

Aus dem Institut für Sportökonomie und Sportmanagement

der Deutschen Sporthochschule Köln

Institutsleiter: Univ.-Prof. Dr. Christoph Breuer

Integrity of sport at risk?
An analysis of match-fixing behaviour and the determinants
of voluntary referees' retention and satisfaction

Von der Deutschen Sporthochschule Köln

zur Erlangung des akademischen Grades

Doktor der Sportwissenschaft

angenommene Dissertation

vorgelegt von

Thomas Giel

aus Duisburg

Köln 2022

Erster Gutachter: Univ.-Prof. Dr. Christoph Breuer
Zweiter Gutachter: Univ.-Prof. Dr. Sebastian Uhrich
Vorsitzender des Promotionsausschusses: Univ.-Prof. Dr. Mario Thevis
Datum der Disputation: 24. November 2022

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17.12.2022, Thomas Giel

Acknowledgments

First and foremost, I would like to express my deepest gratitude to my advisor Univ.-Prof. Dr. Christoph Breuer for giving me the opportunity to work in academia at the German Sport University Cologne. I highly appreciate his support and guidance during this dissertation project. I also want to thank all my colleagues at the Institute of Sport Economics and Sport Management, especially PD Dr. Kirstin Hallmann and Svenja Feiler for their helpful advice, constructive criticism, and/or diligent proofreading.

Further, I extend my gratitude to my family and friends for always believing in me as well as for their continued interest in, appreciation for, and external perspective on my dissertation project. In particular, I would like to express my utmost thanks to my parents Irenäus and Beate for their unconditional support and for being there for me throughout my entire academic career and beyond. Last but not least, I thank my wonderful wife Nicole from the bottom of my heart for her patience and understanding, her unwavering support and continuous encouragement, as well as all her love, as she certainly did not bear the slightest burden while I was working on this dissertation.

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List of Abbreviations

AMDYSQ	Attitudes to Moral Decision-making in Youth Sport Questionnaire
AVE	Average variance extracted
BISp	Federal Institute of Sports Science
BMI	Federal Ministry of the Interior and Community
c_i	Marginal cost
CFA	Confirmatory factor analysis
CFI	Comparative fit index
CI	Confidence interval
CR	Construct reliability
DC_i	Direct costs of illicit behaviour
df	Degrees of freedom
DFB	German Football Association
DFL	German Football League
e_i	Effort
ERI	Effort-reward imbalance
F_i	Monetary punishment
KAFA	Short measure to assess general and facet-specific job satisfaction
KMO	Kaiser-Meyer-Olkin measure of sampling adequacy
LR_i	Loss of reputation
M	Mean
MAX	Maximum
MDN	Median
MIN	Minimum
NFI	Normed-fit index

NOC_i	Nonpecuniary opportunity costs
NPB_i	Nonpecuniary benefits
NPL_i	Nonpecuniary losses
OLS	Ordinary least squares
OR	Odds ratio
p_i	Detection probability
PCA	Principal component analysis
POC_i	Pecuniary opportunity costs
POS	Perceived organisational support
q_i	Success probability of illicit behaviour
RMSEA	Root mean square error of approximation
RQ	Research question
s_i	Income
SD	Standard deviation
SEM	Structural equation modelling
SOEP	German Socio-Economic Panel Study
SRMR	Standardised root mean square residual
TLI	Tucker-Lewis index
U_i	Utility function
UNESCO	United Nations Educational, Scientific, and Cultural Organization
V_i	Prize money
VAR	Video Assistant Referee
w_i	Winning probability
WADA	World Anti-Doping Agency
Y_i	Income from illicit behaviour

1 Introduction

1.1 Problem statement and research questions

1.1.1 The power of sport

“Sport has the power to change the world. It has the power to inspire. It has the power to unite people in a way that little else does. It speaks to youth in a language they understand. Sport can create hope where once there was only despair. It is more powerful than governments in breaking down racial barriers. It laughs in the face of all types of discrimination.”

(Nelson Mandela, 2000)

Many positive effects are attributed to sport. In addition to the meanwhile commonly accepted fact that active sport participation as a form of health-promoting physical activity conduces to a good individual health, other beneficial features and impacts are also associated with sport bringing benefits to society. For example, Nelson Mandela, former South African president and Nobel Peace Prize winner, praised the power of sport in his famous speech at the inaugural Laureus World Sports Awards in 2000, emphasising, among others, that it inspires and unites people as well as promotes behaviour characterised by fair play and good sportsmanship (Mandela, 2000). Sport has the ability to provide a universal framework for conveying essential values including discipline, equality, inclusion, fairness, perseverance, respect, and teambuilding. Moreover, values education through sport is perceived to be of particular relevance in today’s society (United Nations Educational, Scientific, and Cultural Organization [UNESCO], 2021).

The promotion of such fundamental values, which are usually inherent in the nature of sport, and of rule-governed behaviour is often linked to voluntary or non-profit sport clubs. Sport clubs have societal value and play an important role fulfilling societal

functions. This is particularly true in Western societies, in which these “clubs are still at the heart of the sport system” (Nagel et al., 2020, p. v). Sport clubs contribute significantly to public welfare by promoting (public) health, social cohesion, inclusion and integration, as well as promoting and extending democratic participation and active citizenship, especially by means of volunteering and membership (e.g., Nagel et al., 2020). Volunteering is an essential component of major social importance in the context of sport and sport clubs are often referred to as ‘schools of democracy’ for young people, because many clubs offer specific opportunities for voluntary youth participation. This further strengthens the clubs’ public welfare function (Breuer & Feiler, 2022; Flatau, 2009).

While sport participation, aside from individuals’ health promotion, is likewise associated with subjective well-being and self-confidence (e.g., Ruseski et al., 2014; Wicker et al., 2012), important societal functions are also fulfilled by professional sport. For instance, hosting a major sporting event as well as elite sporting success are related with several intangible benefits such as happiness and life satisfaction, social integration, national cohesion, identity, and pride, as well as value conveyance (e.g., Hallmann et al., 2013; Mutter & Pawlowski, 2014).

All in all, the vast majority of Europeans accepts and supports the socially integrative function of sport according to a number of Eurobarometer studies and often it is referred to as the ‘engine of social integration’ (Gerber & Pühse, 2017). Further, the important role that sport can play in achieving global goals or driving positive social change also becomes evident by the United Nations General Assembly (2015, p. 10/35) acknowledging “the growing contribution of sport to the realization of development and peace in its promotion of tolerance and respect and the contributions it makes to the empowerment of women and of young people, individuals and

communities, as well as to health, education, and social inclusion objectives” within the 2030 Agenda for Sustainable Development. The agenda announces 17 Sustainable Development Goals addressing current global threats and sport is deemed as substantial for enabling sustainable development.

1.1.2 Manipulation in sport

However, all these previously described positive effects of sport can only occur if its viability can be safeguarded. In sport, there always have existed and probably will continue to exist ‘minor’ manipulations, in which the rules of a specific sport are violated in order to win a competition. For this reason, in almost all (competitive) sports there is an impartial authority such as a referee or an umpire ensuring that the involved parties comply with the given rules. In case of infringements, punishments are imposed. While cheating tactics have become more sophisticated over the course of time, sports have often refined their control mechanisms. Several sports use technological innovations to detect rule violations, as, for example, the video assistant referee (VAR) in football. Nevertheless, such ‘minor’ manipulations are often considered as part of the game and not as threatening its existence (Andreff, 2018).

In contrast, mainly due to growing commercialisation and thus more money in the industry, also other types of manipulation have emerged across sports in the last decades, representing its ‘dark side’ and accompanied by a gradual shift in values from amateurism, fair play, and sportsmanship towards profit maximisation and winning at all costs (Andreff, 2018; Byers, 2018). Generally, corruption in sport can be understood as “any illegal, immoral, or unethical activity that attempts to deliberately distort the result of a sporting contest for the personal material gain of one or more parties involved in that activity” (Gorse & Chadwick, 2010, p. 43). Given the fact that sport accounts for more than 3% of world trade and nearly 4% of the combined gross

national product of the member states of the European Union, further employing over 5% of its labour force, it can be considered ‘big business’ and this might serve as an explanation that severe forms of manipulation such as corruption arise in sport, threatening its integrity and undermining the interest of fans, sponsors, and broadcasters (Blackshaw, 2018; Carpenter, 2012).

Consequently, the functionality of sport can be assessed as being at some risk, since, on the one hand, manipulation might affect any kind of sport in every country and, on the other hand, doping and match-fixing, which are the two major types of sport manipulation these days, have become core challenges to sport, endangering its overall integrity and attracting criminals into its industry (Andreff, 2018; Harms & Kaiser-Jovy, 2018). In general, a distinction can be made between the manipulation’s purpose of winning or losing a sporting competition. While doping can serve as a well-known example of the former type (“cheating to win”), the latter form (“cheating to lose”) is particularly evident in match-fixing (Preston & Szymanski, 2003). Nevertheless, both types “put sport at risk since they are likely to cut it from its ethical roots, compromise its integrity in the long term, and urgently need action from sports governing bodies and/or governments” (Andreff, 2018, p. 15), because otherwise it might become uninteresting for its stakeholders due to the systematic violation of rules (Harms & Kaiser-Jovy, 2018).

It is important to be aware of and to make aware of the principles of fairness and equal opportunities, as these lead to the uncertainty of outcome that constitutes the foundation of any sport competition. Hence, the preservation of its integrity should be of paramount importance to competitive sport and its athletes. The core values of sport are appealing to many people and it is essential that all participants adhere to them in order to successfully stage the main ‘product’ of professional sport, namely the game

or contest between individuals or teams. Such behaviour not only promotes the functionality of sport, but also contributes to athletes' reputation and their role model function (Federal Institute of Sports Science [BISp], 2021; Federal Ministry of the Interior and Community [BMI], 2022; Harms & Kaiser-Jovy, 2018). Likewise, the World Anti-Doping Agency (WADA) refers to the intrinsic value of sport (i.e., the 'spirit of sport'), which provides the underlying rationale for its anti-doping code. As doping fundamentally contradicts this spirit, the code aims at maintaining the integrity of sport and highlights several values that are characteristic of sport, including (1) health, (2) ethics, fair play, and honesty, (3) character and education, (4) fun and joy, (5) teamwork, or (6) respect for rules and laws (WADA, 2021).

The relevance of the fight against the manipulation of sporting competitions and the concern for its integrity and credibility is also reflected by the intense national and international political attention paid to this issue. For example, the German BMI (2022) highlights the promotion of fair sport competitions with various initiatives, while the Council of Europe (2014) concluded the 'Macolin Convention' (Convention on the Manipulation of Sports Competitions) in 2014, a multilateral treaty aiming at the prevention, detection, and sanction of manipulation in the context of sport as well as at promoting cooperation in combatting it. International cooperation by prosecuting authorities is of particular importance, as that kind of crime is frequently organised across national boundaries (Forrest, 2018). Within the convention, manipulation of sport competitions is defined as "an intentional arrangement, act, or omission aimed at an improper alteration of the result or the course of a sports competition in order to remove all or part of the unpredictable nature of the aforementioned sports competition with a view to obtaining an undue advantage for oneself or for others" (Council of Europe, 2014, p. 3). The convention entered into force in 2019 and is a good example

of how governments, sport governing bodies, and associations have made the fight against corruption in sport a central concern in recent years (McHale, 2018).

1.1.3 Doping and match-fixing

To start with, doping has evidently affected the results of numerous sport competitions, whereas an even higher number of undetected cases has to be assumed. For instance, about 150 Olympic medals have been stripped as a result of anti-doping rule violations, with Russia representing the country with the highest number of 46 stripped Olympic medals, which is more than four times as much as Ukraine and Belarus (11 medals each) coming closest (Zandt, 2022). Another well-known example is professional cycling, whose integrity and credibility have been undermined by repeated doping scandals, especially around the turn of the millennium, thus severely threatening its image. Cycling and doping are so closely intertwined that researchers have recently dedicated an entire book to analysing ‘Doping in Cycling’ from an interdisciplinary perspective (Fincoeur et al., 2018). Doping has also been revealed to lead to declining interest in cycling. For instance, the repeated doping scandals caused German cycling to lose sponsors as well as television coverage and as a consequence thereof also its major event, namely the ‘Deutschland Tour’ (Dimant & Deutscher, 2015). Van Reeth (2013) also demonstrated that doping news negatively affected actual consumer choices in terms of television viewership. In contrast, a recent study by Otto et al. (2021) did not identify that cases of doping negatively affected spectators’ television demand (measured by stated preferences of *intention-to-consume* and *willingness-to-pay*). However, the researchers were able to confirm that the awareness of doping offences reduces trust in fairness and integrity of athletes (Otto et al., 2021), when trust is considered as imperative for sport (McHale, 2018).

Generally, wider knowledge exists so far on doping compared to match-fixing. At first, the amount of information available on the provider of market and consumer data ‘Statista’ regarding doping (156 search results) conveys that impression, as it far exceeds that on match-fixing (4 search results)¹. Moreover, also previous research has concentrated more on the manipulation type doping in contrast to match-fixing. A simple search in the scientific database ‘Web of Science’ in mid-July 2022 yielded substantially more articles on doping (525,821 results) than on match-fixing (19,320 results)². Accordingly, doping’s influence on the demand for sport has also been investigated more frequently than the equivalent impact of match-fixing (Harms & Kaiser-Jovy, 2018). Carpenter (2012) eventually confirms that impression questioning the circumstance that match-fixing has received considerably less attention compared to other threats to the integrity of sport and particularly compared to doping, especially because of match-fixing’s relevance at the present day.

Match-fixing is the most widespread form of corruption in sport nowadays equally representing the greatest challenge to sport in the 21st century. Not only is it a larger threat than doping, but it might also threaten the continued existence of certain sports and competitions (Andreff, 2018; Carpenter, 2012; Forrest, 2018). Jacques Rogge, former president of the International Olympic Committee, explained its significance in 2011 already: “Doping affects one individual athlete, but the impact of match-fixing affects the whole competition – it is much bigger” (Carpenter, 2012; Forrest, 2018). Whereas doping is to some extent limited to sport in which performance is predominantly affected by a physical factor, an additional argument for the relevance of match-fixing is that it can pose a serious threat to almost every sport and in particular to those

¹ The search included the alternative term ‘match rigging’ and the German term ‘Spielmanipulation’.

² Search strings for titles, abstracts, and keywords in all databases: (1) ‘doping’ and (2) ‘match fixing’ OR ‘match rigging’ OR ‘Spielmanipulation’, respectively.

attracting betting interest (Forrest, 2018). The evolving betting market is a core reason for the growing threat of match-fixing, because sport gambling provides incentives for losing sporting competitions by means of match-fixing (Andreff, 2018). Likewise, recently the prevention of match-fixing has been assessed to be of greater relevance compared to doping prevention by German sport clubs (Breuer & Feiler, 2022).

Match-fixing can be understood as “any activity that alters the uncertain outcome of a contest and destroys the integrity of sport” (Breuer & Kaiser, 2017, p. 65) undermining essential values of sport such as fair play in particular, on which the viability of professional and even recreational sport may ultimately depend (Forrest, 2018; Harms & Kaiser-Jovy, 2018). A number of match-fixing incidents have been exposed throughout the history of sport, with well-known examples including the Black Sox scandal as far back as 1919 and the more recent 2009 Bochum case dealing with over 300 fixed football matches in 13 predominantly European countries. Even though athletes are often the first to be considered as potential ‘fixers’, it seems that all other actors involved, including coaches, referees, and officials, can also potentially be manipulated (Carpenter, 2018; Memmert et al., 2021). This poses a major problem to sport, because the loss of trust in the integrity of sport and the doubt that participants in sport competitions give their best not only harms its social, educational, and cultural values, but above all may compromise its economic role by deterring fans, sponsors, and broadcasters from following a particular sport (Carpenter, 2012, 2018). An example of this was given by the German football Bundesliga bribery scandal of 1971, which involved more than 60 players from ten clubs and led to falling attendance figures over the following two years: The total of 5.3 million spectators who visited the Bundesliga stadia in the 1972/1973 season represented a decrease of 18.7% compared to the 1970/1971 season (Transfermarkt GmbH & Co. KG, 2022).

In football in particular, several betting scandals have been exposed over the decades in various countries, including Brazil, China, Colombia, Germany, Great Britain, Indonesia, Italy, Malaysia, Portugal, Singapore, Spain, Thailand, and Vietnam, where match-fixing led to considerable declines in attendance (e.g., Colombia, Germany, and Italy) or the (near) collapse of a professional league (e.g., China and south-east Asian countries; Andreff, 2018; Buraimo et al., 2016; Hill, 2010; McHale, 2018).

As a result of the lesser current scientific knowledge compared to doping on the one hand and the high relevance of match-fixing on the other hand, one part of this dissertation deals with match-fixing intending to contribute to the sustainable viability of sport. The *first study of this dissertation* concentrates on the economic perspective of match-fixing and adds an experimental dimension to analyse such behaviour empirically. Due to the enormous relevance of match-fixing in sport, investments in prevention measures and detection instruments are required, as both have the possibility to contribute significantly to combat match-fixing (Forrest, 2018; Memmert et al., 2021). In this context, knowledge on the determinants of match-fixing behaviour and effective prevention measures is required (Forrest & Simmons, 2003). Therefore, the first study also concentrates on deterrent factors to reduce such behaviour in order to give some indication how to oppose match-fixing behaviour in sporting competitions. It addresses the following two research questions (RQs):

RQ1: What factors determine the decision to engage in match-fixing behaviour in sporting competition?

RQ2: How do deterrence factors affect the decision to engage in match-fixing behaviour in sporting competition?

1.1.4 Refereeing

Despite manipulation being a major threat to sport violating its core values, it is not only the various forms of manipulation such as doping and match-fixing that threaten the integrity of sport. In addition, also any form of violence constitutes an injustice that is not an (accepted) part of sport and questions its integrity (BISp, 2021; BMI, 2022). However, as sport can be considered a mirror of society, abuse also occurs in the context of sport and especially referees (or umpires) are often the ones who suffer. Yet, competitive sport in particular requires an impartial body ensuring that participants observe the given rules. Thereby, referees are an essential part of almost every sport and can be considered as powerful guardians of its integrity bearing the great responsibility to detect and sanction rule violations. Thus, referees constitute a central prerequisite for the socialisation function of competitive sport.

In addition, the skills that referees acquire through training and officiating contribute to indirect social and economic benefits. These skills are often not only applicable in the sporting context, but also benefit the broader society: for example, taking decisions in situations under pressure, dealing with and resolving interpersonal conflicts, understanding, interpreting, and applying rules in an equitable and fair manner, as well as managing stress and one's own emotions are equally valuable skills outside of sport competitions (Cuskelly & Hoye, 2004, 2013).

As mentioned above, 'minor' manipulations such as violations of sporting rules are usually seen as an inherent part of the game, but by fulfilling their tasks referees contribute significantly in not letting them become an excessive threat to sport's viability. However, the execution of this function is endangered when referee numbers are declining, leading to a lack of these guardians of sport integrity.

To give an example, the German Football Association (DFB) has to deal with an enduring decrease in its number of football referees since 2006. While 81,372 football referees were organised within the association in the year of Germany last staging the men's World Cup (DFB, 2006), that amount has decreased by overall 36.2% to 51,884 football referees in 2020 (DFB, 2020). That means, over a period of 14 years the association can rely on about 30,000 less football referees and in the statistic's last year alone, there has been a decrease of almost 5,000 football referees (DFB, 2020)³.

The decreasing number of referees leads to organisational problems. Despite the fact that referees nowadays increasingly officiate several matches on the same weekend, take on different roles (e.g., main referee, assistant referee, referee observer), and/or are deployed alone instead of as part of a team as in former times, in extreme cases there is nobody who can be appointed to referee a match at the amateur level. Nearly two out of five (39%) sport clubs in Germany experience the recruitment and retention of referees to be a (very) big problem, while the corresponding recruitment and retention of volunteers in general is assessed to be the largest out of 21 problems (Breuer & Feiler, 2022). Similar problems with regard to referees occur in numerous other countries over various sports (e.g., Baldwin & Vallance, 2016; Breuer et al., 2017; Cuskelly & Hoye, 2013; Webb, Dicks, et al., 2020; Wicker & Frick, 2016). This organisational problem can also pose a great challenge to sport and its viability.

Although referees only recently received greater research interest (e.g., Livingston et al., 2020; Webb, 2020; Webb, Rayner, et al., 2020), few researchers have dealt with referees' intentions to continue in previous studies analysing some selected

³ It should be noted that the DFB changed its counting method slightly with the 2015/2016 season by only including 'active' referees (i.e., all those who completed at least one match in the respective period) instead of those registered in the association. This explains a loss of 11,099 (71,521 registered vs. 60,422 active) football referees in 2015 (DFB, 2015, 2016).

influencing factors. Particularly focussing on referees in Australian rugby and Australian Rules football as well as Canadian ice hockey, mixed results were found (Cuskelly & Hoye, 2013; Forbes & Livingston, 2013; Kellett & Shilbury, 2007; Livingston & Forbes, 2007, 2016). Notwithstanding the worldwide significance of football, hardly any studies dealt with football referees from a managerial perspective (Webb, 2020). While the European context has also been rather neglected so far, no study has focused on volunteers' and referees' intention to continue including various concepts for a holistic understanding.

Abuse and violence are assumed to be decisive explanations for the decreasing amount of (voluntary) referees. Unfortunately, on a regular basis there are cases in which referees experience verbal and/or physical abuse during their (voluntary) refereeing activity. Particularly football referees are affected by such negative experiences. Just recently, international media had to report shocked about an extreme incident in El Salvador, in which a referee died after being attacked by supposed fans and players for showing a red card in an amateur football match (e.g., Kicker, 2022). But also before, abuse of and violence directed against (voluntary) referees by players, coaches, or spectators was an issue which repeatedly had to be discussed as exemplified by international news services such as the 'Washington Post' (Dvorak, 2021) or the 'BBC' (McGregor, 2021). Also previous research addressed the topic of referee abuse in sport (e.g., Cleland et al., 2018; Cuskelly & Hoye, 2013; Kellett & Shilbury, 2007; Ridinger et al., 2017; Rullang et al., 2015; Webb et al., 2017; Webb, Dicks, et al., 2020) and Webb (2020) identified that it is a 'an evolving narrative'. However, no study prior to this dissertation statistically analysed abuse as a determinant of referee retention. After this dissertation's (second) study has been published, also a recent study of Dawson et al. (2021) investigated that influence finding that abuse is associated with referees' increased intention to quit.

Besides, despite a great interest in volunteering as such, previous sport management literature neglected volunteer groups in specific roles, such as referees in particular (Wicker, 2017). Given the fact that the effective operation of the game, especially at amateur level, is under threat due to the development of decreasing number of referees, it is important to overcome that research gap and increase knowledge about referees and their reasons for (dis)continuation. Consequently, the purpose of the second part of this dissertation is to follow the future research suggestion focusing on voluntary referees as a specific volunteer group and to identify the determinants of their intention to continue including the analysis of the effect of abuse and experiences of violence. Hence, the *second and the third study of this dissertation* deal with voluntary referees and are guided by the following two research questions:

RQ3: What factors determine the intention to continue as a voluntary referee?

RQ4: How does abuse affect the intention to continue as a voluntary referee?

Since the second study, among others, revealed that voluntary referees' satisfaction is a major determinant of their intention to continue with their activity, it induced the third study to also investigate the subsequent research question:

RQ5: What factors determine the voluntary referees' overall satisfaction?

1.2 Structure

The remainder of this dissertation is structured as follows. Subsequent to this introduction, the economic theory of behaviour is explained as the dissertation's underlying theoretical background. This second chapter also outlines how it has been applied in the three studies of the dissertation. Thereafter, its three studies are presented in detail in chapters three, four, and five. The first study generally deals with match-fixing behaviour (cf. '3 *Corruption and self-sabotage in sporting competitions – An*

*experimental approach to match-fixing behavior and the influence of deterrence factors*⁴), while the second and third studies concentrate on voluntary referees and, on the one hand, their intention to continue their activity (cf. ‘4 *The determinants of the intention to continue voluntary football refereeing*’) as well as, on the other hand, their satisfaction with their activity (cf. ‘5 *The general and facet-specific job satisfaction of voluntary referees based on the model of effort-reward imbalance*’). Finally, the dissertation finishes in chapter six with a conclusion and an outlook, summarising the three studies of this dissertation, discussing its theoretical as well as practical implications, and reflecting on its limitations as well as avenues for future research.

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⁴ The journal, to which this study has been submitted, requires American English. Therefore, the title as well as the study itself is written in American English in contrast to the rest of this dissertation.

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2 Theoretical background

This dissertation generally deals with individuals' decisions. These decisions concern, on the one hand, (1) accepting or rejecting a match-fixing offer within a contest situation and, on the other hand, (2) intending to continue the activity as a voluntary referee respectively its consequence of (3) being satisfied with this activity because its rewards outweigh its efforts. Hence, individuals' decision-making has to be considered.

2.1 Economic theory of behaviour

Most standard economic theories assume human behaviour to be fundamentally rational and striving for utility maximisation (e.g., Becker, 1962, 1976; Kirchgässner, 2008). Its underlying principles trace back to Adam Smith (1776), who is often considered as the founder of modern economics (Becker, 1976). According to the neoclassical approach of economics, *preferences* and *constraints* (also known as *restrictions*) determine the decisions of individuals. While constraints such as time and income restrict individuals' scope of action, preferences arise from their intentions and are generally more stable than constraints (Becker, 1993; Kirchgässner, 2008). Ultimately, individuals are supposed to select the alternative most satisfying their preferences considering the given constraints. Thus, by evaluating its costs and benefits, individuals decide for the alternative promising them the highest utility by providing them with the greatest benefit or satisfaction (Kirchgässner, 2008; Scott, 2000; Voss, 2020).

This decision-making process, in which human action is understood as a rational choice between alternatives, corresponds to the neoclassical *homo oeconomicus*, also known as the 'economic man'. This concept considers the individual human being which in its traditional version has been conceptualised as a self-interested ideal decision-maker with complete rationality and stable preferences having full access to

information as well as an unlimited capacity to process them (Diekmann, 2020; Kirchgässner, 2008; Voss, 2020). Such rational actors are, for example, presumed within the rational choice theory, which is a decision theory often employing the model of the homo oeconomicus as a representative person and whose explanations ground on single individuals' behaviour referring to the concept of 'methodological individualism' (Voss, 2020). On the one hand, economic theory of human behaviour can help to understand and to explain individual choices made resulting from carefully weighting costs and benefits. On the other hand, the theory is applicable to many different (academic) disciplines (Boudon, 2009; Scott, 2000).

The eminent economist Gary Stanley Becker (1976, 1993) expanded economics' scope of application by analysing social phenomena, which originated in other academic disciplines studying human behaviour (such as sociology and psychology), from an economic perspective. Based on the same assumptions of rationally acting individuals focussing on their individual utility maximisation, Becker (1962, 1976) demonstrated that an economic approach can be utilised to understand all human behaviour. Reasoning that people use cost-benefit analyses for all their choices, Becker (1962, 1976, 1993) applied the economic theory of behaviour to several aspects of human activity, such as discrimination against minorities, crime and punishment, human capital, family aspects like marriage and family size, social interactions, and even to "irrational" behaviour. By now, economic respectively rational choice approaches occur across all social sciences (Kirchgässner, 2008).

However, other approaches such as behavioural economics argue that, in contrast to the traditional version of the homo oeconomicus, not all human decision-making is purely based on rationality and utility maximisation, extending this concept by

sociological and psychological⁵ factors (Altman, 2006). Considered as a starting point of behavioural economics, the prospect theory (Kahneman & Tversky, 1979) reflects irrational behaviour postulating that individuals value losses and gains differently. The theory is also known as the ‘loss-aversion’ theory, because it discloses that within two equal choices individuals’ decisions emphasise and prefer perceived gains over perceived losses, due to losses’ greater emotional impact compared to the equivalent gain (Kahneman & Tversky, 1979). On the other hand, mental accounting (Thaler, 1999) can be adduced as another example revealing that individuals at times value same amounts of money differently based on framing effects. It is usually based on subjective criteria and often leads to detrimental consequences regarding individuals’ spending or investment behaviour (Thaler, 1999). Yet, alternative approaches such as behavioural economics are rather descriptive than explanatory, but for behavioural models it is essential to understand human actions (Kirchgässner, 2008). Instead, most standard economic theories are normative explaining respectively predicting how people should behave given specific assumptions as, for example, rational decision-making.

On this basis, Kirchgässner (2008) elaborates that the modern economic model of behaviour usually does not assume ‘full rationality’ within the homo oeconomicus:

“In this context, rationality does not mean that the individual chooses the optimum way of acting at every moment, that he goes through the world like a walking computer, which always finds out the best of all available alternatives in a flash. [...] Rationality in this model means only that the individual, following his intentions, is principally in a position to assess

⁵ Nevertheless, also in psychology individuals’ behaviour is usually regarded as responding to various incentives and rationality as well as utility maximisation are of importance within the ‘psychological man’ as well (Kirchgässner, 2008).

and evaluate his action range and then to act accordingly.” (Kirchgässner, 2008, p. 15)

Despite the limitations of the (traditional) homo oeconomicus and its associated criticism, the economic approach of behaviour remains a fundamental principle of economic thought. Apart from rational choice theory already having “beyond any doubt inspired successful and convincing explanations of many puzzling social phenomena” (Boudon, 2009, p. 181), it is important to notice that also novel research is still predominantly founded on the basic economic model of behaviour represented by the homo oeconomicus (Kirchgässner, 2008). Similarly, also Gary Stanley Becker continued to evaluate rationality as a powerful tool which is useful to explain and predict human behaviour within an interview in late 2010, although he has been fully aware of criticism directed at the economic theory of behaviour and familiar with the influences of behavioural economics (Herfeld, 2012). He remained convinced “that there is no other comparable approach in the social sciences with the same degree of explanatory [and predictive] power, or even anywhere near” (Herfeld, 2012, p. 78). With regard to behavioural economics, Becker criticises that it evaluates a set of assumptions individually instead of collectively and likewise that it neglects embedding its insights in an entire behavioural model (Herfeld, 2012).

Hence, considering all these arguments, rational utility maximisation can be interpreted as a general model aiming at (better) understanding (typical) human decision-making, which often is regarded as a very useful and reasonable basic assumption for the (ideal) prediction of behaviour (Becker, 1993; Burgham & Downward, 2005). Rational choice analysis is an abstraction (Herfeld, 2012) which can “be employed as a highly flexible ‘toolbox’, applicable, with appropriate specifications, to a range of problems beyond the traditional scope of economics” (Herfeld, 2013, p. 119). Further, the ‘adjusted’ homo oeconomicus based on the modern economic model of behaviour

is a valuable concept, which can be understood as a further development allowing for the criticism towards ‘full rationality’. Thereby, it does not contradict the concept of ‘bounded rationality’, but, in contrast, both have several similar assumptions (Kirchgässner, 2008).

2.2 Application of theory in this dissertation

Thus, the decisions of individuals examined in this dissertation are considered to be generally in line with the economic theory of behaviour assuming human decision-making to be fundamentally rational and striving for individuals’ utility maximisation.

The *first study of this dissertation* investigates the decision to engage in match-fixing behaviour within a contest situation (cf. chapter 3) and its theoretical model is based on Becker’s (1968) economic approach applied to the context of criminology, as “economic thinking has much to contribute in understanding and addressing attempts to manipulate sporting competition” (Breuer & Forrest, 2018, p. 3). More precisely, individuals’ rational decision is explained by a microeconomic model conceptualised in the context of corruption in sport (Maennig, 2002) and match-fixing (Forrest & Simmons, 2003) in particular. Similarly to Becker (1968), this study applies an expected utility framework attempting to understand for what reasons people commit crimes (e.g., accepting a match-fixing offer) with the purpose of combatting such illegal behaviour in the future. Therefore, the effectiveness of the deterrent factors (1) detection probability and (2) severity of monetary punishment were explored within an experimental laboratory setting based on Becker’s (1968) deterrence hypothesis, as both are relevant factors to reduce match-fixing activities by decreasing their expected net utility (Forrest, 2018). The laboratory setting allows observing match-fixing behaviour and manipulating the experimental environment in order to analyse the causal effects of variables, such as individual micro-level determinants or specific anti-corruption

policies. In line with economic theory, modifications of restrictions are used in this study to explain systematic changes in human behaviour (Kirchgässner, 2008).

The two subsequent studies of this dissertation deal with volunteering in sport examining the specific context of voluntary referees. Generally speaking, rational behaviour is not necessarily equivalent to deciding for monetary or material benefits such as the financially most attractive alternative, but other aspects comprising rather emotional or non-monetary benefits, as, for example, increasing one's individual satisfaction, might be perceived superior and represent rationality for individuals (Kirchgässner, 2008).

Previous research has already demonstrated how economic approaches such as the economic theory of behaviour (Becker, 1976) can be applied in the context of sport volunteering modelling individuals' decision on voluntary engagement (e.g., Burgham & Downward, 2005; Downward & Ralston, 2006; Hallmann, 2020; Schlesinger & Nagel, 2013; Wicker & Hallmann, 2013). In the context of voluntary behaviour, the theory's assumption of self-interest is an interesting aspect (Becker, 1993; Kirchgässner, 2008). Although altruism might be able to supplant the self-interest assumption in some specific situations (Kirchgässner, 2008), Hallmann (2020), for example, explained with reference to the economic approach of Gary Stanley Becker how volunteering can be regarded as a form of self-interest (in contrast to sole altruism) following economic theory, since individuals gain utility from philanthropic behaviour. Additionally, social appreciation has been identified in this context as a strong incentive for and an important outcome of (sport) volunteering that is received in exchange for investing limited resources such as time and money by following the aim of utility maximisation (Erlinghagen, 2003; Flatau, 2009; Schlesinger & Nagel, 2013). Moreover, integrating the role of socialisation to the model, Flatau (2009) has also shown how

the homo oeconomicus and fundamental assumptions of rational choice theory can be applied in the context of volunteer participation in sport clubs not only for individual members, but also on the overall club level. Consequently, volunteering as a form of altruistic behaviour can originate from rational self-interest (Becker, 1993; Hallmann, 2020).

Other established approaches, which derived from the economic one, support this line of argumentation when explaining voluntary behaviour. For example, the logic of selection represents an essential element of Esser's (1993, 1999) model of sociological explanation and is based on the rational choice approach. Following this logic, rational individuals decide to volunteer if the perceived benefits exceed the corresponding costs selecting options based on the greatest expected utility. Sport has increasingly offered utilities of paramount importance such as well-being and social recognition, resulting in a higher subjective utility for individuals (Breuer et al., 2017). While Lindenberg (1996) confirms the relevance of these utilities arguing that individuals particularly strive for social recognition next to well-being, already George Homans (1961), who established rational choice theory in sociology, considered approval as the most fundamental human goal, exchanged by individuals just as money. While the latter represents an economic exchange, approval constitutes a social exchange among people (Scott, 2000). Social interactions, as given in volunteering, can constitute a form of social exchange between individuals (e.g., of approval and other valued behaviours). Individuals' actions might be motivated by perceiving their rewards and costs, often including a combination of monetary and non-monetary components, to be balanced profitably. While individuals' profits from interactions can be assessed by deducting costs from rewards, interactions generally only continue if both parties make a profit representing a productive exchange (Homans, 1961; Kirchgässner, 2008; Scott, 2000).

Thus, analysing individuals' decision-making within the sport volunteering context, this dissertation generally refers to the modern economic theory of behaviour. This economic approach is described as the *heterodox* economic theory of behaviour, allowing for broader theoretical principles compared with the neoclassical approach. This implies that it is not limited to a strict economic postulate but also accepts influences from sociology and psychology in explaining behaviour and therefore, for example, assumes human decision-making to be fundamentally (but not necessarily fully) rational (Kirchgässner, 2008; Wicker & Hallmann, 2013). Thereby, the approach of this dissertation corresponds with previous literature's recommendation arguing that "the heterodox approach might be better suited for a volunteering context [as contrasted with the neoclassical approach], as it does not exclude other approaches, but rather integrates other perspectives" (Wicker & Hallmann, 2013, p. 117) to explain the decision for voluntary engagement.

The *second study of this dissertation* investigates the decision of continuing the activity as a voluntary referee in the context of football (cf. chapter 4) and considers various determinants (e.g., motivation, experiences, perceived organisational support, satisfaction) of this intention to continue. As explained above, within the framework of the economic model of behaviour, preferences are of particular importance determining individuals' decisions and reflecting individuals' intentions (Kirchgässner, 2008). Hence, intention is a crucial concept for the explanation of behaviour and individuals' intention to continue can describe their utility of the voluntary refereeing activity assuming that volunteers will only continue with their activity if they perceive the benefits of volunteering outweighing the associated costs (i.e., benefits exceed the time invested by voluntary referees which cannot be spend on another activity).

Furthermore, this study refers to the organisational support theory within the context of perceived organisational support (POS) which originates in that theory. Organisational support theory is based on the social exchange theory (e.g., Hong et al., 2019; Kurtessis et al., 2017) and thus, “assumes a social exchange of employees trading their time, effort, and loyalty at work for valued outcomes, namely, rewards like pay or promotion on the one hand and socio-emotional benefits like approval or esteem on the other hand” (Giel & Breuer, 2020, p. 246). Thereby, this study seizes on several aspects explained in this theoretical background.

The *third study of this dissertation* investigates a consequence of the decision for a voluntary refereeing activity, namely being satisfied with this activity due to its rewards outweighing its efforts (cf. chapter 5). As explained above, individuals’ satisfaction can represent individuals’ utility and thus, rational behaviour can imply to decide for the alternative promising the greatest satisfaction after evaluating alternatives’ costs and benefits (Kirchgässner, 2008). Similar to the concept of cost-benefit analyses, the effort-reward imbalance (ERI) model (Siegrist, 1996) applied within this study grounds on the idea that (based on the principle of social reciprocity) rewards (e.g., money, esteem, or promotion prospects) should be in balance with or even better exceed individuals’ efforts (e.g., time pressure, high responsibility, or overtime) to experience satisfaction. It integrates a psychological perspective considering stressful situations and their relation to (job) satisfaction. As a result, also this study refers to the arguments provided in this theoretical background, which constitutes a common theoretical framework for the three studies of this dissertation.

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3 Corruption and self-sabotage in sporting competitions – An experimental approach to match-fixing behavior and the influence of deterrence factors

Giel, T., Dallmeyer, S., Memmert, D., & Breuer, C. (2022). Corruption and self-sabotage in sporting competitions – An experimental approach to match-fixing behavior and the influence of deterrence factors. *Journal of Sport Economics* (in press). <https://doi.org/10.1177/15270025221134239>

Abstract

This study investigates match-fixing employing a 2-player contest in an experimental setting. Subjects compete in a real-effort task and are bribed onetime to self-sabotage. Based on Becker's (1968) deterrence hypothesis, the effectiveness of deterrent factors is analyzed via different treatments applying an expected utility framework. Results show that the majority of participants do not maximize their monetary payoff, that increasing detection probability has a higher deterring effect on bribe acceptance compared to severity of monetary punishment, and that participants with lower performance levels were more likely to accept bribes. Implications are derived for sport governing bodies to operate against match-fixing.

Keywords: Integrity; Contest; Underperformance; Bribery; Deterrence Hypothesis.

4 The determinants of the intention to continue voluntary football refereeing

Giel, T., & Breuer, C. (2020). The determinants of the intention to continue voluntary football refereeing. *Sport Management Review*, 23(2), 242-255. <https://doi.org/10.1016/j.smr.2019.01.005>

Abstract

Competitive sports require a regulating body of referees to enforce the rules for the effective operation of the game. However, the number of referees is generally decreasing, leading to organisational problems at the amateur level. The purpose of this research is to identify the factors that determine the intention to continue voluntary refereeing in the context of football in Germany. Combining several concepts as predictors, including both the antecedents and the experience of volunteering, in this study, the authors extend the understanding about volunteers' intentions to continue their activity and address the research gap regarding the analyses of specific volunteer groups such as referees. By means of an online questionnaire, the authors surveyed voluntary football referees in Germany ($n = 4,541$). Regression analysis reveals the motive of self-orientation, respect shown by athletes, coaches, and spectators towards referees, compatibility of refereeing with one's occupational and private life, perceived organisational support, and referees' satisfaction to predict referees' positive intention to continue with their activity. Simultaneously, experiences of offences during refereeing negatively influence this intention, and younger referees show higher intentions to continue their activity than do older referees. Because volunteer recruitment and

retention are expensive, the findings of this study facilitate the improvement of effective retention strategies for the federations responsible for referees.

Keywords: Volunteers, Sport officials, Football, Volunteer process model, Behavioural intentions.

5 The general and facet-specific job satisfaction of voluntary referees based on the model of effort-reward imbalance

Giel, T., & Breuer, C. (2021). The general and facet-specific job satisfaction of voluntary referees based on the model of effort-reward imbalance. *European Sport Management Quarterly* (in press). <https://doi.org/10.1080/16184742.2021.1964090>

Abstract

Research question: Despite the importance of referees for competitive sports and their decreasing numbers in various countries across sports leading to organisational problems, little is known about their job satisfaction and its determinants, although it substantially contributes to their intention to continue. To overcome this research gap, this study examines voluntary referees' general job satisfaction and several job satisfaction facets, their efforts and rewards based on the effort-reward imbalance (ERI) model and how this ERI relates to their job satisfaction. **Research methods:** The study's sample consists of $n = 3,075$ voluntary football referees in Germany having completed the online survey. Logistic regression analyses, confirmatory factor analysis and structural equation modelling were employed to answer the research questions. **Results and Findings:** The four job satisfaction facets esteem, colleagues, promotion prospects, and expense allowance all significantly predict the voluntary referees' general job satisfaction accounting for more than one-third of its variance. While esteem shows the highest practical relevance in determining job satisfaction, promotion prospects and expense allowance have the lowest influence. Although voluntary referees predominantly do not indicate an ERI, it is significantly associated with job

dissatisfaction. **Implications:** This study enriches theory considering general and facet-specific job satisfaction in combination with the ERI model. Practically, to create a satisfying refereeing environment, associations should particularly ensure that referees feel appreciated for their voluntary activity and foster the social interaction among referee colleagues strengthening their camaraderie. Furthermore, associations can attempt to reduce efforts or increase rewards to prevent referees' job dissatisfaction.

Keywords: Job satisfaction facets; KAFA; ERI model; Volunteers; Sport match officials.

6 Conclusion and outlook

This dissertation's final chapter first briefly summarises the main findings of its three studies. Thereafter, its theoretical and practical implications are discussed. Finally, it concludes with addressing its limitations and giving an outlook on future research.

6.1 Summary of key findings

The *first study of this dissertation* (cf. chapter 3) examined match-fixing behaviour by conducting an experiment, in which subjects competed in a real-effort task against each other and each received one single bribe offer to self-sabotage and consequently lose this particular one out of ten rounds on purpose. In this context, the effectiveness of the deterrent factors (1) detection probability and (2) severity of monetary punishment was analysed based on Becker's (1968) deterrence hypothesis. The study detected that participants predominantly did not maximise their monetary payoff by means of accepting the bribe (only 36.7% acceptance in the Baseline treatment). Referring to RQ1, this indicates that individuals' decision to engage in match-fixing behaviour varies. More precisely, higher match-fixing behaviour was prevalent among subjects with lower performance levels and higher incomes. Considering the two deterrent factors with identical expected penalties, particularly an increased detection probability resulted in less participants accepting the bribe offer (23.7% acceptance) in contrast to the increased severity of monetary punishment (31.6% acceptance). This answers RQ2 by indicating a certainty effect, but not a severity effect. Finally, as a side note, the experiment further revealed that all subjects accepting the bribe have reduced their performance levels afterwards, but the majority has not maximised its level of self-sabotage positioning at least one slider correctly.

The *second study of this dissertation* (cf. chapter 4) aimed at identifying the determinants of voluntary football referees' intention to continue with their activity. For this purpose, a comprehensive number of influencing factors were derived from previous literature and investigated within this study, including the various concepts of volunteer motivation (representing 'antecedents of volunteering'), different experiences gained during volunteering (including those of violent behaviour directed towards oneself), POS (both representing 'experience of volunteering'), volunteer satisfaction, and basic socio-demographic information. First, this study detected that active voluntary football referees in general are satisfied with their activity and have not thought about quitting it. Subsequently, with regard to RQ3, the experience of volunteering was revealed to have a higher explanatory power for referees' intention to continue officiating, considering the significant determinants compared to the antecedents of volunteering. While the latter influence is represented by the self-oriented motive, the determinants of the experience of volunteering included the compatibility with other obligations, POS, fewer offences, and the experienced respect (in descending order of influence). Addressing RQ4, abuse in terms of offences reduces voluntary referees' intention to continue, while the two more severe experiences of abuse (i.e., threats and assaults) probably occur infrequently enough not to contribute substantially to these intentions yet. Additionally, younger referees were found to indicate higher intentions to continue as voluntary referees and referees' satisfaction with their activity was identified as the strongest determinant of their intention to continue. The latter finding represented the initial starting point of this dissertation's third study.

The *third study of this dissertation* (cf. chapter 5) concentrated on comprehending volunteer satisfaction and its determinants in detail by means of analysing the concept of general and facet-specific (job) satisfaction within voluntary football referees. First, despite the tendencies of decreasing numbers of referees and increasing experiences

of referee abuse, similar to the second study also this study revealed that active voluntary referees are largely satisfied with their activity and basically do not show an imbalance of efforts and rewards, as the rewards received mainly exceed the efforts spent. However, it is figured out that also in this refereeing context generally such an existing ERI is significantly associated with volunteers' dissatisfaction. Subsequently, concerning RQ5, it has been found that the four satisfaction facets esteem, colleagues, promotion prospects, and expense allowance (in descending order of influence) are capable of significantly explaining overall satisfaction. Hence, particularly the appreciation of referees for their voluntary activity as well as the social interaction among referee colleagues contributes to their (job) satisfaction.

In conclusion, the integrity of sport does not seem to be acutely at risk. Individuals predominantly rejected the match-fixing offer and thus opted for an honest competition in the sense of fair play and against the maximisation of their own monetary gain. Further, the currently active voluntary referees tend to be satisfied with their efforts and rewards in a well-balanced proportion and do not think about quitting their activity, so that they will continue to act as guardians of the integrity of sport to ensure that the involved parties abide by the rules and compete in a fair manner. However, the dissertation allows for further improvement of the situation, by providing knowledge about, for example, the effectiveness of deterrence factors in relation to match-fixing behaviour as well as the determinants of voluntary referees' retention and satisfaction.

6.2 Theoretical implications

The dissertation contains several theoretical implications. First of all, its overall findings provide arguments for the application of the modern economic theory of behaviour to explain individuals' decisions. The experimental study on match-fixing behaviour revealed that complete rationality limited to an economic perspective and with

exclusive self-interest cannot be assumed among individuals. From an economic point of view, everybody should have accepted the bribe offer and therewith the financial gain (2.50€) compared to the maximum potential income of competing honestly and winning that one particular round (2.00€). Despite the risks of the detection probability and the monetary punishment, accepting the bribe primarily would have been beneficial for all participants based on the model's calculation of the expected net utility. However, just over one third of the participants accepted the match-fixing offer (36.7%) and even less did so after increasing the deterrent factors severity of monetary punishment (31.6%) respectively detection probability (23.7%). Next, the divergent extent of change in acceptance behaviour with regard to the two deterrent factors additionally argues against complete rationality, because the expected penalty among those two treatments was held constant and thus should result in similar reactions among participants. Hence, there must be other factors influencing the individuals' decision not explainable with a sole economic perspective. It is assumed that the costs of violating competitive preferences and social and moral norms in a contest are perceived as exceeding the individuals' expected net utility of match-fixing behaviour.

On the other hand, the two further studies within the context of sport volunteering demonstrated that voluntary football referees continue their activity and are satisfied with it if several determinants within a holistic approach support the activity respectively if the overall rewards outweigh the corresponding costs leading to an increased satisfaction among those referees. Moreover, the study on voluntary football referees' determinants of intention to continue disclosed that self-interest is important within the volunteering activity. Out of the motives with the antecedents of volunteering, referees were motivated to continue their activity primarily by self-orientated motives, partly by social interaction (having a significant influence in one of two models), and not at all by aspects of altruism (although insignificant, altruistic motives even tend to

have a negative influence on referees' intention to continue). Besides, the study on volunteer satisfaction also explicitly concentrated on the efforts and rewards of the refereeing activity and a potential imbalance of high efforts spent and low rewards received. However, the results support the economic theory of behaviour, because active voluntary referees principally do not experience such an imbalance, but rather perceive rewards to exceed the corresponding efforts. Therefore, active referees are generally satisfied and therewith also more likely to continue their activity. In contrast, it could also be demonstrated that if such an imbalance of efforts and rewards does exist, it is significantly associated with job dissatisfaction, as might have been assumed based on the theory with not receiving enough utility from the activity.

Focusing on the three studies of this dissertation, each of those contributes several theoretical implications. To begin with, the *first study of this dissertation* extends corruption research considering the relationship between bribing behaviour and self-sabotage. While previous research mostly concentrated on an agent making favourable decisions to third parties, this study addressed the research gap analysing in a laboratory setting the specific corruption form requiring individuals, in exchange for a bribe, to self-sabotage their own performance (i.e., deliberately underperform) within a contest situation for the benefit of a third party. Situations of that kind particularly occur in sport and are known as match-fixing. Such corruption behaviour in contest situations is particularly interesting, as the participation in contests often relates to specific competitive preferences and social and moral norms. Some studies already identified the essential role of social norms within corruption scenarios (e.g., Banerjee, 2016; Barr & Serra, 2010), whereas competitive preferences and related norms have rather been neglected so far, but are addressed within this study. Moreover, this study also controls Becker's (1968) deterrence hypothesis, which has been confirmed in other forms of criminal behaviour, in that particular context of corruption behaviour in

relation with self-sabotage. The results indicate a certainty effect, but not a severity effect, as only increasing the detection probability led to significantly less people accepting the bribe offer. Due to the participants being generally risk-averse, this finding is not in line with Becker's theory on general criminal behaviour (1968).

Although this study cannot confirm Becker's (1968) proposition that offenders generally tend to be risk-seeking, it demonstrates that risk preferences do not predict corruption behaviour within a laboratory experiment supporting previous literature (Berninghaus et al., 2013). Further, whereas previous literature especially concentrated on the influence of performance on bribe-giving behaviour (Burdea, 2013), this study adds on the relationship between performance and corruption behaviour finding that previous performance as a proxy for the winning probability affects the bribe decision. At last, it is also interesting from a theoretical perspective that all subjects accepting the bribe offer reduced their performance, but the majority did not maximise their probability of losing selecting a less suspicious level of self-sabotage than zero correctly positioned sliders. This might support previous research assuming that rank feedback affects competitive preferences and social and moral norms (Gill et al., 2019).

The *second and the third study of this dissertation* contribute substantially to the current state of research on sport volunteering in general and voluntary refereeing in particular. For example, the studies respond to several *calls for research* formulated in previous studies. *First*, by focusing on voluntary referees both studies investigate volunteers in specific roles, whereas research on such specific volunteer groups was identified to have previously been comparatively neglected (Wicker, 2017). *Second*, as requested by Webb (2020), this dissertation adapts and applies methods and concepts originating in other disciplines, such as the ERI model or the concept of general and

facet-specific (job) satisfaction, to the unique refereeing population in order to further develop the body of knowledge. *Third*, voluntary referees' satisfaction is an object of investigation within both studies. As demanded, the dissertation employs large samples to study referees' satisfaction focusing on overall referee satisfaction and its determinants on the one hand, and satisfaction as a determinant for referees' intention to continue on the other hand (Webb, 2020). Additionally, it extends research on job satisfaction and its determinants to another group, as this has been claimed as important for future research (Kinman, 2016).

More specifically, both studies pursue the goal of providing holistic perspectives to the understanding of their respective research topics. On the one hand, while previous literature mostly focused on isolated determinants of volunteers' intention to continue, the *second study of this dissertation* integrates a combination of various concepts as determinants. This integrative perspective on explaining the intention to continue volunteering is based on the three-stage volunteer process model (Wilson, 2012) and gives the opportunity to compare different concepts' relevance magnitude. The approach proves to be meaningful, as the results reveal the importance of experiences compared to volunteers' motives confirming previous research which has explained that motives alone weakly predict sport volunteers' intention to continue (Hoye et al., 2008). In addition to the concepts derived from the current state of research, this study also adds group-specific items to the analysis by considering different aspects of violence experienced by voluntary football referees during their activity and the items' influence on the intention to continue refereeing. On the other hand, the *third study of this dissertation* examines the important but previously neglected concept of referees' (job) satisfaction (Webb, 2020) and its determinants applying both, overall job satisfaction as well as satisfaction with different job facets. Therewith, the study increases the

understanding of human resources management representing an essential organisational problem in sport (Breuer et al., 2017).

Not only do the results generally add to the existing officiating and job satisfaction research, but also has the ERI model been applied to the context of sport volunteering assessing referees' efforts and rewards and thereby confirming its main assumption that ERI leads to (job) dissatisfaction (Siegrist et al., 2004; Sperlich et al., 2013). Beyond that, the third study also extended the ERI model by adding the contextual factor of *colleagues* to efforts and rewards. While some theories, such as the social identity theory (Tajfel & Turner, 1986), have already demonstrated the relevance of social groups, Wilson (2012) has identified that the social context of volunteering work previously has rather been neglected as a determinant of volunteer satisfaction. This dissertation takes this aspect into account finding that colleagues are contributing more to job satisfaction than, for example, promotion prospects and financial compensation.

In addition, the assessment of satisfaction within this dissertation has raised some theoretical implications. Integrated into the ERI model, the third study assessed referees' satisfaction based on the job satisfaction scale 'KAFA' (Haarhaus, 2016). Adapted to the sport volunteering context, it could be validated in a modified version for this context as measure for general job satisfaction explained by the satisfaction facets co-workers, promotions, pay, and supervision. Beyond, in line with previous studies (e.g., Haarhaus, 2016, 2017), the findings of this dissertation also suggest that the application of single-item scales to assess job satisfaction is not recommendable.

Finally, the variety of different methods applied in this dissertation to analyse various aspects of integrity in sports shall be mentioned at this point. Within this dissertation, knowledge has been gained collecting primary data by different empirical research methods, namely an *experiment*, which has been programmed using the software z-

Tree (Fischbacher, 2007), with $n = 310$ participants spread over 23 experimental sessions as well as a *survey* in form of an online questionnaire including $n = 4,541$ respectively $n = 3,075$ voluntary football referees. Moreover, different statistical procedures were employed within the data analyses to answer the respective research questions in the three studies of this dissertation, comprising *correlation analysis*, several *regression analyses* (ordinary least squares regression, logistic regression, probit regression, random-effects regression), *principal component analysis (PCA)*, *confirmatory factor analysis (CFA)*, and *structural equation modelling (SEM)* apart from *descriptive statistics* and several *reliability and validity analyses* (e.g., Cronbach's Alpha, convergent validity, discriminant validity).

6.3 Practical implications

Several practical implications can be derived from this dissertation. These implications are particularly of advantage to sport leagues and sport federations which gain knowledge supporting them in maintaining the viability of sport. This knowledge concerns two areas which are both relating to the aspect of integrity in sport, namely understanding and as a result reducing (1) manipulation in sport in terms of match-fixing behaviour and (2) termination of voluntary refereeing.

First, this dissertation provides information about determinants of match-fixing behaviour as well as the effectiveness of two instruments combatting such practices, since match-fixing is a crucial and evolving challenge for sport posing a threat to its integrity. With the aim to prevent or at least minimise match-fixing and self-sabotage of individuals involved in sporting competitions, sport federations might tackle two aspects in particular. On the one hand, federations might concentrate on the active promotion of competitive preferences and social and moral norms, as aspects such as integrity and sportsmanship seem to be of great relevance for contestants in weighing

them against the expected utility of match-fixing. This has been demonstrated by more than two-thirds of the experiment participants neglecting the bribe offer and thus not maximising their monetary payoff, but competing honestly. If possible, federations should strive for increasing these preferences and norms, for example, by educational programmes, in which their importance for the functionality of sport is emphasised. Potentially, the credibility of former athletes can be exploited for these purposes as recommended by previous literature (Forrest, 2018).

However, it could be expected that some individuals will remain free riders, if federations only appeal to their integer behaviour. Therefore, on the other hand, federations should also enhance deterrent factors operating against match-fixing. In this context, federations should prefer increasing the detection probability instead of the severity of punishments when allocating resources to the fight against match-fixing, as only the former has been identified to have a considerable deterrent effect on the decision to accept a bribe offer demonstrating a more effective instrument. The detection rate of actual match-fixing behaviour might be increased by means of improving the transparency and the surveillance as well as offering the opportunity of whistleblowing. For instance, the German Football League (DFL) already includes an ombudsperson who can be contacted confidentially to report match-fixing behaviour. Responsible federations should consider the economic scale of the respective sport competition, when deciding about investing in anti-corruption policies.

Beyond, as the experiment reveals that lower performance levels are associated with higher probabilities of match-fixing behaviour, sport leagues or other organisers of sport competitions should employ specific relative performance incentives to reduce the appeal of corruptive behaviour for weaker athletes or teams. Dutcher et al. (2015) have demonstrated that incentives not only aiming at competing to be first, but also

avoiding to be last are effective resulting in the highest effort among individuals. Especially avoiding to be last leads to lower effort variance and can motivate more effectively than the competition for the top (Dutcher et al., 2015). This circumstance is already accounted for in most European sport leagues, as these leagues often include the risk of relegation to a lower league if being last in the respective competition. Dependent on the financial means in the respective sport, relegation often goes in hand with substantial lower financial revenues and thus, self-sabotage should not be very attractive even for teams at the bottom of the league. Still, incentives should always be reassessed to optimise the tournament structure.

Second, this dissertation also provides information about the determinants of voluntary referees' intention to continue as well as their overall satisfaction. As recruiting and retaining volunteers is usually expensive but referee numbers are generally decreasing, federations learn by means of this dissertation's findings what aspects are of specific importance for referees to be satisfied and to keep them willing to continue with their activity. This knowledge can enable and facilitate federations to improve their recruitment and particularly their retention strategies for voluntary referees, as, on the one hand, retaining volunteers is less costly than recruiting new ones (e.g., Kim et al., 2009) and, on the other hand, human resource management in general represents an essential organisational problem in the field of sport (e.g., Breuer et al., 2017; Chelladurai & Kerwin, 2017).

Within their *recruiting strategies*, federations should particularly concentrate on approaching individuals motivated by self-oriented reasons for the voluntary refereeing activity. Such individuals should represent the most promising aspirants for federations, as these motives have been found to positively influence volunteers' intention to continue in contrast to the motives of altruism and social interaction, which also

belong to the ‘antecedents of volunteering’. This means that the messages and images used in recruitment campaigns should especially focus on voluntary referees being able to extend own knowledge and experiences as well as having own responsibility and decision-making opportunities. Potentially, also the activity’s utility for occupational prospects can be featured, as all these aspects matter for individuals motivated by self-orientation. This dissertation has further confirmed the relevance of self-realisation in the context of the volunteering activity revealing that promotion prospects within the activity positively affect voluntary referees’ satisfaction levels. Subsequently, motives might also be gathered with the help of a survey, for example, during the refereeing registration process, so that the responsible federations can track if their recruitment is successfully reaching such individuals. However, due to the decreasing referee numbers leading to organisational problems in sport, federations cannot afford to disregard the potential interest of individuals with other motivations. Hence, federations should focus on those individuals motivated by self-interest in particular, but still approach all potential referees with their recruitment activities.

In terms of optimising volunteer *retention strategies*, federations should consider the different aspects determining referees’ satisfaction as well as intention to continue based on the ‘experience of volunteering’. For example, the activity’s compatibility with other obligations, such as individuals’ occupational and private life (including family and friends), is of specific relevance. This compatibility has demonstrated the highest impact on referees’ intention to continue aside from their satisfaction. As a result, federations should ensure this compatibility for voluntary referees ideally offering flexible choices of operating times and enabling them to suspend their activity awhile in exceptional situations without experiencing any negative consequences.

Further, federations should offer assistance and support to referees both on and off the pitch as well as create opportunities concerning training or exchange with referee colleagues, because such aspects constitute the POS which has also been shown to be important affecting referees' intention to continue. In addition, colleagues have been confirmed by this dissertation to be of high relevance for the general satisfaction of referees, only exceeded by esteem in terms of magnitude of influence. Consequently, federations should at least maintain and even better develop these implemented support activities demonstrating that they care for their referees' well-being, consider their goals, and satisfy their needs. Federations should also initiate referee get-togethers and potentially organise team building exercises or training camps to facilitate exchange and strengthen relationships of their referees, because they represent a specific group in the respective sport which benefits from the social interaction with other referees and from feeling a sense of belonging to the 'referee team' as a decisive associate of that sport.

It also is important that referees have the impression of being valued by their federation and that their voluntary engagement matters. In this context, federations also need to strongly work towards an appreciative interaction of athletes, coaches, and spectators with the deployed referees entirely free from any form of violence. As the share of matches in which referees have been offended is associated with a lower intention to continue, any indication of experienced behaviour of violence shall be prevented. Along with this negative influence goes the experienced esteem and respect which is positively affecting referees' satisfaction as well as intention to continue. Esteem has even been found to be the most effective aspect determining referees' overall satisfaction. Hence, federations should ensure to take all necessary action that the above-mentioned stakeholders (players, coaches, spectators) show and treat voluntary referees with respect and internalise this form of appreciation. In this regard, federations will

usually need the assistance of sport clubs where the actual match action takes place. However, it is in the responsibility of the federation to set the framework promoting respectful behaviour and the absence of any violence directed against referees.

On the one hand, the appreciation of voluntary referees should be promoted and become visible in every form of direct contact with referees as well as in all communications dealing with referees or by organising special events, in which they are awarded and honoured, for example, for particularly high engagement or long membership to the referee community. On the other hand, federations need to protect their voluntary referees from any form of abuse in the context of their activity. Educational programmes should be utilised to explicitly impart the high value of voluntary refereeing to all these stakeholders. Without those individuals enforcing the rules as an impartial authority, effective operation of competitive sport would at least be severely limited if not impossible at all. Consequently, it should be in the interest of all these stakeholders that voluntary referees continue their activity ensuring a fair competition in accordance with the rules. Furthermore, penalties and suspensions for any form of misbehaviour need to be deterrent, so that offenders clearly feel the consequences of their actions. While such regulations do partly exist already, they need to be implemented more strictly. Finally, federations also might think about supporting referees with specially trained security personnel at competitions with high explosive power. In case of need for such personnel, they also might put the respective clubs in charge of sharing the costs for it.

Moreover, also the amount of the expense allowance for the voluntary activity should be reflected by the federations, because it has been identified to predict the satisfaction levels of voluntary referees, even though having the least influence of the included determinants. While this comparatively lower importance of financial compensation

is in line with previous well-being research finding that people not necessarily become happy due to money as long as their basic needs are met (e.g., Diener & Biswas-Diener, 2009), federations should not completely neglect it as a relevant aspect of satisfaction, which again has been confirmed to influence volunteers' intention to continue. However, considering its inferior size of influence as well as the limited financial resources of federations and clubs in general, increasing referees' expense allowance might not necessarily be a starting point for federations, but rather a reasonable complementary action after other, even more relevant actions were initiated to the benefit of voluntary referees. For example, a German football association (Badischer Fußballverband e.V., 2019) has implemented such a strategy. It is fully aware of the main role that appreciation plays for referees and attempts to further promote it, but it has additionally increased the expense allowance of referees as another incentive for the voluntary activity. This seems to be a promising approach in order to increase referees' satisfaction and as a result also to combat the current loss of referees. While the impact of the pandemic complicated the control of success of this association's strategy up to now, its success should be constantly monitored and in case of improvements in the situation serve as an orientation for other associations.

Last but not least, the relevance of satisfaction for the volunteering activity has already been emphasised. Federations should endeavour to frame the refereeing activity and its environment in such a way that it generates satisfaction among referees, because their satisfaction with their activity has been revealed to be the strongest determinant of their intention to continue. Employing the comprehensive satisfaction approaches of general and facet-specific (job) satisfaction, the dissertation reveals two more aspects. First, it advises federations to maintain activities promoting and supporting referees, as the satisfaction levels of active referees are rather high. Considering that by keeping voluntary referees satisfied also their continuing early termination can be

reduced, federations thereby can minimise organisational problems and increase their efficiency by saving time and resources usually necessary for the recruitment and training of new referees. Second, the dissertation discloses areas of (dis)satisfaction and their contribution to referees' overall satisfaction. These aspects have already been discussed in the previous paragraphs. For example, it is of utmost importance that referees feel appreciation for their voluntary activity and federations should ensure this feeling in particular. In addition, they should offer opportunities of exchange between refereeing colleagues facilitating social interaction to strengthen their ties. Also, federations should reflect on higher opportunities for promotion and expense allowances, as both positively affect the satisfaction of voluntary referees as well.

Generally, federations should ultimately strive to minimise the efforts of referees (e.g., by reducing their administrative work), because an unfavourable proportion of efforts compared to rewards leads to dissatisfaction with the activity. Alternatively, federations might attempt to increase the corresponding rewards to prevent referee dissatisfaction. In this context, federations could initiate a kind of monitoring system regularly surveying the efforts and rewards of voluntary referees, for example, at the end of the respective season. Such a survey would generate valuable information for federations and enable them to identify a potential imbalance of efforts and rewards among their referees, providing an opportunity to establish such a balance with some of the previously mentioned activities in order not to lead to dissatisfaction among the voluntary referees.

6.4 Limitations and avenues for future research

Notwithstanding the substantial contribution of this dissertation including a wide range of theoretical as well as practical implications, also some limitations can be identified leading to avenues for future research.

Overall, the sample sizes of all three studies of this dissertation are rather substantial for the respective research method. However, they each represent specific groups of individuals. On the one hand, the 310 experiment participants have been recruited from under- and postgraduate students of sport science. While these students might take decisions and demonstrate behaviour within the experiment deviating to some extent from individuals with other (educational) backgrounds, they principally fit very well to this experiment having a sporting background, as it analyses corruption behaviour occurring most typically in sport and as it considers ethical aspects relating to core sporting principles, such as integrity or sportsmanship. Future studies might extend this research to (semi-)professional athletes, coaches, and referees as well as to individuals not directly related to sport and investigate if their corruptive actions confirm the findings of this dissertation. Whereas the group of (semi-)professionals could be assumed to fit best to the experimental context investigating corruption behaviour in professional sport, the non-sport related individuals might be less familiar with such contest situations and corresponding preferences and norms and consequently also of comparatively less practical relevance for sport organisations.

On the other hand, the 4,541 respectively 3,075 surveyed volunteers in the other two studies represent voluntary referees currently active in the context of football in Germany. While those referees are of utmost importance for federations to be retained preventing further increasing organisational problems, it also might be interesting and helpful to analyse those voluntary referees who have (recently) ceased their activity in order to understand their reasons for the decision to quit. Beyond, these former referees' development of satisfaction levels within the activity might generate valuable information in addition to this dissertation's insights focussing on active voluntary referees, as generally knowledge on the well-being of referees is necessary (Webb, 2020).

Another avenue for future research might be analysing voluntary referees from other team or individual sport or football referees from other countries to identify in how far differences among sports (e.g., due to absence of experience of violence) and countries (e.g., due to cultural differences or another scope of appreciation towards volunteering in general and refereeing in particular) can be observed. Besides, a comparison of voluntary referees with other specific volunteer groups, such as coaches or board members, would broaden the current state of research dealing with volunteers in specific roles and potentially unveil peculiarities of those groups, which also federations can benefit from regarding their volunteer recruitment and retention processes adapted to the specific volunteer groups.

Moreover, all studies of this dissertation already consider numerous determinants to explain their respective outcome pursuing a rather comprehensive approach. Still, the models could have been extended by further predictor or control variables. For example, reputation effects have been neglected in the experimental study, but these have been theorised to have a sound impact on corruption behaviour within sport (e.g., Maennig, 2002). Furthermore, commitment might have been added in both studies dealing with volunteering, as it has been found to influence volunteering behaviour (e.g., Cuskelly & Hoye, 2013) and as it could have been included into the ERI model in form of (over)commitment modifying the essential relationship between efforts, rewards, and job satisfaction (e.g., Siegrist et al., 2004). Future research might take that into account and incorporate further determinants to explain the outcomes investigated within this dissertation.

Some further limitations can be assigned to the individual studies of this dissertation. Aside from the benefits of experimental studies as conducted in the *first study of this dissertation*, such as the ability to examine causal relationships, there are also some

challenges going along with it. For example, this experiment's artificial environment in a laboratory setting or specific aspects concerning its design, such as the experimenter being equally responsible for rewarding, bribing, and auditing, could limit the extent of its findings' external validity. Although previous studies demonstrated that laboratory experiments are capable of reflecting actual corruption behaviour of individuals accurately (e.g., Armantier & Boly, 2013; Banerjee, 2016), further analysis on match-fixing behaviour is necessary to verify and extend this study's insights. Field experiments would be a valuable addition, but they are difficult to implement properly due to the clandestine nature of corruption behaviour such as match-fixing.

Furthermore, the dissertation discloses that many participants, on the one hand, do not accept the match-fixing offer and, on the other hand, largely show at least some effort after accepting the bribe offer and thereby decide for a level of self-sabotage not maximising their probability of losing, but it cannot entirely explain the concrete reasons for that behaviour. Although competitive and risk preferences as well as perceived social and moral norms have been addressed in this study, even more research on such preferences and norms is necessary in future studies, which should also include, as mentioned before, reputation effects being of high relevance for sport athletes but neglected in this study. Moreover, future research should additionally focus on anti-corruption policies in contest situations identifying, for example, effective instruments and the ideal combination of different detection factors.

Referring to the *third study of this dissertation*, neither the Kafa nor the ERI model has been applied in the sporting context before. However, the meaningful satisfaction facet 'work itself' representing the effort in the ERI model had to be removed from the model for statistical reasons, although it at first highly related to overall (job) satisfaction confirming previous literature (e.g., Judge & Kammeyer-Mueller, 2012).

Similarly, Stukas et al. (2009) identified that the activities of volunteers constitute an important determinant of their satisfaction. As a result, future research should apply and further validate the scale measuring general and facet-specific job satisfaction as well as the ERI model in the contexts of sport and volunteering investigating, for example, if the huge relationship between this satisfaction facet and general job satisfaction is specific to these contexts or if the facet can be included in other studies to determine overall satisfaction.

Finally, it is imperative for future research to consider potential influences of the COVID-19 pandemic on individuals' decision-making and behaviour in these contexts. While theoretically the partly enormous restrictions in almost all aspects of humans' everyday lives during the pandemic with potentially ensuing negative experiences might affect individuals' decision-making in the context of corruption behaviour, for example, due to altered perceptions of preferences and norms or simply due to loss of earnings, consequences of the pandemic are more likely to occur for the volunteering activity. Sport volunteers, such as voluntary referees, might experience either increasing efforts due to further regulations to be obeyed resulting from the way of dealing with the pandemic, they might have experienced uncertainty due to long suspended competitions, or even have weaned themselves off the volunteering activity finding substitutes during the pandemic that have led to quitting volunteering. The developments around the pandemic need to be constantly monitored and researched separately in future studies.

6.5 References

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Abstract

As many important societal functions are attributed to sport, it is of utmost importance that its viability is ensured. However, the integrity of sport is threatened both by match-fixing, which has become the most widespread form of corruption in sport, as well as by any form of violence, which also referees in particular have to experience. Hence, based on the modern economic model of behaviour, this dissertation concentrates on individuals' decision-making in these two contexts, which currently represent core challenges for sport.

First, the acceptance behaviour of match-fixing offers in a competitive situation as well as the effectiveness of the deterrence factors *detection probability* and *severity of monetary punishment* are investigated within an experimental setting. The majority of individuals reject the bribe in this context and thus do not maximise their own monetary payoff. An increased detection probability further increases deterrence.

Second, voluntary referees are examined in the context of football. On the one hand, it is revealed that, among others, the compatibility with other obligations, the experienced respect, as well as a lower number of suffered offences are significant determinants of their intention to continue with their activity. Yet, the finding that referees' satisfaction with their activity is the strongest determinant of this intention was the starting point for the next study. Thus, on the other hand, the satisfaction of these referees is explored in detail. It turns out that various satisfaction facets significantly explain overall satisfaction and that especially the appreciation of referees for their voluntary activity and the social interaction among their referee colleagues contribute to their (job) satisfaction.

Several practical implications can be derived from the findings of this dissertation that can support the maintenance of the viability of sport. Two areas that pose substantial threats to the integrity of sport, namely match-fixing as well as the decline of voluntary refereeing, can be better understood and consequently better combated. From a theoretical perspective, the dissertation provides arguments for the application of the modern economic theory of behaviour to explain individuals' decisions in these contexts.

Kurzfassung

Da dem Sport viele wichtige gesellschaftliche Funktionen zugeschrieben werden, ist es von größter Bedeutung, dass dessen Funktionsfähigkeit gewährleistet wird. Die Integrität des Sports wird jedoch sowohl durch Spielmanipulationen, die mittlerweile die verbreitetste Form der Korruption im Sport darstellen, als auch durch jegliche Form von Gewalt, die insbesondere auch Schiedsrichter*innen erfahren müssen, gefährdet. Daher konzentriert sich diese Dissertation auf der Grundlage des modernen ökonomischen Verhaltensmodells auf die Entscheidungsfindung von Individuen in diesen beiden Kontexten, die derzeit zentrale Herausforderungen für den Sport darstellen.

Zum einen wird das Akzeptanzverhalten von Spielmanipulationsangeboten in einer Wettbewerbssituation sowie die Wirksamkeit der Abschreckungsfaktoren *Entdeckungswahrscheinlichkeit* und *finanzielle Strafschwere* in einem experimentellen Rahmen untersucht. Der Großteil der Individuen lehnt die Annahme des Bestechungsgeldes in dem Kontext ab und maximiert somit nicht den eigenen monetären Gewinn. Eine erhöhte Entdeckungswahrscheinlichkeit steigert die Abschreckung zudem.

Zum anderen werden ehrenamtliche Schiedsrichter*innen im Kontext des Fußball betrachtet. Einerseits wird festgestellt, dass unter anderem die Vereinbarkeit mit anderen Verpflichtungen, der erfahrene Respekt sowie eine geringere Anzahl an ertragenen Beleidigungen wesentliche Determinanten ihrer Absicht, ihre Tätigkeit fortzuführen, sind. Die Erkenntnis, dass jedoch die Zufriedenheit der Schiedsrichter*innen mit ihrer Tätigkeit die stärkste Determinante dieser Absicht darstellt, war der Ausgangspunkt für die nächste Studie. Somit wird andererseits die Zufriedenheit dieser Schiedsrichter*innen im Detail erforscht. Es zeigt sich, dass verschiedene Zufriedenheitsfacetten die Gesamtzufriedenheit signifikant erklären und dass insbesondere die

Wertschätzung der Schiedsrichter*innen für ihre ehrenamtliche Tätigkeit sowie die soziale Interaktion unter den Schiedsrichterkolleg*innen zu ihrer (Arbeits-)Zufriedenheit beitragen.

Aus den Erkenntnissen dieser Dissertation lassen sich mehrere praktische Implikationen ableiten, welche die Aufrechterhaltung der Funktionsfähigkeit des Sports unterstützen können. Zwei Bereiche, die eine erhebliche Bedrohung für die Integrität des Sports darstellen, nämlich Spielmanipulationen sowie der Rückgang des freiwilligen Schiedsrichterwesens, können besser verstanden und infolgedessen besser bekämpft werden. Aus theoretischer Perspektive liefert die Dissertation Argumente für die Anwendung der modernen ökonomischen Verhaltenstheorie zur Erklärung individueller Entscheidungen in diesen Bereichen.