaches' doping intentions. Nor is there any research that investigates the associations of attitudes, perceived behavioral control, moral disengagement, and anticipated guilt with doping intentions in parents or peers. Therefore, the third aim is to research and compare the associations of the constructs derived from the TPB and SCT with *doping intentions* of the adolescent athletes' social entourage.

Present Study

The overarching goal of the present study was to gain insight in the doping perspectives and intentions of talented adolescent athletes', coaches, parents, and peers (i.e., the social entourage). We conceptualized this goal into the three aims introduced earlier which we investigated in two studies. The first study was conducted in the Netherlands and addressed the aim to map and compare the doping *thoughts and experiences* of the adolescent athletes' social entourage (Study 1.1) as well as the aim to investigate the *responses* of the social entourage to hypothetical doping dilemmas and the *advice* they would give their adolescent athletes (Study 1.2). This study adopted a mixed design method involving quantitative measures in combination with qualitative measures. Due to the explorative nature of this study, we had no a priori hypotheses.

The second study was conducted in Germany and addressed the aim to research and compare the *associations with doping intentions* of the adolescent athletes' social entourage (Study 2). Specifically, we set out to answer the following research question: What are the associations of doping attitudes, moral disengagement, perceived behavioral control, and anticipated guilt with doping intentions in talented adolescent athletes' coaches, parents, and peers and are there differences between the social entourage groups? As there is no previous

research investigating attitudes, perceived behavioral control, moral disengagement and anticipated guilt in relation to coaches', parents' and peers' doping intentions, we based our hypotheses on the relevant literature regarding athletes' doping intentions (e.g., Chan et al., 2015; Kavussanu et al., 2015; Kavussanu & Ring, 2017; Lucidi et al., 2004; Lucidi et al., 2008; Ntoumanis et al., 2014; Kirby et al., 2016; Zelli et al., 2010). We therefore expected doping attitudes and moral disengagement to be positively associated and perceived behavioral control and anticipated guilt to be negatively associated with the social entourage's doping intention. Differences in these associations between coaches, parents and peers were tested exploratively.

Study 1.1: Mapping Doping Thoughts and Experiences

The first study addressed the aim to map and compare the doping thoughts and experiences of the adolescent athletes' coaches, parents and peers.

Method

Recruitment and Participants

Eligible for participation were coaches/trainers, parents/caretakers, and peers/friends of adolescent athletes aged 12-21 years old with an official (inter)national talent status. The participating coaches, parents, and peers themselves had to be 16 years or older.

We recruited participants via the contacts of the Anti-Doping Authority the Netherlands, our network of Talent School coordinators, an ad in a national digital sports newsletter, social media (Twitter, Facebook and LinkedIn), as well as our personal network. All participants were informed about the nature and procedure of the study. Participation was completely voluntary and participants were made aware of their right to stop their participation or withdraw their consent at any time. Data have been handled confidentially and anonymously and strict data management and storage protocols have been followed to adhere to the current European laws concerning privacy. To reward participants without the need to collect sensitive data, €2,- per participant was donated to the Dutch Youth Foundation Sports & Culture, which pays for children's sports and culture club contribution and materials whose parents are unable to.

The total sample consisted of 109 participants, involving 19 coaches, 71 parents, and 19 peers, with an overall mean age of 41 years old ($SD = 13.03$). Across the three social entourage groups, 51% identified as female and 47% as male. The coached/parented/befriended young athletes participated in 25 different sports, including soccer, combat sports, rowing, tennis, basketball, gymnastics, running, skating, etc. Overall, participants perceived these sports as either individually natured (34%), team natured (56%) or both (10%). For details on the distributions of gender, age, and the nature of the sport within each of the social entourage groups, see Table 1.

Procedure and Measures

The study was conducted through an online survey. At the opening page of the survey, participants provided informed consent and stated that they were at least 16 years of age.

Table 1*Demographic Information per Entourage Group in Study 1.1*

Variable	Coaches	Parents	Peers
Age in years, mean (SD)	41.28 (10.00)	46.53 (9.70)	21.84 (6.22)
Gender (frequencies)			
Females	2 (11%)	45 (63%)	4 (21%)
Males	17 (89%)	24 (34%)	15 (79%)
Non-binary	0 (0%)	0 (0%)	0 (0%)
Prefer not to answer	0 (0%)	2 (3%)	0 (0%)
Type of Sport (frequencies)			
Individual	4 (21%)	21 (30%)	12 (63%)
Team	11 (58%)	47 (66%)	3 (16%)
Combination	4 (21%)	3 (4%)	4 (21%)

Next, participants provided individual information regarding their entourage group (coach, parent, peer), age, and gender (male, female, binary, prefer not to answer), followed by questions about the referred athlete's sport status, sport name, and nature of the sport (individual/team/combination). The rest of the survey was divided into two parts, which are presented as Study 1.1 and Study 1.2. Concerning Study 1.1, participants were asked about their thoughts on doping and their experiences with doping using a combination of yes closed (yes/no), rating, and open-ended questions. All participants received the same questions; however, the phrasing was adjusted to the entourage role (automatically matched based on the group indicated by the participant). That is, coaches read about their adolescent athletes, parents about their athlete sons and daughters, and peers about their athlete friends. When participants were the coach, parent or peer of multiple adolescent athletes, they were asked to answer the question with their most talented athletes in mind.

Participants were asked whether they considered the sport of the referred athletes as at *high risk* for doping (*yes/no/don't know*) and whether they *worried* about doping in general (5-point Likert scale; 1=*Not at all*, 5=*A lot*). In case participants answered the latter question with a score of 4 or 5, they were asked to explain their worries (open-ended). Next, participants were asked to what extent they perceived doping to *play a role* in the lives of their athletes (5-point Likert scale; 1=*Not at all*, 5=*A lot*). This was followed by a number of questions regarding them discussing doping with their athletes, zooming on the extent they thought that it is their *responsibility to discuss* doping with their athletes (5-point Likert scale; 1=*Not at all*, 5=*It certainly is*), *how often they discussed* doping with their athletes (4-point

scale; 1=*Never*, 2=*Once or twice*, 3=*Several times*, 4=*Often*), *what they discussed* (open-ended), and *what kind of advice* they gave to their athletes regarding doping (open-ended).

In addition, participants were asked about their level of doping knowledge. Specifically, they were asked whether they felt that they have *enough information* about doping to be able to educate their athletes properly (1=*Not at all*; 5=*Totally*), *what kind of knowledge they would like to gain and in what way* (open-ended), and whether they had ever *attended some kind of information meeting* on doping (1=*Yes*, 2=*No*) and if so *by whom this meeting was hosted* (open-ended).

The survey continued by asking participants how likely it was that their *athletes would tell them* if they used doping (1=*Highly unlikely*; 5=*Highly likely*) and how they thought young athletes would *gain access to doping* (open-ended). The questions also covered the participants own experiences with doping. Specifically, participants were asked whether they had ever *consciously used doping* to improve their sports performance (1=*Yes*, 2=*No*), *provided or advised doping* to a young athlete to improve the athletes' sports performance (1=*Yes*, 2=*No*), or found themselves in a *doping-related situation* of some sort (1=*Yes*, 2=*No*) and if so to describe the situation(s) (open-ended).

Considering the *impact of the Covid-19 pandemic* of the past year, participants were asked whether they or their athletes felt differently towards doping since the pandemic (1=*Yes*, 2=*No*) and if so, how this had changed (open-ended). Lastly, we explored their willingness to participate in future research on this topic.

Results

Two types of quantitative data were analyzed: categorical data and continuous data. The categorical data is reported in percentages and tested for differences in the social entourage groups using chi square tests via crosstabs. The statistics of the categorical variables are presented per entourage group in Table 2. The continuous data is reported in means with standard deviations and tested for differences between the social entourage groups using Kruskal-Wallis tests to take the unequal group sizes into account. For the follow-up post hoc comparisons we conducted Mann-Whitney tests, reporting only the statistics for the groups that differed from each other. The statistics of the continuous variables are presented per entourage group in Table 3.

Table 2*Means (and SDs) of Rating Items Per Entourage Group*

Variable	Total	Coaches	Parents	Peers
Worried about doping	1.77 (0.94)	2.00 (0.82)	1.65 (0.92)	2.08 (1.17)
Doping plays a role	1.55 (0.84)	1.87 (0.74)	1.39 (0.67)	2.00 (1.41)
Responsibility to discuss doping	3.87 (1.19)	3.93 (0.88)	4.15 (1.08)	2.27 (0.90)
Frequency doping discussed	2.02 (0.81)	2.53 (0.83)	1.92 (0.77)	1.92 (0.79)
Capability to inform	2.95 (1.20)	3.20 (1.08)	2.86 (1.25)	3.09 (1.14)
Athlete would tell	3.47 (1.30)	2.47 (1.13)	3.92 (1.06)	2.45 (1.44)

Table 3*Frequency of Questions Answered with "Yes" Per Entourage Group*

Variable	Total	Coaches	Parents	Peers
High-risk sport	37 (33.9%)	9 (47.4%)	18 (25.4%)	10 (56.6%)
High-risk sport – "don't know"	16 (14.7%)	1 (5.3%)	15 (21.1%)	0 (0.0%)
Information meeting	29 (33.7%)	10 (66.7%)	12 (20.3%)	7 (58.3%)
Doping use	2 (2.4%)	0 (0.0%)	2 (3.4%)	0 (0.0%)
Doping provided	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Doping situation	11 (13.3%)	5 (33.3%)	6 (10.3%)	0 (0.0%)
Changes due to Covid-19	4 (6.3%)	1 (7.1%)	3 (7.3%)	0 (0.0%)

When asked whether they perceived the sport of the athlete in question to be at high risk for doping, significant differences were found, $\chi^2(4)=10.64$, $p=.029$, with a quarter of parents said "yes", compared to half of coaches and half of the peers. Furthermore, about half of the parents, coaches, and peers indicated that they did not perceive the sport of the athlete to be a high risk for doping; the remaining social entourage indicated that they did not know. Overall, participants did not really worry about doping with no difference between the social entourage groups, $H(2)=4.40$, $p>.05$ (no additional explanations provided by the participants). Neither did participants feel that doping played a role in the lives of their young athletes. However, this did differ between the social entourage groups, $H(2)=7.12$, $p=.026$, with parents attributing an even smaller role to doping than coaches, $U=277.00$, $z=-2.59$, $p=.01$. The overall strong sense of responsibility to discuss doping with young athletes can be attributed to coaches and parents, with peers feeling significantly less responsible $H(2)=20.57$, $p<.001$, than coaches, $U=18.00$, $z=-3.52$, $p<.001$, and parents, $U=70.00$, $z=-4.32$, $p<.001$. Doping was moderately discussed ($M=2.02$, $SD=0.81$), but this differed between social entourage groups, $H(2)=6.74$, $p=.032$, with coaches discussing doping more often with their young athletes than parents, $U=275.00$, $z=-2.48$, $p=.011$, and peers, $U=51.50$, $z=-2.08$, $p=.040$.

Participants who discussed doping with their young athletes mainly talked about the existence of doping (creating awareness), information about what doping is (and the fact that it can be present in daily nutrients and supplements), health risks and consequences for athletes sport, and a strong appeal that doping is not allowed (for a complete overview, see Table 4). Parents presented more diverse responses than coaches and peers and expressed the danger of doping (you will lose more than you will gain). Regarding the advice participants gave their athletes (for a complete overview, see Table 5), coaches stressed that athletes should not take doping (and used examples of athletes that doped, as presented in the media, to support their point) and advised athletes to regularly check the doping list (as well as e-learning modules, information, and flyers of the anti-doping authority and supplements information). Furthermore, they addressed that doping can and athlete's career and has health hazards. Discuss it with your coach when you are introduced to doping temptations. Parents also strongly advocated to never use doping and expressed that doping use is unfair (fair sport and on your own strength). They also advised to check the doping list or ask for advice when using medication, as it be hazardous for your health. There was no advice provided by peers in the present study.

The social entourage felt moderately capable to discuss doping with their athletes concerning the information they have, and this did not differ between coaches, parents, or peers, $H(2)=1.03$, $p>.05$. Coaches mostly stated that there is enough information available whereas parents and peers would appreciate to-the-point and easily accessible information on what constitutes doping, what are short-term and long-term consequences, what are reliable sources for more information, tailored to the target group (for a complete overview, see Table 6). In line with this, significantly more (two out of three) coaches had attended an information meeting about doping at some point, compared to a fifth of the parents, $\chi^2(2)=15.27$, $p<.001$. These meetings were mostly hosted by sports federations, medical staff, anti-doping authority, and nutritional specialists (coaches), schools and sports federations (parents), and sports federation (peers).

Most members of the social entourage believe that their athletes would tell them if they were using doping, with parents being the most confident in relation to coaches, $U=157.50$, $z=-3.96$, $p<.001$, and peers, $U=140.50$, $z=-3.08$, $p=.001$. Regarding the access to doping (for a complete overview, see Table 7), coaches name that the internet and via other athletes or friends are the most prevalent access routes, parents indicate the same sources

with more emphasis on access via other athletes (or team members) and also think that athletes might come in contact with doping via their school or medical staff. Peers agree with coaches and in addition believe that daily products or supplements can contain doping. Out of all participating coaches, parents and peers, two parents indicated that they have used doping themselves at some point in time, $\chi^2(2)=0.88, p>.05$. None of the participants had ever provided doping to young athletes or have advised them to take doping to improve their performance. None of the peers had ever been in a situation in which doping was involved, whereas 33.3% of coaches and 10.3% of parents had, which is a significant difference, $\chi^2(2)=7.22, p=.039$. None of them specified the situation.

Overall, participants felt that they and/or young athletes do not have a different view of doping due to the Covid-19 pandemic with the exception of 1 coach and 3 parents, which was not significantly different, $\chi^2(2)=0.70, p>.05$. Additional remarks made by coaches were: well-educated guidance of young athletes is crucial to prevent doping use (and other unfair situations such as match fixing, for example in the youth sport program) and there is a risk of athletes experimenting when they have no knowledge on the topic. Parents also believed that support is needed for young athletes to prevent them from using doping and expressed that family, sport, and school should work together and track the athlete. They thought that the type of sport matters in doping risk. Peers expressed no comments.

Concerning their willingness to take part in related future research, 16 participants (12 parents and 4 coaches) responded positively and shared their contact details. Specifically, they were willing to 1) complete questionnaires (94%), 2) be interviewed (56%), 3) be involved in a prevention program (50%), or 3) participate in some other form of research (31%).

Table 4

Topics Discusses Per Entourage Group

Coaches	#	Parents	#	Peers	#
the existence of doping (norms and values, example Thomas Dekker as an anecdote, media reports)	2	the existence of doping (awareness, things that come up in the news like goalkeeper Onana, it used to be very common)	11	the existence of doping (other athletes accused or caught, things in the news, whether you know someone who uses)	4
provide information (doping range, why athletes might choose it, doping categories, supplements, NZVT list, matchfixing, what is considered doping, what does it do)	9	provide information (including what substances can test positive for doping without you being aware of it, such as vitamins and minerals, what falls under doping law, sports nutrition and eg creatine use, all forms of drugs, accidentally bought protein from hemp powder, long-term effects)	7	give information/discuss (why would someone do it, is it a good choice, what resources are on the list)	2
health and sports risks (consequences, what if you get caught)	7	health and sports risks (consequences)	11		
the danger of doping (physical and mental)	3	the danger of doping (destroys more than it brings)	7		
doping is not allowed (responsibility)	2	doping is not allowed (is not an option, always sport from your own strength, must maintain good sportsmanship, moral aspect and own responsibility, what is fair and what not)	8		
what doping control entails	1	what doping control entails	1		
reputational damage (always being an athlete who was caught at the time)	1				
		when taking medications, be alert (e.g., for asthma, bronchitis, questions asked of doctor, precautions to take)	4		
		fear of eating/drinking something that may contain doping (e.g., powders energy boost)	1		
		what others use (teammates used 'snus')	1		
		education at school (I look into what products contain what and we discuss this)	1		
		how my child feels about it (do you think you are sensitive to it, how do you feel about it if athlete has been caught)	3		
		does it play a role in your sport	1		
		when signing contract, it is a part (and then discuss)	1		
		nothing, my child is still young	4		
		nothing	1	nothing serious	1

Table 5*General Advice Per Entourage Group*

Coaches	#	Parents	#	Peers	#
do not use doping (use media examples, including e.g. errors whereabouts)	8	do not use doping (you are fooling yourself, it is not done, a no-go, confirm opinion athlete not to use)	35	N/A	
doping can destroy careers (is that what you want? Name the facts)	3	doping can destroy careers (ruins career, dreams and body)	2		
health hazards	2	dangerous to health	3		
know what is on the doping list (doping learning line bronze, doping authority videos, learning line matchfixing, what is and is not considered doping, check medication and supplements)	7	view doping list (Anti-doping Authority) or ask (can be in anything)	3		
doping is not a team contribution	1	you are selling yourself and the team short	1		
discuss with coach if you are in danger of encountering it	2				
critical thinking	1				
there is no quick fix to getting better (consistent training does work)	1				
be seen as a doping sinner, there is no way back	1				
doping has no added value	1				
not show my opinion, athlete's own responsibility	1				
		doping is unfair (honest sport and your own strength, you are at this level by your own ability, stay honest, don't cheat)	9		
		make it discussible	2		
		use medication only for asthma, no other drugs	1		
		transmit everything I can find about it	1		
		install FEI doping app and check foods	1		
		keep fun in sport is most important (without doping)	1		
		child is young and not yet tempted	2		

Table 6

Preferred Additional Information Per Entourage Group

Coaches	#	Parents	#	Peers	#
short info on the effects and what is most commonly used	1	a clear (concise) version with the most important information for parents (format: short, clear fragments in social media, tailored to the target group, what does doping do and why, what is the first/least form of doping, what is doping about, who monitors that long-term effects and consequences, what are reliable info sources, what can you take without risk, what is allowed and not allowed)	11	short info about the effect on the body during sports (effects, what it does to the body after (long) use) and the use (how often it occurs), pros and cons	4
doping info specific sport (in soccer less known)	1	is doping present within specific sports (e.g., soccer) (and if so, what does it do for those sports)	2	doping info specific sport (e.g. handball presentation, then become more aware)	
resources doping list (everyday things, what can and can't be done, that athletes don't know)	2	resources doping list (which resources are covered)	3	resources doping list (and what "normal" products it is in)	2
poster	1	leaflet/brochure/booklet/email with comprehensive information	4	info via the internet (or ask around in your own personal environment)	1
point of contact for coaches (advice if athlete reports, without consequences. Income dependency is too high)	1				
how to guide players in doping risk	1				
no idea	2				
there is sufficient information (including e-learning from the Anti-doping Authority)	3				
		would like subject to be discussed (repeatedly) with children and parents on a regular basis (e.g. through club)	1		
		new developments about new resources (what's "on the market")	2		
		commerce and distribution	1		
		what penalties there are	1		
		coach gives all the information	2		
		club/union provides all the information	3		
		via what route does doping get to my child (and from what age)	2		
		information of experts on effects	1		

Table 7*Expected Ways of Access to Doping Per Entourage Group*

Coaches	#	Parents	#	Peers	#
through other athletes	3	through other athletes (e.g., teammates)	21	through other athletes (in case of foreign internship)	4
through friends (via via)	2	through friends (via via, can also be in sports)	5		
internet	4	internet	10	internet	2
sports doctor	1	sports doctor (medical staff)	4		
via contaminated daily products (accidentally)	1	via contaminated everyday products (unconscious, poppy seeds, peppermint)	3	via contaminated everyday products (supplements)	2
medications	1	medicines	1		
through parents (when young)	1			via parents	1
sport school	2				
supermarket / drugstore	1				
quacks	1				
		illegal circuit	1		
		school	6		
		sports federation	1		
				via trainers	1
				via social media	1

Study 1.2: Investigating Responses and Advice on Doping Dilemma's

The aim of this study was to investigate the *responses* of the coaches, parents, and peers to hypothetical doping dilemmas and the *advice* they would give adolescent athletes in such situations.

Method

Participants

After completing the measures of Study 1.1, participants were invited to continue with the second part of the study. This means that the sample of Study 1.2 is actually a subsample of the coaches, parents, and peers participating in Study 1.1. Specifically, 69 people participated in Study 1.2, including 14 coaches, 46 parents, and 9 peers, with an overall mean age of 42 years old ($SD = 12.43$). Across these three social entourage groups, 49% identified as male and 48% as female. Overall, participants perceived these sports as either individually natured (35%), team natured (58%) or both (7%). For details on the distributions of gender, age, and the nature of the sport within each of the social entourage groups, see Table 8.

Table 8

Demographic Information per Entourage Group in Study 1.2

Variable	Coaches	Parents	Peers
Age in years, mean (SD)	40.64 (10.08)	46.11 (9.59)	20.56 (2.92)
Gender (frequencies)			
Females	1 (7%)	31 (67%)	1 (11%)
Males	13 (93%)	13 (28%)	8 (89%)
Non-binary	0 (0%)	0 (0%)	0 (0%)
Prefer not to answer	0 (0%)	2 (4%)	0 (0%)
Type of Sport (frequencies)			
Individual	4 (29%)	13 (28%)	7 (78%)
Team	9 (64%)	30 (65%)	1 (11%)
Combination	1 (7%)	3 (7%)	1 (11%)

Procedure and Measures

Study 1.2 was a direct continuation of the online survey introduced in Study 1.1 of this report. In this second part, participants were presented three different dilemmas involving an athlete in the position to dope or report doping. The three dilemmas were adopted from a larger WADA funded study by Claessens and van Noorden (2018), who had further developed

the ones created by Elbe et al. (2012). Participants watched the first animated dilemma, presenting a female athlete who finds herself in the position where she needs to decide whether or not she will be using doping to enhance her performance. Next, participants were asked to indicate how realistic they thought the dilemma was on a 10-point scale (1=*Very unrealistic*; 10=*Very realistic*). This was followed by the question whether they had ever experienced something similar themselves or someone they knew (1=*Yes*; 2=*No*) and if so, if they could describe the situation (open-ended). In addition, participants were asked what the consequences could be if the athlete in the video chose to use doping (open-ended) as well as what the consequences could be if the athlete decided not to use doping (open-ended). The last question concerned the advice the participants would give to the athlete or an athlete in a similar position (open-ended). The same set of questions were asked regarding the other two dilemmas, which presented a male athlete in the position to use or not use doping to relieve stress and a female athlete who finds out her teammate is using doping and needs to decide whether or not to report this, respectively.

Dilemmas. The three dilemmas were presented as animated videos with a voice-over. Screenshots and the links to the videos can be found in Appendix A; the spoken text can be found below.

Dilemma 1. Jennifer is a talented gymnast, but she still has not achieved great success. She does not understand how that is possible, because she trains often and very hard. She wants to be selected for the national team, but she did not achieve the desired result with the previous try-out. Her coach, teammates and family doubt whether she has it. Jennifer wants to prove to everyone that she can do it and start training harder than ever. It still does not lead to the success that she so desires. Her teammate Sane was selected for the national team last time. Without Sane knowing, Jennifer sees that after one of the trainings, Sane injects something into her belly. Jennifer can have a good look at it and looks for the product on the internet later that day. It is a performance-enhancing product that is on the doping list. It surprises Jennifer how easy you can order it on the internet. Jennifer is desperate to join the national team, but has a hard time deciding whether to do this with doping or not.

Dilemma 2. Richard is part of the sports talent program of his secondary school where he can combine school with his top sport career. Richard has a morning training every day before the first lesson starts. In the afternoon, after school, he has a second training. Richard

also gets extra lessons because he cannot keep up with the rest at school. Although Richard is exhausted after such a long day, he has trouble to fall asleep at night because he has too much to his head. One evening he joins a number of his friends to a club. One of them offers Richard a blue pill. His friends, who do not have the ambition to become elite athletes, swallow pills like this when they go out and say that there is no harm. Richard knows that the blue pill is on the doping list, but hesitates anyway. At this moment he wants nothing more than to relax and forget all the stress.

Dilemma 3. For years, Michelle and Jenny have been training together on the same team and competing in the same competitions. Despite their rivalry in snowboarding, they are best friends and even share an apartment. Michelle and Jenny are both very successful, but at the moment Jenny is really in top form and she always achieves high scores. Michelle admires Jenny's development and increases the intensity of her own training, but she still does not reach the high scores of her girlfriend. They always cycle to the training together, but Michelle really has a headache that day and decides to stay home. She knows that Jenny bought a box of paracetamol a while ago and is looking for it in Jenny's room. It is stuck in the one drawer where she keeps all her make-up and vitamin pills. There Michelle indeed finds the paracetamol, but she also finds something she did not expect: a syringe with a needle and a bottle of liquid. Michelle knows for sure that it is doping. She is furious and confronts Jenny immediately when she comes home from the training. During the heated discussion that follows, Jenny makes it clear that she does not intend to stop using the drug. Michelle does not know whether or not to tell their coach the doping use of her best friend.

Results

Dilemma 1

Regarding the first dilemma (Jennifer), the social entourage rated the situation fairly realistic ($M=7.09$, $SD=2.20$). However, peers ($M=5.00$, $SD=2.40$) rated the situation significantly less realistic, $H(2)=6.76$, $p=.031$, compared to coaches ($M=7.29$, $SD=2.20$), $U=31.00$, $z=-2.07$, $p=.039$, as well as parents ($M=7.43$, $SD=1.85$), $U=96.50$, $z=-2.58$, $p=.009$. Two coaches and two parents indicated that they, or someone they knew, had experienced a similar dilemma, but this was not statistically different from peers of whom none indicated to have had a similar experience, $\chi^2(2)=2.58$, $p>.05$.

In response to the question what the consequences could be if the athlete in the video (Jennifer) chose to use doping, *coaches* wrote down two to three answers per person (in general). Their number one answer was the health damage that could come into play when using doping, especially on the long run, shortly followed by being suspended for their sport and being caught when using doping. Coaches also pointed out the damaged reputation of the athlete; how will people view you as a person and athlete when your doping use is outlined in the media? Furthermore, they mentioned the risk of selling dope to others (which is also unlawful) and having trouble to find a position in a future business organization when being exposed as doping user in their athlete career. The *parents* in our study all presented multiple answers to this dilemma, on average three answers per person. They most frequently mentioned the risk of being suspended or disqualified and having to leave the team and losing their talent status. Secondly, parents emphasized the chance of being exposed by a positive test. The negative influence of doping use on the athletes' health is also pointed out: direct negative effects as well as indirect effects in the form of side effects, being unfamiliar with what it actually does in one's body, damage in the long run, taking the wrong dose. In contrast, improved sport performance (short term) is also frequently mentioned. *Peers* gave similar responses as parents and coaches, with an average of two answers per person. The most prevalent responses concerned the risk of having a positive doping test or getting caught when using doping, getting suspended, and the – negative – health or medical consequences. See Table 9 for the full overview of responses.

When Jennifer decides not to take doping, *coaches* most frequently reported on 1) performance level consequences ('she might reach a certain level and will not be able to enhance her performance any further'), 2) not having to deal with guilt, and 3) being open and honest to parents and coaches, having a clean conscience, being reliable, gain or maintain respect and fulfilment. In addition, coaches point out that there is a risk of overtraining with possible physical and mental damage as well as athletes having to deal with financial problems. *Parents* most frequently (50% of all responses) commented on performance consequences, such as not being able to reach the elite level or national team, and learning how to deal with this. Jennifer could also focus on other options (such as extra training hours, support, working extra hard, changing her mindset) to improve her performance level in a natural way. Some parents point out being proud of yourself as a fair sportsman, not being

tempted to use doping, not having to feel guilty about being dishonest. As Table 10 shows, there are many more responses which are mentioned less frequent, but sometimes do overlap with the responses of coaches. Almost all *peers* agree on the performance level consequences, not making the aspired team yet having a fair career with high satisfaction. They also mentioned that Jennifer should look for natural means to improve her performance. One additional response was that one should accept that elite sport level might be determined by biological differences between athletes (and not attainable for everyone).

Regarding the advice to athletes who find themselves in similar situation as our fictitious Jennifer, *coaches* are clear: do not take doping. In total, coaches have eight different responses as can be seen in Table 11. Coaches advise to distance oneself from Sanne (and possibly confront her), to assess an athletes' personal intention to participate in sports (to win or to have fun) and to work from there towards a goal. Let them see that achieving a higher level in sport is not equivalent to who they are as a person. One coach mentioned that it is an athletes' choice to use doping and that he/she will then decide whether it fits with coach' values and they can go to work together. *Parents* most frequently mentioned: 1) work as hard as you can, do not give up, deal with weaknesses and disappointments, it will make you stronger, and 2) be proud of yourself and your personal accomplishments. Parents also advise to accept your situation and performance level, be realistic. If you cannot reach the top but 'only' regional (instead of national level), that is fine too. If you cannot accept, change your career path (and leave your sport aspirations). Finally, *peers* most frequently advise athletes to focus on their personal strength: you will achieve more this way and feel good about it. They also stated that athletes should not use doping – it is not the solution. Furthermore, they mentioned that doping will have the consequence that you will never be trusted again by a sports club or financial sponsor. It has more disadvantages than advantages and you will regret using it. It is better to train hard and to ensure enough rest to recover.

Dilemma 2

The second dilemma was rated quite realistic ($M=7.99$, $SD=1.81$), with no differences between coaches ($M=8.29$, $SD=1.86$), parents ($M=8.07$, $SD=1.61$) and peers ($M=7.11$, $SD=2.57$), $H(2)=1.39$, $p>.05$. These groups did differ in the extent to which they or someone they knew had a similar experience to the dilemma, $\chi^2(2)=11.73$, $p=.003$, with coaches reporting such experience most often (50.0%), then peers (33.3%), followed by parents (9.1%).

Table 9

Responses to Doping Used in Dilemma 1 per Entourage Group

Coaches	#	Parents	#	Peers	#
damaged reputation	4	damaged reputation	1	damaged reputation	1
health problems (long term, side effects, wrong stuff and misuse, shortened career due to physical defects, damage health)	11	negative influence on health (and damage by wrong dose, damage body, side effects, not knowing what is happening in body, physical problems in further life, damage longer term)	13	health implications (medical implications)	4
banished from the sport (missed opportunities, never to be selected again, end of career)	3	banished from sport (lost opportunities, never to be selected again, end of career)	5	end of career	2
getting caught	5	getting caught (falling through, drug tested, caught, unmasked, tested positive, caught)	17	getting caught	7
suspension (disqualification)	10	suspension (disqualification, exclusion from competition, disqualification from high level sport, expelled from team)	24	suspension	4
drug does not help	1	drug does not help (with doping still not desired result)	2	drug does not help (no effect)	1
cheating (living a lie)	2	cheating (honesty is compromised)	2		
social isolation (different relationship Sanne, estrangement from friends)	2	social isolation (relationship with coach, parents, shocked reactions, communication/knowing you are using)	3		
addicted (having to use more and more, with all the negative consequences that entails, no way back)	2	becoming addicted to drug (mentally and physically dependent, getting better in 1 go which means always having to use it, no way back, having to use more and more)	5	addicted (no way back)	1
performance improvement (possible selection team, or not, achieving goals)	3	improved athletic performance (short-term success)	10	performance improvement	1
losing pleasure in sport (losing love for sport)	2	no satisfaction in own performance (lose pleasure in gymnastics)	1		
feeling guilty (regret)	4	feeling guilty (conscientiousness, disappointment, negative feelings due to use)	3	regret	1
trafficking in doping (perhaps criminal offense)	1				
difficulty later finding job in business	1				
		injuries	1		
		becoming dependent (performing only after using doping)	3		
		be expelled from team	1		
		damage belief in self (never know what you can do yourself)	2		
		maintain unfair standards for (future) gymnasts	1		
		greater chance of never reaching goal	1		

Table 10

Responses to Doping Not Used in Dilemma 1 per Entourage Group

<i>Coaches</i>	<i>#</i>	<i>Parents</i>	<i>#</i>	<i>Peers</i>	<i>#</i>
performance level influence (no national team, not successful, staying at level, losing them)	12	performance level influence (no selection or maybe not national team, have to learn to deal with that)	32	performance level influence (team not making it, but fair result, satisfaction greater)	7
move forward in other ways (training smartly and well, improving yourself, not just looking at performance as a product)	1	improve in other ways (extra training times, support, own will, work extra hard, train hard)	12	move forward in other ways (own strength, with fulfillment)	2
not reaching goals (not meeting (own) expectations, therefore no fun anymore)	2	fail to reach goal	3		
other relationship with Sanne (it is a dilemma)	1	linking Sanne/teammate (or who gets caught)	2		
losing faith in yourself (loss of self-esteem)	1	losing faith in yourself (becoming more desperate)	2		
looking back on a beautiful childhood and having fun playing sports	1	coming out stronger as a person (respecting self and others, staying with yourself)	3		
healthier	1	healthier (to be healthy, also in the long run)	3	better for your health	1
no guilt (honest to parents and trainer, maintain clean conscience, be able to look at yourself in the mirror, remain reliable, also for the environment, respect, clear conscience, satisfaction)	8	no guilt (pride in yourself, no remorse of conscience, honest sports career, positive feeling)	4		
damage to mind and health (from training too hard and stress from no success)	1				
financial concerns	1	depressive behavior / negative self-image	2		
		try to get everything out of it (show what you can do)	2		
		suspension	1		
		not achieve her dream	1		
				accept that sport is defined by biological differences	1

Table 11

Advice Regarding Dilemma 1 per Entourage Group

Coaches	#	Parents	#	Peers	#
work on it (give everything, train more yourself, joint/multidisciplinary look at what she can adjust)	3	work on it (do your best, don't give up, learn from your weaknesses, persevere, deal with disappointments)	14		
believe in yourself (be satisfied with yourself)	3	trust yourself (your own ability, be proud, be good as you are, own strength, keep a clear conscience, keep self-respect, fair play, satisfaction, stick to yourself, honor yourself)	14	own strength (you have more talents, remain honest and then you will achieve more, trust yourself, look back with a good feeling, start from your own strength, learn to deal with setbacks)	8
don't (don't use, explain why, doping is cheating, chance of getting caught, go pursue other goals)	10	Don't! (don't use doping, honest and pure lasts the longest, resist temptation, make them see that doping is not the way, you are throwing your life away, don't use it, it always comes out)	25	don't do it (doping is not the solution, it's not okay)	4
go and tell to coach	3	being a whistleblower (to coach, stating what you have seen)	2		
distancing herself from Sanne (even confront her)	1				
look at intent why someone does sports (likes, wins etc; delve into possibilities)	1				
better sports performance does not make who or what she is	1				
athlete must choose, I look at whether it is compatible with my values and athlete wants to continue to accompany, no harm body	1				
		Sanne probably won't perform at level without doping either (maybe Jennifer even better, incentive to continue and persevere)	1		
		accept (be realistic, resign yourself to not having level (and go do something else, unfortunately, top sport is not for you, keep doing regional gymnastics)	8		
		don't care about environment	1		
		engage with trainers and supervisors about where and how to improve	2		
				doping ensures that you are never trusted by sponsors or clubs again	1
				doping has more disadvantages than advantages	1
				you will regret it and never be happy, stay proud	3
				weigh whether doping gives decisive results against physical risks	1
				train hard and rest in time	1

Coaches mentioned that athletes sometimes take forbidden substances (e.g., XTC) in the out of competition period and are not aware of the consequences or find themselves in an environment where recreational drugs are all around them (e.g. a music festival) which they should resist. Two *parents* responded to this question with the examples: one heard that something like the 'blue pills', as mentioned in our dilemma (Richard), was used by friends of their athlete child and one child watched the trafficking of pills in the dressing room (type of pills unknown). *Peers* also mentioned that recreational drugs are offered to their athlete friend when going out (and he/she should resist the peer pressure to join them).

When asked to reflect on the possible consequences in case the athlete in the dilemma (Richard) decides to dope, *coaches* pointed out the risk of getting suspended, getting caught when checked for doping use, as well as health consequences such as medical side effects. In addition, *coaches* mentioned the possible negative reactions of friends and actually losing friends and being viewed as a doping sinner. *Parents* mainly reported the great risk of getting suspended or expelled from his sport as well as the possibility to lose his sport status with all its consequences, such as having to switch schools. Richard might also be caught on doping use, e.g. when tested on doping or his coach could find out. He might even get addicted to the blue pills, it might become a habit and there is no way back. *Parents* mentioned the temporary reduced stress or enhanced energy, however, in the long run it is not the solution as he would need more doping for the same effect and he could not participate in official matches. *Peers* had quite diverse responses to this dilemma, most prevalent being suspended and being exposed as a doping user. Finding a better balance between sport and rest was mentioned as a better solution to this problem. See Table 12 for the full overview of responses.

If Richard were not to take the pill, *coaches* highlighted the potential risk of exhaustion, not performing according to his normal level, but also at being excluded from his group of friends. Additionally, some *coaches* mention 1) that Richard's performance level might stay the same and he could improve his performance by creating a routine with enough rest and regular exercise, 2) he would stay healthy without doping, and 3) Richard could reach out for support in order to find alternative solutions to relaxation and reduced stress. Similar to *coaches*, most *parents* stated that Richard would still feel exhausted and tensed. Over time, the lack of energy could lead to chronic sleep deprivation, no recovery, burnout. In addition, Richard could perform less and may no longer be able to reach high levels in his line of sport.

Or his school performance could be affected. Other parents think that there will be no negative consequences. *Peers* most frequently mentioned not being able to relax, sleep deprivation, and burnout. In addition, they also reported being judged by friends, laughed at, and not having a social life. See Table 13 for the full overview of responses.

The advice of *coaches* centers around not using doping in combination with finding other ways to relax, such as meditation, or relaxation exercises. Coaches also mentioned: 1) follow the doping e-learning module of the anti-doping authority, 2) prepare a presentation or assignment about banned substances for your class or team, 3) look up how long this doping substance can be traced to take it outside the competition period, if you really want to try it, 4) find other friends, and 5) it is up to the athlete to decide to use it or not, you can only ask them about what is driving them to take it. The *parents* presented 14 different types of advice, with the top three being: 1) Involve a trainer/parent/confidential advisor/dietician to find a solution for feeling stressed and exhausted, 2) never use doping, it is not a solution, 3) think of the consequences (being exposed as a doping user but also the chance of becoming addicted). Their advice was focused on finding alternative solutions to deal with this situation such as focus on sport goals and reduce your effort in engaging in other activities, talk to a sport psychologist, accept the situation and take a break. *Peers* also most frequently mentioned that athletes should not take doping or anything that is on the doping list. Find other options to relax such as asking for professional help. See Table 14 for the full overview of responses.

Dilemma 3

Overall, the social entourage rated the third dilemma fairly realistic ($M=7.08$, $SD=2.03$), with parents ($M=7.56$, $SD=1.85$) rating the situation significantly more realistic, $H(2)=7.47$, $p=.021$, than peers ($M=5.78$, $SD=2.33$), $U=96.00$, $z=-2.28$, $p=.021$. There were no differences when compared to coaches ($M=6.50$, $SD=1.95$). No one, with the exception of one parent, reported to have experienced a similar situation described in the dilemma themselves or someone they knew, $\chi^2(2)=0.57$, $p>.05$.

If Michelle did not report Jenny's doping behavior, *coaches* mostly expected Michelle to experience frustration and remorse as well as guilt (feeling irresponsible) about not reporting the suspected doping use of Michelle's friend and not being fair. Their friendship

Table 12*Responses to Doping Used in Dilemma 2 per Entourage Group*

Coaches	#	Parents	#	Peers	#
health consequences (medical side effects, body is affected)	4	health consequences (e.g., risk (cardiovascular) side effects, longer-term adverse effects)	8	health consequences (negative consequences)	1
become addicted	1	become addicted (can't live without it, tempting to take a pill every time, no turning back, becomes a habit)	10	become addicted	1
getting caught when tested	4	getting caught (trainer/coach may find out, chance of positive test)	12	getting caught (positive test)	3
performance deteriorates (because of using more often, from not knowing what you're taking, longer-term performance decline)	3	sports career goes downhill	1	performance deteriorates (adverse effects performance)	1
sports career over (throwing away a career)	3	sports career over (or in jeopardy / harm)	8	sports career over (can have major career implications)	1
suspension (sports, but also from (talent) school)	9	suspension (lose sport status, disqualification)	18	suspension (disqualification, loss of status)	4
no consequences (if you're lucky)	2	no health consequences and not getting caught	2		
temporarily less stress / better sleep (short term: fun night)	3	temporarily less stress / more energy (at that moment feel good, relax wonderfully, sleep better, but at later same situation you don't come out with blue pill, or not participate in competitions, doesn't solve problem)	10	temporarily less stress / fun evening	1
injury risk (due to ignoring fatigue)	1	injury risk the next day (overloading, going beyond your limits)	3	injury risk (bad day tomorrow)	1
being seen as a sinner	1				
friends negative reaction (lose friends)	2				
		reputation (loss of respect)	2		
		higher performance (professional sports career)	3		
		cheating	1		
		can cause accidents when training morning after	1		
		risk of hazardous overheating	1		
		be dazed	1		
		remorse of conscience (keeps gnawing at you, guilt)	4	remorse	1
				better balance sport / rest is preferable	1

Table 13*Responses to Doping Not Used in Dilemma 2 per Entourage Group*

Coaches	#	Parents	#	Peers	#
no negative consequences if not using	2	no negative consequences if not using (not in testing and not in sports career, body remains healthy, with agenda remove pressure and stress)	8	no negative consequences (feel good, no effects body, still have fun night)	2
decreasing sport performance	3	decreasing sports performance (no longer performing at top level, quitting top sport)	14		
exhausted and stressed (poor sleep)	3	exhausted and stressed (too tired and sleeping poorly, chronic lack of sleep, exhaustion, burnout, inability to relax, too little relaxation, busy, full head, getting overexcited from stress)	27	not being able to relax, not sleeping, burnout	5
excluded from friend group (no longer going along due to dilemmas, losing standing)	3	loss of friends (social isolation, falling out of the group)	4	friends judging (being laughed at, no social life)	3
poorer school results	2	poorer school results	6		
being honest to yourself (being strong)	2	pride in yourself by saying no (no weighing remorse, growing in self-confidence and making different choices)	4		
staying healthy (physically and mentally)	1				
performance remains the same (only care out this, find rest, cleanliness, regularity)	2				
find appropriate guidance for solutions	1				
		other unpleasant situation (depression, health issues)	4		
		lose sport status (perhaps)	1		
		peer group pressure (being seen as a loser, doesn't participate, outsider, always involved with sports, is struggle of many athletes, will his friends accept him if he doesn't)	4		
		drop-out of school	1		
		addiction/dependency	1		
		overtrain	2		
		change schedule (look at how to use time effectively incl rest, regularity, structure)	1		
		quit when you can't take it anymore	1		
		have fun and forget everything	1		

Table 14

Advice Regarding Dilemma 2 per Entourage Group

Coaches	#	Parents	#	Peers	#
do not use doping (traces remain visible for a long time, show understanding but strongly discourage)	5	do not use doping (never start)	18	not use doping (take nothing that is on doping list)	5
concentrate on sport (you have to give up things as an athlete)	1	focus on sports goals (prioritize, keep training, focus on sports, less on learning)	7	focus on sports goals	1
look at schedule / program	2	look at the bigger picture (schedule, being so busy, program adjustments)	3	you're in over your head, do less	1
discussion with trainer, parents, school about load/capacity	2	involve trainer/parents/school/doctor/confidential advisor/dietician for solution	19	find professional support	1
finding other ways to relax (e.g., meditation, relaxation exercises)	3	clear head in other ways (find other relaxation)	7	find other ways to relax	2
follow the Anti-Doping Authority e-learning modules	1				
produce a paper on narcotics for class or sports group	1				
look up how long it is detectable and plan well when to take it (and only outside of test season) if you want to use it that badly	1				
find other friends	1				
allow athlete to choose to use/not use (do ask about motivations)	1				
		think about the consequences (including addiction risk)	8		
		school and sports club should work together	1		
		take step back in sport to get in order (including dropping training, teaching at different level)	3		
		talk to a sport psychologist	3		
		do it on your own (keep respect)	3		
		accept when things don't work out (put things in perspective)	2		
		explain to friends (let them help you reach your goal, do not meet when going out but at other times)	4	talk to friends (not be influenced by what friends say)	1
		introduce structure, rest, regularity	1		
		take care of your body	1	take care of yourself	1

could be distanced due to this situation. Some expected that there will be no consequences. Coaches uniquely indicated that Michelle and Jenny could continue to train together with the risk of Michelle developing injuries as she wants to keep up with the level of Jenny. Some coaches did not rule out the maintaining of a good friendship. *Parents* indicated that they would mostly expect Michelle to experience a lot of stress, frustration, remorse, losing trust and honesty towards her friend Jenny. They also pointed out that Michelle is accessory to Jenny's doping use. Jenny would outperform Michelle, a dishonest competition. Their friendship will be disrupted (also because Michelle needs to keep it a secret). In line with parents, *peers* most frequently mentioned that Michelle is now an accessory to the doping use of her friend. Furthermore, they stated that when Michelle's friend will be exposed as a doping user, all would think that Michelle was taking it as well. A coach could lose trust in Michelle when things come out. See Table 15 for the full overview of responses.

If Michelle did report on her friend, *coaches* expected an end of the acquaintance and reputational damage, but also having a clear conscience when being honest. In addition, coaches expected that Michelle's friend will realize after a while that she was actually helped by Michelle in dealing with her situation, and their friendship might strengthen. Michelle might be frustrated because of reporting her friend and she might lose her training buddy which could lower her own performance. Other coaches indicated that there might be no consequences for Michelle. *Parents* emphasized a broken friendship in more than 40% of the answers. Being suspended (Michelle's friend) or even the end of career is indicated in almost 20% of the answers. Damage to Michelle's reputation (being a traitor or snitch) but also being a fair sportsman is also expected by parents. *Peers* believed that it would lead to the end of Michelle's friendship with Jenny. Less frequently they mentioned the reputational damage (being viewed as not to be trusted), friend Jenny would be suspended, or Michelle would have a better change herself in the (fair) competition. See Table 16 for the full overview of responses.

Coaches advise to report to the coach, persuade friend to come clean, and discuss it with someone you trust. They also mentioned that Michelle could distance herself from her friend, or she could discuss the pros and cons of admitting the doping use with her friend, invite a third party to join their discussion and state that there is no obligation to report alleged doping use. *Parents* gave 13 different types of advice ranging from 'always report' (most

frequently mentioned), 'convince your friend to come forward and admit to her doping use', 'ask someone that you trust for advice', to 'do not report, as every athlete is personally responsible, do not interfere'. All other answers indicate that Michelle should not ignore the situation and should discuss it with her friend, either to show support or to find (joint) solutions for her friends' problem. *Peers* advised most frequently that Michelle should stress that her friend needs to stop using doping, report the use of forbidden substance, or do nothing to save the friendship. Find another training environment is an additional advice. Ultimately, parents, coaches, and peers seem quite coherent in their assessment of the situation (not reporting versus reporting doping use of her friend Jenny) and in their advice to someone who might encounter the same situation. A clean sport is definitely their goal. See Table 17 for the full overview of responses.

Table 15

Responses to Doping Not Reported in Dilemma 3 per Entourage Group

Coaches	#	Parents	#	Peers	#
Michelle is an accomplice	1	Michelle is an accomplice	11	Michelle is an accomplice	4
Michelle's performance remains inferior	1	performance Michelle lags behind (or the same but in a fair way)	5	performance Michelle lags behind (can't match level of friend)	2
unequal opportunity (Michelle loses unfairly)	1	performance friend remains better (uneven odds, Michelle in her shadow)	8	unequal opportunity (friend stays better and doesn't get caught)	1
damaged health friend	1	health problems friend of Michelle (and concern of Michelle about health friend)	4		
causes frustration, remorse of conscience (not fair to self, guilt if not reported, sense of responsibility)	6	causes stress, frustration, conscience issues (loss of trust, feeling unfair, her friend goes along with it, guilt, can be blackmailed?)	12		
Michelle's career friend at risk (it will be discovered)	1	Michelle's career friend at risk (it will be discovered)	2	suspension of friend if caught	1
friendship becomes disrupted (removal of friend, maintaining friendship short term)	3	friendship gets disrupted (also because of keeping secret, breaks down, quarrels)	5		
no consequences	3	not much will change (consequences are not for Michelle)	4		
continue to train together, Michelle injury due to wanting to keep up with level (top just missed)	1				
keeping good relationship with friend	1	friend of Michelle continues to use on the long term: trauma	3		
		Inform Anti-doping authority (and not coach), that way friend will be exposed	1		
		tricky to report, you ratted on someone	1		
		Michelle might use doping as well	1		
				friend gets caught and everyone thinks the same of Michelle	2
				coach can lose confidence in Michelle	1

Table 16

Responses to Doping Reported in Dilemma 3 per Entourage Group

Coaches	#	Parents	#	Peers	#
end of friendship	13	end of friendship (quarrel)	32	end of friendship	6
reputational damage (being made out to be a snitch/traitor, performing on the backs of others)	7	reputation damage (snitching, feeling betrayed, left out, by other girlfriends)	5	reputational damage (seen as not to be trusted)	2
story is not believed (not seen as reliable)	1	Michelle is not believed and expelled from training group	1		
Michelle remains honest (clear conscience)	3	Michelle stays honest (sports), on her own	5	Michelle remains honest	1
guilt on Michelle's part (remorse of conscience)	2	guilt on Michelle's part	2		
Michelle is frustrated	1				
as friend realizes she has been helped perhaps stronger friendship than ever	2				
no longer a training buddy (may reduce own performance)	1				
no implications for Michelle	1				
		friend is suspended (or end of career/expelled from team)	16	friend is suspended (expelled from team)	2
		friend is helped and learns to deal with performance pressure	1		
		Michelle regains more balance in performance	1		
		consequence depends on type of coach/trainer (reprimand)	2		
		Michelle goes beyond performance girlfriend	1		
		later, friend Michelle will be grateful to her (then restore friendship?)	3		
		Competitions fairer again	1		
		Michelle no longer has a 'competitor'	1	Michelle has a better chance herself (fair competition)	2
		Affects friend Michelle	1		
		No place to live	1		
				discussion may arise	1

Table 17

Advice Regarding Dilemma 3 per Entourage Group

Coaches	#	Parents	#	Peers	#
always report (to coach; self-respect takes precedence over friendship)	5	always report (e.g., to coach/trainer/sports doctor; fair sport)	19	always report	3
convince girlfriend to talk about doping herself	4	convince friend to talk about doping herself (give ultimatum)	9		
later in the same week discuss with friend (without emotion of confrontation)	1	discuss again with girlfriend in calm situation	1		
talk to someone you trust (team doctor-physio, parents, VCP person, confidant)	2	ask someone you trust (e.g., confidant) for advice	5		
don't tell (this advice because personally, I wouldn't tell either)	1	don't tell (everyone responsible for own choice, don't interfere)	5	don't tell (rather this than destroy friendship)	2
focus on own performance	1	focus on own performance	1		
speaking with friend and involving 3rd person in conversation who both athletes trust	1			speaking with friend and involving 3rd person in conversation who both athletes trust	1
distancing from friend	2				
listing consequences of reporting/not reporting together with girlfriend	1				
no reporting requirement	1				
		tell friend: doping is not good, can have terrible consequences	4		
		the user needs help	1		
		consult with the authority together	1		
		together to change training intensity for higher performance	1		
		making it clear to friend that she needs to stop	1	make clear to friend she needs to stop (help get off doping, fix among themselves)	4
		ask friend why she thinks she needs it, support her	2		
		difficult dilemma, not betraying friend but this is not fair either	2		
				find other training environment	1

Study 2: Associations with Doping Intentions

This second study addressed the associations with doping intentions of the adolescent athletes' social entourage. More specifically, we aimed to answer the following research question: What are the associations of doping attitudes, moral disengagement, perceived behavioral control, and anticipated guilt with doping intentions in talented adolescent athletes' coaches, parents, and peers and are there differences between the social entourage groups?

Method

Recruitment and Participants

This second study was conducted in Germany. Participants were talented adolescent athletes' coaches, parents, and peers, aged 16 years or older. The referring adolescent athletes were required to be aged between 12 and 21 years and to be part of a national (youth) team, talent development program, or to compete in the first two leagues within their performing discipline. Participants were contacted via the German Trainer Academy and social media groups (Facebook) of the respective sample. Moreover, talented athletes were identified through open-source squat lists, contacted (Facebook, Instagram), and asked to forward the online questionnaire to their coaches, parents, and peers. In total, 327 personalized invites and reminders were sent. To reward participants without the need to collect sensitive data, €1,- Euro per participant was donated to refugees in Moria, Lesbos.

The recruitment resulted in a total sample of 180 participants, involving 58 coaches, 37 parents, and 85 peers, with a mean age of 29.32 ($SD = 13.60$; Range = 16-70 years). In total, 56% of them identified as female and 44% identified as male. Most dominant athletic groups were team ball sports ($n = 54$, 30%), gymnastics ($n = 36$, 20%), cycling ($n = 29$, 16%), and badminton ($n = 24$, 13%). Remaining sports ($n = 37$, 21%) included track and field, winter sports, swimming, shooting, tennis, triathlon, combat sports, and canoeing. Overall, participants perceived these sports as individually natured (52%), team natured (37%) or both (11%). In addition, 38% of all participants indicated that they perceived the sport of their athletes to be at high risk for doping. See Table 18 for details on the distributions per entourage group.

Table 18*Demographic Information Per Entourage Group in Study 2*

Variable	Coaches	Parents	Peers
Age in years, mean (<i>SD</i>)	33.02 (11.99)	44.24 (13.04)	20.29 (5.82)
Gender (frequencies)			
Female	20 (34.5%)	24 (64.9%)	57 (67.1%)
Male	38 (65.5%)	13 (35.1%)	28 (32.9%)
Competitive level of athlete (frequencies)			
Worldwide	14 (24.1%)	10 (27.0%)	34 (40.0%)
Europe	10 (17.2%)	8 (21.6%)	16 (18.8%)
Germany	25 (43.1%)	17 (45.9%)	27 (31.8%)
States in Germany	9 (15.5%)	2 (5.4%)	8 (9.4%)
Type of Sport (frequencies)			
Individual	33 (56.9%)	17 (45.9%)	43 (50.6%)
Team	18 (31.0%)	14 (37.8%)	35 (41.2%)
Combination	7 (12.1%)	6 (16.2%)	7 (8.2%)
Doping Risk in respective sport (frequencies)			
Yes	21 (36.2%)	11 (29.7%)	36 (42.4%)
No	37 (63.8%)	26 (70.3%)	49 (57.6%)

Procedure and Measures

Before starting, an information letter, including study content, aim, and extent, inclusion criteria, as well as data management, privacy, and voluntariness regulations, plus the researcher's contact details, was provided. Afterwards, active informed consent was required to start the actual questionnaire. All social entourage groups received the same questions.

Demographical Information. Participants provided individual information regarding gender, age, and entourage type, followed by questions about the athlete's performance level, sport name, sport type (*individual/team/combination*), and whether participants recognize the respective sport to be at risk for doping. Based on question type, answers were given on nominal and ratio scales or via open text fields which were categorized by the researcher afterwards.

Doping Attitude. To measure participants' explicit doping attitude the shortened 8-item version of the Performance Enhancement Attitude Scale (PEAS; Vargo et al., 2014) was used, as this version showed greater model fit (Nicholls, Madigan, & Levy, 2017) compared to the original questionnaire (Petróczi & Aidman, 2009). The PEAS includes statements, such as "Doping is not cheating since everyone does it", which are rated on a 6-point Likert scale, from 1 (*strongly disagree*) to 6 (*strongly agree*). Sum scores can vary from 8 to 48, with greater scores exhibiting more positive doping attitudes. The 8-item version of PEAS provides excellent reliability (Cronbach alpha = .94) and good internal consistency (Cronbach alpha =

.85; Vargo et al., 2014). Internal consistency within this sample was acceptable (Cronbach alpha = .68).

Perceived Behavioral Control. Two statements assessed Perceived Behavioral Control (Lucidi et al., 2008), which were: “The decision to use illegal substances to improve sport performance would be up to the athlete him or herself” and “[...] up to persons other than the athlete or circumstances”. Items are rated on a 5-point Likert scale, from 1 (*not at all*) to 5 (*completely*). The second item was mirrored. Due to a negative correlation ($r = -.320$, $n = 177$, $p < .01$), we decided to not average the two items as proposed (Lucidi et al., 2008), and only kept the first variable for further analyses. Subsequent scores varied between 1 and 5, with higher values reflecting greater perceived behavioral control of athletes themselves.

Moral Disengagement. The six items of the Moral Disengagement in Doping Scale (MDDS; Kavussanu et al., 2016) measured moral disengagement. An example item states: “A player should not be blamed for doping if everyone on the team is doing it”. Participants responded on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Sum scores can range between 6 and 42, with higher scores representing greater moral disengagement. Good test-retest reliability (Cronbach alpha = .82) and internal consistency (Cronbach alpha = .79) was demonstrated (Kavussanu et al., 2016). Likewise, in this sample internal consistency was good (Cronbach alpha = .77).

Doping Intentions. Doping intentions were measured with two scenarios, developed by Kavussanu et al. (2015). One scenario focused doping as a means to enhance performance, whereas the other focused on doping as a means to recover from an injury more quickly. In both scenarios, the chance of being caught seems to be particularly small. After each scenario participants were asked (1) “How likely is it that you would use the banned substance if you were in this situation?” and (2) “How tempted would you be to use the banned substance in this situation?”. Both questions are answered on a 7-point Likert scale ranging from 1 (*not at all likely/not at all tempted*) to 7 (*very likely/very tempted*). Following Kavussanu et al.’ (2015) advice, doping intentions sum scores were calculated separately for performance enhancement and injury recovery. Each sum score varied between 2 and 14 with greater scores reflecting more positive doping intentions. The internal consistency was acceptable for performance enhancement (Cronbach alpha = .59) and good for injury recovery scenarios (Cronbach alpha = .73).

Anticipated Guilt. To measure anticipated guilt concerning the specific scenario, participants additionally rated three statements after each scenario (based on Kavussanu et al., 2015). The statements say: “If I had used the banned substance [...]” (1) “[...] I would feel sorry”, (2) “[...] I would feel guilty”, and (3) “[...] I would feel bad”. The three statements are responded on a 7-point Likert scale ranging from 1 (*not at all*) to 7 (*very strongly*). Again, sum scores for anticipated guilt within each scenario were determined separately. Both scores varied between 3 and 21 with greater scores representing higher anticipated guilt. Internal consistency within the present project was excellent for performance enhancement (Cronbach alpha = .89) and injury recovery (Cronbach alpha = .91).

Results

Table 19 presents all the variable mean sum scores with their corresponding standard deviations. We tested for differences between the social entourage groups for each of the variables using Kruskal-Wallis tests to take the unequal group sizes into account. For the follow-up post hoc comparisons we used Mann-Whitney tests, reporting only the statistics for the groups that differed from each other. For an overview of the bivariate correlations between these predictor variables and the dependent variables, see Table 20.

Table 19

Mean Sum Scores (and SDs) of Study Variables Per Entourage Group

Variable	Total	Coaches	Parents	Peers
Doping attitude	12.14 (4.54)	12.00 (3.08)	12.86 (7.00)	11.92 (3.77)
Perceived Behavioral Control	2.54 (1.52)	2.27 (1.38)	1.65 (1.09)	3.12 (1.54)
Moral Disengagement	9.11 (3.97)	8.98 (3.08)	8.49 (6.08)	9.46 (3.28)
Anticipated Guilt (Perf. Enhancement)	18.70 (3.43)	18.48 (3.48)	18.70 (4.41)	18.84 (3.41)
Anticipated Guilt (Injury Recovery)	18.40 (3.65)	18.02 (3.91)	18.35 (2.51)	18.68 (3.08)
Doping Intentions (Perf. Enhancement)	3.97 (2.56)	3.50 (2.10)	3.46 (2.51)	4.51 (2.78)
Doping Intentions (Injury Recovery)	4.37 (2.97)	3.68 (2.32)	4.27 (3.31)	4.88 (3.12)

Overall, participants indicated a strong negative doping attitude with no difference between the social entourage groups, $H(2)=0.12$, $p>.05$. The extent to which participants perceived that the decision to dope is up to the athletes themselves differs per entourage

group, with parents attributing less behavioral control to athletes than both coaches, $U=769.50$, $z=-2.88$, $p=.022$, and peers, $U=732.00$, $z=-4.80$, $p<.001$, and with coaches also attributing less behavioral control to athletes than peers, $U=1618.00$, $z=-3.21$, $p=.001$. There is also a group difference in the – overall low – moral disengagement of doping, $H(2)=9.78$, $p=.008$, with parents showing even less moral disengagement than coaches, $U=754.00$, $z=-2.18$, $p=.029$ and peers, $U=1012.50$, $z=-3.11$, $p=.002$. Participants anticipated strong feelings of guilt after using doping to enhance performance or to speed up recovery, with no differences between social entourage groups, respectively $H(2)=0.36$, $p>.05$ and $H(2)=0.56$, $p>.05$. The intention to use doping was low for all participants, but there were differences between the groups in the performance scenario, $H(2)=8.61$, $p=.014$ as well as the recovery scenario, $H(2)=6.70$, $p=.035$. Peers were more likely to dope to improve performance than coaches, $U=1728.00$, $z=-2.24$, $p=.025$ and parents, $U=1099.00$, $z=-2.50$, $p=.012$. Peers were also more likely to dope to speed up a recovery process than coaches, $U=1635.00$, $z=-2.40$, $p=.016$.

Table 20
Correlations Matrix with Sum Scores of All Measures

Variables	1	2	3	4	5	6
1. Doping attitude	1					
2. Moral Disengagement	.647**	1				
3. Perceived Behavioral Control	.149*	.240**	1			
4. Anticipated Guilt (Perf. Enhancement)	-.247**	-.273**	-.101	1		
5. Anticipated Guilt (Injury Recovery)	-.259**	-.257**	-.062	.797**	1	
6. Doping Intentions (Perf. Enhancement)	.404**	.490**	.144	-.298**	-.326**	1
7. Doping Intentions (Injury Recovery)	.363**	.435**	.157*	-.350**	-.485**	.668**

Note. * $p < .05$ (two-tailed); ** $p < .01$ (two-tailed).

To analyze the associations with doping intentions, two separate but identical constructed hierarchical regression analyses were performed, one including performance enhancement and the other one for injury recovery. Two analyses were needed due to absence of multicollinearity between both scenarios ($r = .67$, $n = 173$, $p < .01$). Controlling for

potential effects of participants' gender (Blank et al., 2015), this variable was added first (Model 1). Next, doping attitude, perceived behavioral control, moral disengagement, and anticipated guilt (specific to doping intentions scenario) were included (Model 2). Entourage group was dummy coded and incorporated into the model to identify group differences in the dependent variables (Model 3). Lastly, all interactions between the social entourage group and predictor variables from Model 2 were included (Model 4). With regards to the dummy coding, the peer category was set as the reference group.

First, the full model for doping intentions regarding *performance enhancement* was significant, $F(11,161) = 7.27, p < .001$ and predicted 33% of the variance. The control variable gender did not result in a significant effect, $\Delta R^2 = .016, F(1,171) = 2.80, p > .05$ (Model 1). The addition of attitude, perceived behavioral control, moral disengagement, and anticipated guilt (Model 2) led to a significant increase in the predictive value, $\Delta R^2 = .28, F(4,167) = 16.68, p < .001$. Specifically, moral disengagement ($\beta = .33, p < .001$) and anticipated guilt ($\beta = -.19, p = .007$) predicted doping intentions significantly. The addition of entourage group (Model 3) also significantly enhanced the model $\Delta R^2 = .03, F(2,165) = 3.96, p = .021$. Investigation of the predictors indicates that peers demonstrated significantly higher doping intentions compared to coaches ($\beta = -.17, p = .022$) as well as parents ($\beta = -.18, p = .018$). Adding the entourage group interactions with the predictors did not result in a significant increase, $\Delta R^2 < .01, F(4,161) = 0.17, p > .05$ (Model 4). None of the interactions were significant.

Second, the full model for doping intentions referring to *injury recovery* was significant $F(11,159) = 9.21, p < .001$ and explained 39% of the variance. Again, the control variable gender did not result in a significant effect, $\Delta R^2 < .01, F(1,169) < 0.01, p > .05$ (Model 1). The addition of attitude, perceived behavioral control, moral disengagement, and anticipated guilt (Model 2) led to a significant increase in the predictive value, $\Delta R^2 = .35, F(4,165) = 21.93, p < .001$. Here, the main effects of moral disengagement ($\beta = .26, p = .003$) and anticipated guilt ($\beta = -.40, p < .001$) predicted doping intentions. The inclusion of the social entourage (Model 3) further increased the predictive value of the model significantly $\Delta R^2 = .04, F(2,163) = 4.55, p = .012$. Investigation of the predictors demonstrates that peers had significantly higher doping intentions compared to coaches ($\beta = -.21, p = .003$). None of interactions between the entourage group and the predictor variables from Model 2 were significant and adding them did not result in a significant increase, $\Delta R^2 < .01, F(4,159) < 0.01, p > .05$ (Model 4).

General Discussion

Main Findings of Study 1

Study 1 aimed to map and compare the doping thoughts and experiences of the adolescent athletes' coaches, parents and peers as well as to investigate their responses to hypothetical doping dilemmas and the advice they would give their adolescent athletes. The results demonstrate that half of the parents and peers and a quarter of the parents perceive the sport of their athletes to be at high risk for doping. However, the social entourage does not worry about doping and generally does not feel that doping plays a role in the lives of their adolescent athletes. This is in line with the study by Allen et al. (2017), who found that 17 out of their 23 coaches did not consider doping to be a problem in their sport with anti-doping being seen as a low priority. In a similar vein, the coaches in a study by Mazanov et al. (2014) felt they did not need to be familiar with the WADC as doping was perceived as so rare that it was unlikely that they would ever be in a situation where they needed the WADC.

Despite the lacking sense of personal relevance or priority, coaches and parents do feel responsible to discuss doping with their athletes, which replicates findings from previous studies conducted among coaches (e.g., Engelberg & Moston, 2015; Laure et al., 2001; Moston, Engelberg, & Skinner, 2014; Nicholls et al., 2015). However, such conversations only take place in moderate frequency, mostly between coaches and their adolescent athletes and mainly focused on factual knowledge and health risks. This is in line with previous research among coaches, which indicates a low frequency of doping-related interactions (Engelberg et al., 2017; Laure et al., 2001; Mazanov, Backhouse, Connor, Hemphill, & Quirk, 2014) as well as anti-doping actions, which can be characterized as reactive rather than proactive (Blank et al., 2015; Engelberg & Moston, 2015; Engelberg, Moston, & Blank, 2017; Patterson & Backhouse, 2018). Despite previous studies indicating that coaches have greater knowledge of doping (Jurisic & Sattler, 2015; Mandic et al., 2013; Sajber et al., 2013), we found no differences between coaches, parents and peers in their experienced capability to discuss doping with their athletes. Our entourage felt moderately capable to discuss doping with their athletes, which portrays a more positive picture than previous research in which coaches perceived themselves as 'badly informed' (Laure et al., 2001) or having poor doping knowledge (Rodek, Sekulic, & Kondric, 2012). This may be related to the finding that two thirds of coaches and peers (and even one in five parents) has attended some sort of doping information

meeting/training (compared to one third of the coaches in the study by Patterson, Backhouse, & Lara-Bercial, 2019). Parents and peers did express an appreciation for receiving additional information on the short-term and long-term effects, from reliable sources, in an accessible form tailored to the specific situation of their athletes (e.g., age, sport, performance level).

The social entourage feels confident that their athletes would confide in them their athletes had used doping, with parents being the most confident. None of the parents ever used doping themselves (with the exception of two parents) nor did they ever provide or advise doping to their athletes. Five coaches and six parents did experience some sort of situation involving doping, with a few of them having experienced a situation similar to ones described in the presented dilemmas – which were viewed as realistic by coaches and parents, but not so much by peers.

According to the social entourage, consequences of using doping include damage to one's health and reputation, getting caught and suspended, perhaps even getting addicted, losing friends who disapprove of doping, but also improving one's sports performance and relieving stress (short term). Not reporting the use of a doping friend may result in the end of this friendship, developing injuries by trying to keep up with the doping friend, or becoming an accessory to the friend's doping which may eventually have negative consequences for one's own career. When an athlete decides to stay clean and does not take doping, the social entourage believes this will result in a clean conscience without feelings of guilt or remorse, a focus on natural ways to improve one's performance, but also an increased chance of not being able to attain the desired performance level or actually overtraining, exhaustion and even burnout. One may face the risk of getting socially excluded by (non-athlete) friends who use drugs. On the one hand, reporting on a doping friend may result in losing a training buddy which may decrease one's own performance. On the other, the friend may realize the honest intentions behind the reporting, strengthening the friendship while keeping a clear conscience.

The overall advice of the social entourage comes down to an anti-doping stance (in line with previous research among coaches who holds an anti-doping stance, e.g., Barkoukis et al., 2019; Blank et al., 2015; Engelberg & Moston, 2015) and keeping oneself informed as well as keeping in mind the consequences for their health, career and psychological well-being. Specifically concerning situations described in the dilemmas, the social entourage advises

young athletes to distance themselves from doping athletes, accept that not everyone can reach the very top and be satisfied with sub-top, set realistic goals, find other ways to keep up your performance, and find allies or even professional support. Do not ignore the doping use of friends, but persuade them to stop using and come clean, and discuss the situation with someone you trust.

Main Findings Study 2

Study 2 aimed to identify associations of doping attitude, moral disengagement, perceived behavioral control, and anticipated guilt with doping intentions in talented adolescent athletes' social entourage as well as test for differences in these associations between coaches, parents, and peers. Overall, all members of the social entourage were found to hold a strong negative doping attitude, which is in line with previous research among coaches (e.g., Barkoukis et al., 2019; Blank et al., 2014; Engelberg & Moston, 2015). Compared to the levels of perceived behavioral control among athletes (Lucidi et al., 2008), our coaches, parents and peers seem to believe less strongly that the decision to dope is up to the athletes themselves, with parents attributing the least behavioral control to athletes. Parents also display less doping moral disengagement than coaches and peers, although they all score very low on doping moral disengagement. Coaches, parents and peers all anticipate strong feelings of guilt if they were to use doping. The levels of the social entourages' doping moral disengagement and anticipated guilt are comparable to those of athletes (e.g., Kavussanu et al., 2020).

Moreover, in line with our hypotheses based on findings in athletes (e.g., Kavussanu et al., 2020), we found the social entourages' doping intentions to be positively associated with moral disengagement and anticipated guilt. However, we found no evidence to support our hypotheses that the social entourage's doping intention is positively associated with doping attitudes. This is noteworthy since doping attitudes have been found to be one of the strongest predictors of doping intentions in athletes (Ntoumanis et al., 2014). Neither did we find the expected negative association between doping intention and perceived behavioral control, in contrast to previous research (e.g., Ntoumanis et al., 2014). However, this could be due to the fact that we measured to what extent the social entourage believes *athletes* have control over whether or not to use doping, whereas the attitude depicts how *they themselves* feel towards doping. Furthermore, we found that peers are more likely to use doping than

coaches or parents to enhance their performance as well as to speed up the recovery process when injured. This could be due to the fact that coaches and parents are less in the position to use doping than peers are, as many of the peers participating in the study were likely to be involved in sports themselves.

The Social Entourage

Overall, the present research indicates a large degree of similarity in the perspectives and responses of coaches, parents and peers. At the same time, clear differences between the entourage groups are demonstrated as well. Compared to coaches and peers, parents perceive the sport of their athletes to be high at risk for doping less frequently, feel that doping plays a smaller role in the lives of their athletes, have attended a doping information meeting less frequently, are more confident that their athletes would tell them if they were using doping, attribute less behavioral control over doping use to their athletes, and demonstrate smaller levels of doping moral disengagement. In addition, compared to parents and peers, coaches discuss the topic of doping more often with their athletes and have experienced a doping situation more often. Last, compared to coaches and parents, peers feel less responsible to discuss doping with their athletes, perceived the moral dilemmas as less realistic, and show more intention to use doping. Taken together, the present research demonstrates the uniqueness of each social entourage group and emphasizes the potentially differential role of coaches, parents and peers in adolescent athletes' doping cognitions.

Regarding the specific entourage group of peers, we need to keep in mind that we focused on peers in general. This means that the peer group in our study represents a heterogeneous composition of individuals at a similar age as their adolescent athletes including friends, teammates, fellow athletes as well as individuals who are not involved in sports nor identified as friends. Shedding some light on the issue, however, the high percentage of peers having attended some form of doping information meeting suggest that most peers participating in the present study were athletes themselves. In addition, the participating peers demonstrated higher levels of doping intention than coaches and parents, which may be due to a higher relevance of doping to them than coaches and parents. We need to take into account that different findings could have emerged if peers were specifically identified as friends, teammates, or fellow athletes.

Despite the challenge of identifying the participating peers as (non)athletes, the present research reveals clear differences between the social entourage and the adolescent athletes. That is, in addition to moral disengagement and anticipated guilt, previous research among (adolescent) athletes has identified doping attitudes and perceived behavioral intention as strong predictors of doping intention (e.g., Ntoumanis et al., 2014). Although we did find similar associations of moral disengagement and anticipated guilt, we did not find associations of doping attitudes and perceived behavioral control with doping intention in our social entourage. These differential patterns of associations indicate distinct processes underlying doping intentions in athletes and their social entourage.

Strengths, Limitations and Future Research

The present research offers valuable insight into the perspectives of the adolescent athletes' social entourage. Rather than deducting information about the social entourage through the athletes, the present research involved the social entourage herself. To our knowledge, the presented studies are the first to involve coaches, parents and peers simultaneously, allowing for direct comparisons between the different social entourage groups. Also, in addition to thoughts and experiences, we investigated the determinants of doping intention, which had not been done before among parents and peers. The investigated determinants were drawn from the Theory of Planned Behavior and the Social-Cognitive Theory which have proven to be most suitable for investigating doping intentions in athletes (e.g., Chan et al., 2015; Lucidi, Grano, Leone, Lombardo, & Pesce, 2004; Lucidi et al., 2008; Ntoumanis et al., 2014; Kavussanu, et al., 2015; Kavussanu & Ring, 2017; Kavussanu et al., 2020; Kirby, Guerin, Moran, & Matthews, 2016; Zelli, Mallia, & Lucidi, 2010). An additional strength of the present research is that it had a mixed method design, combining qualitative and quantitative measures to gain a complete and comprehensive understanding of the perspectives of athletes' social entourage. Last, whereas social desirability is likely to play a role in doping research among athletes, it is less likely to have influenced the answers in the present study as the members of the social entourage have less to lose than athletes who are in the prime of their career.

Notwithstanding these strengths, the present study has several limitations that need to be taken into account. First of all, the present study investigated the perspectives and associations of the social entourage only and did not include their athletes. This means that

there is no data on the direct impact of the social entourage on the athletes' doping intentions. It would be very interesting to conduct future research in which we would investigate the links between entourage perspectives and athlete intentions, or – preferably – even test the influence of the entourage perspectives on the athlete intentions experimentally. Moreover, this could be integrated with a doping prevention program to test whether the social entourage's influence can enhance the effectiveness of the program. Such an experiment would also tackle the constraints of correlational research. That is, no causal inferences can be drawn from the current study. Another advantage of future research that involves coaches, parents, peers and their athletes is that it would allow to test differences in the role of the social entourage based on the athletes' age. That is, the influence of specific members of the social entourage may be affected by developmental changes in adolescence due to biological, cognitive, and social transitions. As adolescents are dealing with identity formation and growing autonomy, the susceptibility to influences from the social environment changes. As they grow older, time spent with parents decreases, whereas time spent with peers increases (Larsen & Richards, 1991). This change in time allocation makes adolescents more susceptible to peer influence compared to younger adolescents. Future research could determine which social entourage group is most influential at a certain age of the athlete concerning doping intentions and apply this to doping prevention and intervention.

As discussed earlier, it is unclear who the peers in the present study are exactly. Future research could investigate the differential perspectives or even influence of several peer groups, such as friends, teammates, fellow athletes, and other peers who are not involved in sports nor identified as friends.

Another limitation of the present study is the size and composition of the sample. Ideally, we would have liked to have included more participants who, in addition, were distributed among the three social entourage groups more equally. We originally planned to conduct the first study through our connections at specialized secondary education schools that are designed to support adolescent athletes (i.e., Talent Schools). However, due to the Covid-19 pandemic the schools got closed and struggled to have their students stick to the curriculum. We did not want to add any more pressure on the schoolteachers nor on the athletes and their social entourage by asking them to commit to our research. Due to the extensive period of the Covid-19 pandemic, we still ended up collecting the data during the

pandemic (March 2020 – June 2021) but via a more individualized recruitment process (e.g., our own professional and personal networks as well as social media) rather than via the schools. We do recommend recruitment via – specialized – schools or sports federations for future research.

Practical Implications

The results from this research may be used to more efficiently and effectively implement anti-doping prevention programs among adolescent athletes. So far, the ethical decision-making training – as well as all other existing prevention programs – has been implemented at the individual (athlete) level. As called for by Nieper (2005) and Sipavičiūtė et al. (2020), the involvement of the social entourage is likely to increase the effectiveness of the program and would be appreciated by the athletes (Hallward & Duncan, 2019). Integrating members of the sports context (coaches), home context (parents) and social context (peers) creates a clear anti-doping culture in the athletes' social environment, which is considered fundamental for athletes' decision against doping (Barkoukis et al., 2019). The differential perspectives of coaches, parents and peers offer the athletes complementary perspectives on doping issues. Specifically, a focus on moral disengagement and anticipated guilt seems promising as the present research demonstrates links to the social entourage's doping intentions similar to the athletes' doping intentions (e.g., Kavussanu et al., 2020). Athletes and their social entourage may be stimulated to discuss the values underlying moral disengagement, as moral values have been identified as an important pillar in doping prevention (Barkoukis et al., 2019; Ntoumanis et al., 2014). Research shows that moral disengagement may be reduced by first identifying it in others to create awareness of a similar process in themselves (Bustamante & Chaux, 2014). The moral dilemmas tested in the present study prove ideal material as they elicited different perspectives by coaches, parents and peers – all representing an anti-doping stance. Such an implementation fits perfectly with the values-based orientation of the WADA to prevent doping use (e.g. Koehler & Cunningham, 2015).

Take-Home Message

By investigating coaches', parents', and peers' perspectives on doping as well as associations of their doping intentions with psychological constructs drawn from the Theory of Planned Behavior and the Social-Cognitive Theory, this studies fills a gap in the existing

doping literature. It demonstrates the uniqueness of each social entourage groups and emphasizes the potentially differential role of coaches, parents and peers in adolescent athletes' doping perspectives. Moreover, with the present research, an important first step is taken towards constructively investigating the differential roles of the social entourage in adolescent athletes' doping cognitions, with the ultimate goal of applying the social entourage's influence to strengthen the athletes' anti-doping stance and protect the athletes from doping temptations.

“After all, our fight is everyone’s fight. Every athlete, every parent, every coach [...]. We know we can’t change things overnight, but we do know things have to change and we know we already making a difference.”

~ WADA (2020)

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behaviour & Human Decision Processes*, 50, 179-211.
- Allen, J. B., Morris, R., Dimeo, P., & Robinson, L. (2017). Precipitating or prohibiting factor: Coaches' perceptions of their role and actions in anti-doping. *International Journal of Sports Science & Coaching*, 12, 577–587.
- Backhouse, S. H., & McKenna, J. (2012). Reviewing coaches' knowledge, attitudes and beliefs regarding doping in sport. *International journal of sports science & coaching*, 7(1), 167-175.
- Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist*, 44, 1175-1184.
- Barkoukis, V., Brooke, L., Ntoumanis, N., Smith, B., & Gucciardi, D. F. (2019). The role of the athletes' entourage on attitudes to doping. *Journal of sports sciences*, 37(21), 2483-2491.
- Barnes, L. T., Patterson, L. B., & Backhouse, S. H. (in press). A systematic review of research into coach perspectives and behaviours regarding doping and anti-doping. *Psychology of Sport and Exercise*.
- Blank, C., Leichtfried, V., Müller, D., & Schobersberger, W. (2015a). Role of parents as a protective factor against adolescent athletes' doping susceptibility. *South African Journal of Sports Medicine*, 27, 87-91.
- Blank, C., Leichtfried, V., Schaiter, R., Fürhapter, C., Müller, D., & Schobersberger, W. (2015b). Doping in sports: Knowledge and attitudes among parents of Austrian junior athletes. *Scandinavian journal of medicine & science in sports*, 25(1), 116-124.
- Blank, C., Schobersberger, W., Leichtfried, V., & Duschek, S. (2016). Health psychological constructs as predictors of doping susceptibility in adolescent athletes. *Asian journal of sports medicine*, 7(4).
- Brechwald, W. A., & Prinstein, M. J. (2011). Beyond homophily: A decade of advances in understanding peer influence processes. *Journal of Research on Adolescence*, 21, 166-179.

- Bronfenbrenner, U. (1992). *Ecological systems theory*. Jessica Kingsley Publishers.
- Bustamante, A., & Chaux, E. (2014). Reducing moral disengagement mechanisms: A comparison of two interventions. *Journal of Latino/Latin American Studies*, 6(1), 52-54.
- Chan, D. K. C., Hardcastle, S., Dimmock, J. A., Lentillon-Kaestner, V., Donovan, R. J., Burgin, M., & Hagger, M. S. (2015). Modal salient belief and social cognitive variables of anti-doping behaviors in sport: Examining an extended model of the theory of planned behavior. *Psychology of Sport and Exercise*, 16, 164-174.
- Claessens, B. J. C., & van Noorden, T. H. J. (2018). Doping attitudes, moral disengagement, and ethical decision making of young talented athletes; an advanced intervention study. *Final Report for the World Anti-Doping Agency Social Science Grant (2016-2018)*.
- Dodge, T., & Clarke, P. (2015). Influence of parent–adolescent communication about anabolic steroids on adolescent athletes’ willingness to try performance-enhancing substances. *Substance use & misuse*, 50(10), 1307-1315.
- Dodge, T., & Jaccard, J. J. (2007). Negative beliefs as a moderator of the intention–behavior relationship: Decisions to use performance-enhancing substances. *Journal of Applied Social Psychology*, 37(1), 43-59.
- Elbe, A., Schlegel, M., & Brand, R. (2012). Being a fair sportsman. Ethical decision-making as a chance for doping prevention? *Final report for the World Anti-Doping Agency Social Science Research Grant*, 1-46.
[http://www.wadaama.org/Documents/Education_Awareness/SocialScienceResearch/Funded_Research_Projects/2008/ELBE%20-%20\(2008\)%20Final_report.pdf](http://www.wadaama.org/Documents/Education_Awareness/SocialScienceResearch/Funded_Research_Projects/2008/ELBE%20-%20(2008)%20Final_report.pdf)
- Engelberg, T., & Moston, S. (2015). Inside the locker room: A qualitative study of coaches’ anti-doping knowledge, beliefs and attitudes. *Sport in Society*, 19, 942–956.
- Engelberg, T., Moston, S., & Blank, C. (2017). Coaches’ awareness of doping practices and knowledge about anti-doping control systems in elite sport. *Drugs: Education, Prevention & Policy*, 2, 1–7.

- Erickson, K., Backhouse, S. H., & Carless, D. (2017). Doping in sport: Do parents matter?. *Sport, Exercise, and Performance Psychology, 6*(2), 115.
- Erickson, K., McKenna, J., & Backhouse, S. H. (2015). A qualitative analysis of the factors that protect athletes against doping in sport. *Psychology of Sport and Exercise, 16*, 149-155.
- Fallace, P., Aiese, P., Bianco, E., Bolognini, I., Costa, M. P., Esposito, R., ... & Valeriani, F. (2019). Peer Education strategies for promoting prevention of doping in different populations. *Ann Ig, 31*(6), 556-575.
- Fung, L. and Yuan, Y. (2006). Performance enhancement drugs: Knowledge, attitude and intended behaviour among community coaches in Hong Kong. *The Sport Journal, 9* (3). Unpaginated.
- Hallward, L., & Duncan, L. R. (2019). A qualitative exploration of athletes' past experiences with doping prevention education. *Journal of Applied Sport Psychology, 31*(2), 187-202.
- Judge, L. W., Bellar, D., Petersen, J., Lutz, R., Gilreath, E., Simon, L., & Judge, M. (2012). The attitudes and perceptions of adolescent track and field athletes toward PED use. *Performance Enhancement & Health, 1*(2), 75-82.
- Juriscic, D., & Sattler, T. (2015). Knowledge on doping: Construction and validation of an original measurement tool and its applicability to Olympic sailing. *Kinesiologia Slovenica, 21*, 37-45.
- Kavussanu, M., Elbe, A. M., & Hatzigeorgiadis, A. (2015). *A Cross-cultural Approach to a Cross-cultural Issue: Psychosocial Factors and Doping in Young Athletes: Final Report for the World Anti-Doping Agency, Social Science Research Grant (2013-2015)*. University of Birmingham.
- Kavussanu, M., & Ring, C. (2017). Moral identity predicts doping likelihood via moral disengagement and anticipated guilt. *Journal of Sport and Exercise Psychology, 39*(4), 293-301.

- Kavussanu, M., Yukhymenko-Lescroart, M. A., Elbe, A. M., & Hatzigeorgiadis, A. (2020). Integrating moral and achievement variables to predict doping likelihood in football: A cross-cultural investigation. *Psychology of Sport & Exercise, 47*, 101518.
- Kirby, K., Guerin, S., Moran, A., & Matthews, J. (2016). Doping in elite sport. *The Psychology of Doping in Sport. London and New York: Routledge*, 3-17.
- Kirby, K., Moran, A., & Guerin, S. (2011). A qualitative analysis of the experiences of elite athletes who have admitted to doping for performance enhancement. *International Journal of Sport Policy and Politics, 3*, 205-224.
- Koehler, R. & Cunningham, T. (2015). *Play True. Education in anti-doping*. Presentation WADA ADO symposium. Switzerland: Lausanne.
- Larson, R., & Richards, M. H. (1991). Daily companionship in late childhood and early adolescence: Changing developmental contexts. *Child Development, 62*, 284–300.
- Laure, P., Lecerf, T., Friser, A., & Binsinger, C. (2004). Drugs, recreational drug use and attitudes towards doping of high school athletes. *International journal of sports medicine, 25(02)*, 133-138.
- Laure, P., Thouvenin, F., & Lecerf, T. (2001). Attitudes of coaches towards doping. *Journal of Sports Medicine and Physical Fitness, 41*, 132136.
- Lucidi, F., Grano, C., Leone, L., Lombardo, C., and Pesce, C. (2004). Determinants of the intention to use doping substances: An empirical contribution in a sample of Italian adolescents. *International Journal of Sport Psychology, 35*, 133–148.
- Lucidi, F., Zelli, A., Mallia, L., Grano, C., Russo, P. M., & Violani, C. (2008). The social-cognitive mechanisms regulating adolescents' use of doping substances. *Journal of Sports Sciences, 26*, 447- 456.
- Mandic, G. F., Peric, M., Krzelj, L., Stankovic, S., & Zenic, N. (2013). Sports nutrition and doping factors in synchronized swimming: Parallel analysis among athletes and coaches. *Journal of Sports Science and Medicine, 12*, 753–760.
- Mazanov, J., Backhouse, S., Connor, J., Hemphill, D., & Quirk, F. (2014). Athlete support personnel and anti-doping: Knowledge, attitudes and ethical stance. *Scandinavian Journal of Medicine & Science in Sports, 24(5)*, 846–856.

- Mazanov, J., Hemphill, D., Connor, J., Quirk, F., & Backhouse, S. H. (2014). Australian athlete support personnel lived experience of anti-doping. *Sport Management Review, 18*, 218–230.
- Moston, S., Engelberg, T., & Skinner, J. (2014). Athletes' and coaches' perceptions of deterrents to performance-enhancing drug use. *International Journal of Sport Policy and Politics, 7*, 623–636.
- Nicholls, A. R., Perry, J. L., Levy, A. R., Meir, R., Jones, L., Baghurst, T., et al. (2015). Coach perceptions of performance enhancement in adolescence: The sport drug control model for adolescent athletes. *Performance Enhancement and Health, 3*, 93–101.
- Nieper, A. (2005). Nutritional supplement practices in UK junior national track and field athletes. *British Journal of Sports Medicine, 39*(9), 645–649.
- Ntoumanis, N., Barkoukis, V., Gucciardi, D. F., & Chan, D. K. C. (2017). Linking coach interpersonal style with athlete doping intentions and doping use: A prospective study. *Journal of Sport and Exercise Psychology, 39*(3), 188-198.
- Ntoumanis, N., Gucciardi, D. F., Backhouse, S. H., Barkoukis, V., Quested, E., Patterson, L., ... & Kaffe, S. (2018). An intervention to optimize coach motivational climates and reduce athlete willingness to DOPE (CoachMADE): protocol for a cross-cultural cluster randomized control trial. *Frontiers in psychology, 8*, 2301.
- Ntoumanis, N., Ng, J. Y., Barkoukis, V., & Backhouse, S. (2014). Personal and psychosocial predictors of doping use in physical activity settings: a meta-analysis. *Sports Medicine, 44*, 1603-1624.
- Ohl, F., Fincoeur, B., Lentillon-Kaestner, V., Defrance, J., & Brissonneau, C. (2015). The socialization of young cyclists and the culture of doping. *International Review for the Sociology of Sport, 50*(7), 865-882.
- Patterson, L. B., & Backhouse, S. H. (2018). "An important cog in the wheel", but not the driver: Coaches' perceptions of their role in doping prevention. *Psychology of Sport and Exercise, 37*, 117-127.

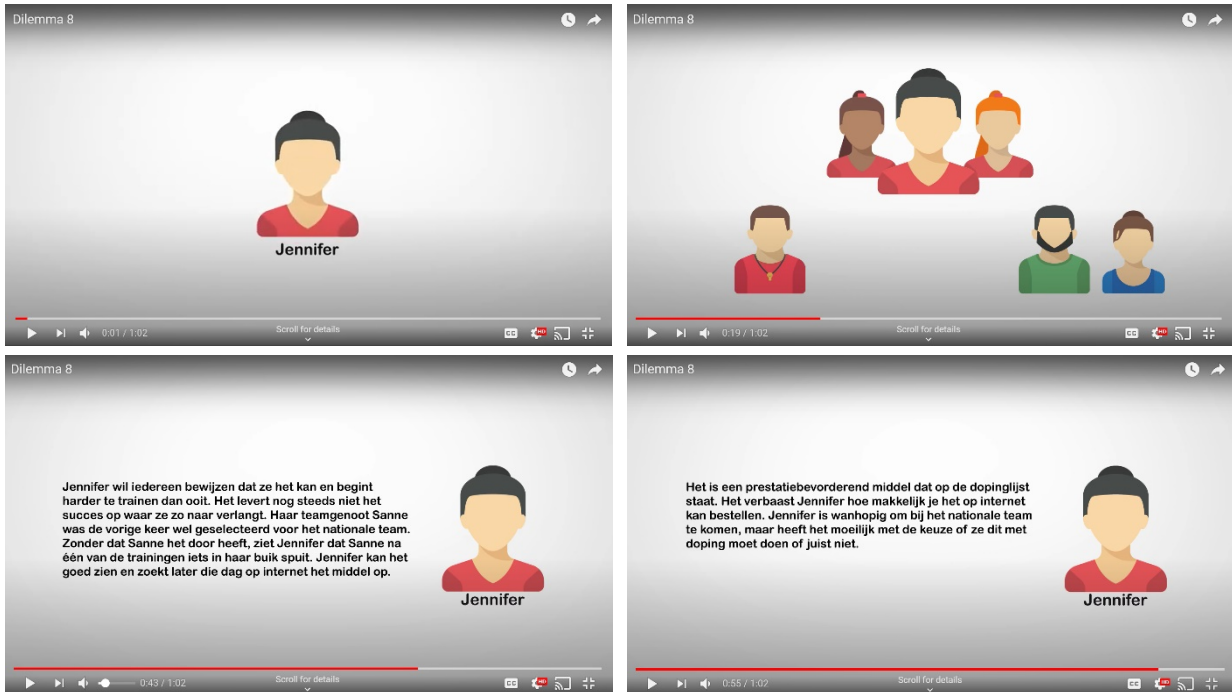
- Patterson, L. B., Backhouse, S. H., & Lara-Bercial, S. (2019). Examining coaches' experiences and opinions of anti-doping education. *International sport coaching journal*, 6(2), 145-159.
- Petróczi, A., Heyes, A., Thrower, S. N., Martinelli, L. A., Backhouse, S. H., Boardley, I. D., & RESPECT Consortium. (2021). Understanding and building clean (er) sport together: community-based participatory research with elite athletes and anti-doping organisations from five European countries. *Psychology of Sport and Exercise*, 55, 101932.
- Rodek, J., Sekulic, D., & Kondric, M. (2012). Dietary supplementation and doping-related factors in high-level sailing. *Journal of the International Society of Sports Nutrition*, 9, 51.
- Sajber, D., Rodek, J., Escalante, Y., Olujić, D., & Sekulić, D. (2013). Sport nutrition and doping factors in swimming; parallel analysis among athletes and coaches. *Collegium Antropologicum*, 37, 179–186.
- Sipavičiūtė, B., Šukys, S., & Dumčienė, A. (2020). Doping Prevention in Sport: Overview of Anti-Doping Education Programmes. *Baltic Journal of Sport and Health Sciences*, 2(117).
- Steinberg L: Risk taking in adolescence: what changes, and why? *Annals of the New York Academy of Sciences* 2004; 1021: 51–8
- Steinberg, L., & Morris, A. S. (2001). Adolescent development. *Annual review of psychology*, 52(1), 83-110.
- Waddington, I., & Smith, A. (2000). *Sport, health and drugs: A critical sociological perspective*. Taylor & Francis.
- Wiefferink, C.H., Detmar, S.B., Coumans, B., Vogels, T., & Paulussen, T.G.W. (2008). Social psychological determinants of the use of performance enhancing drugs by gym users. *Health Education Research*, 23, 70–80.
- World Anti-Doping Agency (2021). *World Anti-Doping Code [WADC]*. Retrieved May 2021, from https://www.wada-ama.org/sites/default/files/resources/files/2021_wada_code.pdf

- WADA. (2020). Who are we. Available online: <https://www.wada-ama.org/en/who-we-are> (accessed on April 7th, 2020).
- World Anti-Doping Agency (2007). *Coach True*. Available <https://www.wada-ama.org/en/resources/education-and-prevention/coach-trueant>
- Wylleman, P., De Brandt, K., Rosier, N., Van Rossem, N., & Kegelaers, J. (2016). *A lifespan and holistic approach to the influence of career transitions on athletes drug-taking behaviours*. Vrije Universiteit.
- Wylleman, P., De Knop, P., Vanden Auweele, Y., & Sloore, H. (1997). The athletic triangle in competitive youth sport: Young athletes' perceptions of the athlete-coach-parents relationships. In R. Lidor, & M. Bar-Eli (Eds.), *Innovations in sport psychology: Linking theory and practice. Proceedings, Part II*. (pp. 762-764). Wingate Institute of Physical Education and sport.
- Zelli, A., Mallia, L., & Lucidi, F. (2010). The contribution of interpersonal appraisals to a social-cognitive analysis of adolescents' doping use. *Psychology of sport and exercise*, *11*(4), 304-311.

Appendix A: Dilemmas

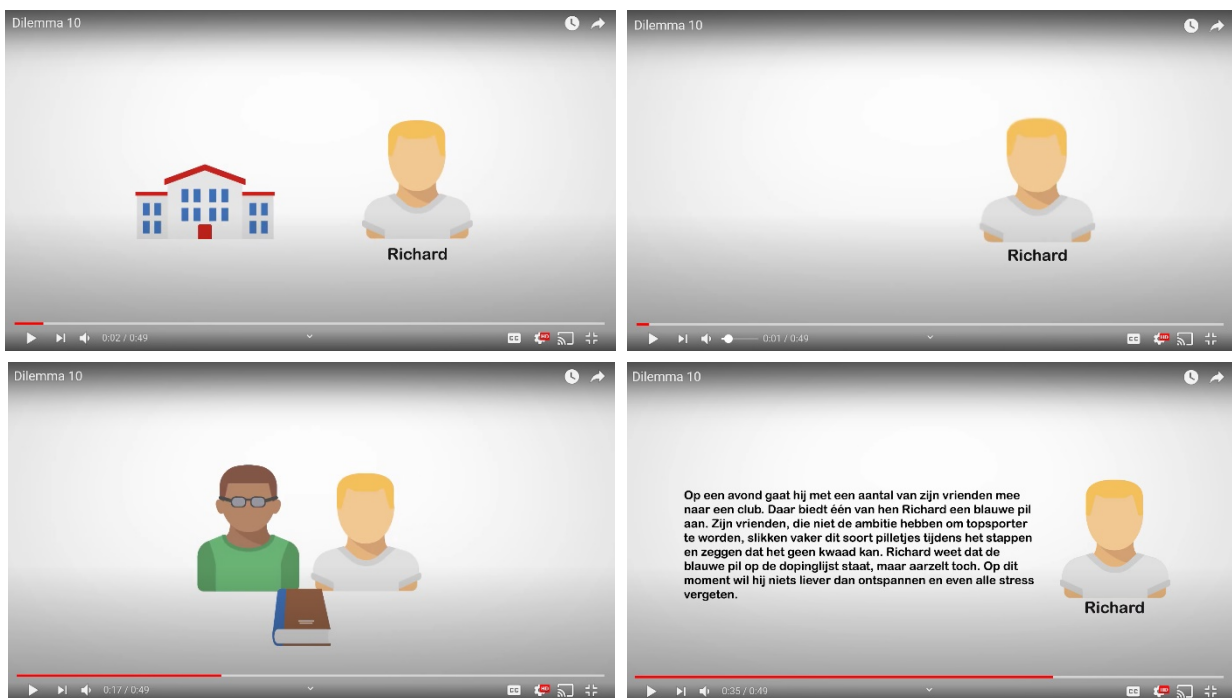
Dilemma 1: Jennifer

Link to video: <https://www.youtube.com/watch?v=1lz6KknKdBw>



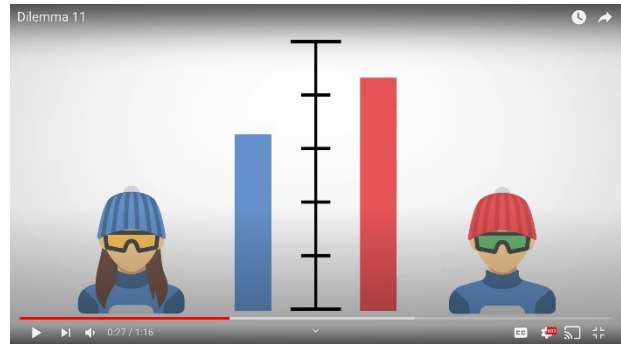
Dilemma 2: Richard

Link to video: <https://www.youtube.com/watch?v=zEUw8RoKuE>



Dilemma 3: Michelle

Link to video: <https://www.youtube.com/watch?v=iz9VW1wLsYI>



Ze fietsen altijd samen naar de training, maar Michelle heeft die dag echt knallende hoofdpijn en besluit thuis te blijven. Ze weet dat Jenny een tijdje geleden een doosje paracetamol had gekocht en gaat ernaar op zoek in Jenny's kamer. Het ligt vast in die ene la waar ze al haar make-up en vitaminepillen bewaart. Daar vindt Michelle inderdaad de paracetamol maar ze vindt ook iets wat ze niet had verwacht: een spuit met naald en een flesje vloeistof.



A screenshot from a video player showing two characters, Michelle and Jenny, in cycling gear. Michelle is on the left wearing a blue helmet and goggles, and Jenny is on the right wearing a red helmet and goggles. The video player interface shows a progress bar at 0:44 / 1:16.

Michelle weet zeker dat het doping is. Ze is woedend en confronteert Jenny meteen als ze thuiskomt van de training. Tijdens de heftige discussie die daarop volgt maakt Jenny duidelijk dat ze niet van plan is te stoppen met het gebruik van het middel. Michelle weet niet of ze het dopinggebruik van haar beste vriendin nu wel of niet aan hun coach moet vertellen.



A screenshot from a video player showing two characters, Michelle and Jenny, in cycling gear. Michelle is on the left wearing a blue helmet and goggles, and Jenny is on the right wearing a red helmet and goggles. The video player interface shows a progress bar at 1:08 / 1:16.

Appendix B: Use of Results

Publications

As for the scientific publications, we aim to publish two manuscripts.

- 1) Manuscript 1 will present the results the doping thoughts and experiences of the adolescent athletes' social entourage (Study 1.1) as well as the responses of the social entourage to hypothetical doping dilemmas and the advice they would give their adolescent athletes (Study 1.2)
- 2) Manuscript 2 will address the research question: What are the associations of doping attitudes, moral disengagement, perceived behaviour control, and anticipated guilt with doping intentions in talented adolescent athletes' coaches, parents, and peers and are there differences between the entourage groups? (Study 2)

Potential outlets for these articles include the following journals:

- Scandinavian Journal of Medicine & Science in Sport
- Journal of Sport & Exercise Psychology
- International Journal of Sports Medicine
- Performance Enhancement & Health

Furthermore, we have plans to research developmental changes in the role of the entourage (e.g., the general trend of peer influence taking over the lead of parental influence) as well as plans that include the social entourage (coaches, parents, and peers) into a doping prevention program for talented adolescent athletes.

Presentations

The results will be presented at several national and international academic conferences, specialized on the topic of sports or doping. The results will also be presented to regional and national sports federations and organisations. Due to the COVID-19 pandemic, conferences and presentations were cancelled or not possible in 2021.

Educational Program

The dilemmas that were used in this study, will be integrated in the national educational program for talents in order to prepare them for a future elite athlete career of the Netherlands Olympic Committee* Netherlands Sports Confederation (NOC*NSF) and the Anti-Doping Authority the Netherlands. In addition, some Dutch specialized secondary education schools that are designed to support adolescent athletes (i.e., Talent Schools) have already incorporated the dilemmas in their educational material.