



A preliminary investigation of the decision making process towards match fixing

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Published online: 26 November 2019
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Abstract

Match fixing represents a major threat to sport integrity and action is needed to tackle this phenomenon across levels and types of sport. The present study examined, for the first time, the psychological factors associated with athletes' intentions to engage in match fixing, by utilizing the Theory of Planned Behaviour. Ninety nine athletes from team sports ($M = 21.98$ years, $SD = 2.25$) participated in the study and completed a survey measuring the variables of TPB (i.e., attitudes, subjective norms, perceived behavioural control, and intentions). The results of the analyses indicated that approximately 30% of the athletes reported that have been engaged in a match that they believe was fixed, and intentions to engage in match fixing were significantly associated with perceived social approval of match fixing among referent others. Further analysis showed that athletes with prior experience of match fixing also perceived stronger social norms in favor of match fixing as compared to athletes without such experience. Our findings are novel and have implications about the role of social norms in understanding and preventing match fixing in sport, and we provide specific recommendation for future studies and policy-making in this area.

Match fixing represents and ongoing threat to the integrity, reputation, and societal welfare dimension of sports. It is an illegal activity with an international dimension, and is directly linked to gambling and criminal networks exploiting unregulated gambling markets. The honorary president of the International Olympics Committee, Jacques Rogge, argued that match-fixing is the among the biggest threats to sport integrity as it affects the whole competition. Accordingly, Carpenter [1] argued that match fixing probably represents the biggest threat to sport in the twenty-first century. In his report, Carpenter highlights several cases of match-fixing from different countries involving

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athletes, officials (e.g. referees), and other sport stakeholders across different sports including football, basketball, tennis, snooker, and sumo wrestling.

To date, there has been a relative paucity of research on match fixing. Among the first efforts to empirically examine match fixing were the studies of the ‘Don’t Fix It’ project. The report of this project showed, among others, that (a) match fixing involves complex sets of behaviours on the part of different actors with many motivations and incentives, (b) personal ethics should be a key variable in match-fixing prevention, and (c) it is important to empower athletes and other relevant sport stakeholders to more effectively cope with and resist the temptations of match-fixing [2]. Match-fixing is a relatively unexplored research area that requires more systematic empirical study focusing on the understanding of the psycho-social processes underlying decision-making among risk-vulnerable groups (e.g., athletes, coaches, sport executives, referees). Furthermore, in order to inform evidence-based policies and interventions against match fixing in sport, it is imperative to understand how athletes reason about, and decide to engage in this behaviour.

One way to do this is by utilizing behavioural science theories that have been effectively applied in different contexts to understand how people form intentions to engage in risk behaviour. The Theory of Planned Behaviour was originally developed by Ajzen [3] to describe a general process by which people understand the risks and benefits of a given behaviour, and accordingly decide to enact it (or not). In summary, the TPB posits that goal-directed and volitional behaviours are predicted by one’s intention (i.e., being determined to follow a specific course of action). In turn, behavioural intentions are said to be associated with attitudes (i.e., perceived pros and cons of the behaviour), subjective social norms (i.e., perceived social approval/endorsement of the behaviour by referent groups), and perceived behavioural control (PBC; i.e., the perceived capacity or efficacy to successfully perform the behaviour). Although the original corpus of the TPB did not take into account prior experiences and past behaviour as determinants of future intentions and actions, a lot of research has shown that measures of past behaviour can significantly improve the predictive validity of the TPB and influence both outcome variables [4, 5]. As such, Fishbein and Ajzen [6] recommended that future studies of the TPB take into account measures of past behaviour.

The TPB has been successfully applied in a wide range of dishonest behaviour, such as academic misconduct and cheating, and tax evasion e.g., [7–10]. In the context of sport integrity, the TPB has been used as the main theoretical framework to understand the decision-making processes that explain athletes’ intentions to use doping (for a meta-analysis see [11]).

The present study used the TPB in order to empirically examine, for the first time, whether the model can explain athletes’ intentions to engage in match fixing in the future. The reason why the TPB was deemed suitable for this context is that previous research has usefully used this theory to predict doping—which is another major threat to sport integrity—in different groups of elite and non-elite athletes [11]. Another reason is that match fixing is mainly an intentional and goal-directed behaviour. This means that athletes who engage in match fixing do not do so in an offhand, automatic manner; rather, the moral and legal consequences associated with match fixing are likely to make athletes consider the pros and cons of this behaviour, social support, as well as their capacity to engage in match fixing, in the process of deciding whether they will (or not) engage in this behaviour. The present study is the first one to apply the

TPB in the context of match fixing. Based on the general premises of the TPB (e.g., [3]) and past evidence with the use of TPB on corruption-related behaviours in sport, such as doping [11], it was hypothesized that the variables of the TPB (i.e., attitudes, subjective social norms, and PBC) will be significantly associated with intentions to engage in match fixing. Along this objective, the present study aimed to provide a preliminary evaluation of the match fixing prevalence in team sports and investigate the effect of athletes' experience with match fixing behaviour on the decision making process. Based on policy efforts placing more emphasis on investigations of match fixing incidents in football (see Operation SOGA) it was assumed that the prevalence of match fixing will be higher in football as compared to other team sports. Furthermore, based on past evidence with other corruption related behaviours in sport, such as doping, it was assumed that athletes' with prior experience in match fixing will display more positive attitudes and subjective norms, and higher PBC towards match-fixing as compared to athletes without prior experience.

Method

Participants

Ninety nine team sport students-athletes ($M = 21.98$, $SD = 2.25$; 77.8% males) were recruited from a University Department of Physical Education and Sport Sciences in Northern Greece. Eligibility criteria for participation in the study included being an adult (>18 years), and participating in systematic training (i.e., at least three times per week) and competing (or having competed) at a regional or national level. Participants came from football ($n = 52$), basketball ($n = 28$), volleyball ($n = 7$), handball ($n = 3$) and water polo ($n = 3$) - the other participants did not report their sport—and all of them were competing at regional and national championships at the time of survey completion. Participants from football, basketball and volleyball were participating in championships where betting was allowed.

Measures

The survey included a section with demographic information such as age, gender, and sport, as well as whether they have participated in a fixed match. Furthermore, the core variables of the TPB (attitudes, subjective norms, and PBC) were measured in this study according to the guidelines provided by Ajzen [3] and Fishbein and Ajzen [6]. More specifically, each of the social cognitive constructs of the TPB (i.e., attitudes, subjective norms, PBC, and intentions) was assessed with distinct and multi-item measures, using a continuous rating scale to capture participants' responses. Furthermore, attitudes reflected binary evaluations of a given behaviour (e.g., evaluation of match fixing as bad/good); subjective social norms reflected the degree of perceived social approval of a given behaviour by referent social groups, such as people who are important to the respondent; PBC was operationalized as the perceived confidence that one can successfully carry out a given behaviour; and intention items reflected one's intentionality/planning to carry out a given behaviour within a specific timeframe [3, 6].

Attitudes towards match fixing: This variable was measured with the stem proposition ‘Match fixing is something...’ followed by three semantic differential evaluative adjectives (useless/useful; harmful/beneficial; unethical/ethical). Participants responses were anchored on a seven-point scale (1 = negative pole to 7 = positive pole). The internal consistency reliability (Cronbach’s α) for this measure was low ($\alpha = .64$) but acceptable for measures with less than ten items [12].

Subjective norms: Beliefs about the perceived social support of match fixing among referent others were assessed with the mean of three items (e.g., ‘*Most people who are important to me would want me to fix a match and earn money this season*’). Responses were scored on a seven-point scale (1 = *strongly disagree*, 7 = *strongly agree*), and a mean score was calculated with higher scores reflecting greater perceived social pressure to fix a match (Cronbach’s $\alpha = .85$).

PBC: The mean of three items (e.g., ‘*I feel in complete control over whether I will fix a match this season*’ and ‘*I am able to control over whether I will fix a match this season*’) was used to measure PBC over match fixing. Responses were recorded on a seven-point scale (1 = *strongly disagree*, 7 = *strongly agree*), and higher scores indicated higher PBC over match fixing. The internal consistency reliability for this measure was low ($\alpha = .61$) but considered acceptable as the scale has fewer than 10 items [12].

Intentions: The mean of three items (e.g., ‘*How likely would it be to fix a match during this season, if you were sure that you won’t get caught and you would be able to earn money*’) was used to assess intentions to engage in match fixing. Responses were recorded on a seven-point scale (1 = *highly unlikely*, 7 = *highly likely*), and higher scores reflected stronger intentions to fix a match (Cronbach’s $\alpha = .88$).

Match fixing experience: A single item (“*Have you ever played in a fixed match?*”) was used to assess prior experience/awareness of participants with match fixing, and responses were binary (yes/no).

Procedure

The study procedure was in line with the Code of Ethics of the Aristotle University of Thessaloniki. The research team approached students of the Department of Physical Education and Sport Sciences during their practical courses and explained the aims and objectives of the study. Those eligible for the study were invited to complete the survey. Students-athletes who accepted to participate in the study completed the survey immediately after their lesson. All participants were informed that the completion of the survey is anonymous and they were re-assured about the confidentiality of their responses. Participants were informed that the surveys will be used for research purposes only.

Results

The means and standard deviations of the social cognitive variables examined in the present study, as well as the inter-correlations among the study variables are reported in

Table 1. Attitudes showed moderate correlation with subjective norms and low correlation with PBC and intentions. Subjective norms were strongly correlated with intentions; no correlation emerged with PBC. Also, PBC was not correlated with intentions.

Prevalence of match fixing

Analysis of frequencies with Pearson's chi-square (χ^2) showed that 30.3% ($n = 30$) of the participants self-reported that they had participated in matches they thought were fixed. In terms of gender differences, 34.2% of males and 18.2% of females had previous experiences with fixed matches, but this difference was not statistically significant. Additionally, match fixing was reported to be more prevalent (42.6%) among football players, 14.3% in basketball players, and 14.3% in volleyball players, and the observed differences were marginally significant ($\chi^2 = 16.19, p = .040$). Mann-Whitney non-parametric tests were also used to assess if athletes with/without prior experiences in match fixing differed in age, but no significant differences were observed.

Differences in social cognitive variables related to match fixing by levels of experience

Non-parametric analysis (Mann-Whitney) was further used to examine differences in social cognitive variables related to match fixing (i.e., attitudes, subjective norms, PBC and intentions) between athletes with and without prior experiences with match fixing. The results are summarized in Table 2 and showed that only subjective norms differed significantly between the two groups, with athletes with prior experiences with match fixing reporting higher scores in this variable than those without match fixing experience ($U = 707.0, p = .012$).

Social cognitive determinants of intentions to engage in match fixing

A linear regression analysis was used to assess the association between theory of planned behaviour variables and intentions to engage in match fixing, after controlling for prior experience, age and gender. The analysis was completed in two steps, with the first step including age, gender and prior experiences with match fixing as control variables, whereas the second step included attitudes, subjective norms and PBC as

Table 1 Means, standard deviation scores and intercorrelations among the study variables

	1	2	3	4	<i>M</i>	<i>SD</i>
1. Attitudes	–	.31***	–.22*	.21*	2.22	1.35
2. Subjective norms		–	–.07	.65***	2.60	1.46
3. PBC			–	–.17	3.92	1.76
4. Intentions				–	2.99	1.79

Note. * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Table 2 Differences in social cognitive variables related to match fixing by levels of match fixing experience

	Athletes with match fixing experience		Athletes without match fixing experience	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Attitudes	2.56	1.50	2.10	1.26
Subjective norms*	3.07	1.35	2.38	1.47
PBC	4.01	1.87	3.88	1.71
Intentions	3.17	1.99	2.88	1.69

Note. * Significant differences were observed for this variable at $p < .05$

predictors of intentions that served as the dependent variable in the study. This allowed us to examine the unique contribution of TPB variables on intentions after having taken into account the effect of prior experience and demographic characteristics of the participants. The results showed that the overall model was statistically significant [$F(3, 95) = 13.20, p < .001$] and predicted 43.5% of the variance in intentions. The multivariate effect size of the model was $f^2 = 0.76$, and tolerance levels among the predictor variables were high ($>.821$), suggesting low levels of multicollinearity. At the first step of the analysis, only gender was inversely associated with intentions to engage in match fixing in the future ($\beta = -.277, p = .007$). At the second step of the analysis, the effect of gender turned non-significant, and only subjective norms were significantly associated with match fixing intentions ($\beta = .639, p < .001$). The results of the analysis are summarized in Table 3.

Discussion

Match fixing represents a major challenge to the integrity and spirit of sport, and policy-makers need to take action to effectively tackle this phenomenon across levels and types of sport, and across groups (e.g., athletes, coaches, referees and officials, and club managers). Nonetheless, in order to inform related policies and interventions against match fixing it is necessary to better understand the social and psychological processes that can explain this behaviour. The study investigated the prevalence of match fixing in team sports and employed a theoretical approach to investigate the decision making process towards match fixing. Match fixing incidents were reported in all three main sports (i.e., football, basketball and volleyball) with a higher prevalence found in football. This finding implies that football is a sport at risk for match fixing. This is probably due to more betting opportunities offered in football. Betting has been closely linked with match fixing and, therefore, having more opportunities to bet may result in more fixed matches [13].

In the present study we used the TPB as a first approach to evaluating athletes' intentions to engage in match fixing, and assessing the social cognitive correlates of intentions, particularly attitudes, subjective social norms and PBC. The results of the analysis showed that after prior experience (or awareness of being involved in a fixed match) was controlled for, only subjective norms were significantly associated with intentions to engage in match fixing in the future. In other words, athletes who

Table 3 Social cognitive determinants of intentions to engage in match fixing

Predictors	β	Adjusted R^2
<i>Step 1</i>		5.5%
Gender	-.277**	
Age	-.047	
Prior experience	-.061	
<i>Step 2</i>		43.5%
Gender	-.112	
Age	.034	
Prior experience	.063	
Attitudes	.006	
Subjective norms	.639***	
PBC	-.118	

Note. * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$. PBC = perceived behavioural control

perceived match fixing as socially approved and endorsed among referent others were also more likely to report stronger intentions to engage in this behaviour. Further analysis corroborated the results of the regression model by showing that athletes with prior experiences in match fixing reported significantly higher scores in subjective norms as compared to those without such experiences—and this was the only significant difference observed between the two groups.

Taken together, the present findings have very important implications both for future behavioural and social science theory and research in match fixing, and for policy-making and design of interventions against this behaviour. First of all, our results showed that match fixing intentions were associated with subjective social norms, but not attitudes and PBC. This was a surprising finding as both attitudes and PBC have been found to be the most influential TPB variables in a wide range of behaviours [4, 14], including doping [11]. A plausible explanation for these findings may lie on the way match fixing is manifested. More specifically, in many cases athletes are engaged in match fixing because they are forced to by club officials, coaches or crime networks [1], although they may not have positive attitudes towards the behaviour. Thus, it may be the case that even when athletes hold a negative or a neutral attitude towards match fixing they may engage in fixing behaviour due to external pressure. Of course, they may also fix a match if they have positive attitudes towards match fixing. Hence, attitude may not be a factor influencing to a great extent the decision to fix a match. In a similar vein, if match fixing is arranged from other agents and imposed on the athletes, they may feel that they have no control on the decision to match fixing. Hence, PBC was not able to predict match fixing intentions.

These findings are also corroborated by the examination of differences between athletes with and without experience with match fixing. Significant differences emerged only for subjective norms, but not for attitudes and PBC. These findings signify that athletes engage in match fixing not because they consider it as a positive behaviour or because they can, but because they are influenced or forced by their sport or social environment. If this is the case, these findings highlight an important

mechanism; match fixing is closely related with the interplay of the athlete with his/her environment and the decision to fix a match is largely dependent on the social context the athlete performs in.

This suggestion was further supported from the study's findings pertaining to social norms. More specifically, the findings from the present study suggested that subjective norms were strongly associated with match fixing intentions. Subjective norms have been weakly associated with intentions and behaviour in most TPB studies in different contexts in the past (e.g., [4, 5, 15]). Interestingly, subjective social norms have emerged as significant predictors of intentions in doping behaviour (see [11]), which represents another major threat to sport integrity. These results imply that the decision to fix a match is largely influenced by the team and overall societal culture about match fixing. Athletes playing in teams and/or living in societies where much fixing is considered acceptable are more susceptible to engage in this behaviour. This finding highlights the important role of athlete's social environment in determining his/her decision to fix a match. Future studies should focus on the role of social norms as it seems to be highly relevant and help us better explain the social and psychological dynamics of match fixing at a personal and at an institutional level. Towards this end, alternative theoretical approaches that focus on the study of normative influence should be used jointly to TPB to the study of the decision making process towards match fixing. For instance, the Theory of Normative Social Behaviour (TNSB; [16, 17]) is a useful theoretical framework that can be applied in the context of match fixing and help in identifying how different types of social norms influence intention and behaviour. In particular, the TNSB recognizes that normative influence may stem from both subjective and descriptive social norms (i.e., perceived prevalence or popularity of a given behaviour in referent groups), and explains how descriptive and subjective social norms interact with each other, and with other variables (e.g., identification with referent groups) to predict intentions and future actions [17, 18].

Overall, the present findings call for greater attention and detail to the sources of normative influence in the context of match fixing. Specifically, future studies may use more diversified measures of subjective (and perhaps descriptive) social norms in order to delineate whether different sources of normative influence (e.g., fellow athletes, coaches) are differentially associated with intentions and behaviour. The TNSB [17] allows for such a distinction because it posits that social norms may describe social approval (or prevalence) either at a distal level, such as institutional policies and norms, or at a personal/proximal level, such as social norms in proximal referent groups. Based on this multi-level approach, therefore, future studies may assess whether match fixing intentions among athletes are driven mostly by proximal or distal levels of normative influence.

Another way the psychological study of match fixing can advance is through the use of more controlled experimental studies. Specifically, future research may utilize experimental designs to determine whether normative manipulations (e.g., presenting information that match fixing is or is not prevalent/socially endorsed among different referent groups) influence the ways athletes reason about and intent to engage in match fixing in the future. This method has been widely applied in the context of the Focus Theory of Normative Conduct [19–21], which can also be used to better understand normative influences on match fixing behaviour.

Although the present findings warrant further empirical investigation, and alternative ways to assess the effects of social norms on match fixing intention and behaviour, they

can still be used in the context of informing evidence-based policies and interventions against match fixing in sport. Specifically, athletes in our study were more likely to intent to engage in match fixing if they perceived a supportive social context for this behaviour. This may indicate that their choices are subject to social norms in their environment, or that athletes derive support for their choices (e.g., desire to accrue wealth through match fixing) by selecting environments, contexts and contacts where they can fulfil their goals. Interventions and policies against match fixing, therefore, could tackle the ways norms against match fixing are communicated in sporting contexts. In this context, Cialdini [22] has suggested different ways to develop effective norm communication strategies.

The present study has several limitations, most notably including a rather small sample size of athletes completing the survey, and the cross-sectional design of the study. These limit the potential to generalize the present findings to larger groups of athletes, and to determine causal effects between social norms and intentions (e.g., whether social norms predict future intentions and actions, or whether having an intention to fix a match makes pro-match fixing social norms more salient). Notwithstanding these limitations, this is the first study, to date, that has used a specific psychological theory (i.e., the TPB) to assess athletes' intentions towards match fixing, and identify whether such intentions are associated with attitudes, social norms of perceived behavioural control beliefs. Future studies should consider alternative theories and methods to better understand the social and psychological processes underlying match fixing behaviour in sport, and accordingly inform policies and interventions against this phenomenon.

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