

PSYCHOLOGICAL PREDICTORS OF CHEATING IN ULTIMATE FRISBEE

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## Abstract

Whilst cheating in sports has been heavily studied, very few researchers have investigated the phenomenon within recreational or self-governed sports. Ultimate Frisbee (Ultimate) is a unique, non-contact, recreational sport that relies on self-governance and Spirit of the Game (Spirit) (a player scoring system structured around fair play and Sportspersonship). The lack of designated adjudicators could make it easier for players to cheat. The present study aimed to investigate the role of Spirit within Ultimate; more specifically, to examine players attitudes towards the efficacy of Spirit and to identify predictors of cheating behaviour.

Participants ( $N= 828$ ) completed a series of questionnaires about their likeliness to cheat and their preferences towards Spirit and Ultimate as well as personality questionnaires including the Short Dark Triad (Jones & Paulhus, 2014), the HEXACO-60 (Ashton & Lee, 2009) and the Sportspersonship scale (Perry et al., 2015).

The results found that 6% of participants admitted to being likely to misuse Spirit, additionally, misuse was more likely to occur in an important match than a fun one. It was also found that likeliness of cheating can be predicted by higher levels of *Machiavellianism* and lower levels of *Compliance towards rules*, however the other included personality variables did not significantly predict cheating likeliness. *Compliance towards rules* was the only significant difference between players who had admitted to cheating compared to those that had not. Together, the findings from this study indicate that Spirit is a well valued and useful tool for the effective governance of Ultimate. Spirit is seemingly well received by the Ultimate community; therefore, it is recommended that Ultimate's governing bodies continue to encourage players to use Spirit fairly, particularly in more important and competitive tournaments.

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## 1 Introduction

Sport has been associated with empowering and developing athletes for millennia, however the desire to win can motivate many to break the rules. In sport literature, this kind of behaviour has received a lot of attention, and many forms of cheating have been studied, for example, fouling opponents (see [Schild et al., 2020](#)), dishonesty (see [Pfattheicher et al., 2019](#)), match fixing (see [Tak et al., 2018](#)), doping (see [Lazuras et al., 2010](#); [Woolway et al., 2020](#)) and importantly, breaking game rules ([McTernan et al., 2014](#); [Hilbig & Zettler, 2015](#); [Kleinlogel et al., 2018](#); [Nicholls et al., 2019](#)). These behaviours all have negative social or emotional consequences and often breach the ideal of fair play. Intentionally engaging in cheating can cause feelings of shame and guilt, as well as hurting opponents and negatively impacting sporting competitions that were built on the foundation of fairness.

It is not difficult to understand why professional athletes might engage in cheating behaviours considering the potentially large monetary awards and fame associated with winning. Previous researchers have suggested reducing monetary awards of winning sporting events to help reduce cheating behaviours (Mohan & Hazari, 2016). This however fails to consider recreational or non-professional sports where there are no monetary awards for winning.

As demonstrated by [Sailors et al., \(2017\)](#) cheating also exists in recreational sports despite the lack of a substantial reward. To combat this, in most sports, referees play the role of identifying and preventing cheating from taking place. Referees are the adjudicators of the game, and their purpose is to ensure games run fairly and smoothly for the enjoyment of the players. However, not all sports have referees, some predominantly recreational sports rely on the players' self-governance of the rules, with one of the most popular self-governed sports being Ultimate (frisbee).

Ultimate is one of the world's fastest growing team sports with over seven million players across 80 different countries (USA Ultimate, 2020). It originated from the United States and was first played in the late 1960s. In 2015 Ultimate was officially recognised by the International Olympic Committee and hopes to feature in the Olympics as soon as 2028.

Ultimate is a non-contact team sport, predominantly played outdoors using a disc - the aim of the game is for a player to catch the disc in an end zone to score a point, the team with the most points at the end wins. Players are unable to move whilst holding the disc and must release the disc before a set time period (10 seconds) that is counted out loud by the opposition defender. If a player drops the disc, a pass is intercepted, or the disc is caught out of play then the possession is turned over to the opposition team. Ultimate can be played in single or mixed gender teams, and it is customary for opposition teams to match the number of male and female players before the start of each point, teams are made up of seven players.

Ultimate relies heavily on Spirit which is a scoring system structured around fair play and Sportsmanship and is one of the defining characteristics of Ultimate. Ultimate relies on Spirit because there are no referees, it is a completely self-governed sport. To ensure fair play is adhered to the players have also identified practises and norms that help to control any discrepancies or disagreements within the game (Robbins, 2004). Spirit is measured by the opposition team (each team will score their opposing team) after each game using a point scoring template that consists of five categories worth up to four points each (maximum 20 points). The Spirit categories are (1) Rules knowledge and use, (2) Fouls and body contact, (3) Fair-mindedness, (4) Positive attitude and self-control and (5) Communication. The team with the highest Spirit score is awarded a Spirit trophy that is separate to the trophy for the winners of the overall tournament. During game play, decisions are made solely by the players via a discussion between those involved in an incident, discussions are encouraged to last no longer than 30 seconds. If a disagreement occurs, the disc is returned

to a previous non-disputed point. Some examples of incidents that can occur are fouls, in or out calls and stall outs which is when a player has not released the disc within the allotted time. After a game of Ultimate both teams join together to form a Spirit circle, which is an opportunity to discuss the game and congratulate the opponent as well as highlight any disagreements, conflicts, or instances of poor Spirit. Poor Spirit could include intentionally fouling an opponent, not communicating with the opposition appropriately or contesting a call for no good reason. During recreational tournaments the teams will usually play recreational mini games and always finish with slaps which are variations of high-5s.

The unique nature of Ultimate and reliance on self-governance creates an interesting research area for examining cheating behaviours in recreational sports. The main aim of this study is therefore to evaluate the effectiveness of Spirit as a tool for maintaining fairness in Ultimate and to identify whether players misuse Spirit. In recreational, self-governed sports it may be easier for athletes to get away with cheating because there are no in-game repercussions such as sinbins or cards and there are no referees to officiate behaviour.

Despite this, the emphasis of community Spirit and the importance of the Spirit trophy and score in Ultimate may act as a deterrent for individuals to engage in cheating behaviours and violate the rules. If it is found that players do misuse Spirit, a further aim is to understand who is more likely to cheat and why players do cheat. The findings from this research may be applied to other recreational sports and can hopefully provide a better understanding of cheating behaviours in sport and self-governance. The proceeding sections draw on psychological models of cheating behaviour to examine the motivations, predictors, and decision-making processes behind cheating in sport.

## **1.1 Motivation to Cheat in Sport**

Motivation can play an imperative role in the decision to engage in immoral behaviour, individuals may differ in the reasoning behind their decision to cheat. Therefore, it is

worthwhile exploring the theories around the motivation to cheat to understand how individuals can commit an act of cheating that could be considered immoral. The first theory discussed is achievement goal theory.

### **1.1.1 Achievement goal theory**

Being able to define success in sport is fundamental to understanding the motivation behind why athletes participate. For this reason, achievement goal theory was introduced in the late 1980s, led by Dweck, (1986) and Nicholls, (1984). Achievement goal theories are founded on the idea or belief that an individual defines their success in two contrasting ways: performance or mastery goals (Elliot, 1999). Researchers such as Nicholls, (1989) and Jagacinski & Strickland, (2000) also refer to performance and mastery goals as ego-orientation goals and task-orientation goals respectively. Individuals who feel successful through the mastery of something such as the sport they play would be considered task-oriented, whereas individuals who perceive success as being better than others would be considered ego-orientated. From a theoretical point of view these orientations are decided by a combination of their motivational climate (e.g. parents and coaches) and their intrapersonal disposition (e.g. attitudes and decisions) (Harwood & Thrower, 2020). Despite the suggestion that ego and task orientation states are temporary, experience and socialisation can lead people to develop either of these states as dispositional traits (Nicholls, 1989).

Studies on athletes from multiple nationalities (including British, Portuguese and Italian) in a variety of sports (including tennis, football and basketball) have found that those who are more ego-oriented are more likely to pursue their goal of winning by engaging in cheating behaviours, (Lee et al., 2008; Van Yperen et al., 2011; Lucidi et al., 2017; Ring & Kavussanu, 2018). Athletes with low task-orientation were found to be more likely to endorse cheating behaviours, it was also found that higher ego-orientation predicted the legitimising

of aggressive acts (Duda et al., 1991). Prosocial attitudes (e.g. good Sportsmanship and disapproval of cheating) in athletes were found to be predicted by task-orientation more effectively than ego orientation predicted antisocial attitudes (e.g. poor Sportsmanship and acceptance of cheating) (Ring & Kavussanu, 2018). Sportsmanship (discussed in section 1.4.5), preferred to the gender specific term sportsmanship, can be defined as respect towards opponents, the rules of the sport, social conventions, officials, and a general absence of negativity during participation in sport. Task-oriented athletes have also been found to consistently endorse Sportsmanship, however the athletes that were found to have the highest respect for rules and officials were those low in ego orientation and high in perceived ability (Lemyre et al., 2002). Lee et al., (2008), believes that athletes who want to appear superior only cheat when they do not trust their own abilities to succeed. Alternatively, in a study of ego-orientation motivations Elliot and Church, (1997) argued that athletes who expect to look good are less likely to cheat than those who want to refrain from looking bad. However, this study did not examine task-oriented motivations which are an important aspect of the discussion.

Barkoukis et al., (2013) examined the predictors of doping intentions in elite athletes who had and had not doped before, they found that the decision and intention to dope was associated with achievement goals, in particular performance avoidance which is the tendency to avoid displaying low competence and mastery approach which are goals associated with self-improvement. They also found that Sportsmanship orientations played a role in mediating the relationship between mastery approach goals (self-improvement) and doping intentions in athletes that had never doped. In athletes that had previously doped, Barkoukis et al., (2013) found that athletes who wanted to avoid displaying low competence or skill were more likely to believe they cannot avoid doping, particularly in high pressure situations such as an important competition or peer pressure from a coach.

This suggests that social pressures to cheat do exist and may be higher in sports where there is more pressure to succeed.

Boardley and Kavussanu, (2009) and Stanger et al., (2018) found that mastery climate (task-oriented) was negatively related to moral disengagement for anti-social behaviour whereas performance climate (ego-oriented) was positively related. According to Ames, (1992) mastery climate typically encourages cooperative behaviour and moral values, which could explain the reduction in moral disengagement. Van de Pol et al., (2020) examined whether the context of the sporting climate (training or competition) had an impact on moral functioning in sport. As expected, they found that athletes in performance climates (competitive matches) were more likely to behave antisocially than those in mastery climates (training). These findings emphasise the importance of a motivational climate (discussed below) and the context of the behaviour when examining moral functioning, highlighting the importance of studying both competitive and friendly matches when exploring cheating behaviour.

Ultimate is a predominantly recreational sport without lucrative cash prizes or big rewards associated with success, there are also minimal sponsorship deals, therefore, it is likely that the majority of people who play Ultimate do so because they want to enjoy and master the sport (task-oriented). For this reason, ego and mastery achievement goal theories were not directly measured in this study, instead, the study examined athlete's likeliness to cheat in a particular setting (fun/important game) as that has previously yielded results that suggest individuals are more likely to behave antisocially in more important games than fun ones. Another theory that appears frequently in sports literature is the motivational climate of an athlete, therefore, the following section will examine the role of the social environment on behaviour exhibited by athletes.

### 1.1.2 Motivational climate

An individual's sporting experience and social environment are another influencing social factor of making moral judgements and decisions in sport settings. Sports players are advised and instructed about how to behave by coaches, teammates, and family. They are told which behaviours are acceptable and encouraged and which behaviours are unacceptable and discouraged, (Bredemeier & Shields, 1984; 1986; 1995; 1996, Miller et al., 1997). Players are also indirectly influenced to behave in this way via normative social influences, which can pressure people to conform to group (team) norms for acceptance (Nichol et al., 2020).

The social environment of sport settings has been found to influence cheating behaviours and perceptions of cheating (Shields et al., 1995). Specifically, the longer athletes had spent in their sport (including baseball and softball), the more likely they were to show that they would injure an opponent to win, believe that their peers would cheat to win and believe that their coaches would encourage them to cheat to win. It was also found that some coaches believe their players are not committed enough if they do not cheat (Lumpkin, 2017). Contrary to this, Šukys, (2018) found that years of involvement in sport was not related to the overall justification of cheating in sports but did relate specifically to different forms of cheating such as justifying deception. These contradictory findings may be a consequence of the type and level of sport played, Shields et al., (1995) studied high school and community level baseball and softball players whereas Šukys, (2018) examined athletes across multiple sports but at a higher mastery level. This suggests that the attitudes towards cheating may be influenced by the type of sport played, the culture of the sport and the level of competition, not just the time an athlete had spent in the sport.



Level of participation and type of sport played have also been found to contribute to an athlete's perception of success and failure. Hanrahan and Cerin, (2009) found that the type of sport an athlete played (individual or team) was a predictor of achievement goal orientation. Individual sport athletes were more task oriented than athletes who played team sports, this could be due to the clarity of goals and comparison between athletes in individual sports and it is more difficult to compare an individual from within a team sport to another. In addition to this, within a team sport there is more opportunity to credit and blame teammates than in an individual sport which could lead to the perception that mastery (task-orientation) is less controllable therefore prioritising performance (ego-orientation).

Level of contact in sport has previously been linked to moral reasoning and justification of immoral behaviour. Bredemeier and Shields, (1986) found that athletes who played contact sports were more likely to consider intentional aggression as competitive play. Similarly, Silva, (1983) found that athletes who played sports with higher levels of contact were more likely to justify breaking rules compared to those in sports with lower levels of contact. This could be due to athletes in sports with higher levels of contact viewing contact and aggression as a fundamental part of the game that is required in order to win. Alternatively, this could simply be due to the fact it is easier to get away with aggressive play in contact sports (e.g. rugby) than in non-contact sports (e.g. running).

The sports examined in the above studies are full-contact sports whereas Ultimate is supposed to be played as completely non-contact. With this in consideration it could be logical to propose that Ultimate players or players of other non-contact sports are less likely to justify rule breaking and immoral behaviour, particularly in the form of aggression, than contact sport athletes. Interestingly, Mintah et al., (1999) found that athletes in contact sports disagreed more with the use of aggression than athletes from semi-contact sports. This

could be due to the levels of acceptance of aggression in their sport varying across levels of contact (contact vs semi-contact).

As well as the environment an athlete plays in, an athlete's attitudes have also been found to relate to their behaviour, to examine this further the theory of reasoned will be discussed in the next section.

### **1.1.3 Theory of reasoned action**

Attitudes and intentions of an individual have previously been found to be an important predictor of behaviour. The Theory of Reasoned Action or Rational Choice Theory has consequently been used to explain the relationship between an individual's attitudes and behaviour (Ajzen & Fishbein, 1980). It could therefore help to understand how an athlete's attitudes or intentions may predict their likeliness to engage in cheating behaviours.

Theory of Reasoned Action states that an individual will consider the consequences of their behaviour before acting and that individuals use rational decision making to sculpt the behaviour that they believe to be aligned with their own personal beliefs (Madara et al., 2016). Consequently, this can result in self-interested outcomes because the expectation of the Theory of Reasoned Action is that individuals will act in a way that provides the greatest satisfaction and outcome out of the given options.

According to Ajzen and Fishbein, (1980) an individual's intentions are based on their perception of a behaviour as well as how they think the behaviour is perceived by society (subjective norm). Intention is therefore shaped by personal attitudes and social pressures, which is crucial to how individuals behave or change their behaviour (Madara et al., 2016). This theory treats dishonest behaviour as the consequences of the decisions made by a rational individual. They will weigh up the positives and negatives of an action and make a

decision based on an assessment of the alternatives. For example, is the risk of getting caught cheating worth the advantage gained? In the sport of Ultimate, getting caught cheating could have a large impact on players due to the reliance on self-governance and the importance of Spirit scoring within the Ultimate community. The advantages or incentives to winning may not be as high given the lack of monetary rewards, suggesting that individuals may be less motivated to cheat.

In a field observation study of Ultimate players, [Robbins \(2004\)](#) utilised the Theory of Reasoned Action to explain how players interact with Spirit. He found that players were likely to manipulate the usual practises of Spirit to maximise the quality, interaction, and flow of the game dependent on playing conditions. These conditions include the level of competition, previous encounters between players and teams, and the level of rewards at stake.

Robbins states that Ultimate is laden with violations of the rules due to human error and mistakes made by players, however not all violations are sanctioned. Players make one of three decisions when it comes to violations, they can negotiate the outcome of the violation which can be time consuming and slow down the flow of the game, they can actively ignore the violation which means it goes unnoticed, but the flow of the game is not hindered, or they can sanction the player. Sanctions in Ultimate are not as straightforward as refereed or non-recreational sports where players who commit violations of the rules are punished via a sinbin, or they are booked. Sanctions in Ultimate can come in the form of heckling and comments from players and observers, specifically Robbins stated that players and teams who consistently violate the ethos or Spirit of the game would be ostracised and treated differently by players within the Ultimate community - ultimately, they can develop a reputation for this kind of behaviour.

The findings from Robbins' (2004) study demonstrate a flexible rational choice model where players are motivated to make decisions based on the best possible outcome for the Ultimate community, subject to aforementioned conditions (competition level, player history and reward at stake). Players must make a decision about how to respond to violations during game play by weighing up the pros and cons of each action. Players in Robbins study were found to prioritise the fluidity and quality of the game over stringently following the rules, they did this by minimising the number of calls on minor violations (travelling or mild contact) and reducing the more major violations (dangerous or physical play). In this instance players were found to prioritise the outcome that was considered best for the Ultimate community; therefore, it is likely that the majority of players would avoid cheating behaviours or actively violate the rules because of the negative impact this could have on the community. Conversely, because players were found to prioritise the flow of the game, some players may believe they are more likely to elude the opposition with minor cheating violations and could use this as an opportunity for personal gain.

The Theory of Reasoned Action relies on an individual's volitional control over an action, in other words, an individual must have the capabilities to perform an action or behaviour for the theory to predict said behaviour (Ajzen, 1985). Ajzen, (1991) later responded to this flaw in the theory by proposing the Theory of Planned Behaviour that considers an individual's perceived control over their behaviour as well as their attitude towards the behaviour and the subjective norm. It is however assumed that Ultimate players all have the capabilities or volitional control over their cheating behaviour which can therefore, at least in part, be explained by the Theory of Reasoned Action.

Another limitation of the Theory of Reasoned Action is that it does not consider the role of emotion on an individual's behaviour (Coleman & Fararo, 1992). Individuals can act

irrationally, usually to satisfy their short-term interests instead of their long-term interests, which is not explained by the Theory of Reasoned Action (Hechter, 1994). The theory assumes that people think rationally by weighing up the pros and cons of an action before deciding whether to do it, whereas in reality this is not always the case. Similarly, the theory struggles to provide an explanation for why individuals cooperate even when it is the irrational choice (Hechter, 1994; Sally, 1995; Kanazawa, 2001).

## **1.2 Moral Reasoning and Cheating in Sport**

Psychologists have presented theories of moral decision making and reasoning to explain how individuals choose to conduct immoral behaviours. These theories may help to explain why athletes might behave immorally in their sport. Specifically, the relationship between moral development, self-regulated, moral identity and moral disengagement and cheating in sport will be discussed.

### **1.2.1 Moral development**

Moral development influences the decision-making processes individuals use when trying to behave morally every day. Expanding on the previous work of Piaget, (1932) and Kohlberg and Goslin, (1969) and their theories on moral development, Rest, (1984) developed the Four Component Model of Morality. The four components of Rest's model include moral sensitivity, moral judgement, moral motivation and finally, moral character. Together these four components are believed to make up moral behaviour.

Moral sensitivity is referred to as the ability to recognise and understand an ethical dilemma, moral judgement is the ability to know what the correct and moral behaviour is in a given situation. Moral motivation is rationalising behaviour and making a moral decision when faced with a dilemma (e.g., to cheat or not to cheat) and finally, moral character is the qualities and characteristics that allow an individual to go through with moral decision making. If an individual fails at any of these steps, they may fail to make an ethical decision (Rest & Narváez,

1994). Therefore, according to the Four Component Model of Morality, in the example of Ultimate, four steps would need to be overcome in order to make a moral decision: lack of awareness that cheating is a moral issue (*moral sensitivity*), not believing that cheating is wrong (*moral judgement*), justification or rationalising of the decision to cheat (*moral motivation*), and not having the strength to avoid cheating due to pressure from others (*moral character*). An individual's moral character could include personality traits that leave an individual predisposed to being immoral, such as Machiavellianism or a lack of empathy (Rauthmann, 2012).

### **1.2.2 Self-regulation of behaviour**

The ability to self-regulate behaviour is one of the fundamental human qualities required to monitor and judge behaviour whilst respecting personal and social standards and self-reflecting on behaviour (Bandura, 2001; Bandura & Locke, 2003). D'Arripe-Longueville et al., (2010) emphasise the importance of these steps in self-regulation, particularly when examining transgressive behaviour such as cheating.

Bandura's, (1986) Social cognitive theory suggests that our ability to make moral judgements is explained via two aspects, proactive and inhibitive behaviour. Proactive or prosocial behaviours include positive moral actions such as helping a player from the floor, whereas inhibitive or antisocial behaviour include behaviours that intentionally harm an opponent such as committing a foul (Kavussanu, 2006). Self-regulation of these behaviours follows a process of setting standards that can be sanctioned (negative) or rewarded (positive), these standards act as a regulator of behaving in a moral way. Social cognitive theory also proposes that individuals learn new behaviours by replicating others. Individuals would also examine the consequences of the observed behaviour and consider these when deciding whether to replicate the behaviour. If the behaviour they observed had negative

consequences they may be less likely to engage in this behaviour, in contrast to if the behaviour led to a reward or benefit, they may be more likely to engage in it.

Social cognitive theory, however, assumes that an individual's environment will automatically lead to changes in their behaviour which may not always be the case. More emphasis could be placed on the motivation behind an individual's action such as their reason or justification for cheating instead of placing so much weight on past experiences. In addition to this, the theory focuses heavily on learned behaviours but fails to incorporate the predisposition of an individual which may also influence their decision making and behaviour. An individual may have witnessed a player gaining an advantage via cheating without consequences, but this does not mean they are guaranteed to replicate and engage in this behaviour, particularly if this behaviour does not fall in line with their standards.

### **1.2.3 Moral identity**

A person's moral identity is used to dictate their actions, based on the standards they have set for themselves. Building on the work of Blasi, (1980), Aquino and Reed, (2002) developed social identity theory that suggests varying levels of moral concern in an individual are fundamental to their moral identity. When an individual considers certain actions and behaviours, the standards they have adopted can ultimately trigger anticipatory guilt.

Aquino and Reed, (2002) believe it is important for an individual to consciously experience their self-set standards by behaving in a way that matches their beliefs. Moral identity echoes the importance of acting morally and being a moral person; it is often positively associated with the negative emotional consequences of acting in an unethical manner, such as cheating in sport (Stanger & Backhouse, 2020). Although social identity theory provides a way of understanding behaviour using self-set standards, it fails to consider the environment

and situation of an individual. However, Aquino et al., (2009) later considered that the relationship between moral identity and cheating behaviours is also believed to be moderated and influenced by environmental and situational factors (Aquino et al., 2009).

In situations where the moral identity can be accessed more easily, such as positive reinforcement or rewards for acting morally, moral behaviour becomes more likely. However, in situations where access to moral identity is reduced, such as personal gain, immoral or unethical behaviours can become more likely (Stanger & Backhouse, 2020). In Ultimate, players are rewarded for acting morally via the use of a Spirit score and trophy, therefore, it could be suggested that they are more likely to act morally due to the positive reinforcement of moral behaviour. However, if an individual considers winning a tournament or game as more important than winning a Spirit trophy or having a high Spirit score then they may be more likely to engage in immoral behaviour for personal gain.

#### **1.2.4 Moral disengagement**

Moral disengagement is believed to prevent people who have behaved in an antisocial way from experiencing the negative emotional consequences of their actions, (Bandura, 1991). Specifically, moral disengagement is the justification of negative or transgressive behaviour (e.g. cheating) via psychosocial processes that cause people to alter the reality of situations and reduce their responsibility and even blame the victim for their behaviour (Stanger & Backhouse, 2020).

Moral disengagement is recognised as a set of eight selectively activated social-cognitive mechanisms that let individuals justify immoral behaviour; (1) *moral justification*: justifying immoral behaviour on the basis the outcome has a moral purpose, (2) *euphemistic labelling*: labelling immoral behaviour in a way to make it sound less reprehensible, (3) *advantageous comparison*: justifying immoral behaviour by comparing it to worse behaviour, (4)



*displacement of responsibility*: reducing personal responsibility by viewing behaviour as coming from authorities, (5) *diffusion of responsibility*: the sharing of responsibility for immoral behaviour to minimise personal accountability, (6) *distorting the consequences*: misinterpreting or minimising the negative effects of immoral behaviour, (7) *dehumanisation*: denying a victim of human qualities, (8) *victim blaming*: believing the victim is responsible for their suffering (Bandura, 1986).

In an experimental study of the impact of moral disengagement on attitudes towards doping in athletes, Stanger and Backhouse, (2020) found that under conditions where moral disengagement is more likely, players are more likely to justify doping. The moral disengagement mechanisms utilised in this study were displacement and diffusion of responsibility and advantageous comparison. Participants were placed in different scenarios to mimic high and low levels of moral disengagement. For example, displacement of responsibility was represented by pressurising coaches vs. supportive coaches, and advantageous comparison was represented by the perception that other athletes are breaking rules vs. not suspecting other athletes are breaking rules. Stanger and Backhouse, (2020) also found that athletes may refrain from immoral behaviour and cheating because they anticipate the negative emotional consequences of their actions such as guilt. Guilt, anticipated guilt, and moral emotions have previously been found to be a deterrent for prohibited behaviour in sport (Johnson & Connelly, 2016; Ring & Kavussanu, 2018).

Moral disengagement relies on conscious self-regulation, unlike Moral Foundations Theory, Haidt and Joseph, (2004) (see section 1.4.4), although there will be some exceptions whereby the process of disengagement happens subconsciously, the theory suggests that individuals make the decision on whether to morally disengage or not. Although hypothetical scenarios have been utilised by scholars for decades to examine moral decision making,

Bostyn et al., (2018) provide evidence suggesting that an individual's moral attitude towards a hypothetical scenario may not reflect their actions in a real-life situation. They argue that whilst studies that utilise hypothetical scenarios are important contributors to the understanding of moral attitudes, they should be used with caution as they have little predictive power for an individual's actual behaviour.

Across multiple studies, moral disengagement has been found to have a strong positive relationship with antisocial behaviour in sports, particularly towards opponents (Boardley & Kavussanu, 2009; Boardley & Kavussanu, 2011; Stanger et al., 2013). The relationship strength is however much smaller for antisocial behaviour towards teammates than opponents. D'Arripe-Longueville et al., (2010) found that moral disengagement is linked specifically to cheating behaviours and can moderate the relationship between moderate self-regulation and the acceptability or likelihood to cheat. Moral disengagement has been described as a predictor of morally undesirable behaviour such as cheating. It also explains the cognitive mechanisms that separate morals from actions, (Moore, 2015). Therefore, rationalising cheating in sports, amongst other things (e.g. aggression, deviance, doping), can be explained, at least in part by moral disengagement (e.g., Lucidi et al., 2017; Moore, 2015; Ring & Kavussanu, 2018).

Moral disengagement also believed to occur after an individual behaves unethically as a coping mechanism to prevent the negative emotional consequences of their actions, this process is referred to as post-moral disengagement (Tillman et al., 2018). In a study of moral disengagement in undergraduate students, Tillman et al., (2018) found that individuals are believed to morally disengage after acting or behaving unethically (e.g., cheating) as well as prior to their actions. They did however find that individuals who felt guilty after behaving unethically did not morally disengage and instead accepted responsibility for their actions.

The same cannot be said for those who scored higher in shame, who were more likely to morally disengage, this may be due to wanting to rescue their reputation. This theory is also supported by Johnson and Connelly, (2016) who examined the role of guilt and shame in moral disengagement and found that increased guilt is associated with personality responsibility and moral disengagement whereas shame was not found to moderate moral disengagement. Moral disengagement goes some way to explaining why individuals might behave antisocially, however it does not fully explain the motivations behind prosocial behaviour. This could be in part due to its origins as a tool for disengaging the self-regulatory process to allow antisocial behaviour without the feelings of guilt (Bandura et al., 1996).

Research has examined prosocial and antisocial behaviour in sport across multiple different sports and settings as discussed above, an important feature in many of those studies is the inclusion of the Prosocial and Antisocial Behaviour in Sport Scale (PABSS) (Kavussanu & Boardley, 2009). Although the current study does not utilise this specific measure, it is important to highlight the importance of its theoretical impact on research in moral behaviour in sports. Researchers will likely continue to focus on individual aspects of antisocial and prosocial behaviour however this measure provides a well-validated, well-rounded measure of these behaviours. One of the important distinctions this measure makes is the direction of the behaviour, i.e., towards an opponent or a teammate.

Another study, by Kavussanu et al., (2013) that further validated the PABSS, also found that moral disengagement was a good predictor of antisocial behaviour towards an opponent. When compared to research on achievement goal orientations, moral disengagement had more predictive power of antisocial behaviour than achievement goal orientations (Sage et al., 2006). This is perhaps expected as achievement goal orientations are exactly as they

say, orientations of achievement, whereas moral identity and moral disengagement, as examined above, are central to the moral functioning process. Social norms are another influence that may help to understand why an athlete behaves as they do, and will therefore be examined in more detail in the following section.

### **1.3 Social Influence and Cheating**

Social norms are believed to play an important role in shaping behaviour. They are socially constructed and negotiated codes of conduct and are understood and developed via social interaction (Chung & Rimal, 2016). Understanding the role of social norms can help to understand why individuals behave immorally.

Social norms refer to how individuals and society should act, there are many different types of norms that refer to different aspects of societies and an individual's behaviour. For example, injunctive and descriptive norms; injunctive norms refer to an individual's perception on how they are expected to behave and also a belief that if they do not behave as is socially expected there will be social implications (i.e., what they ought to be doing). Descriptive norms, on the other hand, refer to an individual's perception of actual societal behaviours (i.e., beliefs about what others do).

Descriptive norms differ from collective norms in that descriptive norms focus on the perception of the occurrence of a behaviour whereas collective norms focus on the actual occurrence of a behaviour (Chung & Rimal, 2016). Previous researchers (e.g., [Rimal & Lapinski, 2015](#); [Chung & Rimal, 2016](#)) have highlighted the importance of communication and social interaction in the development of social norms and their theory. Norms are negotiated and enforced via communication and social interaction and are a code of conduct or rule book that is utilised to maintain collective order. Communities and social groups rely on communication to understand social sanctions and to discuss whether they should be accepted or rejected.

The bulk of research concerning descriptive norms in sport focus on engagement and participation in physical activity rather than behaviour within the sport. Multiple studies have found significant relationships between descriptive and injunctive norms and physical exercise intention (e.g., [Lee, 2011](#); [Priebe & Spink, 2011](#); [Rhodes & Courneya, 2003](#)). An individual's perception of their team-mate's activity level was found to significantly influence their own level.

[Crozier et al., \(2019\)](#) examined the role of descriptive norms via the relationship between teammate self-compassion and athlete self-compassion. They found that an individual's perception of their teammates level of compassion were influential to their own, the more they thought their teammates were being compassionate, the more likely they were to be compassionate. The theory behind these findings is that if an individual believes most people are engaging in an activity or behaviour, they will be more likely to do the same due to perceiving it as the right thing to do. In contrast, some studies failed to find a relationship between physical activity and descriptive norms, (e.g., [Jackson et al., 2003](#); [Lee et al., 2020](#)). The lack of a significant relationship in these studies could however be due to a lack of explanation of who the normative group is or a lack of association with the normative group. [Terry and Hogg, \(1996\)](#) proposed the idea of a social identity and believe that norms are associated with a group, therefore a lack of association could be the cause of the weak predictors of attitudes or norms and behaviour. An individual may be more likely to be influenced by a group if the group is relevant to them. For example, an athlete may be more likely to engage in a certain behaviour if a team-mate is already engaging in that behaviour.

Focus theory of normative conduct proposes three different types of norms, descriptive, injunctive, and personal norms (Cialdini et al., 1990). Descriptive and injunctive as described above guide behaviour via a perception of how others behave and via perceived approval of behaviour. Personal norms are believed to guide behaviour based on an individual's own

conduct and approval or disapproval of their behaviour. Focus theory of normative conduct also proposes that social norms do not have the same level of influence on any given situation, and rather norms must become salient before they can influence behaviour. Therefore, whether an injunctive, personal, or descriptive norm is triggered in a situation should, in theory, influence which norm has a greater effect on an individual's behaviour (Cialdini et al., 1991).

Research on the theory of normative conduct has found that the situation and environment are key factors in the impact of different norms. For example, Cialdini et al., (1990) found that individuals were more likely to litter in an environment that had already been littered in, compared to one that was clean. This behaviour can at least in part be explained by social norms, in the clean environment the injunctive norm (people should not litter) would be salient, and therefore discourage people from littering because they believe it is wrong. In contrast, in the already littered environment the descriptive norm (most people litter) would be salient and therefore influence individuals to litter more because they believe everybody is doing it (Chung & Rimal, 2016). This could also suggest that descriptive norms can be more influential than injunctive norms. Most people will understand that littering is frowned upon by society (injunctive norm), yet they still make the decision to do it if their descriptive norm posits that others litter. The theory behind an individual's decision making could be applied to immoral behaviours in sport, such as cheating, although most individuals will understand that cheating is frowned upon (injunctive norm), if they believe that others are engaging in cheating behaviours (descriptive norm) they may be more likely to engage in them.

Drawing on the focus theory of normative conduct (Cialdini et al., 1990), the theory of normative social behaviour, proposed by Rimal and Real, (2005) examines the mechanisms

that are thought to influence and moderate behaviour. Specifically, they believe that injunctive norms, group identity and outcome expectations moderate the impact of descriptive norms on behaviour. Descriptive and injunctive norms can work in tandem, for example individuals who have observed a behaviour in a social environment often believe they should replicate this behaviour.

Group identity, one of the other moderators of behaviour proposed in the theory, is conceptualised as how demographically or attitudinally similar an individual believes they are to other group members. Outcome expectations represent the idea that individuals are likely to follow or replicate the behaviour of a group on the basis that doing so is likely to benefit them (Rimal & Real, 2005). Outcome expectations also tie into Bandura's, (1999) work on social cognitive theory, as described above, in that human behaviour is moderated at least in part, by an individual's outcome expectations, such as the belief that they will benefit from their behaviour.

Since the introduction of the theory of normative social behaviour, some enhancements and improvements have been suggested, in particular by Lapinski and Rimal, (2005) who specified the involvement of ego-orientation. Following this, researchers have now revealed more moderators of behaviour that were not originally included in the theory of normative social behaviour (Rimal & Lapinski, 2015). The increasing number of moderators of descriptive-norm behaviour can be categorised into individual level and group-level and contribute towards the attribute-centred approach Rimal et al., (2011) proposed. Some of the individual-level moderators include self-efficacy (Jang et al., 2013), social comparison tendency (Litt et al., 2012) and involvement (Lapinski et al., 2017). The group-level moderators include interdependence (Triandis, 1989; Triandis, 1994; Lapinski et al., 2007), and group proximity (Neighbors et al., 2010; Woolf et al., 2014). This approach allows for

more flexibility when examining specific behaviours and takes into consideration the change in situation that behaviours can occur in as well as the attributes such as individual differences and characteristics of an individual (Rimal & Lapinski, 2015). For example, Lapinski and Rimal, (2005) found that behaviours occurring in private are much less susceptible to normative influence whereas Cialdini, (2001) found that higher levels of uncertainty in behaviour can increase the susceptibility of normative influence.

In the theory of normative social behaviour descriptive norms are believed to be the drivers of behaviour whilst other factors such as individual attributes and the context of a situation are moderators of behaviour. Rimal and Lapinski, (2015) state that collective norms and the influence of society may be an important driving factor in descriptive norms. For example, if lots of people engage in a behaviour (such as cheating in Ultimate) others may perceive that that is expected of them and if they do not behave in this *expected* way there will be social consequences. Likewise, if players believe that nobody cheats in Ultimate, they may be less likely to engage in this behaviour (or actively avoid cheating behaviours) because there will be social consequences. This may be emphasised if the avoidance of cheating or the acceptance of cheating is part of the group or community's identity. In this example, collective and descriptive norms are driving injunctive norms to be a mediator between descriptive norms and behaviour.

Previous research on both the focus theory of normative conduct and the theory of normative social behaviour has examined the influence of injunctive and descriptive norms across multiple different scenarios. They found that injunctive norms were a significant predictor of classroom aggression (Henry et al., 2000), environmentally friendly consumer choices (Dean et al., 2008) and drinking behaviour (Kilty, 1978) whereas descriptive norms were found to be a significant predictor of littering (Cialdini et al., 1990) and home energy use (Nolan et al., 2008). So far, however there has been little discussion about the relationship between social



norms and cheating behaviours in sport. The findings discussed in the theories above highlight the importance of the influence of social norms and their role in mediating behaviour. Therefore, the present study will investigate the effect of descriptive and injunctive norms on participants cheating behaviours within Ultimate via their perceptions of Spirit.

Social norms may help to understand the role of external influence on an individual's behaviour however to it is also important to understand how an individual's dispositional characteristics may impact how they act. The following section will examine the role of individual differences on cheating behaviour.

## **1.4 Individual Differences and Cheating**

Previous research on individual differences have identified dispositional predictors of cheating behaviour in athletes.

### **1.4.1 Personality and cheating**

There is emerging evolving support for studying moral behaviour within the context of personality. Specifically, Narvaez and Lapsley, (2009) believe that if moral identity is a dimension of individual differences, it can therefore be examined as a dimension of personality. They argue that personality can be split into two disciplines. Firstly, the social-cognitive approach that accounts for individual differences that can adapt and develop depending on the environment and situation such as schemas. Secondly, traits of personality that are made up of latent dispositional constructs such as Machiavellianism, Agreeableness and Honesty-Humility. The latter are examined in the present study.

There is a large body of research that links personality traits and behaviour associated with cheating, in particular, dishonest behaviour (Pfattheicher et al., 2019), doping in athletes (Petróczi, 2007; Nicholls et al., 2017; Woolway et al., 2020), committing fouls (Bushman & Wells, 1998; Schild et al., 2020) and importantly, breaking game rules (McTernan et al., 2014;

Hilbig & Zettler, 2015; Kleinlogel et al., 2018; Nicholls et al., 2019). This body of research goes some way to understanding how personality and behaviour interact, however no studies to date have reported specifically on the relationship between personality traits and cheating in self-governed sport. The recreational nature of Ultimate and the reliance on self-governance could yield different findings to that of studies of more competitive or refereed sports due to athletes finding it easier to cheat and therefore feeling more inclined to do so, alternatively they may feel responsible for upholding the rules of their sport and refrain from cheating. This section examines individual differences and their relationship with cheating behaviours in sport, including Dark-Triad traits, Honesty-Humility, Sportspersonship, fairness, authority and morality.

#### **1.4.2 Dark-Triad traits**

Personality traits that have been consistently associated with immoral behaviour are those known as the Dark Triad. The Dark Triad is made up of three distinct, but related malevolent personality traits, Machiavellianism, Narcissism and Psychopathy (Paulhus & Williams, 2002). Machiavellianism represents a manipulative personality, those high in Machiavellianism are likely to act deceitfully in order to achieve their own personal goals (Nathanson et al., 2006). Narcissism represents a personality that displays superiority and entitlement as well as dominance and grandiosity. Psychopathy, which is considered to be the most malevolent of the three dark triad traits (Rauthmann, 2012), represents a lack of empathy as well as high levels of impulsivity and a tendency to act antisocially (Paulhus & Williams, 2002).

In an examination of the relationship between competitiveness and performance satisfaction and the Dark Triad traits in athletes from multiple sports, González-Hernández et al., (2020) found that fear of losing and the desire to win was related to higher levels of narcissism, the fear of failure and inferiority was associated with higher levels of psychopathy and they also

found that Machiavellianism was heightened when athletes felt like they were losers. These findings suggest that the Dark Triad traits may also be related to an individual's moral identity, self-perception and importantly the competitiveness of their sport. This could suggest that a more recreational sport, such as Ultimate, could have lower levels of cheating behaviour than that of an elite or predominantly professional sport. This hypothesis has been supported by Vaughan et al., (2019) who found that elite athletes had higher levels of Dark Triad traits than amateur athletes or those that play recreationally, both levels of athletes subsequently scored higher in Dark Triad traits than non-athletes.

Previous research has examined the relationship between Dark Triad personality traits and cheating behaviours. Williams et al., (2010) found that psychopathy was a significant predictor of scholastic cheating when controlling for the other traits. This was also the case for Roeser et al., (2016) who found that participants who scored higher in psychopathy were more likely to lie about how many correct answers they got in a matrix-task in order to make more money. Further to this, Jones and Paulhus., (2017) found that the situation participants were in was a significant factor when considering cheating behaviour. Those who believed they would not get caught were more likely to cheat and could be predicted by all three dark triad traits. However, when the participants thought there was a chance of punishment only psychopathy could significantly predict cheating behaviours.

In summary, psychopathy is believed to be the strongest predictor of attitudes towards cheating behaviours, however Machiavellianism and Narcissism both contribute to understanding and predicting cheating behaviours dependent on the situation (Nicholls et al., 2019). Some researchers have examined the relationship between Dark Triad traits and cheating in sport, (e.g., Nicholls et al., 2017; 2019), however the majority of the research in a sport setting focuses on doping behaviours. Nicholls et al., (2019) did however examine

the relationship between Dark Triad traits and attitudes towards doping and cheating behaviour finding a positive correlation. This suggests that examining dark triad traits in athletes who play Ultimate might provide further understanding of attitudes towards cheating and cheating behaviour.

Previous research has examined the relationship between Dark Triad traits and other personality traits, such as the Big 5 variables, Agreeableness, Extraversion, Neuroticism, Openness and Conscientiousness (Costa & McCrae, 1992). Agreeable individuals are trustworthy and willing to compromise whereas disagreeable individuals are usually competitive and uncooperative. Extraversion focuses on an individual's interaction with their environment, specifically those higher in extraversion are more likely to be dominant in a social setting and be full of energy whereas an introvert is less socially engaged and more independent than an extravert. Neuroticism is the inclination to exhibit negative emotions such as anger, individuals high in neuroticism are often emotionally reactive whereas those low in neuroticism are usually calm and more emotionally stable. Openness refers to curiosity, adventure, and imagination. Individuals high in openness are more likely to try new things whereas those low in openness are often more pragmatic and close-minded. Conscientiousness is about the way an individual can control their impulses, those high in conscientiousness are often self-disciplined, honest and sometimes stubborn whereas those that are low are more spontaneous and flexible (Costa & McCrae, 1992).

Paulhus and Williams, (2002) and Vernon et al., (2008) found that Machiavellianism was negatively correlated with conscientiousness and agreeableness, suggesting those that are more manipulative are less likely to be able to control their impulses and may be more competitive. Those that are more competitive have been previously found to be more likely to cheat in sport (González-Hernández et al., 2020). If an individual that is competitive is

also less able to control their impulses, they may be even more likely to cheat, particularly in the instance of Ultimate which relies on players to discuss any calls made within the game - those who are more manipulative and have higher levels of Machiavellianism may use that to their own personal advantage to persuade the opposition they are right. Therefore, understanding more about an individual's personality traits may help in predicting the likelihood of cheating behaviours.

Paulhus and Williams, (2002) and Vernon et al., (2008) both found that narcissism was positively associated with openness and extraversion and negatively associated with agreeableness. The negative relationship between narcissism and agreeableness could represent an individual that is more dominant and has beliefs they are superior, whilst simultaneously being untrustworthy, competitive, and uncooperative, which in the context of Ultimate could mean they were more likely to disregard Spirit and cheat because they believe they are better than the opposition and are uncooperative.

There were mixed findings on the relationship between psychopathy and the Big Five personality traits. Paulhus and Williams, (2002) and Lee & Ashton, (2005) found that Psychopathy was correlated with each of the Big 5 personality traits. However, Jakobwitz and Egan, (2006) did not find a significant correlation between any of the Dark Triad traits and extraversion or openness and in a behavioural genetic investigation Vernon et al., (2008) found that psychopathy correlated negatively with agreeableness and conscientiousness, but found no correlation between neuroticism, extraversion or openness to experience and psychopathy.

### **1.4.3 Honesty-Humility**

Honesty-Humility as defined by Ashton and Lee, (2007) is a personality trait that encapsulates variations in fairness and sincerity - it is also negatively associated with greed and

pretentiousness. Previous research has examined the relationship between personality and moral or honest behaviour, [Hilbig et al., \(2015\)](#) found that individuals that were low in Honesty-Humility were more likely to engage in behaviour that is considered immoral and also less likely to be honest about this behaviour when asked. Specifically, low levels of Honesty-Humility and Agreeableness have been associated with Dark Triad personality traits, which have in turn been associated with cheating behaviours and antisocial behaviours ([Paulhus & Williams, 2002](#); [Lee & Ashton, 2005](#); [Moshagen et al., 2020](#); [Jones & Paulhus, 2017](#); [Hodson et al., 2018](#); [Muris et al., 2017](#); [Paulhus, 2014](#)).

Honesty-Humility is sometimes referred to as the sixth trait of personality ([Ashton et al., 2019](#)) and it has become a popular topic in studies of prosocial and antisocial behaviour (e.g., [Ashton & Lee, 2007](#); [Ashton et al., 2014](#); [Pfattheicher & Böhm, 2018](#); [Ashton et al., 2019](#)). High levels of Honesty-Humility have been associated with negative Dark Triad traits as well as prosocial behaviour whereas low levels of Honesty-Humility have been associated with immoral behaviour ([Hilbig, Moshagen, et al., 2015](#)). An individual's level of Honesty-Humility could therefore provide insight into their likeliness to cheat and their perceptions towards cheating behaviour. It would be expected that an individual lower in Honesty-Humility would be more likely to engage in cheating behaviours and have a more positive perception of these types of behaviour, whereas an individual high in Honesty-Humility may look to avoid cheating behaviours. [Ashton and Lee, \(2007\)](#) believe that the traits associated with Honesty-Humility (e.g., honesty, fairness and being sly) are also associated with cheating in sports.

In a study that examined the role of each of the six personality traits from the HEXACO model, Honesty-Humility was found to be the only valid predictor of dishonest behaviour and the evidence was inconclusive for the other basic personality traits ([Heck et al., 2018](#)). Previous research has also shown the positive relationship that Honesty-Humility can have on behaviour, [Ashton et al., \(2014\)](#) provide an overview of how Honesty-Humility can impact our

lives socially. Honesty-Humility has been positively associated with prosocial behaviours (Hilbig & Zettler, 2009; Thielmann & Hilbig, 2015; Pfattheicher & Böhm, 2018) and also Dictator Game giving (Hilbig et al., 2015; Zhao & Smillie, 2015; Zhao et al., 2016; Zhao et al., 2017; Thielmann & Hilbig, 2018; Allgaier et al., 2020). Honesty-Humility was also found to negatively predict cheating and dishonest behaviours, in other words, those with higher levels of Honesty-Humility are less likely to cheat and those with lower levels of Honesty-Humility are more likely to cheat (Hershfield et al., 2012; Hilbig & Zettler, 2015; Hilbig et al., 2016; Pfattheicher & Böhm, 2018; Kleinlogel et al., 2018; Klein et al., 2020).

Honesty-Humility is usually measured using HEXACO and often refers to money and wealth as an indicator of high or low levels of prosocial behaviour such as giving in the Dictator Game. The Dictator Game is an experimental paradigm, primarily used for measuring fairness in decision-making. A participant, namely the dictator, receives an endowment and is required to decide how much of the endowment they want to split with another participant who is the recipient. They are not required to share any of the endowment with the recipient and the recipient has no direct influence on the decision-making process (Zhao & Smillie, 2015). Dictator Game giving can be perceived as a prosocial behaviour because there is no requirement to offer anything to the recipient, meaning the dictator game can be a direct measure of prosociality (Zhao & Smillie, 2015). Camerer, (2003) found that dictators typically give the recipient just under 30% of their endowment (i.e., £3 out of £10). This was found to be the case irrespective of the demographics and culture of the participants (Engel, 2011). Thielmann and Hilbig, (2018) examined whether the correlation between Honesty-Humility and prosocial behaviour was due to money concerns rather than the trait itself. They found that the link between Honesty-Humility and prosocial behaviour was apparent in scenarios that did and did not involve money, suggesting the trait Honesty-Humility is directly related to prosocial behaviour.

Dictator game giving has previously been found to positively relate to the personality trait Agreeableness. Those higher in Agreeableness are more likely to give larger amounts of their endowment to the recipient (Baumert et al., 2014; Foschi & Lauriola, 2014; Li & Chen, 2012). Honesty-Humility and Agreeableness are believed to complement one another and have both been positively associated with prosocial behaviour and reciprocal altruism (Sun et al., 2019; Zettler et al., 2020). However, Heck et al. (2018) found that the link between Agreeableness and prosocial behaviour is often less robust and effect sizes are smaller than for Honesty-Humility. Shyness was also found to weaken the association between Agreeableness and prosocial behaviour (Sun et al., 2019). This could be due to the tendency for shy individuals to want to avoid disapproval, hindering their prosocial engagement. Twenge et al. (2007) supported these findings as they found that shy individuals were less likely to engage in prosocial behaviours, therefore, despite having high levels of Agreeableness an individual may be prevented from acting pro-socially due to higher levels of shyness.

#### **1.4.4 Fairness, authority and morality**

Individuals vary in their moral beliefs; our personal characteristics can determine which factors of morality a person is more likely to endorse. To understand the varying factors of morality that people consider to be morally salient, Haidt and Graham, (2007) proposed Moral Foundations Theory. Moral Foundations Theory is made up of five foundations of moral reasoning, including; care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, sanctity/degradation. Liberty/oppression was later included in the theory to distinguish between equality and proportionality (which is measured under the fairness dimension) (Haidt, 2012). Moral Foundations Theory was developed to help understand why morality varies across cultures and individuals. It proposes that internal psychological systems make up the foundations of our ethical behaviour. This theory suggests that the majority of our moral judgement of behaviour happens as an unconscious, intuitive process and removes the importance of rational thought when determining moral behaviour and instead places onus on



interpersonal moral dialogue. Specifically, this dialogue brings awareness to the individual of alternative situation specific moral instincts that are progressively integrated or rejected.

Prior to the development of Haidt's theory, Bargh et al., (2001) established dual-process cognition that suggests that moral judgement is more often an unconscious process (Bargh, 2011; Evans, 2008; Hagger, 2016). Although this theory focuses largely on political cultures, it is important to highlight the significance of fairness and cheating as well as the authority and subversion foundations that are associated with the process of reciprocal altruism. A violation of fairness has been considered a cheating behaviour in sport as has violating authority, such as when an athlete intentionally breaks the rules or acts in a prohibited way. Therefore, according to Moral Foundations Theory, those who give high importance to fairness and authority should disapprove of cheating in sport more than those who give lower importance whilst those that do not consider fairness or authority to be as important may be more likely to cheat (Graham et al., 2009). Authority, which corresponds with respecting rules, is generally more accepted as a moral foundation by individuals that live in collectivist cultures (e.g., China and Japan) compared to individualist cultures (e.g., Britain and America). Therefore, in more individualist cultures they may not find authority to be as much of a moral issue, (Graham et al., 2013).

#### **1.4.5 Sportspersonship**

Sportspersonship, formerly sportsmanship, is the fair treatment of others in a sports setting, however, as highlighted by Vallerand et al., (1996) one of the problems it has faced is the lack of an accepted definition. Researchers originally approached Sportspersonship as a set of attitudes and behaviours. However, advances in research and development in theories now consider Sportspersonship to be an individual difference or an orientation which is how it will be treated within this study. Sportspersonship as an orientation has associations with an individual's motivation because an athlete's motivation to participate in sport can have an

impact on the decision to behave in a sporting manner and refrain from cheating behaviour (Rest, 1984).

Prior to Vallerand et al., (1996), few researchers had examined Sportspersonship, with the exception of Crawford, (1957) who grouped reported unethical behaviour into nine categories. The nine categories in descending order of frequency include officiating, opponent relationship, rules of the game, player relationships, professional relationships, recruiting, public relations, eligibility rules and scouting. Crawford's conceptualisation of Sportspersonship however focused too heavily on the thoughts of coaches and officials and failed to consider the opinions of actual athletes. Therefore, in the context of Ultimate this conceptualisation would fail to represent the fundamentals of self-governance, additionally the inclusion of categories such as recruiting, scouting and public relations does not provide the explanation for in-game behaviour and decision making that Sportspersonship should.

Vallerand et al., (1996) proposed a multidimensional definition of Sportspersonship, which focuses on the psychological construct of Sportspersonship and a five-item model that highlights the behavioural and situational factors that makeup Sportspersonship. These five factors include commitment towards participation, respect for social conventions, respect for rules and officials, respect for the opponent and the lack of a negative approach. Vallerand and colleagues highlighted that simply adhering to the rules of the game would not suffice as a positive sporting orientation, instead, they emphasised the importance of social and behavioural factors. Some examples of behaviours encapsulated by the social-psychological approach include helping an opponent from the floor, pausing the game for an injury, or calling oneself out when stepping out of bounds. These behaviours are the opposite of what might be expected from immoral or cheating behaviours, therefore an individual who has a high level of Sportspersonship might be less likely to cheat in their sport. At the time this

theory and approach emerged it was ground-breaking in the Sportspersonship literature, however, as Perry et al., (2015) highlight, it fails to examine proactive approaches to displaying positive Sportspersonship and instead focuses too much on how athletes may have a less than good level of Sportspersonship.

Vallerand et al., (1996) treat Sportspersonship as an individual difference and believe it is learnt via interpersonal social interactions and situations. The participants used in their study were adolescents (aged 10-18). If they believed that interpersonal interactions were the driving force for developing Sportspersonship it would make more sense to examine adults who were likely to have encountered more social interactions than an adolescent. In this instance, their findings could suggest social influences and social norms play a larger role than their individual differences. Utilising the definition of Sportspersonship Vallerand et al., (1996) proposed, Stornes, (2001) found that when an individual's Sportspersonship orientations were manifested in their behaviour, the influence of their social situation was very important.

To get an understanding of the predictive powers of Sportspersonship Perry and Clough, (2017) examined the relationship between Sportspersonship and cooperation, specifically whether those higher in Sportspersonship were more likely to cooperate. They found that cooperation could be positively predicted by Sportspersonship except when the individuals' actions were free from consequences. However, levels of cooperation decreased with higher levels of competition, highlighting the importance of measuring different levels of competition when examining Sportspersonship and cooperation.

Vallerand and Losier, (1994) proposed an association between self-determined motivation and Sportspersonship orientations. Their research findings suggested that athletes were more likely to exhibit behaviour akin to Sportspersonship when their motivation for participation was

pleasure and autonomy. Self-determined athletes were more motivated by the social aspects of sport compared to non-self-determined athletes who were more driven by factors such as money and fame (Chantal et al., 2005). These findings support and relate to the research on achievement goal theories discussed previously (see section 1.1.1) (e.g., [Barkoukis et al., 2013](#); [Nicholls, 1989](#); [Jagacinski & Strickland, 2000](#); [Duda et al., 1991](#)), specifically, those with a higher task goal orientation (mastery or personal success) were more likely to endorse Sportspersonship behaviours. Conversely, those with a high ego goal orientation (performance or being better than others) were more likely to behave in an unsporting manner, including cheating behaviours (Chantal et al., 2005).

Further studies of Sportspersonship (e.g., [Deci & Ryan, 1985, 1990](#); [Ryan & Deci, 2000](#)) have examined the relationship between motivation and Sportspersonship, namely, Self-Determination Theory (Ryan & Deci, 2000). Self-Determination Theory is a theoretical framework that has been used to examine motivation and personality in sport. The theory focuses on what motivates an individual to make decisions without the influence of others, specifically how much of human behaviour is determined by the self. Ryan and Deci believe there are three innate psychological requirements that motivate individuals to behave, autonomy, competence, and relatedness.

Autonomy is the feeling of having control over our actions, competence is the feeling of being good enough to produce a desired outcome and finally, relatedness is the ability to meaningfully interact with others (Ryan & Deci, 2000). At the centre of the theory are two forms of motivation, controlled and autonomous, they echo an individual's justification for behaving in a particular way. This behaviour is dependent on whether an individual believes it will support their psychological needs. Controlled motivation represents behaviours that an individual engages in for personal benefits such as winning trophies, avoiding feelings of guilt or looking good in front of teammates. These types of behaviours are only likely to occur or

continue when an individual feels obliged or pressured into acting this way, control motivated individuals are therefore unlikely to be self-regulated (Hagger et al., 2014). In contrast, autonomous motivation refers to behaviours that are self-determined and behaviours that the individual believes are consistent with their personal goals. Individuals whose behaviour is determined by autonomous motivation are more likely to continue this behaviour without the need for external reinforcement. Unlike control motivated individuals, autonomous motivated individuals are more likely to self-regulate their behaviour (Hagger et al., 2014).

Self-Determination Theory plays an important role in understanding the moral behaviour of sport. Ntoumanis and Standage, (2009) examined whether the factors proposed by Self-Determination Theory can predict immoral sporting attitudes and Sportspersonship. They found that autonomy motivation was a positive predictor of Sportspersonship whereas controlled motivation was a negative predictor of Sportspersonship. In contrast, autonomous motivation was found to be a negative predictor of antisocial moral attitudes, whereas controlled motivation positively predicted antisocial moral attitudes. This study highlights the importance of an environment that supports autonomy for encouraging Sportspersonship and discouraging antisocial moral attitudes and cheating in sport.

## **1.5 Present Study**

The present study was designed with the aim to examine the likelihood and prevalence of cheating behaviours in the recreational and self-governed sport of Ultimate by determining the preferences, social influences, and individual differences of its players. If the predictors of cheating are explored on an individual level, the findings could help sporting bodies to understand why athletes make the decisions that they do and ultimately look at preventing the negative side effects cheating can have on sport. Examining players perceptions of Spirit may therefore contribute to the understanding of their behaviour. Very little research has attempted to investigate the effectiveness of self-governance, particularly within a

recreational sport. Due to the lack of existing literature surrounding self-governance the first objective is to explore how players perceive and interact with Spirit in relation to fairness and self-governance.

Ultimate is a relatively new and niche sport, there is very little existing research that examines players preferences, particularly in relation to Spirit within Ultimate. Given that Ultimate is one of very few mixed gender, self-governed sports, gaining an understanding of players preferences could provide valuable insight into this lesser-known world of recreational sport. The second objective is therefore to examine players preferences in relation to Ultimate and Spirit.

The next objective of the study centres around the gaming behaviour of players.

Sportspersonship underpins the main focus of Spirit, in particular, the role of fairness. Due to these similarities, examining the predictors of Sportspersonship could provide insight into what makes Ultimate players use Spirit more fairly. Therefore, the third objective is to examine the predictors of Sportspersonship in Ultimate players.

Previous research on social influences, individual differences and motivational climate have found that they can impact a person's decision-making and their behaviour. However, there is very little research on social influence in recreational, self-governed sport in relation to cheating. Understanding what can influence an individual's behaviour could help to minimise immoral or anti-social behaviour from occurring in the future. Most people understand that cheating behaviours are wrong, however the belief that others are engaging in cheating behaviours could increase cheating likelihood. Similarly, Dark-Triad traits, as well as low levels of Honesty-Humility have previously been associated with cheating behaviours, particularly amongst professional sports. Less research has examined this in recreational

sports. Previous research on the role of a motivational climate is inconsistent, however the level and type of sport played may be a contributing factor on the motivation to cheat.

Therefore, the fourth objective is to understand whether social influences, individual differences and the level of competition can predict cheating likeliness within Ultimate players. The following Hypothesis were tested:

Hypothesis 1: Higher level of competition will increase the likeliness of cheating in Ultimate players

Null Hypothesis 1: Level of competition will not impact likeliness of cheating in Ultimate players

Hypothesis 2: Higher Narcissism scores will increase the likeliness of cheating in Ultimate

Null Hypothesis 2: Narcissism scores will not impact likeliness of cheating in Ultimate

Hypothesis 3: Higher Machiavellianism scores will increase the likeliness of cheating in Ultimate

Null Hypothesis 3: Machiavellianism scores will not impact likeliness of cheating in Ultimate

Hypothesis 4: Higher Psychopathy scores will increase the likeliness of cheating in Ultimate

Null Hypothesis 4: Psychopathy scores will not impact likeliness of cheating in Ultimate

Hypothesis 5: Higher Narcissism scores will increase the amount of cheating in Ultimate players

Null Hypothesis 5: Narcissism scores will not impact the amount of cheating in Ultimate players

Hypothesis 6: Higher Machiavellianism scores will increase the amount of cheating in Ultimate players

Null Hypothesis 6: Machiavellianism scores will not impact the amount of cheating in Ultimate players

Hypothesis 7: Higher Psychopathy scores will increase the amount of cheating in Ultimate

players

Null Hypothesis 7: Psychopathy scores will not impact the amount of cheating in Ultimate players

Hypothesis 8: Higher Honesty-Humility scores will decrease the likeliness of cheating in Ultimate players

Null Hypothesis 8: Honesty-Humility scores will not impact the likeliness of cheating in Ultimate players

Hypothesis 9: Higher Honesty-Humility scores will decrease the amount of cheating in Ultimate players

Null Hypothesis 9: Honesty-Humility scores will not impact the amount of cheating in Ultimate players



## 2 Method

### 2.1 Participants

Participants were recruited via Ultimate-related social media and internet groups (Facebook and Reddit) and were offered a small incentive for taking part in the research: they were advised they would be added into a prize draw to win a custom Frisbee disc and the opportunity to choose a charity that would receive a donation from the researcher (10p per user response). There were 1,254 responses to the questionnaire, however 426 responses were removed due to incomplete responses, not consenting to take part, not having played Ultimate or being under 18. The remaining 828 responses were included in the data analysis. Participants ( $N = 828$ , male = 578, female = 245, other = 5) were aged between 18 and 65 ( $M = 26.79$ ,  $SD = 8.64$ ) and consisted of players of different levels of experience, the highest-level participants had played at varied between recreational ( $n = 43$ ), University ( $n = 192$ ), club ( $n = 411$ ) and national ( $n = 182$ ) level. Participants' experience in playing Ultimate ranged from 4 months to 43 years ( $M$  years = 8.2 years,  $SD = 7.29$ ). Participants were recruited from all around the world and had 50 different nationalities, the most common were American ( $n = 399$ , 48.2%), British ( $n = 195$ , 23.6%) and Canadian ( $n = 60$ , 7.2%) (see Appendix A for full list). The majority of participants (51.3%) trained or played Ultimate at least three times a week, compared to 37.9% who played once or twice a week and 10.8% who trained or played once a month or less.

### 2.2 Measures and Materials

Participants were asked to complete a series of questionnaires (see Appendix F) that are described in detail below.

### 2.2.1 Demographics

A series of questions were first used to measure basic demographics, including age, gender and nationality. Players were also asked questions about their experience with playing Ultimate, including their length of time played, highest level played and playing frequency.

### 2.2.2 Player preferences

Participants were asked to give their preferred level to play Ultimate at, they were given a choice of *Recreational, University, Club* and *National*. Participants were also asked their preference of gender make up when playing Ultimate, specifically “*Do you prefer playing men’s/women’s or mixed Ultimate?*”. This was asked to understand whether men or women were more likely to prefer same-sex or mixed Ultimate, or whether they had no preference. To understand more about player preference, participants were asked their level of agreement to statements about Ultimate on a five point Likert scale anchored by 1 = *Strongly Disagree* to 5 = *Strongly Agree* (“Ultimate Frisbee would benefit from having referees” = *Benefit from officials*, “Most players understand the rules of Spirit” = *Spirit Comprehension*, “Spirit helps maintain the flow of the game” = *Spirit Flow* and “You felt guilty after misusing Spirit during a game” = *Felt Guilty*).

Participants were also asked to rank the five attributes that make up a Spirit score on how important they believed they are to Spirit (*Rules knowledge and use; Fouls and body contact; Fair-mindedness; Positive attitude and self-control; and Communication*). The median and mean scores were calculated by allocating a rank to a score (Ranked 1st = 5, 2nd = 4, 3rd = 3, 4th = 2 and 5th = 1).

### 2.2.3 Use of Spirit

Six attitudinal questions were included to examine Ultimate perceptions of Spirit. Participants were required to respond on a 5-point Likert scale anchored by 1 = *Strongly Disagree* to 5 = *Strongly Agree*. These questions will hereafter be referred to using their labels; ‘Spirit works

well in maintaining fairness' = *Spirit Efficacy*, 'The misuse of Spirit counts as cheating' = *Spirit Misuse*, 'Players generally use Spirit fairly' = *Honouring Spirit*, 'I am likely to misuse Spirit during an important match or point' = *Important Spirit misuse*, 'I am likely to misuse Spirit during a fun tournament' = *Fun Spirit misuse* and 'You have misused Spirit to gain an advantage' = *Misused Spirit*. These questions were included to examine injunctive (*Spirit Misuse and Spirit Efficacy*) and descriptive social norms (*Honouring Spirit*) as well as understanding cheaters (*Important Spirit misuse, Fun Spirit misuse and Misused Spirit*).

Only participants who responded *agree* or *strongly agree* to being likely to misuse Spirit during a fun or important match or tournament were asked to respond to *Misused Spirit*. The decision to only include this subset was taken based on the assumption that participants who *neither agreed or disagreed, disagreed, or strongly disagreed* were unlikely to have misused Spirit.

#### **2.2.4 Short Dark Triad**

The Short Dark Triad Scale (SD3) (Jones and Paulhus, 2014), a widely used 27 item scale was included to measure participants levels of Machiavellianism, Narcissism and Psychopathy, each with 9 items. Participants were required to indicate their level of agreement on a 5-point Likert scale anchored by 1 = *Strongly Disagree* to 5 = *Strongly agree*. This scale consists of three subscales that measure different malevolent personality traits; *Machiavellianism* (e.g., "Generally speaking people won't work hard unless they have to"), *Narcissism* (e.g., "People see me as a natural leader") and *Psychopathy* (e.g., "I like to pick on losers"). A total score for each of the three dimensions was calculated using the 27 items (nine items per dimension) after re-coding the reverse-keyed items. This score was then divided by nine to get a mean score for each of the three dimensions. The SD3 has established internal and test-retest reliability; research studies (e.g., Jonason & Webster, 2010; Roeser et al., 2016; Jonason & Davis, 2018) have continuously supported the construct validity of this

scale. Acceptable Cronbach's alphas were observed for each subscale (*Machiavellianism* = .69; *Narcissism* = .65; and *Psychopathy* = .68).

### 2.2.5 HEXACO-60

The HEXACO-60 (Ashton & Lee, 2009), a 60-item scale, was used to measure six major dimensions of personality that have been previously discovered in lexical studies of personality structure as shown in the introduction. As shown by Ashton and Lee, (2009) the HEXACO-60 scale has good psychometric properties, with internal consistency reliability of the six factor scales exceeding .87 and none of the factor scales had correlations exceeding the .30 level. The 60-item scale showed correlations exceeding .95 with the 100-item scale, justifying the use of the shorter scale (Lee & Ashton, 2018). The scale consists of six subscales which measure different personality traits: *Honesty-Humility* (e.g., "Having a lot of money is not especially important to me"), *Emotionality* (e.g., "When I suffer from a painful experience, I need someone to make me feel comfortable"), *Extraversion* (e.g., "I feel reasonably satisfied with myself overall"), *Agreeableness* (e.g., "I rarely hold a grudge, even against people who have badly wronged me"), *Conscientiousness* (e.g., "I plan ahead and organize things, to avoid scrambling at the last minute"), and *Openness to Experience* (e.g., "I would be quite bored by a visit to an art gallery"). Participants were required to respond to each statement on a 5-point Likert scale (1 = *Strongly Disagree*; 5 = *Strongly agree*). A score for each of the six subscales is calculated by allocating a score of 1 for Strongly disagree to 5 for Strongly agree for each of the 60 items, reverse-keyed items are calculated before computing scale scores. The 60 items make up six subscales and 24 facets, the score for the 24 facets is calculated using the mean of the two or three items in the facets. The score for each of the six subscales used in the analysis is computed as means across all items in each of the six subscales. Acceptable Cronbach's alphas were observed for each subscale, as shown in [Table 1](#)

Table 1. Cronbach's alpha scores for HEXACO-60 factors.

HEXACO category	$\alpha$
Honesty-Humility	.60
Emotionality	.69
Extraversion	.70
Agreeableness	.67
Conscientiousness	.70
Openness to experience	.61

### 2.2.6 Sportspersonship scale

The Sportspersonship scale developed by [Perry et al., \(2015\)](#) was used to measure Sportspersonship orientation. This 24-item scale consists of five subscales however the questions from the subscale *Compliance towards officials* were omitted as they refer to referees and officials which are not relevant to Ultimate, there were four subscales and 19 items remaining. The included scales were *Compliance towards rules* (e.g., "I never break the rules of my sport"), *Legitimacy of injurious acts* (e.g., "I refrain from tactics that could injure my opponent"), *Approach towards opponent* (e.g., "I would go out of my way to congratulate an opponent") and *Principled game perspective*, (e.g., "It is more important to do what is right than to win"). The Sportspersonship scale was included to examine sporting behaviours beyond those that are expected of Ultimate players. [Serrano-Durá et al., \(2020\)](#) believe that the Sportspersonship scale conceptualises previous measures of Sportspersonship whilst considering more positive and proactive sporting behaviours. Participants were required to respond on a 4-point Likert scale anchored by 1 = *Strongly Disagree* to 4 = *Strongly agree*. A mean score for each subscale was calculated using the total of the items from each scale divided by the number of items from each scale. Acceptable to high Cronbach's alphas were

observed for each subscale (*Compliance towards rules* = .81; *Legitimacy of injurious acts* = .60; *Approach towards opponent* = .68; and *Principled game perspective* = .84).

### **2.2.7 The Dictator game**

The dictator game is an economic game that is widely used to measure fairness by asking participants the number of coins they would give to another 'participant' (Kahneman et al., 1986). The participant is asked to imagine they are completing a decision-making task with another participant; however, they are aware this is a hypothetical scenario and that the other participant does not exist. Participants begin with 10 coins and are told their partner begins with zero, they are given the opportunity to give any of their money to their partner, they can give any whole number between zero and 10 coins. The number of coins they give to their partner signifies their level of fairness. As argued by Guala and Mittone, (2010), the dictator game is a useful tool for investigating social norms. As found by Engel, (2011), it has been widely utilised across multiple research studies, they found that the average give rate is 28.3% which equates to roughly three coins in the present study.

Although not a specific aim of the present study, due to the novel approach to assessing fairness via using the dictator game, additional analysis was conducted to evaluate how effectively it correlated with other constructs of fairness such as Sportspersonship. Personality and attitudinal predictors were found to accurately predict dictator game giving with a small to medium effect size. The specific variables that significantly predicted dictator game giving include Agreeableness, Openness to Experience and Machiavellianism. Agreeableness and Openness to Experience were both positive predictors, meaning higher levels of the trait correlates to higher dictator game giving, whereas Machiavellianism was a negative predictor meaning higher levels of the trait correlated with lower dictator game giving. Openness to Experience and Agreeableness both also positively predicted levels of Sportspersonship in Ultimate players suggesting the dictator game is a good predictor of fairness in athletes.

Previous research (e.g., [Foschi & Lauriola, 2014](#); [Li & Chen, 2012](#)) also found that level of Agreeableness is positively associated with dictator game giving.

### **2.3 Procedure and Design**

This study was cross-sectional and exploratory in nature, as whilst there is research that exists on cheating in sport, most research has looked at cheating in sport that's governed using a referee. Ultimate is self-governed therefore there is reason to expect behaviour might be different. Qualtrics (*Qualtrics*, n.d.) was used to create the questionnaire. All of the participants were informed before starting the questionnaire that participation was voluntary, anonymous and that they could exit (and return to) the questionnaire at any point during completion. Participants were required to read an information sheet (see Appendix B) and complete a consent form (see Appendix C) before beginning the study. Questions were not mandatory, however there was a pop up that reminded participants if they had any incomplete questions before continuing to the next section of questions.

Participants completed the questionnaire online which consisted of questions about demographics, player perceptions and preferences of Spirit and Ultimate, attitudinal questions, three personality scales (SD3, HEXACO-60 and The Sportspersonship scale) and the dictator game (described above), which was embedded into the questionnaire. The questionnaire took participants approximately 15-20 minutes to complete, afterwards the participants were fully debriefed.

Creating the questions in relation to Spirit and Ultimate was a difficulty the researcher faced as no prior relevant literature or research exists on the topic of Ultimate. Utilising a questionnaire and a cross-sectional design is a disadvantage as there is no verification of the participants, no follow up on responses given and there were no open-ended questions included in this study. Despite this, the advantages of using an online survey meant that the sample size could be much larger than that of a qualitative or longitudinal design. The cost

and resources associated with this method of design are also minimal which makes this research accessible to all researchers. The present research sets a foundation for future researchers to build upon which will be discussed in more detail the discussion (see section 4.3.6). A second was administered to 30 new participants following potential confusion with the wording of the behavioural task, the dictator game, which was spotted by the researcher after distributing the questionnaire (see Appendix G). The 30 new participants were asked to complete the same behavioural task as the original study as well as another question to ask what they thought they were being asked to do. To prevent duplication of participants across the two questionnaires, only non-Ultimate players were approached to complete the second questionnaire because to be included in the first questionnaire they had to have played Ultimate before. They were approached via social media (Facebook) using an opportunity sample. All 30 of the participants correctly understood the task being asked of them, therefore justifying the decision to include the responses to the dictator game from the first questionnaire in the data analysis.

## 2.4 Data Analysis

Data was exported from Qualtrics (*Qualtrics*, n.d.) and preliminary screened for missing responses, normality and outliers in SPSS Version 26 (*IBM SPSS Statistics for Windows*, 2019). The numerical data collected by the questionnaires were analysed using five separate analyses; Chi-Square test, Multiple linear regression, Wilcoxon signed ranks, Binary logistic regression and Mann-Whitney U tests.

To calculate the effect sizes of individual significant predictors from the linear regression models the following equation was used:  $f^2 = \frac{R^2_{inc}}{1-R^2_{inc}}$  and all effect sizes were interpreted in accordance with (Cohen, 1988).



Multiple linear regression was used to examine predictors of the Sportspersonship scale, the predictors in this analysis were personality scales (HEXACO-60 and SD3) and attitudinal predictors (*Spirit Efficacy*, *Spirit Misuse* and *Honouring Spirit*) and the dependent variable was the Sportspersonship scale scores. Tests to see if the data met the assumption of collinearity indicated that multicollinearity was not a concern.

The intended analysis to examine predictors of likeliness to cheat was ordinal regression but due to a lack of dispersion across responses some of the assumptions were violated. This assumption could be considered as too lenient though and thus, we should not fully discount the findings. Instead, we can supplement it with a further binary logistic regression that does not require the same assumptions. Binary logistic regression was therefore also used to examine predictors of likeliness to cheat in Ultimate matches. The predictors in the analysis were personality scales (HEXACO-60, SD3 and Sportspersonship) and attitudinal predictors (*Spirit Misuse* and *Honouring Spirit*). Tests to see if the data met the assumption of collinearity indicated that multicollinearity were not a concern.

## **2.5 Ethical Considerations**

The following research was reviewed and approved by the institutional ethics panel at The University of Huddersfield. Appropriate ethical considerations and practises were taken, and guidelines set out by the [British Psychological Society et al., \(2018\)](#) were strictly followed. Participants were informed before taking part that this study is anonymous and no identifiable information was collected for the purpose of the research. Each participant reviewed and signed the consent form (see Appendix C) before beginning the questionnaire, granting permission for the research to take place. In line with the University guidance the data will be stored for a period of up to 10 years on a password protected computer. Following completion of the questionnaire, participants were debriefed (see Appendix D) and the aims of the study were explained.

### 3 Results

The results are grouped into four main sections, each relevant to an aim of the study; firstly, to explore how Ultimate players perceive and interact with Spirit in relation to fairness and self-governance. A correlation analysis was also conducted to examine any descriptive relationships between personality and attitudinal predictors, these can be found in [Table 3](#). Secondly, linear regression was performed to examine predictors of the Sportspersonship scale and also predictors of dictator game giving. Next, binary logistic regression was utilised to understand predictors of participants' likeliness to cheat. Finally, Mann-Whitney U tests were conducted to compare players who claim to have cheated to those who have not.

#### 3.1 Ultimate Players Interaction and Perception of Ultimate and Spirit

##### 3.1.1 Gender preferences

Of the 828 participants, 359 (43%) preferred to play mixed compared to 281 (34%) who preferred to play single gender and 188 (23%) who had no preference. See [Table 2](#) for a cross-tabulation of gender and gender preference.

A chi-square test of independence showed that there was a significant association between the gender and gender playing preference,  $X^2(4, N=828) = 16.362, p = .003$ . The effect size of this association was small Cramer's  $V = .099$ ,  $\Phi = .141$ . Post-hoc observations were made to identify the under and over-represented groups. The negative standardised residual (-2.2) exceeded the critical value (-1.96), indicating that female players were underrepresented in the no preference category.

*Table 2. Participants gender preference for playing Ultimate*

Gender	Gender preference			
	Total	Own gender preference	Mixed	No preference
Male	578	195 (33.7%)	234 (40.5%)	149 (25.8%)
Female	245	82 (33.5%)	124 (50.6%)	39 (15.9%)
Total	823	277 (33.7%)	358 (43.5%)	188 (22.8%)

Table 3. Correlations among personality and attitudinal predictors

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Sportspersonship																						
1. Compliance towards rules	1																					
2. Legitimacy of injurious acts	.51**	1																				
3. Approach towards opponent	.31**	.35**	1																			
4. Principled game Perspective	.61**	.53**	.50**	1																		
5. Dictator game	.11**	.09*	.09**	.15**	1																	
HEXACO-60																						
6. Honesty-Humility	.36**	.30**	.17**	.40**	.20**	1																
7. Emotionality	0	0.02	-0.05	-0.04	.07*	-0.03	1															
8. Extraversion	0.05	0.04	.12**	.07*	0	-0.02	-.18**	1														
9. Agreeableness	.13**	.14**	.18**	.16**	.16**	.26**	-.09*	0.06	1													
10. Conscientiousness	.17**	.13**	.08*	.16**	.08*	.27**	0.06	0.01	0.01	1												
11. Openness to Experience	.13**	.17**	.19**	.24**	.12**	.11**	0	.14**	0.01	.12**	1											
SD3																						
12. Machiavellianism	-.29**	-.25**	-.16**	-.31**	-.20**	-.46**	-.08*	-.13**	-.16**	-.17**	-.16**	1										
13. Narcissism	-0.06	-0.05	0	-.07*	-.07*	-.28**	-.13**	.55**	-.10**	0.01	.13**	.13**	1									
14. Psychopathy	-.35**	-.33**	-.18**	-.35**	-.14**	-.40**	-.10**	-0.04	-.36**	-.23**	-0.03	.41**	.20**	1								
Attitudinal predictors																						
15. Spirit Comprehension	.15**	0.06	.11**	.14**	-0.01	.07*	-.08*	0.03	.09*	.10**	-0.01	-.08*	-0.03	-.10**	1							
16. Spirit Efficacy	.27**	.19**	.21**	.28**	.07*	.17**	0.02	0.05	.11**	.08*	0.04	-.15**	0.02	-.11**	.26**	1						
17. Benefit from officials	-.27**	-.19**	-.17**	-.36**	-.11**	-.28**	0	-0.01	0	-.13**	-.11**	.20**	0.05	.13**	-.16**	-.35**	1					
18. Spirit Misuse	.10**	.11**	0.03	.14**	-0.04	-0.02	0	0.05	-0.01	0.01	0.06	0.03	0.03	-.07*	-.11**	0.04	-0.04	1				

Table 3 (continued)

19. Honouring Spirit	.17**	.16**	.19**	.27**	0	.17**	-.09**	0	.11**	.08*	0.01	-.12**	-.10**	-.12**	.36**	.31**	-.30**	-0.01	1			
20. Important Spirit Misuse	-.43**	-.25**	-.16**	-.40**	-.12**	-.28**	0.03	0	-.09*	-.11**	-.10**	.24**	0.05	.23**	-.11**	-.21**	.28**	-.08*	-.17**	1		
21. Fun Spirit Misuse	-.22**	-.20**	-.14**	-.24**	-0.02	-.14**	0.06	-0.02	-0.07	-.08*	-.09**	.16**	0.05	.20**	-.14**	-.12**	.11**	-.11**	-.13**	.27**	1	
22. Spirit Flow	.16**	.10**	.18**	.18**	.122**	.09*	.02	.04	.06	.08*	.10**	-.09*	.03	-.09	.18**	.33**	-.21**	-.03	.16**	-.15**	-.11**	1
<b>Mean</b>	3.16	3.62	3.35	3.40	4.13	3.52	2.99	3.33	3.30	3.46	3.48	2.82	2.68	1.91	3.45	3.91	2.67	4.20	3.94	1.60	1.35	3.98
<b>Median</b>	3.20	3.75	3.50	3.50	5.00	3.60	3.00	3.40	3.40	3.50	3.50	2.78	2.67	1.89	4	4	2	4	4	1	1	
<b>Standard Deviation</b>	0.52	0.39	0.47	0.48	2.03	0.58	0.68	0.63	0.57	0.62	0.58	0.52	0.51	0.47	0.91	0.85	1.19	0.86	0.68	0.77	0.64	0.94
<b>Range</b>	2.8	2	2.5	2.5	10	3.1	3.8	3.7	3.5	3.3	3.3	3.0	3.11	2.33	4	4	4	4	4	4	3	

\* =  $p > .05$ , \*\* =  $p < .001$

### 3.1.2 Highest and favourite level played

Participants were asked their highest level they had played Ultimate at, of the 815 participants who correctly answered, the majority had played at least Club level and just 5.0% had only played recreationally, these findings are shown in [Table 4](#).

Participants were also asked to select their favourite level of playing Ultimate. For the majority of participants their favourite level of playing was also the highest level they had played at, as demonstrated in [Table 4](#).

*Table 4. Ultimate players favourite level to compete at*

Highest level played	<i>n</i> (% of sample)	Preferred level (Mode)
Recreational	41 (5.0%)	Recreational
University	182 (22.3%)	University
Club	410 (50.3%)	Club
National	182 (22.3%)	National
Total	815	

*Note.* 13 responses were removed as the participant did not understand the question being asked.

### 3.1.3 Spirit rules

Players were asked to rank the five categories of Spirit and their importance when scoring Spirit, from 1 (least important) to 5 (most important) as shown in [Table 5](#). *Fair mindedness* was ranked as most important by 225 (27.2%) participants, followed by *Rules* 209 (25.2%), *Positive attitude* 195 (23.6%), *Fouls* 111 (13.4%) and *Communication* 88 (10.6%).

*Fouls* was ranked as the least important category by 258 (31.2%) participants, followed by *Communication* 163 (19.7%), *Positive attitude* 158 (19.1%), *Rules* 134 (16.2%) and *Fair-mindedness* 115 (13.9%).

Table 5. Ultimate players ranking of Spirit categories (1- Least important, 5 - Most important).

Spirit category	Rank	
	Median (IQR)	Mean (SD)
Fair Mindedness	3 (3)	3.27 (1.39)
Rules Knowledge and Use	3 (3)	3.26 (1.41)
Positive Attitude and Self Control	3 (2)	3.08 (1.44)
Communication	3 (2)	2.77 (1.27)
Fouls and Body Contact	2 (3)	2.61 (1.43)

#### 3.1.4 Player perceptions of Spirit

Participants were asked how much they agreed with statements about their perceptions of Ultimate, responses can be found in [Table 6](#). Of the 828 responses, 696 (84%) strongly agreed or agreed with *Spirit Misuse*, compared to 5.4% who disagreed or strongly disagreed and 10.5% who neither agreed or disagreed.

Participants also believed in *Spirit Efficacy*, 79.3% of participants agreed or strongly agreed compared to 8.3% who disagreed or strongly disagreed and 12.4% who neither agreed nor disagreed. When asked about *Honouring Spirit*, 85.8% of participants agreed or strongly agreed, whereas 5% disagreed or strongly disagreed and 9.1% neither agreed nor disagreed.

The response to *Benefit from officials* varied between participants, however 52% disagreed or strongly disagreed, compared to 25.2% who agreed or strongly agreed and 22.7% who neither agreed nor disagreed. Participants generally agreed or strongly agreed (62%) with

*Spirit Comprehension*, however 20.4% disagreed or strongly disagreed and 17.6% neither agreed nor disagreed.

When asked about *Spirit Flow*, 79.1% of participants agreed or strongly agreed that Spirit helps maintain the flow of the game, compared to 9.2% who disagreed or strongly disagreed and 11.7% who neither agreed nor disagreed.



Table 6. Ultimate players level of agreement with statements about Spirit (1 - Strongly disagree, 5 - Strongly agree)

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Median (IQR)	Mean (SD)
Spirit Misuse	348 (42.0%)	348 (42.0%)	87 (10.5%)	39 (4.7%)	6 (0.7%)	4 (1)	4.20 (.86)
Spirit Efficacy	179 (21.7%)	477 (57.6%)	103 (12.4%)	59 (7.1%)	10 (1.2%)	4 (0)	3.91(.85)
Honouring Spirit	115 (13.9%)	595 (71.9%)	75 (9.1%)	38 (4.6%)	5 (0.6%)	4 (0)	3.94 (.68)
Benefit from officials	78 (9.4%)	131 (15.8%)	188 (22.7%)	304 (36.7%)	127 (15.3%)	2 (2)	2.67 (1.19)
Spirit Comprehension	46 (5.6%)	467 (56.4%)	146 (17.6%)	155 (18.7%)	14 (1.7%)	4 (0)	3.45 (.91)
Spirit Flow	246 (29.7%)	409 (49.4%)	97 (11.7%)	59 (7.1%)	17 (2.1%)	4 (1)	3.98 (.94)

### 3.1.5 Using Spirit to make and contest calls

Participants responded to Likert scale statements about their likeliness to contest or make a call whilst playing Ultimate. Participants generally agreed, with slight variation, to being likely to make or contest a call whilst playing Ultimate despite possible repercussions (confrontation, a bad Spirit score, disrupting the flow, seeming unfair), suggesting they were happy to make or contest calls during matches and tournaments. Just over half the participants did not want to disrupt the flow of the game (51.5%), they were also likely to make a call despite seeming unfair (59.4%), they were likely to make a call despite the possibility of receiving a bad Spirit score (86.1%) and they did not mind confrontation (65.1%) when making or contesting a call. A breakdown of the responses can be found in [Table 7](#).

Table 7. Ultimate players levels of agreement with statements about contesting and making calls

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Median (IQR)	Mean (SD)
I am unlikely to make or contest a call because...							
I don't like confrontation	27 (3.3%)	161 (19.4%)	101 (12.2%)	307 (37.1%)	232 (28.0%)	2 (2)	2.33 (1.17)
I don't want a bad Spirit score	7 (0.8%)	39 (4.7%)	69 (8.3%)	345 (41.7%)	368 (44.4%)	2 (1)	1.76 (.86)
I don't want to disrupt the flow of the game	22 (2.7%)	226 (27.3%)	153 (18.5%)	286 (34.5%)	141 (17.0%)	2 (2)	2.64 (1.13)
I don't want to see unfair	12 (1.4%)	191 (23.1%)	133 (16.1%)	315 (38.0%)	177 (21.4%)	2 (1)	2.45 (1.11)

## 3.2 Predictors of Sportspersonship

The predictors of the Sportspersonship scale were examined (average scores can be found in [Table 3](#)) and it was found that some personality correlates and attitudinal predictors were significant in predicting Sportspersonship, these relationships can be found in [Table 8](#).

### 3.2.1 Compliance towards rules

A multiple linear regression was run to determine whether scores for *Compliance towards rules* from the Sportspersonship scale could be predicted through the following factors: HEXACO, SD3, and the attitudinal predictors *Spirit Efficacy*, *Spirit Misuse* and *Honouring Spirit*. These variables statistically significantly predicted *Compliance towards rules*,  $F(12, 806) = 21.657$ ,  $p < .001$ ,  $R^2 = .244$ ,  $f^2 = 0.32$  which represents a medium to large effect size for the entire model. The statistically significant variables were *Honesty-Humility* ( $f^2 = 0.030$ ,  $\beta = .213$ ), *Openness to experience* ( $f^2 = 0.004$ ,  $\beta = .066$ ), *Psychopathy* ( $f^2 = 0.036$ ,  $\beta = -.231$ ), *Spirit Efficacy* ( $f^2 = 0.028$ ,  $\beta = .176$ ) and *Spirit Misuse* ( $f^2 = 0.005$ ,  $\beta = .075$ ),  $p < .05$ , each representing a small effect size. These findings can be found in [Table 8](#).

### 3.2.2 Legitimacy of injurious acts

A multiple linear regression was run to determine whether scores for *Legitimacy of injurious acts* from the Sportspersonship scale could be predicted through the following factors: HEXACO, SD3, and the attitudinal predictors *Spirit Efficacy*, *Spirit Misuse* and *Honouring Spirit*. These variables statistically significantly predicted *Legitimacy of injurious acts*,  $F(12, 806) = 16.028$ ,  $p < .001$ ,  $R^2 = .193$ ,  $f^2 = 0.23$  which represents a medium to large effect size for the entire model. The statistically significant variables were *Honesty-Humility* ( $f^2 = 0.016$ ,  $\beta = .159$ ), *Openness to experience* ( $f^2 = 0.014$ ,  $\beta = .122$ ), *Psychopathy* ( $f^2 = 0.037$ ,  $\beta = -.232$ ), *Spirit Efficacy* ( $f^2 = 0.009$ ,  $\beta = .103$ ), *Spirit Misuse* ( $f^2 = 0.008$ ,  $\beta = .092$ ) and *Honouring Spirit*

( $f^2 = 0.004$ ,  $\beta = .071$ ),  $p < .05$ , indicating a small effect size for each predictor. These findings can be found in [Table 8](#).

### 3.2.3 Approach towards opponent

A multiple linear regression was run to determine whether scores for *Approach towards opponent* from the Sportspersonship scale could be predicted through the following factors: HEXACO, SD3, and the attitudinal predictors *Spirit Efficacy*, *Spirit Misuse* and *Honouring Spirit*. These variables statistically significantly predicted *Approach towards opponent*,  $F(12, 806) = 10.736$ ,  $p < .001$ ,  $R^2 = .138$ ,  $f^2 = 0.16$  which represents a medium effect size for the entire model. The statistically significant variables were *Extraversion* ( $f^2 = 0.006$ ,  $\beta = .098$ ), *Agreeableness* ( $f^2 = 0.008$ ,  $\beta = .096$ ), *Openness to experience* ( $f^2 = 0.027$ ,  $\beta = .017$ ), *Psychopathy*, ( $f^2 = 0.005$ ,  $\beta = -.085$ ), *Spirit Efficacy* ( $f^2 = 0.018$ ,  $\beta = .142$ ) and *Honouring Spirit* ( $f^2 = 0.010$ ,  $\beta = .109$ ),  $p < .05$ . The statistically significant predictors each indicate a small effect size. These findings can be found in [Table 8](#).

### 3.2.4 Principled game perspective

A multiple linear regression was run to determine whether scores for *Principled game perspective* from the Sportspersonship scale could be predicted through the following factors: HEXACO, SD3, and the attitudinal predictors *Spirit Efficacy*, *Spirit Misuse* and *Honouring Spirit*. These variables statistically significantly predicted *Principled game perspective*,  $F(12, 806) = 32.511$ ,  $p < .001$ ,  $R^2 = .326$ ,  $f^2 = 0.48$  which represents a large effect size for the entire model. The statistically significant variables each indicated a small effect size, they were *Honesty-Humility* ( $f^2 = 0.034$ ,  $\beta = .228$ ), *Openness to Experience* ( $f^2 = 0.033$ ,  $\beta = .184$ ), *Psychopathy* ( $f^2 = 0.031$ ,  $\beta = -.212$ ), *Spirit Efficacy* ( $f^2 = 0.021$ ,  $\beta = .155$ ), *Spirit Misuse* ( $f^2 = 0.012$ ,  $\beta = .112$ ) and *Honouring Spirit* ( $f^2 = 0.022$ ,  $\beta = .160$ ),  $p < .05$ . These findings can be found in [Table 8](#).

Table 8. Summary of multiple linear regression analysis for predicting Sportpersonship scale variables

Variable	Rules			LIA			Opponent			Game perspective		
	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
HEXACO												
Honesty-Humility	.190	.034	.213**	.107	.027	.159**	.024	.033	.030	.187	.030	.228**
Emotionality	-.015	.025	-.019	.005	.020	.009	-.022	.025	-.030	-.037	.022	-.051
Extraversion	-.014	.032	-.017	-.010	.025	-.016	.073	.031	.098*	.002	.028	.003
Agreeableness	-.035	.030	-.039	-.006	.024	-.009	.078	.030	.096*	-.023	.026	-.028
Conscientiousness	.020	.027	.024	-.001	.021	-.001	.013	.027	.017	-.003	.024	-.004
Openness to experience	.059	.028	.066*	.081	.022	.122**	.135	.027	.017**	.151	.024	.184**
SD3												
Machiavellianism	-.064	.037	-.064	-.031	.029	-.042	-.009	.036	-.010	-.050	.032	-.054
Narcissism	.051	.041	.050	.030	.032	.039	-.041	.040	-.045	.017	.035	.018
Psychopathy	-.254	.042	-.231**	-.191	.032	-.232**	-.085	.040	-.085*	-.214	.036	-.212**
Attitudinal												
Spirit Efficacy	.107	.020	.176**	.047	.016	.103*	.079	.019	.142**	.087	.017	.155**
Spirit Misuse	.045	.019	.075*	.042	.014	.092*	.009	.018	.016	.062	.016	.112**
Honouring Spirit	.042	.025	.054	.041	.020	.071*	.076	.025	.109*	.113	.022	.160**

\* $p < .05$ . \*\* $p < .01$

### 3.3 Predictors of Dictator Game Giving

A multiple linear regression was run to determine whether the number of coins participants gave to their 'partner' during the dictator game could be predicted through the following factors: HEXACO, SD3, the Sportspersonship scale, and the attitudinal predictors Spirit Efficacy, Spirit Misuse and Honouring Spirit. These variables statistically significantly predicted dictator game giving,  $F(16, 799) = 4.903$ ,  $p < .001$ ,  $R^2 = .089$ ,  $f^2 = .10$  which represents a small to medium effect size. The statistically significant variables were Agreeableness ( $f^2 = .012$ ,  $\beta = .121$ ), Openness to experience ( $f^2 = 0.006$ ,  $\beta = .079$ ) and Machiavellianism ( $f^2 = 0.009$ ,  $\beta = -.114$ ),  $p < .05$ , each representing a small effect size. The results from this model can be found in [Table 9](#).

Table 9. Summary of linear regression analysis for predicting dictator game giving

	<i>B</i>	<i>SE B</i>	$\beta$
HEXACO			
Honest-Humility	.292	.152	.084
Emotionality	.205	.109	.067
Extraversion	-.039	.138	-.012
Agreeableness	.427	.132	.121*
Conscientiousness	.054	.118	.016
Openness to experience	.275	.125	.079*
SD3			
Machiavellianism	-.441	.160	-.114*
Narcissism	-.052	.175	-.013
Psychopathy	.015	.185	.003
Sportspersonship			
Compliance towards rules	-.014	.178	-.004
Legitimacy of injurious acts	-.148	.219	-.029
Approach towards opponent	.046	.173	.011
Game perspective	.343	.218	.081
Attitudinal			
Spirit Efficacy	.047	.088	.020
Spirit Misuse	-.106	.081	-.045
Honouring Spirit	-.200	.110	-.067

\* $p < .05$ . \*\* $p < .01$ .



### 3.4 Likelihood to Cheat

Participants were asked whether they were likely to misuse Spirit during a fun tournament or an important match. Of the 828 participants, 50 (6%) admitted to being likely to misuse Spirit during a fun or important match or point (*Agree or Strongly agree*), compared to 775 (93.6%) who were not likely to misuse Spirit (*Disagree or Strongly disagree*) and 3 who selected *Neither agree nor disagree* to both an important and a fun match or point.

Participants were asked how much they agreed with the statement '*I am likely to misuse Spirit during an important match or point*', 437 (52.8%) said *Strongly disagree*, 317 (38.3%) said *Disagree*, 41 (5.0%) said *Neither agree nor disagree*, 32 (3.9%) said *Agree* and 1 (0.1%) said *Strongly agree*. Participants were asked how much they agreed with the statement '*I am likely to misuse Spirit during a fun tournament*', 597 (72.1%) said *Strongly disagree*, 190 (22.9%) said *Disagree*, 23 (2.8%) said *Neither agree nor disagree*, 18 (2.2%) selected *Agree* and none of the participants selected *Strongly agree*.

The results seem to indicate that participants were more likely to misuse Spirit during an important match or tournament  $M=1.60$  ( $SD=.765$ ) than a fun match tournament  $M=1.35$  ( $SD=.643$ ). A Wilcoxon Signed-Ranks Test indicated that participants likelihood to misuse Spirit during an important match (Median =1) was statistically significantly higher than their likelihood to misuse Spirit during a fun match (Median =1),  $Z=-8.294$ ,  $p<.001$ . Therefore, we can reject the null hypothesis that there is no difference, and we might assume that the importance of the game caused the significant increase in likelihood to misuse Spirit.

A binary logistic regression was performed to assess whether "likelihood to cheat" can be predicted by the personality scales and attitudinal variables. The model contained 17 independent variables (HEXACO (6), Sportpersonship (4), SD3 (3), dictator game, Spirit Efficacy, *Spirit Misuse* and *Honouring Spirit*). The full model containing all predictors was statistically significant,  $\chi^2(17, N =813) =67.248$ ,  $p<.001$ , indicating that the model was able to

distinguish between players who were and were not likely to cheat whilst playing Ultimate. The model as a whole explained between 8% (Cox and Snell R squared) and 22% (Nagelkerke R squared) of the variance in likeliness to cheat and correctly classified 94.1% of cases. As shown in [Table 10](#), only two of the independent variables made a unique statistically significant contribution to the model. The strongest predictor of likeliness to cheat was *Machiavellianism* recording an odds ratio of 2.5. This indicated that participants who had higher levels of Machiavellianism were 2.5 times more likely to cheat than those with lower levels of Machiavellianism, controlling for all other factors in the model. Additionally, those who scored higher in *Compliance towards rules* (OR = .27) were less likely to cheat.

Table 10. Binary logistic regression model for likeliness to cheat in Ultimate

Variable	Likeliness to cheat (N =813)	
	SE	OR [95% CI]
HEXACO		
Honesty-Humility	0.37	0.75 [0.36, 1.57]
Emotionality	0.26	1.18 [0.71, 1.91]
Extraversion	0.33	1.00 [0.52, 1.92]
Agreeableness	0.31	1.37 [0.74, 2.53]
Conscientiousness	0.28	0.91 [0.53, 1.56]
Openness to experience	0.30	0.85 [0.48, 1.53]
Sportspersonship		
Compliance towards rules	0.39	0.27 [0.13, 0.58]**
Legitimacy of injurious acts	0.47	2.31 [0.93, 5.75]
Approach towards opponent	0.37	1.20 [0.58, 2.47]
Principled game perspective	0.45	0.66 [0.27, 1.60]
SD3		
Machiavellianism	0.40	2.50 [1.14, 5.46]*
Narcissism	0.41	0.95 [0.42, 2.14]
Psychopathy	0.42	1.26 [0.56, 2.85]
Attitudinal		
Spirit Misuse	0.18	0.83 [0.58, 1.18]
Honouring Spirit	0.22	0.73 [0.47, 1.12]
Spirit Efficacy	0.18	0.78 [0.55, 1.11]
Dictator game	0.80	0.99 [0.85, 1.16]

\*p&lt;.05, \*\*p&lt;.001

### 3.5 Cheaters vs non-Cheaters

Of the 50 participants who had responded either *Agree* or *Strongly agree* to *Fun Spirit Misuse* or *Important Spirit Misuse*, 43 admitted to having misused Spirit at least once. This includes 40 (80.0%) who said they had misused Spirit *Sometimes*, 2 (4.0%) who said they had misused Spirit *About half the time*, 1 (2.0%) who said they had misused Spirit *Most of the time* and zero that said *Always*. The remaining 7 participants who said they were likely to misuse Spirit also said they had *Never* misused Spirit.

The 43 participants who admitted to misusing Spirit were also asked whether they felt guilty afterwards; 13 (30.2%) said *Sometimes*, 12 (27.9%) said *Most of the time*, 7 (16.3%) said *Never*, 6 (14.0%) said *Always* and 5 (11.6%) said *About half the time*.

Five Mann-Whitney U tests were conducted to determine whether there were any personality or attitudinal differences between Ultimate players that are likely to cheat compared to those who are not. A Mann-Whitney U test shows that there was a significant difference ( $U=60.500$ ,  $p=0.013$ ) between scores for *Compliance towards rules* on the Sportspersonship scale for those that had cheated during Ultimate compared to those that had not. The median *Compliance towards rules* score for cheaters was 2.6 compared to 3.4 for non-cheaters suggesting those that respect the rules are less likely to cheat. Here the effect size is -0.355 which is a moderate effect according to Cohen's classification of effect size.

Tests of personality scales HEXACO, SD3, attitudinal predictors and the dictator game were not statistically significant ( $p>0.05$ ) when examining cheaters vs non-cheaters. These findings are shown in [Table 11](#).

Table 11. Summary of Mann-Whitney U tests for differences between cheaters vs non-cheaters

Variable	Cheaters	Non-cheaters	Z-value	P-value
	(n=42)	(n=7)		
Mean rank	Mean rank			
<b>Sportspersonship scale</b>				
Compliance towards rules	22.94	37.36	-2.488	.013*
Legitimacy of injurious acts	24.82	26.07	-.220	.826
Approach towards opponent	25.96	19.21	-1.172	.241
Principled game perspective	24.57	27.57	-.517	.605
<b>HEXACO</b>				
Honesty-Humility	24.43	24.93	-.088	.930
Emotionality	24.35	25.36	-.176	.861
Extraversion	25.37	19.43	-1.039	.299
Agreeableness	23.90	23.64	-.717	.473
Conscientiousness	24.65	23.64	-.176	.861
Openness to Experience	24.49	24.57	-.015	.988
<b>SD3</b>				
Machiavellianism	24.85	29.50	-.786	.432
Narcissism	25.77	20.36	-.936	.349

Table 11 (continued)

Psychopathy	25.60	21.43	-.716	.474
Attitudinal predictors				
Spirit Misuse	26.17	21.36	-.865	.387
Honouring Spirit	25.15	27.64	.387	.629
Spirit Efficacy	24.88	29.29	.426	.438
Dictator game	25.03	28.36	-.614	.539

\*p&lt;.0

## 4 Discussion

The aim of the present study was to examine Ultimate players' perceptions of the sport as well as its use of self-governance and Spirit; and then to assess the role personality played in the self-governance of Ultimate. This study is predominantly exploratory in nature due to the lack of previous research in the field of Ultimate.

### 4.1 Ultimate Players Attitudes Towards Spirit

#### 4.1.1 Player perceptions of Spirit within Ultimate

Participants generally agreed, with slight variance, to being likely to make or contest a call whilst playing Ultimate, despite any possible repercussions such as a bad Spirit score, disrupting the flow of a game or coming across as unfair. The majority of participants (79.1%) believed that Spirit helped to maintain the flow of a game of Ultimate whilst around half (51.5%) of participants said they would be likely to contest or make a call despite it disrupting the flow of the game. Around a third (30.0%) of participants said that they were unlikely to contest or make a call because they didn't want the flow of the game to be disrupted.

The variance in responses could be due to the type of call contested, players may have different acceptance criteria of contestable calls such as allowing a violation of travelling with the disc but stopping the game for a foul or out of bounds call. It is possible that in a more competitive game players may prioritise winning and be less accepting of rule violations compared to a more informal or recreational match where players are more forgiving and may let minor violations slide.

Robbins, (2004) found that Ultimate players were not bothered by calls being made, but rather the length of time players sometimes take to negotiate the call. The study also found that players were likely to minimise the number of minor rule violations called to maximise the flow or fluidity of the game. Robbins utilised rational choice theory to explain the manipulation of

norms and practises (Spirit) to maximise the quality and flow of a match, depending on the level of competition. This means that some players were found to selectively allow certain rule violations and minor infractions to increase the fluidity of game play, reduce stoppages and enhance enjoyment. An Ultimate player's use of Spirit may reflect their individual interpretation of rationality and their collective morality.

The present study found varying responses regarding whether participants would be happy to disrupt the flow of the game to make a call which may be explained in part by the level of competition or what is at stake for the game or point. Future research could look to examine the specific role of level of competition on the decision to make calls within a game, building on the findings from the present study that showed level of competition was significant in the misuse of Spirit. These findings highlight the potential value in pre-defining acceptance criteria prior to a match or tournament, this could remove the ambiguity when making decisions about violations and could be used as a key criterion for separating recreational games from professional or competitive ones. However, this may lead to opportunistic players taking advantage of the situation and may also discourage some players from rightfully making calls. Due to the variation in responses to being likely to contest or make a call that impacts the flow of the game and the majority of players believing Spirit helps maintain the flow of the game there are no clear suggestions of solid changes that should be made to Spirit based on these findings.

Robbins, (2004) found that the inclusion of game advisors minimised rule violations and calls subsequently increasing game fluidity because fewer calls were being made, which meant less time negotiating. However, since the present study found that the majority of players believe Spirit helps to maintain the flow of the game, game observers may not be required. Alternatively, this could suggest that maybe players over emphasise the effectiveness of Spirit, under-estimate the effectiveness of referees or game advisors, or they misjudge



players cheating intentions. Future studies could look to examine how players perceive the role of a game advisor and their impact on Spirit in more depth.

Over half of participants (52%) thought that Ultimate would not benefit from having referees, supporting the exclusion of officials and/or game observers, although it should be noted that game advisors are supposed to only be called upon when asked by the players to support with self-officiating whereas the inclusion of a referee implies removing all decision making from players. Roughly a quarter (25.2%) of participants believe that Ultimate would benefit from having referees and 22.7% were not sure.

In more serious and competitive tournaments, game advisors have been introduced, particularly in North America and in the World Championships to help with the in-game decision-making, however their roles are limited, and decisions are still made by the players (Griggs, 2011). Historically, as mentioned by Griggs, as sports evolve, they tend to introduce more stricter regulations, which makes sense when there are monetary prizes for winning. However, the findings from this study suggest there is not enough evidence or support from players for Ultimate to deviate away from self-officiating or Spirit. It is something that as Ultimate grows or if it ever deviates from its recreational roots may be worth re-considering.

Importantly, the resources required to implement having referees such as volunteers or money to pay referees, may not be available or worth it for the players involved. Being self-governed and recreational is currently a selling point for encouraging people to play Ultimate, therefore introducing officials should currently be avoided or practised with caution unless absolutely necessary such as, to compete in the Olympics or if an increase in cheating is suspected.

Another finding from the present study is that around a fifth (20.4%) of participants did not think that most players understood the rules of Spirit. Due to the reliance on self-governance in Ultimate it might be expected that more than two thirds of participants would know the rules, or at least it could be considered a limitation of Spirit when negotiating calls if some of the players think the opposition do not know the rules. Despite this, Spirit encourages players to negotiate and discuss calls and situations throughout games therefore there are always opportunities for players to learn more about the rules and how Spirit works.

Griggs, (2011) found many instances of rule ignorance amongst players and believes that as Ultimate grows as a sport and becomes more competitive, players may be more inclined to cheat. This can be supported in part by findings that will be discussed in chapter 4.3 where level of competition and cheating likeliness is reviewed. If some players are under the impression that not all opposition players understand the rules, it is possible that some players could take advantage of this and may be more likely to cheat.

Participants ranked the opposition's knowledge and use of the rules as the second most important component of Spirit behind fairness, implying that players hold this in high regard compared to the other categories (positive attitude and self-control, communication, and fouls and body contact). Ultimate players ranking the knowledge and use of rules highly is not surprising given the reliance on self-governance, as it is likely to negatively impact the game if rules are not followed appropriately. However, Cruz et al., (1995) found that one of the most prevalent values in Spanish footballers was acting against the rules to gain an advantage as well as winning and showing skills. As well as this, Bernard and Trudel, (2004) found that the three most prevalent values of ice hockey players were to value the opponent as the enemy, to have no respect for the opponent and that in some circumstances the players may need to violate the rules. These values are very different for Ultimate players

compared to footballers and ice hockey players which could be due to the recreational nature of the sport, or the reliance on self-governance to hold up the ethos of the sport.

The majority (86.1%) of participants were likely to make or contest a call despite the possibility of receiving a bad Spirit score. This could imply that players value fairness more highly than their Spirit score, calling and contesting calls is part of using Spirit so these findings could more specifically suggest that players rate accurate and fair self-governance above winning a Spirit trophy, or they believe that contesting and making calls could improve their Spirit score if it is done fairly. Controversially, the importance of winning a match or tournament (personal gain) could come above Spirit and fairness for some individuals. The majority (59.4%) of participants said they would be likely to make or contest a call despite seeming unfair. Very few participants (5.5%) said they would be unlikely to contest or make a call because they did not want a bad Spirit score compared to 24.5% of participants who did not want to seem unfair. These findings support the idea that players prioritise fairness above winning a Spirit trophy. Fair mindedness was also ranked as the most important rule of Spirit by participants highlighting the importance of fairness to Ultimate players. In addition, the majority (65.1%) of participants did not see confrontation as a barrier to contesting or making a call.

Collectively these findings suggest that players are generally happy to utilise Spirit to uphold accurate and fair self-governance in Ultimate. Controversially, a participant's willingness to contest or make calls could also imply a more sinister finding, where they are likely to take advantage of Spirit for personal gain despite the aforementioned social repercussions (bad Spirit score, confrontation or seeming unfair). However, as will be discussed in more detail in chapter 4.3, very few (6%) participants admit to being likely to misuse Spirit to gain an advantage.

#### **4.1.2 Gender preference**

Gender differences were not a central aim of the present study, however the emerging findings deserved some discussion. Participants were asked to state their gender preference for playing Ultimate, a slight majority of females (50.6%) stated that they preferred to play mixed gender sport than play with other females (33.5%), the remaining 15.9% had no preference. Female players were found to be more likely to have a preference than male participants, as 25.8% of males stated they had no gender preference. These findings contradict those of [Wallace et al., \(2020\)](#) who found that 55% of females preferred single-gender sport compared to just 10% who preferred single-gender. These findings could differ from the present study because they were asking school age girls who may be less keen on mixing with the boys in their class. It has been reported that girls felt embarrassed and intimidated when boys were watching them play sports ([Casey et al., \(2009\)](#)). The sport played may also impact their decision, basketball is not widely considered as a mixed-gender sport whereas Ultimate is. Being mixed gender is one of Ultimate's bigger selling points therefore it is more likely players prefer this to single-gender. Males did not show as strong a preference to mixed gender as females, however mixed gender was still the most popular choice (40.5%) followed by 33.7% who chose male and 25.8% who had no preference.

#### **4.1.3 Do players think Spirit works effectively?**

The majority (79.3%) of participants believed that Spirit works well in maintaining fairness. Maintaining fairness is important within a self-governed sport like Ultimate as highlighted by the preferences of players in the previous section. If players believe Spirit is good at maintaining fairness, they may be less likely to behave unfairly or cheat. Alternatively, the minority (8.3%) of participants who believe Spirit does not work well in maintaining fairness may think Spirit does not maintain fairness because they use Spirit fairly but believe that others cheat. Players that do not think Spirit works well in maintaining fairness may also be more likely to behave unfairly or cheat because they believe others are too. The implications of

players believing Spirit maintains fairness are that cheating behaviours are likely to be less frequent, therefore it is important for the Ultimate community and the sport to ensure Spirit continues to maintain fairness and that players believe that that is the case. If players start to doubt that Spirit is an effective tool for maintaining fairness then they may be encouraged to misuse it, however the current study's findings suggest that this does not currently appear to be an issue of concern.

The majority (84.0%) of participants agreed that the misuse of Spirit is a form of cheating, whilst just 5.4% disagreed. Players who believe misusing Spirit is a form of cheating may be less likely to misuse Spirit because they understand it is not acceptable to do so. Whereas the small proportion of participants who do not believe that misusing Spirit is a form of cheating may be more likely to engage in cheating behaviours. Although it is not guaranteed that players who believe misusing Spirit is cheating will not engage in cheating anyway, it is likely that they will be less likely to, therefore anybody involved in the Ultimate community who wants to discourage this type of behaviour should ensure players understand that misusing Spirit is a form of cheating.

The current study found that the majority (85.8%) of participants believed that players generally use Spirit fairly compared to 5.2% who disagreed and thought that other players do not use Spirit fairly. This suggests that most Ultimate players hold Spirit in high regard and that it is an effective substitute of governance and refereeing. If most players believe opposition players are using Spirit fairly, theory of normative social behaviour posits that those players will also use Spirit fairly (Rimal & Real, 2005). This theory also explains that descriptive norms are the catalysts of behaviour whilst injunctive norms, individual differences, and situational context act as moderators of behaviour. As found by Nicholls et al., (2019) athletes are more likely to cheat if they believe others are cheating, therefore it is important to the

Ultimate community that players continue to believe that most players are not cheating and that players use Spirit fairly.

As will be discussed in chapter 4.3 very few participants admitted to being likely to cheat, therefore it is important for the Ultimate community to uphold the expectation that most players are using Spirit fairly to maintain the belief that players honour Spirit. Since injunctive and descriptive norms were not found to uniquely predict cheating behaviours in the present study, future studies should look in more detail at the role of social norms in Ultimate and how perceptions of Spirit or changes in Spirit might impact game play. It should be noted that the present findings suggest that the majority of players currently like the way Spirit works and believe it is used well, therefore this may not be necessary.

## **4.2 Predictors of Sportspersonship**

### **4.2.1 Comparing Ultimate Sportspersonship to other sports**

Ultimate players from the present study scored significantly higher in all four Sportspersonship categories than the University sports athletes from [Perry's \(2014\)](#) study, each with a large effect size. A full breakdown of the findings can be found in the appendix (appendix E). These findings suggest that Ultimate incurs greater Sportspersonship behaviours compared to other sports. The differences found could be due to the more recreational nature of Ultimate compared to most other sports, it is also possible that Spirit is only effective because players of the sport play more fairly than in other sports. Alternatively, it could be due to players having to play in a manner that teaches them to be fairer.

### **4.2.2 HEXACO and Sportspersonship**

Honesty-Humility was one of the five personality variables that significantly predicted Sportspersonship, those who scored higher in Honesty-Humility also scored higher in Compliance towards rules, Legitimacy of injurious acts and Principled game perspective. Honesty-Humility has been widely associated with prosocial behaviour (Ashton & Lee, 2007).

Sportspersonship has also been associated with prosocial and fair behaviour by Vallerand et al., (1996) which could explain why Honesty-Humility was able to positively predict Sportspersonship in Ultimate players.

Another of the personality predictors that was able to significantly predict Sportspersonship was Openness to experience which significantly predicted all four of the Sportspersonship categories. Openness to experience has been previously associated with social and political attitudes as well as the motivation to seek out new experiences, those high in Openness to experience tend to be more tolerant and more creative (Costa & McCrae, 1992).

There is no current research that directly examines the association between Openness to experience and Sportspersonship therefore it may be useful for future research to examine this relationship in more detail. Extraversion and Agreeableness were also found to be significant positive predictors of the Sportspersonship category Approach towards opponent, however no other significant relationships were found. It is not surprising that higher levels of Agreeableness are associated with higher Sportspersonship scores because the trait is associated with being kind, considerate and cooperative Costa and McCrae, (1992), characteristics also associated with higher levels of Sportspersonship (Vallerand et al., 1996). Although it is slightly more surprising that Extraversion seems to predict Sportspersonship, Extraversion is a trait associated with social characteristics, if someone is more social and outgoing, they tend to prefer to spend time in groups then they may be more inclined to behave in a Sportspersonlike manner to avoid negative social repercussions.

#### **4.2.3 Dark-Triad traits and Sportspersonship**

Psychopathy was the only of the three Dark-Triad traits found to be a negative significant predictor of Sportspersonship, those who scored higher in Psychopathy had lower levels of Sportspersonship. This relationship is unsurprising given the characteristics Paulhus and Williams, (2002) associated with Psychopathy such as a lack of empathy, high levels of

impulsivity and a tendency to act antisocially are also associated with low levels of Sportspersonship (Vallerand et al., 1996). Interestingly, Machiavellianism and Narcissism were not significant predictors of Sportspersonship. Although not a specific hypothesis of the present study it may be expected that higher levels of these traits may predict lower levels of Sportspersonship because of their association with predicting cheating behaviour and attitudes towards cheating (Nicholls et al., 2017; 2019) which are considered unsporting behaviours.

#### **4.2.4 Social norms and Sportspersonship**

Those who believed Spirit worked well in maintaining fairness, and those who believed the misuse of Spirit counts as cheating were found to have significantly higher levels of Sportspersonship than those who did not. The direction of this causation and effect is however not known and it is possible that this relationship is because individuals who are more Sportspersonlike may believe that their behaviour is the correct way to behave in Ultimate.

It is unsurprising that a relationship was found between thinking *Spirit works well in maintaining fairness* and believing *the misuse of Spirit counts as cheating* and Sportspersonship in Ultimate players because the emphasis on what players ought to be doing is likely to be much higher than for other sports due to the reliance on self-governance. The social implications are also likely to be emphasised more because the players act as the referees, they have more responsibility and Ultimate relies heavily on Spirit to be a successful sport. If Spirit breaks down in Ultimate, it could be detrimental to the sport and as found in the present study the majority of participants think that Spirit helps maintain the flow of the game as well as valuing fairness as the most important Spirit category.

Although there is no previous research that examines the direct relationship between injunctive norms and Sportspersonship, injunctive norms have been found to significantly influence behaviour (e.g., Henry et al., 2000; Dean et al., 2008; Kilty, 1978), highlighting the



role of attitudes on predicting behaviour. These findings contribute to research on the influence of social norms, more specifically it shows that Ultimate players attitudes towards Spirit can help to understand their level of Sportspersonship which, in turn could help predict how they may interact with Spirit. It could therefore be important to examine Ultimate players' attitudes towards Spirit to understand how they are likely to use Spirit. Those who believe Spirit works well in maintaining fairness and/or that the misuse of Spirit counts as cheating are more likely to behave in a Sportspersonlike manner.

#### **4.2.5 Descriptive social norms and Sportspersonship**

Ultimate players that believed players generally use Spirit fairly scored significantly higher in Sportspersonship than those that did not. This finding suggests that players play more altruistically if they believe that other players do too. However, the direction of the relationship cannot be determined therefore it is also possible that some players may be somewhat naive and believe that other players are as altruistic as them because that is how they play.

There is no previous research that examines the role of descriptive norms and Sportspersonship however, similar to injunctive norms, they have been found to play a role in mediating behaviour (e.g., [Cialdini et al., 1990](#); [Nolan et al., 2008](#)). Theory of normative social behaviour proposed by [Rimal and Lapinski, \(2015\)](#) suggests that descriptive norms are the drivers of behaviour therefore it is unsurprising that there was a significant relationship with the level of Sportspersonship in Ultimate players in the present study. It is useful for the Ultimate community and those involved in the sport to understand the role that descriptive norms play in driving behaviour.

As the present study has highlighted, most Ultimate players believe that players generally use Spirit fairly - this is important because if players did not believe others were using Spirit fairly, they may be inclined to misuse Spirit themselves. To maintain fairness, Sportspersonship and good Spirit it is important that players continue to believe other players use Spirit fairly too.

Captains, Spirit captains and members of the Ultimate community should therefore consider the importance of how Spirit is portrayed to players and the potential detrimental impact negative connotations of Spirit could have on Ultimate. Presently, there is no evidence to suggest this would be an issue because players generally believe Spirit is used fairly, however highlighting the positive impact attitudes towards Spirit have on levels of Sportspersonship shows the influential power of social norms. For Ultimate's sake it is important these social norms remain positive in relation to Spirit and prosocial behaviour and that the Ultimate community take responsibility for encouraging the good use of Spirit.

### **4.3 What Influences an Individual to Cheat?**

Only 50 (6.0%) participants admitted to being likely to misuse Spirit. This proportion varied when participants were asked whether they were likely to misuse Spirit in a recreational or an important match. Of the 50 participants who admitted to being likely to cheat, 43 (86.0%) admitted to having misused Spirit at least once. In line with previous research and in support of hypothesis 1, participants admitted to being more likely to misuse Spirit in an important match than a recreational one, suggesting the importance or competition level of the game can cause a significant difference in likeliness to misuse Spirit.

Van de Pol et al., (2020) also found that the context of a sporting environment was influential to an athlete's behaviour, those in a more competitive setting were more likely to behave antisocially or engage in cheating behaviours. Similarly, Robbins, (2004) found that competition level was one reason players were found to manipulate the usual practises of Spirit, however Robbins' findings suggested that players were doing this to maximise enjoyment out of the game because it helped with the flow, rather than solely for their own benefit or to gain an advantage. Perry and Clough, (2017) also found that levels of cooperation decreased as the level of competition increased which supports the current findings that a

more competitive match or tournament can encourage players to engage in behaviours synonymous with cheating.

Due to the body of existing research and the current findings supporting the theory that level of competition has an impact on likeliness to cheat, the Ultimate community could consider trying to enforce stricter guidelines or rules during more competitive tournaments to try and reduce levels of potential misuse. However, because the levels of cheating participants admitted to is so low it may not be necessary to adjust Spirit which is obviously well received by the players. Additionally, in a study of German athletes the rate of doping - which is considered a cheating behaviour - amongst athletes was found to be between 10 percent and 35 percent which is much higher than the prevalence of cheating found in the present study (Pitsch & Emrich, 2012). Although doping is a form of cheating it should be recognised that it is different to cheating in Ultimate for a number of reasons, including greater health risks, more investment from the athlete and it is generally more frowned upon. Therefore, although comparisons to antisocial and cheating behaviours can be made, they should be made with caution.

Pitsch and Emrich, (2012) also found that cheating prevalence was likely to be influenced by the type of sport, where athletes who played in team sports were less likely to cheat than those in individual sports. Future research could therefore look to examine whether the prevalence of cheating is dependent on the type of sport played with the aim to examine whether Ultimate has higher or lower instances of cheating than a sport that relies on referees. It should also be noted that although not a limitation of the study, the number of participants that admitted to cheating was small which may have influenced the reliability of the predictors.

Participants who admitted to having cheated in Ultimate were asked whether they felt guilty afterwards, 30.2% said they sometimes felt guilty, 27.9% said most of the time, 16.3% said never, 14% said always and 11.6% said about half the time. Although the number of

participants who admitted to cheating was small, this suggests that the majority of players who had cheated did feel guilty afterwards, with the exception of the 16.3% which equates to only 7 of the 50 participants. These findings support those of previous research, Stanger and Backhouse, (2020) found that in situations where positive reinforcement exists and the moral identity of an individual can be easily accessed, moral behaviour (feeling guilty) is more likely to occur.

In Ultimate, Spirit acts as the positive reinforcement for moral behaviour and therefore appears to reinforce the idea that cheating is bad, and players should feel guilty for acting in this manner. When a person feels guilty for acting or behaving in a way it is likely they will refrain from replicating this behaviour. Aquino and Reed, (2002) highlight the importance of consciously experiencing self-set standards of morality and the experience of guilt may reduce the likeliness of cheating in the future. To gain more understanding on the role of guilt in Ultimate, longitudinal studies could examine whether those who misuse Spirit are more or less likely to repeat this behaviour after experiencing guilt.

### **4.3.1 Dark-Triad traits and cheating**

#### 4.3.1.1 Machiavellianism

Collectively, personality and attitudinal factors were found to accurately distinguish between participants who admitted to being likely and not likely to cheat whilst playing Ultimate. However, not all predictors were uniquely significant. The strongest predictor of likeliness to cheat was Machiavellianism, supporting hypothesis 3. Participants who had higher levels of Machiavellianism were found to be two and a half times more likely to cheat than those with lower levels.

In support of the current findings, previous research has suggested that those who score higher in Machiavellianism are more likely to behave deceitfully for personal gain (Nathanson et al., 2006). González-Hernández et al., (2020) also found that higher levels of

Machiavellianism were associated with the fear of losing, an individual who wants to avoid failure may be more likely to engage in behaviours such as cheating to reduce the chances of experiencing loss. These findings highlight the role Machiavellianism plays in the moral decision-making process and the impact it could have on a game of Ultimate. Given that Ultimate relies on self-governance and is therefore open to exploitation, an individual high in Machiavellianism may be more likely to cheat, for their own personal gain and interests.

Although the prevalence of cheating was found to be low, it is important to highlight the role of personality traits in the way an individual behaves. Machiavellianism was found to accurately predict cheating behaviours in Ultimate players supporting hypothesis 6 and highlighting a potential limitation of Spirit and self-governance because it indicates that regardless of the sport and collective attitude of players, some individuals will be more inclined to cheat. Without referees or officials, it may be easier for players to exploit or manipulate Spirit for personal gain, unfairly impacting those that are not dispositioned to cheat.

If cheating in Ultimate was found to be more prevalent than the current research suggests then this may be worth future consideration. However, the level of cheating appears to be small, and Spirit is well received by the Ultimate community therefore the risks of negatively impacting Ultimate by altering its core feature (self-governance) appears to outweigh the potential benefits.

#### 4.3.1.2 Psychopathy

Although collectively personality and attitudinal predictors successfully predicted likeliness to cheat, psychopathy, which is known as the most malevolent of the Dark-Triad traits, was surprisingly not found to be a unique significant contributor to the model, meaning null hypothesis 4 was supported.

Previous research has found that psychopathy was associated with cheating (e.g., Williams et al., 2010; Roeser et al., 2016; Jones & Paulhus, 2017). Jones and Paulhus, (2017) even found that participants high in psychopathy were more likely to cheat despite the possibility of a punishment. The above studies highlight the role of psychopathy in some cheating however they did not examine athletes, which may begin to explain the differences in findings.

González-Hernández et al., (2020) found that the fear of failure and inferiority in athletes was associated with higher levels of psychopathy, which would suggest they might be more likely to engage in cheating behaviours to avoid the feeling of losing, however, they did not examine cheating behaviours directly. They also found that the level of competition or performance of an athlete significantly contributed to their Dark Triad scores, those who are higher-performance athletes scored higher than amateur athletes. The lack of significant association in the present study could therefore in part be explained by the recreational nature of Ultimate.

In support of the current findings, Nicholls et al., (2019) who examined cheating in athletes also found that psychopathy was not a significant positive predictor of likeliness to cheat, they did however find that psychopathy was a significant predictor of positive attitudes towards cheating. Higher scores in psychopathy were not found to significantly increase the amount of cheating found in Ultimate players, meaning null hypothesis 7 was supported. Individuals who score high in psychopathy tend to be more antisocial (Paulhus & Williams, 2002) and may therefore be less likely to play a recreational sport like Ultimate which could explain the lack of association found. Additionally, social desirability bias may play a role in these findings, typically, research subjects have been found to give socially desirable responses to socially sensitive questions such as cheating prevalence or likeliness (characteristics associated with high Dark Triad scores), instead of providing their true feelings (Grimm, 2010).

#### 4.3.1.3 Narcissism

Similarly to Psychopathy, Narcissism was surprisingly also not found to significantly contribute to the overall model of predicting likeliness to cheat in participants, meaning null hypothesis 2 was supported. Narcissism has been associated with the fear of losing and desire to win suggesting you might expect an association with higher levels of Narcissism and likeliness to cheat (González-Hernández et al., 2020). Despite this, Narcissism is also associated with the desire for admiration from others, and due to the structure of Spirit and the requirement to negotiate discrepancies, it is more difficult to hide from your decisions and to deceive the opposition without the potential of being perceived negatively if they believed you were being disingenuous.

There is more emphasis on the importance of Spirit and the potential to win the Spirit trophy and the Spirit trophy is accessible to all teams despite their playing ability, whereas the chances of winning a tournament for a less experienced or lower-level team are much smaller. It is possible that the desire to win the Spirit trophy could have an impact on a player's decision to behave morally or avoid cheating behaviour because winning the Spirit trophy may be seen as more achievable than winning a game or tournament. It may be useful for future studies to examine the role of the Spirit trophy and the winner's trophy and even examine the role of achievement goal theory to understand whether players who are more task or ego-oriented are more or less likely to engage in cheating behaviours.

Higher Narcissism scores were also not found to significantly increase the amount participants admitted to cheating in Ultimate, meaning null hypothesis 5 was supported. This is at odds with Nicholls et al., (2019) who found that Narcissism was a predictor of cheating behaviours in athletes. However, Vaughan et al., (2019) found that recreational athletes scored lower in Dark-Triad traits than elite athletes which could help to explain why Narcissism was not found to be a unique predictor of cheating in Ultimate players. It might be useful in future to examine

in more detail what the impact of level of competition has on cheating behaviours. The current study examines participant's highest and favourite level of competition, however further explanation on the differences in Dark-Triad traits on playing frequency of different levels of Ultimate may be useful to expand on existing knowledge.

The Dark-Triad appears to be somewhat important to predicting cheating likeliness in Ultimate players however not as much as initially expected. Although the present study and previous studies (e.g., [Nicholls et al., 2019](#); [Jones & Paulhus, 2017](#); [Vaughan et al., 2019](#)) utilised the SD3 to explore the relationship between Dark Triad traits and cheating behaviours, it does not offer a more detailed examination of high and low levels of the Dark Triad traits and their relationship with cheating.

Given Machiavellianism was an important predictor in the present study, future research could be done to examine whether subcomponents of the three Dark Triad traits are important in relation to cheating behaviours. This distinction could be crucial because as highlighted by previous studies there may be an overlap between the Dark Triad traits ([Muris et al., 2017](#); [Miller et al., 2019](#)), therefore the relationship between the traits and cheating behaviours may not be as straightforward as it first appears.

#### **4.3.2 Honesty-Humility**

Honesty-Humility was not found to be a uniquely significant predictor of likeliness to cheat in Ultimate players, meaning null hypothesis 8 was supported. This is surprising since individuals with lower levels of Honesty-Humility have previously been found to be more likely to engage in immoral and dishonest behaviour, such as cheating ([Hilbig, Moshagen, et al., 2015](#)).

Honesty-Humility also represents fairness and sincerity, so it is surprising that it was not found to predict likeliness to cheat in Ultimate players. Multiple studies have found correlations between high levels of Honesty-Humility and honest or fair behaviour, likewise with low levels



of Honesty-Humility and transgressive or cheating behaviour ([Hershfield et al., 2012](#); [Hilbig & Zettler, 2015](#); [Hilbig et al., 2016](#); [Pfattheicher & Böhm, 2018](#); [Kleinlogel et al., 2018](#); [Klein et al., 2020](#)). Similarly, no significant association between Honesty-Humility and cheating in Ultimate players was found, meaning null hypothesis 9 was supported. As mentioned previously, social desirability bias may play a role in the lack of a significant association. This study examined self-reported cheating therefore participants may not admit to cheating, thus reducing the likelihood of finding a relationship. Future research could observationally examine cheating behaviours instead of relying on self-reported cheating as it is possible participants may under-report the prevalence of cheating.

High levels of Agreeableness have previously been associated with prosocial behaviour therefore it was expected that low levels of Agreeableness may be associated with antisocial behaviour and a higher likeliness to cheat. The present study found no association with Agreeableness and likeliness to cheat, however, [Heck et al., \(2018\)](#) found that Agreeableness was often less robust and had smaller effect sizes than Honesty-Humility when examining behaviour. In addition, shyness has previously been found to weaken the relationship between Agreeableness and prosocial behaviour which could be a contributing factor to the lack of a significant association ([Sun et al., 2019](#)).

The present study focused on cheating behaviours rather than prosocial behaviour which Honesty-Humility and Agreeableness are often associated with. This may explain why no association was found, to further understand the role of these two traits and behaviour, future studies could examine the impact of Honesty-Humility and Agreeableness on instances of prosocial behaviour within Ultimate.

### **4.3.3 Sportspersonship**

As expected, Compliance towards rules was found to significantly predict likeliness to cheat. Those who scored higher in Compliance towards rules were less likely to cheat. There was

also a significant difference in scores in Compliance towards rules for cheaters compared to non-cheaters, those who admitted to cheating scored lower than those who had not, this relationship had a moderate effect size. Compliance refers to behaviour that is expected of an individual, so in this instance it would be following the rules of Ultimate as they are expected to be followed. Therefore, it is unsurprising that those who value rules highly were found to be less likely to misuse Spirit or cheat than those who did not.

Compliance towards rules was the only significant predictor of likeliness to cheat or cheating from the included variables. In support of the present findings, [Ulaş et al., \(2020\)](#) also found that higher levels of Sportspersonship in footballers, in particular respect towards rules, was a significant predictor of disapproval towards cheating behaviours. These findings highlight the importance of Sportspersonship and a climate that encourages respect towards the rules, particularly for Ultimate that relies more heavily on cheating behaviours being prevented than a sport that has referees. If players can exhibit a high level of Sportspersonship it is expected that cheating behaviours will be minimised.

Additionally, Principled game perspective, Legitimacy of injurious acts and Approach towards opponent were not significant predictors of likeliness to cheat. Cheating is a culturally and socially undesirable act, therefore it is possible that social desirability or impression management bias discouraged participants from admitting to cheating or being likely to cheat ([Lee et al., 2007](#); [Grimm, 2010](#)).

To understand what might cause a player to go from being likely to cheat to actually cheating, only participants who admitted to being likely to cheat were included in the analysis of cheaters vs non-cheaters. It is however possible that some cheaters were not asked the question and not included in the analysis because they said they were unlikely to misuse Spirit. As mentioned above, Compliance towards rules was the only significant predictor of actual cheating behaviours, however the base was quite low due to few participants admitting to

being likely to cheat. To further understand the relationship between Sportpersonship and cheating behaviours it may be beneficial for future research to conduct observational studies that monitor cheating prevalence in Ultimate. The present study focuses on self-reported measures and helps to gain an understanding of the perceptions of Spirit and cheating in Ultimate. However, to expand on this knowledge and evaluate whether Ultimate players accurately and honestly report their behaviour more attention is needed.

#### **4.3.4 Recommendations for the sport**

Based on the current findings and literature, Ultimate players value the use of Spirit as a form of self-governance. They believe that it works effectively at maintaining fairness and only a small minority (6%) of players had admitted to the misuse of Spirit to gain an advantage. The prevalence of misuse of Spirit increases slightly in important tournaments compared to fun tournaments, therefore, steps to encourage fair-play and discourage misuse could be taken when Ultimate is played in a more professional setting, however this prevalence is not currently an area of great concern.

The introduction of referees remains to be a controversial and potentially divisive topic for players; however, the findings suggest that the majority of players are against their inclusion. Overall, Spirit is well received by the Ultimate community, therefore it is recommended that Ultimate's governing bodies do what is within their power to maintain this level of appreciation for Spirit. It should however be noted that these findings are based on players' beliefs about Spirit's efficacy rather than its actual efficacy on preventing cheating. Thus, to determine the effectiveness of this system, further research needs to examine whether player conduct and match quality is improved or made worse when referees are included.

#### **4.3.5 Limitations**

The current study is of course subject to a number of limitations. One potential limitation was in relation to the dictator game. The guidance for participants when completing the dictator

game question may have been misleading, however, a further study was completed by another group of participants and the findings were that all of the participants correctly understood the task they were asked to complete. Due to the findings in the second study, it can be assumed that the original guidance did not impact the findings in relation to the dictator game.

Another limitation is that cheating was assessed using a self-report questionnaire, therefore we do not know how the players would act whilst playing Ultimate. Highlighted by the work of [Bostyn et al., \(2018\)](#) who believe that whilst hypothetical dilemmas such as the present study provide value for understanding moral cognition, they do not provide much predictive value for actual behaviour. Self-reported behaviours are subject to possible errors including social desirability bias, [Grimm, \(2010\)](#), however the online survey allowed for more participants to take part in the study in a cheaper, quicker and more efficient way. Despite this, this limitation can be addressed by utilising a behavioural measure of cheating or observing a competition instead of using a questionnaire which is a suggestion for future researchers to consider.

Another potential limitation is that only participants who responded that they would be likely to cheat were asked whether they had cheated before. This means that there was a possibility that some participants who had cheated in the past but had changed were missed from this group and the 'have cheated' group was consequently made up of only 50 participants. However, by only including this subset it meant the present study could examine what would make someone go from being likely to cheat to actually cheating.

Another possible limitation is that the questions included to measure social norms are unable to infer which direction the results are in. For example, it cannot be assumed that those who believe that the misuse of Spirit counts as cheating also believe that cheating is wrong and that they won't do it, although it is likely that this is the case. Similarly, it could be that those

who do not cheat are naive and believe that others are the same and also do not cheat. Although this seems unlikely, better and more direct measures could have been used.

Although not a limitation, it is worth noting that the present study was cross sectional therefore it is not possible to monitor any changes in behaviour in Ultimate players over time, such as over a season or a tournament weekend. It is therefore suggested that future researchers examine changes in behaviour to see if levels of Spirit vary over time or across tournaments.

#### **4.3.6 Future research**

Considering the present findings and the limitations discussed throughout the study a number of possible future research directions are outlined below. Firstly, to better examine the behaviours of Ultimate players future work could utilise a behavioural measure of cheating. To address the limitation of being a cross-sectional study future studies could examine behaviour across multiple time points, this would provide insight into how attitudes towards Spirit and prevalence of cheating behaviour might change over time.

The present study only examined the role of competition on a top level therefore it would be beneficial for future research to study the impact of level of competition on prevalence of cheating, for example, do teams that consistently play at higher or lower levels cheat more or less than their counterparts?

Another consideration for future research is to examine what motivates Ultimate players to play and whether this impacts on their likeliness to cheat, for example does the possibility of winning the Spirit trophy discourage players from cheating or are they more influenced by winning games and tournaments? Similarly, whilst it was assumed that very few people will have entered the sport of Ultimate for ego-oriented reasons (success and rewards), it would be useful for future studies to examine whether this does dictate any differences.

Future studies could conduct a qualitative study utilising a community of practise where stakeholders from within the Ultimate community, including players, coaches and funding providers, seek to identify any potential issues and benefits with the current format of Spirit. This could be done via focus groups and interviews with recreational and international level Ultimate players.

Something that has been recurrent in discussions amongst the Ultimate community is the inclusion of referees or officials, it was also one of the more indecisive findings in the present study. It is something that Ultimate players appear not to be able to agree on therefore it is worth more consideration in future studies. Can officials help to reduce the misuse of Spirit, or are they a burden on a well-functioning sport? As Ultimate grows, it is inevitable that the level of competition will grow too, with that the chances of cheating may also increase. Game advisors have been introduced at national events so future research could look to evaluate the impact of their inclusion.

#### **4.3.7 Conclusion**

The purpose of this thesis was to examine the effectiveness of Spirit and to identify how Ultimate players interact with Spirit. It was found that the majority of Ultimate players value Spirit highly, they believe it works well in maintaining fairness and also think that most players use it fairly. Importantly players were also found to believe that the misuse of Spirit is a form of cheating. These findings were relatively unanimous amongst the participants of this study highlighting the value of Spirit within the Ultimate community. The most controversial topic within Ultimate has been and continues to be the inclusion of officials. Since Ultimate's creation players have relied on self-governance, it is part of the tradition of the sport that players officiate their own and their opposition's behaviour therefore it is an important but sensitive subject that requires careful consideration.

The current study found that very few (6%) participants were likely to misuse Spirit and of those who were likely to cheat not all of them had admitted to cheating before. It was however found that the level of competition impacted on the likeliness to cheat, more participants were likely to misuse Spirit in an important match than a recreational one. Given this, it should be considered by the Ultimate community that in future, more important or professional games might benefit from officials if the prevalence of cheating appears to increase. However, only a quarter (25.2%) of participants believed their inclusion would benefit Ultimate. Some tournaments such as the World Games already utilise game advisors therefore the impact of their inclusion should be evaluated before any solid conclusions are made. It could be a happy medium between total self-governance and referees making decisions for the players; however, introducing game advisors to games and tournaments that do not already have them should be avoided until more is known about their impact. Recreational tournaments and games should avoid the inclusion of game advisors and officials entirely because players were found to be unlikely to misuse Spirit during these games and the benefits of their inclusion do not outweigh their monetary costs and potential negative side effects on the game. The Ultimate question is, do you stick to your recreational roots and trust Spirit, or do you venture more into the professional world of sport?

## 5 References

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## 6 Appendix

### 6.1 Appendix A: Nationality list

America (535)  
Great Britain (236)  
Canada (65)  
Denmark (23)  
Germany (14)  
South Africa (12)  
Dual (11)  
Australia (10)  
Belgium (9)  
Ireland (9)  
Switzerland (9)  
Japan (8)  
The Netherlands (8)  
Sweden (7)  
France (6)  
China (5)  
Netherlands (5)  
Singapore (5)  
Indonesia (4)  
Malaysia (4)  
Hungary (3)  
Israel (3)  
Italy (3)  
Austria (2)  
Britain (2)  
Czech Republic (2)  
India (2)  
New Zealand (2)  
Norway (2)  
Portugal (2)  
Spain (2)  
Turkey (2)  
Argentina (1)  
Costa Rica (1)  
Cyprus (1)  
Finland (1)  
Jordan (1)  
Malawi (1)  
Other (1)  
Panama (1)  
Philippines (1)  
Poland (1)  
Romania (1)  
Russia (1)  
Slovakia (1)  
Slovenia (1)  
South Korea (1)

## **6.2 Appendix B: Participant information sheet**

The aim of this study is to understand the relationship between personality and the use of Spirit in Ultimate Frisbee. This research is being conducted as currently there are few studies involving Ultimate Frisbee. Participants will include those who have played Ultimate Frisbee before.

The researcher, Tanya Fozzard is responsible for conducting this research, including the collection and analysis of the data, under the supervision of Dara Mojtahedi and Éilish Duke. The data being collected includes personality trait questionnaires and perceptions of Spirit within Ultimate Frisbee.

The questionnaire should take roughly 15-20 minutes to complete and is completely anonymous. All of the answers will be analysed as a part of a master's project conducted at The University of Huddersfield.

Any questions about the research do not hesitate to contact the researcher using [tanya.fozzard@hud.ac.uk](mailto:tanya.fozzard@hud.ac.uk). If you are interested in research or analysis, then send an email and once it is completed a copy will be sent.

### 6.3 Appendix C: Participant consent form

It is important that you read, understand, and sign the consent form. Your contribution to this research is entirely voluntary, and you are not obliged in any way to participate, if you require any further details, please contact your researcher. I have been fully informed of the nature and aims of this research as outlined in the information sheet on the previous page.

- I consent to taking part in it.
- I understand that I have the right to withdraw from the research at any time without giving any reason
- I give permission for my anonymised data to be used.
- I understand that the information collected will be kept in secure conditions for a period of 10 years at the University of Huddersfield in accordance with GDPR
- I understand that no person other than the researcher will have access to the information provided.
- I understand that my identity will be protected in the report and that no written information that could lead to my being identified will be included in any report.
- I can confirm that I am aged 18 or older.
- If you are satisfied that you understand the information and are happy to take part in this project, please select 'I consent, begin the study'.

#### **6.4 Appendix D: Participant debrief**

Thank you for your participation. Below, the full aims of the study are explained.

The main aim of the present study is to examine the relationship between personality and trait characteristics and the use of Spirit within a game of Ultimate Frisbee.

Some personality traits are associated with the likelihood to cheat or act selfishly whereas others are associated with fairness and honesty. This research focuses on whether your personality and characteristics can predict whether you are likely to misuse Spirit during a game of Ultimate Frisbee. Research has previously shown that not all players are aware of all the rules within Ultimate and that Spirit is not always applied consistently.

To carry out the aims, the current study presents participants with a survey that consists of three scales (HEXACO PI-R, Complaint and Principled Sportspersonship, and Dark Triad), followed by a small task. The participants were also asked about their perceptions of Spirit and how they use Spirit in a game.

The data collected for this project will be collated and used by the researcher (Tanya Fozzard). No identifiable information from any participant will be used in any work that is generated from the data. If you have any questions about the research and would like to get in touch, please do not hesitate to contact the research lead.

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## 6.5 Appendix E: Sportpersonship mean scores

Table 12. Sportpersonship scores from Perry (2014) thesis and the current study

Sportpersonship category	Perry's (2014) findings	Current study	
	Mean (SD)	Mean (SD)	Effect size
Rules	2.57 (.92)	3.16 (.52)	0.765
LIA	2.77 (.97)	3.62 (.39)	0.891
Opponent	3.02 (.83)	3.35 (.47)	0.673
Game Perspective	2.67 (.89)	3.40 (.48)	0.83

## 6.6 Appendix F: Questionnaire

Q1 Have you ever played Ultimate Frisbee?

- Yes
- No

Q2 Please state your age

---

Q3 What is your gender?

- Male
- Female
- Other
- Prefer not to say

Q4 What is your nationality?

---

Q5 Which country have you played the most Ultimate Frisbee in?

---

Q6 How long have you been playing Ultimate Frisbee?  
(Answer in years, if less than 1 year write 'months' after answer).

---

Q7 What is the highest level of Ultimate Frisbee you have played?

- Recreational (for fun)
- University
- Club
- National

Q8 Which is your favourite level of Ultimate Frisbee to play at?

- Recreational (for fun)
- University
- Club
- National

Q9 On average, how often do you train or play Ultimate Frisbee?

- Less than once a month
- Once a month
- Once or twice a week
- Three to four times a week
- More than four times a week

Q10 Do you prefer playing men's/women's or mixed Ultimate?

- Men's/women's
- Mixed
- No preference

Q11 Please complete these based on how much you agree:  
(Strongly disagree to Strongly agree)

- Spirit helps maintain the flow of the game
- Most players understand the rules of Spirit
- Spirit works well in maintaining fairness
- Ultimate Frisbee would benefit from having referees
- The misuse of spirit counts as cheating
- Players generally use Spirit fairly

Q12 Using the scale below, how likely are you to engage in the following behaviours during a game

(Strongly disagree to Strongly agree)

- I am likely to misuse Spirit during an important match or point
- I am likely to misuse Spirit during a fun tournament
- I am unlikely to make or contest a call because I don't like confrontation
- I am unlikely to make or contest a call because I don't want a bad Spirit score
- I am unlikely to make or contest a call because I don't want to disrupt the flow of the game
- I am unlikely to make or contest a call because I don't want to seem unfair

Q13 The following questions will be asked on a 5-point scale ranging from 'never' to 'always'.

(Never, Sometimes, About half the time, Most of the time, Always)

- You have misused Spirit to gain an advantage
- You felt guilty after misusing Spirit during a game

Q14 Please rank the following attributes on how important you believe they are to Spirit.

1 is most important, 5 is least important (drag the items as appropriate)

- Rules knowledge and use
- Fouls and body contact
- Fair-mindedness
- Positive attitude and self-control
- Communication

Q15 Please rate your agreement or disagreement with each item.

(Strongly disagree to Strongly agree)

- It's not wise to tell your secrets.
- Generally speaking, people won't work hard unless they have to.
- Whatever it takes, you must get the important people on your side.
- Avoid direct conflict with others because they may be useful in the future.
- It's wise to keep track of information that you can use against people later.
- You should wait for the right time to get back at people.
- There are things you should hide from other people because they don't need to know.
- Make sure your plans benefit you, not others.
- Most people can be manipulated.
- People see me as a natural leader.
- I hate being the centre of attention.
- Many group activities tend to be dull without me.
- I know that I am special because everyone keeps telling me so.
- I like to get acquainted with important people.
- I feel embarrassed if someone compliments me.



- I have been compared to famous people.
- I am an average person.
- I insist on getting the respect I deserve.
- I like to get revenge on authorities.
- I avoid dangerous situations.
- Payback needs to be quick and nasty.
- People often say I'm out of control.
- It's true that I can be mean to others.
- People who mess with me always regret it.
- I have never gotten into trouble with the law.
- I like to pick on losers.
- I'll say anything to get what I want.

Q16 On the following pages you will find a series of statements about you. Please read each statement and decide how much you agree or disagree with that statement. Please answer every statement, even if you are not completely sure of your response. (Strongly disagree to Strongly agree)

- I would be quite bored by a visit to an art gallery.
- I plan ahead and organize things, to avoid scrambling at the last minute.
- I rarely hold a grudge, even against people who have badly wronged me.
- I feel reasonably satisfied with myself overall.
- I would feel afraid if I had to travel in bad weather conditions.
- I wouldn't use flattery to get a raise or promotion at work, even if I thought it would succeed.
- I'm interested in learning about the history and politics of other countries.
- I often push myself very hard when trying to achieve a goal.
- People sometimes tell me that I am too critical of others.
- I rarely express my opinions in group meetings.
- I sometimes can't help worrying about little things.
- If I knew that I could never get caught, I would be willing to steal a million dollars.
- I would enjoy creating a work of art, such as a novel, a song, or a painting.
- When working on something, I don't pay much attention to small details.
- People sometimes tell me that I'm too stubborn.
- I prefer jobs that involve active social interaction to those that involve working alone.
- When I suffer from a painful experience, I need someone to make me feel comfortable.
- Having a lot of money is not especially important to me.
- I think that paying attention to radical ideas is a waste of time.
- I make decisions based on the feeling of the moment rather than on careful thought.
- People think of me as someone who has a quick temper.
- On most days, I feel cheerful and optimistic.
- I feel like crying when I see other people crying.
- I think that I am entitled to more respect than the average person is.
- If I had the opportunity, I would like to attend a classical music concert.
- When working, I sometimes have difficulties due to being disorganized.
- My attitude toward people who have treated me badly is "forgive and forget".
- I feel that I am an unpopular person.
- When it comes to physical danger, I am very fearful.
- If I want something from someone, I will laugh at that person's worst jokes.
- I've never really enjoyed looking through an encyclopedia.
- I do only the minimum amount of work needed to get by.

- I tend to be lenient in judging other people.
- In social situations, I'm usually the one who makes the first move.
- I worry a lot less than most people do.
- I would never accept a bribe, even if it were very large.
- People have often told me that I have a good imagination.
- I always try to be accurate in my work, even at the expense of time.
- I am usually quite flexible in my opinions when people disagree with me.
- The first thing that I always do in a new place is to make friends.
- I can handle difficult situations without needing emotional support from anyone else.
- I would get a lot of pleasure from owning expensive luxury goods.
- I like people who have unconventional views.
- I make a lot of mistakes because I don't think before I act.
- Most people tend to get angry more quickly than I do.
- Most people are more upbeat and dynamic than I generally am.
- I feel strong emotions when someone close to me is going away for a long time.
- I want people to know that I am an important person of high status.
- I don't think of myself as the artistic or creative type.
- People often call me a perfectionist.
- Even when people make a lot of mistakes, I rarely say anything negative.
- I sometimes feel that I am a worthless person.
- Even in an emergency I wouldn't feel like panicking.
- I wouldn't pretend to like someone just to get that person to do favours for me.
- I find it boring to discuss philosophy.
- I prefer to do whatever comes to mind, rather than stick to a plan.
- When people tell me that I'm wrong, my first reaction is to argue with them.
- When I'm in a group of people, I'm often the one who speaks on behalf of the group.
- I remain unemotional even in situations where most people get very sentimental.
- I'd be tempted to use counterfeit money, if I were sure I could get away with it.

Q17 Please read each statement below and for each indicate the extent to which you behave within ultimate frisbee games by selecting the appropriate response between strongly disagree and strongly agree.

- I never break the rules of my sport
- I do not believe in winning at all costs
- I abide by all of the rules in my sport
- I will always congratulate my opponent on his or her victory
- I would rather be respected for my actions than merely winning
- I would not intentionally injure an opponent to gain advantage
- I would not bend the rules to win
- It is more important to do what is right than to win
- At times I will acknowledge my opponents good play
- I refrain from tactics that could injure my opponent
- I would rather lose with grace than win with dishonesty
- I truly respect a worthy opponent
- I play hard but make sure that I do not injure my opponent
- Winning is not always the most important part of sport
- It is wrong to test the boundaries to see what I can get away with
- I would go out of my way to congratulate an opponent
- I would never intentionally foul an opponent
- I always obey the rules of my sport
- It is more important to play fair than to win

Q18 As mentioned previously, all participants will be entered into a draw to win a customised limited edition frisbee. The study has allocated 10 coins to each participant for the prize-draw (each coin is the equivalent to one entry into the draw). You have currently been allocated 10 coins but have the opportunity to acquire 10 more coins for the draw. However, any additional coins added to your entry will be taken from another participant. Please specify how many (if any) additional tokens you wish to acquire.

In the following pages, please imagine that you are completing a decision-making task with another participant. The other participant is a complete stranger whom you will not knowingly meet.

Both of you will be able to see the options available to the other and your decisions will be known to each other. However, imagine that the tasks are being completed on computers in separate cubicles so that your identities remain anonymous to each other and to the experimenter.

Please keep in mind that there are no right or wrong answers—choose the option you imagine that you would pick in that situation, for whatever reason.

Make sure you read the instructions and options carefully.

*Next page*

Please read the following task carefully and make sure that you understand the task before proceeding.

In the following task, there are two roles, which you and your partner have been randomly assigned to. You begin the task with 10 coins and your partner begins the task with 0. You are then given the opportunity to GIVE any of your coins to your partner. Your partner must accept whatever you choose, that is, s/he does not have a say in this task. What would you do?

- I would give 0 to my partner
- I would give 1 to my partner
- I would give 2 to my partner
- I would give 3 to my partner
- I would give 4 to my partner
- I would give 5 to my partner
- I would give 6 to my partner
- I would give 7 to my partner
- I would give 8 to my partner
- I would give 9 to my partner
- I would give 10 to my partner

## 6.7 Appendix G: Dictator game testing

In the following pages, please imagine that you are completing a decision-making task with another participant. The other participant is a complete stranger whom you will not knowingly meet.

Both of you will be able to see the options available to the other and your decisions will be known to each other. However, imagine that the tasks are being completed on computers in separate cubicles so that your identities remain anonymous to each other and to the experimenter.

Please keep in mind that there are no right or wrong answers—choose the option you imagine that you would pick in that situation, for whatever reason.

Make sure you read the instructions and options carefully.

Please read the following task carefully and make sure that you understand the task before proceeding.

In the following task, there are two roles, which you and your partner have been randomly assigned to.

- You begin the task with 10 coins and your partner begins the task with 0.
- You are then given the opportunity to GIVE any of your coins to your partner.
- Your partner must accept whatever you choose, that is, s/he does not have a say in this task.

What would you do?

- I would give 0 to my partner
- I would give 1 to my partner
- I would give 2 to my partner
- I would give 3 to my partner
- I would give 4 to my partner
- I would give 5 to my partner
- I would give 6 to my partner
- I would give 7 to my partner
- I would give 8 to my partner
- I would give 9 to my partner
- I would give 10 to my partner