

Do Social Norms Predict Equestrians' Likelihood of Using Safety Equipment?

Alexandra Hathaway

22183811

A dissertation submitted to Auckland University of Technology in partial fulfilment of the requirements for the degree of

Bachelor of Arts (Honours)

2024

School of Social Sciences and Public Policy

Primary supervisor: Dr Jay Wood

Abstract

Equestrian sports carry a high risk of injury. Despite the well known risks carried by these activities, there are still many riders who choose to not utilise safety equipment when working with horses. The current study examined whether social norms or differences in personality traits influenced riders' decision to use various types of safety equipment. An online questionnaire ($N = 115$) was used to investigate whether agreeance with descriptive norms, injunctive norms, or differences in sensation seeking and conscientiousness predicted the use of helmets, protective vests, or safety stirrups. Consistent with prior research, the study found descriptive norms and injunctive norms both influenced the proportion of use of various safety equipment. More specifically, descriptive norms predicted the proportion of helmet and safety stirrup use, while personal and peer injunctive norms predicted the proportion of safety vest use. Sensation seeking was only found to be a predictor of helmet use and did not correlate to the proportion of safety vest or safety stirrup use. Conscientiousness was not found to be a predictor of any variable. The findings are significant within the equestrian community as they contribute to the understanding of what influences safety equipment use, allowing for more informed interventions to increase safe practices within equestrian sport.

Table of Contents

Abstract.....	2
List of Tables.....	4
Acknowledgements.....	5
Attestation of Authorship.....	6
Introduction.....	7
Injury Prevention.....	8
Barriers to Injury Prevention.....	9
External Influences on Safety Behaviour.....	9
Internal Influences on Safety Behaviour.....	14
Influences on Safety Behaviour Within the Equestrian Community.....	15
Method.....	17
Design.....	17
Participants.....	17
Procedure and Measures.....	17
Descriptive Norms.....	18
Injunctive Norms.....	18
Conscientiousness.....	18
Sensation Seeking.....	19
Results.....	19
Discussion.....	28
Personal Descriptive Norms and Helmet Use.....	29
Injunctive Norms and Safety Vest Use.....	30
Personal Descriptive Norms and Safety Stirrup Use.....	32
Sensation Seeking and Helmet Use.....	33
Other Findings.....	34
Strengths, Limitations, and Future Directions.....	35
Conclusion.....	36
References.....	38

List of Tables

Table	Page
1 Descriptive Statistics and Correlations Across All Measures	23
2 Hierarchical Regression Analysis for Proportion of Helmet Use	25
3 Hierarchical Regression Analysis for Proportion of Safety Vest Use	27
4 Hierarchical Regression Analysis for Proportion of Safety Stirrup Use	30

Acknowledgements

Firstly, I would like to acknowledge my supervisor, Dr Jay Wood. Thank you for all the guidance and support throughout. I am so grateful for your feedback and words of encouragement, Secondly, I would like to thank the Waitemata Riding Club community. Your willingness to help and take the time to complete my survey is greatly appreciated. Finally, I would like to thank my family and friends back in Canada. Thank you for your ongoing support and belief in my abilities. I am so grateful for the encouragement and willingness to partake in my survey.

This study was approved by the Auckland University of Technology Ethics Committee on 29 September 2023, AUTEK Reference Number 23/275.

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma or a university or institution of higher learning.

Alexandra Hathaway

January 2024

Introduction

It is well known that equestrian activities carry a lot of risk. Both riding and simply being around horses carry their own unique assortment of risks and hazards, including being kicked, trampled, bitten, or falling. The most common risks come from falls (77%), being crushed (7%), and being kicked (4%) (Williams & Ashy, 1989).

The high number of risks equestrians face every day leads to a significant risk of injury within equestrian sports. While some studies have found the overall rate of injury low within the sport, most agree that the risk of serious injury is quite significant (Nelson & Bixby-Hammett, 1992). Studies within the United States have found that approximately one in five equestrians will suffer a serious injury, requiring medical treatment or hospitalisation, at some point in their careers (Havlik, 2010). Head injuries make up the majority of the serious injuries, as well as deaths, within equestrian sports (Nelson & Bixby-Hammett, 1992), largely as a result of a fall (Watt & Finch, 1996). A smaller proportion of injuries occur on the ground, with most serious injuries a result of being kicked (Hobbs et al., 1994; Williams & Ashby, 1992).

Several studies have found that the rates and seriousness of injury differ depending on certain factors. Young riders who sustain injuries are more likely to be female, while older riders who sustain injuries are more likely to be male (Ingemarson et al., 1989; Bixby-Hammett & Brooks, 1990). The gender difference in injury rates may be due to the proportion of females to males in younger versus older populations, with younger athletes being predominantly female while older athletes are more likely to be male (Hedenborg & White, 2012). A study that examined injuries among professional jockeys and amateur riders found that the most common injuries differed between the two experience levels. They found that the more experienced jockeys sustained more injuries to the limbs, while the less experienced riders sustained more injuries to the head and face (Whitlock et al., 1987). They suggested that their findings may be due to the improved head protection that was worn by the professional jockeys compared to that worn by the amateur riders (Whitlock et al., 1987). It has also been found that in almost half of the horse riding accidents examined, inadequate rider experience level was a common factor (Silver & Parry, 1991). Due to the dangers related to equestrian activities,

there is a need for safety equipment and injury prevention techniques for riders and anyone else involved with horses.

Injury Prevention

Given the risks associated with equestrian activities, several injury prevention strategies have been developed to attempt to make the sports safer. Watt and Finch (1996) identified several strategies to prevent injuries. They categorised these strategies into primary, secondary, and tertiary groups, based on their ability to reduce the likelihood of injury, reduce the severity of injury, and minimise the consequences of injury, respectively. Primary countermeasures included rules and regulations implemented by the organizations, knowledge of equine behaviour, lessons with a certified and experienced instructor, appropriate equipment for the horse, and appropriate clothing for the rider (Watt & Finch, 1996). The outlined secondary countermeasures were protective helmets, rider experience level, safety stirrups, body protectors, and falling techniques (Watt & Finch, 1996). The tertiary countermeasures outlined included the availability of first aid and the presence of paramedics (Watt & Finch, 1996).

Existing injury prevention equipment, including body protectors, safety stirrups, and helmets, have proved to be successful in preventing injury or lessening the extent of an injury. Body protectors come in several different forms, including PVC nitrile foam, air vests, and shoulder protectors. There is existing evidence that body protectors are useful in reducing the severity of rib fractures, and soft tissue and shoulder injuries (Nelson et al., 1994). Safety stirrups are another available form of safety equipment, created to reduce the risk of a rider becoming stuck in their stirrup when they have fallen off their horse. Several different types exist, including open stirrups, detachable stirrups, and closed stirrups that open with a hinge or an elastic. Despite their increasing popularity, not much evidence exists to determine how effective safety stirrups are at reducing injury. Helmets are the most commonly known safety equipment for equestrians. Several studies have concluded that many injuries can be prevented, or have their severity lessened, by wearing a helmet (Aronson & Tough, 1993; Barone & Rodgers, 1989; Bixby-Hammett, 1992).

Barriers to Injury Prevention

Despite the variety of safety equipment available and the evidence supporting its efficacy, the percentage of use still remains lower than expected for such a risky sport. One study within the United States found that, of the 837 riders surveyed, only 20 per cent wore helmets every time they rode, and 40 per cent reported never wearing a helmet when riding (Hunt & Mills, 1989). A study from the Pacific Northwest found that 61 per cent of respondents wore helmets, while only 7 per cent wore body protectors (Guyton et al., 2013). Even lower rates of helmet use were reported in Canada, where only 9 per cent of the riders reporting injury between 1995 and 2005 reported using a helmet (Ball et al., 2007).

There are different influences behind the use of safety equipment, including cost, discomfort, appearance, and various beliefs about who needs to use them and their efficacy (Hunt & Mills, 1989; Condie et al., 1993; Nelson et al., 1994). A common belief within the equestrian community was found to be that riders thought safety equipment was only needed for beginner riders (Condie et al., 1993). The beliefs about safety equipment have been found to differ depending on the rider's discipline, with helmet use being accepted in dressage but looked down on in show jumping (Firth, 1985). Other potential barriers to safety equipment use may be due to individual differences or social influence from the riders' communities.

External Influences on Safety Behaviour

Social norms may be another potential influence on safety equipment use in equestrian sports. Social norms are defined as rules that guide and or constrain the behaviour of a group (Cialdini & Trost, 1998). Social norms guide individuals towards behaviour that will allow them to fit into larger groups. They are not written rules or laws, but often unspoken guidelines. Social norms have been described as jointly negotiated standards, traditions, or values, for social behaviour (Sherif, 1936), that are more characteristic of a collective rather than an individual (Pepitone, 1976). Social norms guide behaviour by both showing what is desirable as well as forbidding unacceptable behaviours (Triandis, 1994).

Two main perspectives have been put forward to explain how social norms are created. The societal value perspective suggests that social norms are developed as they are reinforced by the culture they exist within (Opp, 1982; Solomon et al., 1991). The normative behaviours begin to hold

reward power in specific situations, while the nonnormative behaviour comes with a cost to the individual, making those beneficial behaviours the norm that is accepted and internalised by the members of the group (Cialdini & Trost, 1998). Sherif (1936) also noted that reinforced behaviours arise as they meet basic human needs and desires.

The functionalist perspective argues that social norms arise to aid in achieving the group's goals, such as survival (Sherif, 1936). The behaviour becomes a norm as it promotes survival in ways such as acquiring status, affiliating with others, or more basic needs such as acquiring food (Cialdini & Trost, 1998). Nonnormative behaviour is maladaptive to the group's survival, therefore creating a norm within the group to adopt the adaptive behaviour.

The power social norms have over individuals is referred to as normative influence. One classic study on normative influence conducted by Asch (1951) examined participants' likelihood to conform to the norm of a group, even if the norm was objectively incorrect. In this study, participants were shown one image of a line and asked to select from a group of another three lines which was the same length as the original line they were shown. In some trials, the other group members selected the second line that was the same length as the first, while in other trials the other group members selected a line that was not the same length as the first. The findings of the study showed a strong pressure to conform to the group's answer, even if the participant knew the group's answer was the incorrect choice (Asch, 1951). A second study conducted by Barauskaite et al (2018) examined motivating factors, such as descriptive social norms, in the consumption of food. Participants of this study completed a questionnaire that assessed their food consumption, that included a measure of their susceptibility to descriptive normative influence. Participants' susceptibility to normative influence was measured using a Likert scale that assessed how likely they were to use others' food choices to influence their own. They found a positive relationship between descriptive normative influence and function food category distinctiveness (Barauskaite et al., 2018). This suggested that those influenced by others chose specific food choices to follow the expectations and opinions of other peers (Barauskaite et al., 2018).

Social norms can be broken down into descriptive and injunctive norms. Descriptive norms refer to the perceived prevalence of a behaviour, while injunctive norms refer to the perceived degree

of social approval or disapproval of a behaviour (Cialdini et al., 1991). Descriptive norms allow individuals to achieve effective or accurate behaviour, while injunctive norms provide individuals with information on how to best create or maintain social relationships (Cialdini & Trost, 1998).

Cialdini et al (1990) conducted several studies that examined the power of descriptive norms to reduce littering in public spaces. Norm salience was examined in two groups, one where participants encountered a stranger who was observed to litter a handbill they had and another where the stranger just walked past them without dropping the handbill. Existing descriptive norms were measured by splitting the subjects into one group walking through a heavily littered parking structure, and the other walking through a litter free parking structure. Participants were then observed to determine if they would adhere to the descriptive norms they were exposed to. Participants were found to litter more in the littered environment than in a clean environment and were even more likely to litter after being exposed to a stranger littering as well (Cialdini et al., 1990). The findings suggest that attention to a descriptive norm generally has enough influence to change participants' behaviour to match the observed norm (Cialdini et al., 1990). A second study conducted by Cialdini et al (1990) again examined the influence of descriptive norms on littering behaviour, this time without the participants observing a subject littering themselves. In this study, participants received a flier in their mailbox. The walkway leading up to the mailbox was either clean, contained one piece of litter, or contained many pieces of litter. The results of their study showed that participants were more likely to litter if they walked through a littered environment than a clean one (Cialdini et al., 1990). Interestingly, they also found that participants were less likely to litter in an environment that only contained one piece of litter than in the clean environment (Cialdini et al., 1990). From these findings, they were able to conclude that the littering behaviour of others influenced participants' littering behaviour, even in the absence of witnessing someone litter. The findings of these studies conclude that the behaviour of others influences our own. This suggests that descriptive norms influence the behaviour of those within the group.

The influence of injunctive norms has also been examined and established in research (Sherif, 1935; Baumgartner et al., 2011). A classic study conducted by Sherif (1935) examined the influence of norms in a group setting. Using the autokinetic effect, where a small spot of light appears to move

even though in actuality it does not, participants were asked to determine and answer aloud how far they believed the light moved within a group of three other subjects. Among the other subjects in the group, two gave similar answers while the third gave a different estimate. In this study, participants tended to conform to the most common estimate given (Sherif, 1935). Their findings suggest that, in a novel setting that may produce feelings of uncertainty, individuals are more likely to conform to the belief that is accepted by the group, even if they are aware, it is not correct. Baumgartner et al (2011) examined the influence of norms on risky behaviour among adolescents and found injunctive norms predictors the adolescents' risky behaviour. In this study, participants completed a survey on their online risky sexual behaviour and their friends' approval of the behaviour. The results of their study showed that injunctive norms were a predictor of the participants' risky online sexual behaviour (Baumgartner et al., 2011). From their findings, they concluded that participants' perception of their peers' approval of behaviour influenced their likelihood of engaging in that behaviour. The findings of these studies conclude that individuals' belief on what behaviour is accepted by their group influences the behaviour they choose to engage in. This suggests that injunctive norms also influence behaviour within a group.

The influence of injunctive and descriptive norms has also been examined among health behaviours. Both health and health risk behaviours have been found to be susceptible to normative influence (Rivis & Sheeran., 2003; Reid et al., 2010). A meta-analysis was conducted by Rivis and Sheeran (2003) to quantify the relationship between descriptive norms and intentions among various behaviours. Health behaviours were found to be associated with a stronger correlation between descriptive norms and intentions, indicating that descriptive norms can influence intentional health behaviour (Rivis & Sheeran, 2003). They also determined that there was a stronger relationship between descriptive norms and health risk behaviour than between descriptive norms and health promoting behaviours (Rivis & Sheeran, 2003). Berger and Rand (2008) conducted a study that used injunctive norms and identity to promote healthy behaviours and decrease unhealthy behaviours. The study utilised identities to promote or deter certain behaviours. Unhealthy behaviours, such as drinking alcohol and eating junk food, were deterred by presenting them as markers of the outgroup, while healthy behaviours were promoted by presenting them as behaviours displayed by the ingroup.

Among college freshmen, alcohol consumption decreased when this behaviour was part of the outgroup's identity (Berger & Rand, 2008). Among restaurant patrons, less fattening food was ordered when this behaviour was displayed as the norm of the outgroup (Berger & Rand, 2008). Thus, injunctive norms were found to have an influence on the behaviour, both increasing health related behaviour and decreasing unhealthy behaviour (Berger & Rand, 2008). They were able to conclude that social identity-based interventions were successful in promoting healthy behaviours and decreasing unhealthy behaviours (Berger & Rand, 2008).

To further the understanding of social norms and health related behaviours, several studies have been conducted that examine the influence of both descriptive and injunctive norms on helmet wearing behaviour. Haqverdi, Seyedabrishami, and Groeger (2015) examined various psychological and socioeconomic factors that affected helmet use among motorcyclists in Iran. Using face to face interviews, various influences including helmet use norms, risky behaviour, and experience, were measured, and analysed to determine consistent features within the data. In this study, they found a positive correlation between perception of social norms and tendency to wear a helmet, and a negative correlation between perception of norms and tendency to engage in risky traffic behaviours (Haqverdi et al., 2015). Specifically, those with higher agreeance to social norms were more likely to wear a helmet and less likely to engage in risky traffic behaviours (Haqverdi et al., 2015). From their findings, they were able to conclude that the social norms around helmet wearing were a key determinant of helmet use (Haqverdi et al., 2015). Influential factors on helmet wearing among cyclists were examined within the United States by Finnoff et al (2001). In their study, participants were recruited from three public, elementary, and middle schools, as well as three local paved trails, ranging in ages from children to adolescents to adults. Among all of the age groups surveyed, peer helmet use was found to influence participant helmet use (Finnoff et al., 2001). When participants' peers used a helmet more often, they were also more likely to use a helmet. Within the youngest group of participants, parents' helmet wearing was also a strong influence on their own helmet use (Finnoff et al., 2001). When parents of the younger participants wore helmets, the participants were more likely to wear them as well. These findings suggest that descriptive norms influence bicycle

helmet wearing. Based on previous evidence, it is likely that social norms also influence safety behaviour within equestrian sports.

Internal Influences on Safety Behaviour

Conscientiousness and sensation seeking are two other internal factors that may influence an individual's likelihood to use safety equipment. Conscientiousness is a personality trait that shows individual differences in the likelihood of following socially prescribed norms, following rules, goal-planning, and delayed gratification (Roberts et al., 2009). Individuals with this personality trait are careful and diligent in their everyday tasks. Conscientiousness has been found to predict major preventative and risky behaviours for physical health (Bogg & Roberts, 2004). Bogg and Roberts (2004) conducted a meta-analysis to determine behavioural contributors to mortality. In their analysis, a negative relationship between conscientiousness related personality traits, such as organisation and self-discipline, and several health risk behaviours, including smoking, unhealthy diet, and risky actions (Bogg & Roberts, 2004). That is, high levels of conscientiousness related traits were associated with a lower frequency of health risk behaviours. A positive relationship was also found between conscientiousness related traits and health positive behaviours, such as healthy eating habits and safe driving (Bogg & Roberts, 2004). Mottola et al (2023) examined the HEXACO personality traits and their association with risk behaviour among Italian youth. In their study, middle school aged adolescents filled out a HEXACO Middle School Inventory questionnaire. The primary carers of the participants also filled out a set of questions on the adolescents' risky behaviour and emotional and behavioural problems. Their findings showed that conscientiousness was the HEXACO trait most correlated with wearing a helmet when riding a bike, as well as with wearing a seatbelt in a car (Mottola et al., 2023). Conscientiousness was also found to be a significant predictor of safe behaviours related to car and bike transportation, including wearing a seatbelt (Mottola et al., 2023). Based on the findings that conscientiousness is positively associated with safety behaviours, including helmet wearing, and negatively associated with risky behaviours, it is likely that it is also a predictor of safety behaviour among equestrians.

A second personality trait that has been found to be associated with risky behaviour is sensation seeking. Sensation seeking is a trait characterised by those who seek novel experiences and

sensations, possibly engaging in risky behaviour (Zuckerman et al., 1964). Sensation seeking is associated with both positive risk behaviours, including risky activities such as climbing or kayaking, and negative risk behaviours, including crime and substance use (Hansen & Breivik, 2001). A study conducted by Hansen and Breivik (2001) used a Swedish version of the sensation seeking scale, Opinion II, to measure the personality traits and several risk behaviours among adolescents. Risk behaviour in their study was divided into positive, activities including rafting and climbing, and negative, including shoplifting and substance use, categories. Their results showed a significant, positive relationship between the sensation seeking trait and all types of risky behaviour among the adolescent population (Hansen & Breivik, 2001). Specifically, those with higher levels of sensation seeking were more likely to engage in both positive and negative risky behaviours, including extreme sports and crime (Hansen & Breivik, 2001). Another study in Canada examined the relationship between self-reported risk taking and sensation seeking behaviour and helmet wearing among ski and snowboard instructors. Participants in this study filled out the Sensation Seeking Scale Form V, as well as reporting how often they wore a helmet (Masson et al., 2020). Self-assessment of risk taking behaviour was found to be significantly associated with helmet wearing (Masson et al., 2020). A smaller proportion of participants, specifically men, who reported more risk and sensation seeking behaviour were found to wear a helmet than those who reported lower sensation seeking behaviour (Masson et al., 2020). Thus, it was concluded that risk behaviour and sensation seeking are negatively correlated with helmet wearing. Based on the findings of these studies, it is likely that sensation seeking may also be a factor influencing safety behaviour among equestrians.

Influences on Safety Behaviours Within the Equestrian Community

The equestrian community has its own set of social norms, that may be influenced by various factors including discipline, experience level, and rider age. Rider experience has been established as an influence on safety behaviour among equestrians (Ikinger et al., 2016). Ikinger et al (2016) surveyed German equestrians on several factors that influence the use of protective equipment. Years of riding were found to influence the proportion of safety behaviour, with more experienced riders showing less pronounced safety behaviour (Ikinger et al., 2016). Rider's peers have also been established as a significant influence on safety behaviour (Haigh & Thompson, 2015; Ikinger et al.,

2016). In the study conducted by Ikinger et al (2016), the protective behaviour of other peers, including helmet wearing, was found to be one of the strongest influences on the participants' safety behaviour. Participants observing other peers engaging in protective behaviour are more likely to engage in that behaviour themselves, and those who observed peers not engaging in protective behaviour were more likely to not engage in that protective behaviour (Haigh & Thompson, 2015). More specifically, other riders' helmet wearing behaviour influenced whether participants chose to wear or not to wear a helmet (Haigh & Thompson, 2015). Ross et al (2010) examined barriers to using protective equipment, including helmets and body protectors, among rough stock athletes such as bull and bronc riders. Their survey concluded that overall safety usage among riders was significantly low, due to barriers including the equipment affecting the riders' performance, discomfort, and feeling that safety equipment did not align with the norms of the sport (Ross et al., 2010). The norms highlighted in the study were the attitudes towards riders being tough and not requiring safety equipment. The responses in the study concluded that participants felt that using safety equipment made them appear "not cowboy" (Ross et al., 2010), indicating that injunctive norms influenced the riders' decision to not use safety equipment. The evidence from these studies has established that, within several different sports, the behaviour of peers and sports norms have an influence on whether or not individuals wear helmets (Ross et al., 2010; Haigh & Thompson, 2015; Ikinger et al., 2016).

Little research has been done to determine what the norms that influence safety behaviour are. This study aims to expand the understanding of what influences are associated with safety behaviour among equestrians, whether it be individual factors such as personality traits or the influence of peers or the wider community norms. I hypothesise that injunctive and descriptive norms will influence the use of safety equipment in equestrian sports, and participants who score higher on social norm belief will use safety equipment more frequently. The second aim of this study is to determine if personality traits influence safety equipment use. I hypothesise that participants with high levels of conscientiousness, and or low levels of sensation seeking, will use safety equipment a higher proportion of the time than those with low levels of conscientiousness and or high levels of sensation seeking. By improving the understanding of factors that influence safety behaviour, more targeted

interventions to increase the use of safety equipment and change the attitudes towards use can be created.

Method

Design

The current study utilised a correlational design to investigate if there is a relationship between social norms and the proportion of safety equipment use among equestrians. Both injunctive and descriptive norms were examined to determine if they affected the proportion of helmet, body protector, or safety stirrup use. The study also looked at conscientiousness and sensation seeking as potential predictors of safety equipment use. The potential covariates age, gender, experience level, and discipline, were also examined to see if they influenced the relationship between social norms and the proportion of safety equipment use.

Participants

Individuals from Canada and New Zealand were invited to participate in the study via posts on Facebook. Those eligible to participate were over the age of 16 and involved in the equestrian community, whether it be through work, hobby, or sport. A total of 146 participants responded to the post. Thirty-one participants were not included in the final sample due to not completing the questionnaire. The final sample included 115 participants (3 males, 111 females, 1 gender diverse). Participants' ages ranged from 16 to 80, with a median age of 44. Approximately 39% of the participants in this study were from Canada, and approximately 61% were from New Zealand. The main disciplines participated in were dressage (23.5%), show jumping (20.9%), show hunter (14.8%), eventing (9.6%), western pleasure (3.5%), hunting (1.7%), racing (0.6%), western trail (0.6%), and other (24.3%). Participants' experience levels ranged from 2 years to over 20 years, with an average of over 15 years of experience.

Procedure and Measures

To partake in the study, the participants clicked a link to the anonymous online questionnaire. Consent to participate was indicated before beginning the survey. Questions in the survey included those on descriptive norms, injunctive norms, conscientiousness, and sensation seeking, as well as demographic variables such as age, discipline, experience level, gender, and country. Once the survey

was completed, participants were given the option to enter into a prize draw to win one of ten NZD\$50 Westfield vouchers.

Descriptive Norms. Three items, based on procedures for measuring norms outlined by Azjen (2002) and Krieger et al (2016) were used to measure descriptive norms. The model utilised self-report scales measuring the proportion of time the participants perceived other equestrians to use safety equipment (e.g. What proportion of the time do equestrians use helmets?), to determine the participants' perception of safety behaviour norms. Responses were measured on a scale that ranged from 0 (none of the time) to 100 (all the time). Each of the responses was considered a separate item to allow each safety equipment norm to be examined separately ($\alpha = .84$)

Injunctive Norms. Injunctive norms were measured using a 24 item scale, based on procedures for measuring norms outlined by Azjen (2002) and Krieger et al (2016). Twelve items in the model were used to measure personal injunctive norms, and twelve items were used to measure peer injunctive norms. The personal injunctive norms subscale measured participants' perceptions of when safety equipment should or must be used (e.g. "Professionals should always use helmets" and "Body protectors should always be used when hacking.") ($\alpha = .84$). The peer injunctive norms subscale measured participants' beliefs of their peer's perceptions of when safety equipment should or must be used (e.g. "My coach/peers believe helmets should always be used when schooling or riding at home" and "My coach/peers believe amateurs should always wear a helmet."). Responses were measured using a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) ($\alpha = .86$).

Conscientiousness. The conscientiousness subscale of the HEXACO Model (Ashton & Lee, 2005) was used to assess participants' levels of conscientiousness. The subscale has 11 items that use self-report scales on conscientiousness. It measures various attributes of conscientiousness, including decision making (e.g. "I make decisions based on the feeling of the moment rather than on careful thought" (reverse scored)) and work ethic (e.g. "I always try to be accurate in my work, even at the expense of time"). Responses were measured on a 5-point Likert scale ranging from strongly agree to strongly disagree. Five items were reverse scored, where agreement with the statement represented lower conscientiousness ($\alpha = .74$).

Sensation Seeking. The Brief Sensation Seeking Scale, adapted from the SSS-V (Zuckerman et al., 1964) was used to assess participants' level of sensation seeking. The model used 8 items to measure components from the SSS-V (Zuckerman et al., 1964), including thrill and adventure seeking (e.g. "I like wild parties"), experience seeking (e.g. "I would love to have new and exciting experiences, even if they are illegal"), and boredom susceptibility (e.g. "I get restless when I spend too much time at home"). Responses were measured on a 5-point Likert scale ranging from strongly disagree to strongly agree. None of the items were reverse scored. More agreement with the statement indicates high levels of sensation seeking in the participant ($\alpha = .72$).

Reliability was significant among the independent variables' descriptive norms ($\alpha = .84$), personal injunctive norms ($\alpha = .84$), peer injunctive norms ($\alpha = .86$), conscientiousness ($\alpha = .74$), and sensation seeking ($\alpha = .72$). Aggregate scores were created for the independent variables as the reliability justified creating a scale. Aggregate scores were created by averaging the scores for each dependent variable and creating a scale that ranges from 1 to 5. Higher scores indicate higher agreeance with the norm or higher levels of the personality trait.

Results

Prior to the analyses, the distribution statistics were examined to determine if the assumptions of normality were met. All assumptions were met. Reliability analyses were conducted on both the safety behaviours and social norms variables. Reliability was low ($\alpha = .45$) for the safety behaviours, and therefore it was not justified to create a scale for the safety behaviours, resulting in the outcome variables being examined separately. The demographic variables of experience level, age, and discipline were examined. Due to the disproportionately female sample, gender was not examined in the model.

The averages and correlations across all variables are displayed in Table 1. As displayed, helmet wearing had a positive correlation with personal injunctive norms and a strong positive correlation with descriptive helmet use norms. Helmet wearing also had a strong negative correlation with sensation seeking. Both of these findings were expected, given previous research has established

the influence of descriptive norms on helmet wearing in other sports (Finnoff et al., 2001) and the influence of high levels of sensation seeking on risky behaviour (Masson et al., 2020). Unexpectedly, helmet use was not significantly associated with peer injunctive norms. Safety vest use was significantly associated with personal injunctive norms and had a less significant correlation with conscientiousness. Unexpectedly, safety vest use did not have a significant correlation with descriptive norms, peer injunctive norms, or sensation seeking. Safety stirrup use had a significant positive correlation with descriptive norms on safety stirrup use. In contrast to expected findings, safety stirrup use did not have a significant correlation to personal or peer injunctive norms, sensation seeking, or conscientiousness.

Table 1

Descriptive Statistics and Correlations Across All Measures

Measures	<i>M</i>	<i>SD</i>	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Descriptive Helmet	77.23	16.31										
2. Descriptive Safety Vest	25.62	17.00	.23*									
3. Descriptive Safety stirrups	1.14	0.35	-.07	-.02								
4. Helmet Use	90.4	19.8	.33**	.05	-.18							
5. Safety Vest Use	21.23	30.94	.02	.14	.02	.17						
6. Safety Stirrup Use	3.92	0.52	.05	.11	.24*	-.06	-.25*					
7. Personal Injunctive	3.64	0.53	-.02	.11	.19*	.19*	.38**	-.18				
8. Peer Injunctive	2.1	0.53	.15	.09	.18	.18	-.00	-.11	.25**			
9. Conscientiousness	2.62	0.70	.02	.18	-.02	.01	.20**	.09	.04	-.02		
10. Sensation Seeking			-.05	-.05	-.01	-.20**	.11	-.10	-.07	.03	.15	

Note. * $p < .05$. ** $p < .01$.

To determine whether social norms and personality factors influenced the proportion of safety behaviours, a hierarchical linear regression was conducted for each of the three outcome variables.

Helmet wearing was the first safety behaviour examined, and the result of the hierarchical regression is displayed in Table 2. Personal descriptive norms were added to the model in step 1. Personal descriptive norms explained 11% of the variance in the proportion of helmet use. When personal injunctive and peer injunctive norms were added at step 2, the total variance explained by the model as a whole was 14%. Personal injunctive norms explained 3% of the total variance of the model, and peer injunctive norms explained 1% of the total variance of the model. Neither injunctive norm significantly improved the model. In step 3, conscientiousness and sensation seeking were added to the model. With the internal influences added, the total variance explained by the model was 16%. Conscientiousness explained less than 1% of the variance within the model, while sensation seeking explained 3% of the variance within the model. Sensation seeking improved the model while conscientiousness did not significantly improve the model. The demographic variables age, main discipline, and experience level were added in step 4. The total variance explained by the model with the demographic variables was 19%. Rider discipline explained 2% of the variance in the final model, and experience level explained less than 1% of the variance. Adding primary discipline and rider experience level did not significantly improve the model. In the final model, only personal injunctive norms ($p < .001$) and sensation seeking were significant ($p = .03$).

Table 3

Hierarchical Regression Analysis for Proportion of Helmet Use

	Step 1		Step 2		Step 3		Step 4	
	β	t	β	t	β	t	β	t
Descriptive	.33	3.75**	.32	3.66**	.31	3.55**	.31	3.56**
Helmet								
Personal Injunctive	.17		.17	1.90	.16	1.73	.14	1.53
Peer Injunctive	.09		.09	.94	.10	1.07	.10	1.05
Conscientiousness					.03	.31	.05	.59
Sensation Seeking					-.18	-2.01*	-.20	-2.20*
Discipline							-.14	-1.53
Experience Level							-.04	-.50
R^2	.11		.16		.19		.20	
ΔR^2			.05		.03		.01	

Note. * $p < .05$ ** $p < .01$

Safety vest use was the second safety behaviour examined. A second hierarchical regression was run to determine what variables influence safety vest use. The results are displayed in Table 3. In step 1, personal descriptive norms were added to the model. Personal descriptive norms explained 1% of the variance in the model. In step 2, personal and peer injunctive norms were added to the model. The variance explained by the model with personal and peer injunctive norms included was 16%. Personal injunctive norms explained 15% of the variance in the model, and peer injunctive norms explained 1% of the variance in the model. Personal injunctive norms significantly improved the model, while peer injunctive norms did not significantly improve the model. Conscientiousness and sensation seeking were added to the model in step 3. The total variance explained by the model in step 3 was 22%. Conscientiousness explained 2% of the variance within the model, and sensation seeking explained 1% of the variance. Sensation seeking and conscientiousness did not significantly add to the model. In step 4, the demographic variables primary discipline and rider experience level were added to the model. The total variance explained by the model in step 4 remained at 22%. Rider discipline explained less than 1% of the variance in the model, and experience level explained less than .1% of the variance. Neither primary discipline nor rider experience level significantly improved the model. In the final model, only personal injunctive norms ($p = .002$) were significant.

Table 3

Hierarchical Regression Analysis for Proportion of Safety Vest Use

	Step 1		Step 2		Step 3		Step 4	
	β	t	β	t	β	t	β	t
Descriptive	.14	1.46	.11	1.25	.10	1.02	.11	1.23
Safety Vest								
Personal			.40	4.40**	.40	4.48**	.40	4.39**
Injunctive								
Peer Injunctive			-.12	-1.30	-.12	-1.34	-.11	-1.25
Conscientiousness					.15	1.70	.13	1.50
Sensation Seeking					.13	1.44	.12	1.40
Discipline							.07	.81
Experience Level							-.00	-.02
R^2	.02		.16		.20		.22	
ΔR^2			.14		.04		.02	

Note. * $p < .05$ ** $p < .01$

The predictability of safety stirrup use was examined using a final hierarchical regression. The results from the regression are presented in Table 4. Personal descriptive norms were added to the model in step 1. Personal descriptive norms explained 5% of the variance within the model. In step 2, personal injunctive norms and peer injunctive norms were added to the model. With the inclusion of injunctive norms, the model explained 6% of the total variance. Personal injunctive norms explained 1% of the total variance within the model, and peer injunctive norms explained less than 1% of the total variance. Neither injunctive norm significantly added to the model. Conscientiousness and sensation seeking were added to the model in step 3. The total variance explained by the model in step 3 was 7%. On their own, both conscientiousness and sensation seeking explained 1% of the total variance within the model. Neither sensation seeking nor conscientiousness significantly improved the model. In step 4, the demographic variables primary discipline and rider experience level were added to the model. The total variance explained by the model in step 4 was 11%. Primary discipline explained less than 1% of the variance in the model, and experience level explained 2% of the variance. Primary discipline and rider experience did not significantly improve the model. In the final model, only personal descriptive norms ($p < .001$) were found to be statistically significant.

Table 3

Hierarchical Regression Analysis for Proportion of Safety Stirrup Use

	Step 1		Step 2		Step 3		Step 4	
	β	t	β	t	β	t	β	t
Descriptive	-.25	-2.58**	-.21	-2.20**	-.20	-2.16**	-.21	-2.25*
Safety Stirrup								
Personal			-.13	-1.31*	-.14	-1.50*	-.12	-1.24
Injunctive								
Peer Injunctive			-.04	-.40	-.03	-.30	-.03	-.32
Conscientiousness					.11	1.16	.12	1.32
Sensation Seeking					-.12	-1.35	-.11	-1.15
Discipline							-.07	-.72
Experience Level							.13	1.42
R^2	.06		.07		.10		.12	
ΔR^2			.01		.03		.02	

*Note. * $p < .05$ ** $p < .01$*

Discussion

It has been previously established that other riders can influence one's own decision to use safety equipment within equestrian sports (Ross et al., 2010; Haigh & Thompson, 2015; Ikinger et al., 2016). The present study aimed to build on the findings of previous research to determine whether descriptive norms or injunctive norms influenced respondent's safety equipment use. To measure this, participants completed an online questionnaire that assessed their proportion of safety equipment use, agreement with peer descriptive, peer injunctive, and personal injunctive norms, and levels of sensation seeking and conscientiousness. Data on demographic variables was also collected in the questionnaire. Participants' proportion of safety equipment use was measured separately for helmets, safety vests, and safety stirrups.

For each of the safety behaviours, social norms were found to have a significant correlation to the proportion of use. When examining helmet use, personal descriptive norms were found to be a significant predictor of the participant's proportion of use. Participants with higher agreeance to descriptive norms reported a higher proportion of helmet use when riding. Both peer and personal injunctive norms were not found to be significantly related to the proportion of helmet use. Sensation seeking was also found to have a significant inverse correlation to the proportion of helmet use. Participants reporting higher levels of sensation seeking were more likely to report a lower proportion of helmet use. Rider discipline and experience level were not found to influence the proportion of helmet use. For safety vest use, both personal and peer injunctive norms were found to be predictors of the proportion of use among participants. Participants with higher agreeance to personal and peer injunctive norms were more likely to report a higher proportion of safety vest use. Descriptive norms were not found to be a predictor of safety vest use. Both personality traits were also not found to have a significant relationship with safety vest use. Rider experience level and discipline were not found to correlate with safety vest use. When examining safety stirrup use, personal descriptive norms were found to be a significant predictor of participant's use. Participants who reported more agreeance to descriptive norms were more likely to report using safety stirrups. Both personal and peer injunctive norms were not found to be a significant predictor of safety stirrup use. Conscientiousness and sensation seeking were not found to be significant predictors of safety stirrup use. Rider discipline and

experience level were not found to have a relationship with the proportion of safety stirrup use. Due to the overrepresentation of females in the sample, the effects of gender on the relationships between variables were not examined.

Personal Descriptive Norms and Helmet Use

The results of the current study were present with existing research that has established that descriptive norms influence the behaviour of others. It is also consistent with risky behaviour specific research that has concluded helmet use is influenced by descriptive norms. A positive relationship was found between descriptive norms and the proportion of helmet use. More specifically, as the proportion of helmet use increased among participants, the agreeance with descriptive norms also increased. Of the three types of social norms examined, only personal descriptive norms were found to have a significant correlation to the proportion of helmet use. The findings conclude that participants who agreed that most other equestrians wore helmets when riding were more likely to report wearing a helmet themselves. In contrast to other studies, injunctive norms were not found to influence the proportion of helmet wearing among participants. The findings suggest that there is an influential relationship between equestrians' perception of what the normal helmet wearing behaviour is and whether they use a helmet when riding themselves.

The findings were consistent with prior research that has concluded descriptive norms are influences of helmet wearing behaviour (Finoff et al., 2001; Haqverdi et al., 2015; Ikinger et al., 2016). Early studies on normative influence offer some explanations for the influence observed in the current study. Both the pressure to follow the behaviour of others (Asch, 1951; Barauskaite et al., 2018), as well as the perceived social approval of helmet wearing (Cialdini & Trost, 1998), contribute to the acceptance and adherence to social norms. Adhering to the common behaviour holds a reward for the individual, whether it be social approval or inclusion in the community, which reinforces the behaviour (Cialdini & Trost, 1998). Therefore, if equestrians perceive their peers to wear helmets often, they are more likely to do so themselves. Previous studies suggested a few other explanations for the observed relationship between descriptive norms and safety behaviour. Finoff et al (2001) suggested that modelling plays a role in the influence of peer behaviour, and is an especially strong influence on young people and adolescents. Ikinger et al (2016) believed the influence they observed

was particularly strong due to the closeness of the relationship between the participants and their equestrian peers. Within the current study, participants reported wearing a helmet a high proportion of the time when riding. Thus, the potential underrepresentation of riders who do not utilise helmets when riding may contribute to the findings.

The current study's findings challenged previous literature that concluded experience level influenced helmet wearing among equestrians (Ikinger et al., 2016). The current study did not find a relationship between rider experience level and proportion of helmet use, suggesting that no difference exists in helmet wearing behaviour between inexperienced or more experienced riders. It has been previously theorised that more experienced riders show less pronounced safety behaviour due to their perception of control and read equine behaviour (Haigh & Thompson, 2015), the belief that helmet use is associated with inexperienced riders (Condie et al., 1993), or possible prior minor injuries leading to an underestimation of the seriousness of injury risk (Ikinger et al., 2016). A possible explanation for the finding of the current study is the higher average experience level of participants. The average time participants had been involved in the equestrian community within this study was seventeen years. The underrepresentation of less experienced riders may contribute to the lack of observed relationships.

These findings are important as they add to the existing literature on what influences helmet wearing in equestrian sports. They highlight a strong starting point to increase the safety behaviours of young equestrians. Influential peers, such as riding instructors, can promote helmet wearing by modelling the behaviour to their students, increasing the safety behaviour within the equestrian community and decreasing the risk of harm.

Injunctive Norms and Safety Vest Use

Consistent with previous research, injunctive norms were found to have a significant correlation with the proportion of safety vest use among participants. Specifically, personal injunctive norms were found to have a significant positive relationship, and peer injunctive norms had a significant inverse relationship with the proportion of safety vest use. The findings conclude that participants with high agreeance to personal injunctive norms were more likely to report a higher proportion of safety vest usage, while participants with high agreeance to peer injunctive norms were

less likely to report a higher proportion of safety vest usage. In contrast to other studies, descriptive norms were not found to influence the proportion of safety vest use among participants. The relationship between personal injunctive norms suggests that participants' agreement with wearing safety vests while riding being accepted within the equestrian community influences their likelihood of wearing a safety vest. The inverse relationship between peer injunctive norms and safety vest use suggests that participants' perception that their peers believe wearing a safety vest while riding is accepted within the equestrian community influences their likelihood of using a safety vest.

The findings were consistent with previous research that has established that the perception of what is acceptable behaviour within a community, can influence health related behaviour (Rivis & Sheeran, 2003; Berger & Rand, 2008). Early studies on normative influence put forward explanations for the influence found within the current study. Our desire to fit in and remain within our chosen group, by conforming to what we perceive as socially acceptable behaviour, can influence our behaviour (Cialdini & Trost, 1998). By behaving in a way that we perceive is socially acceptable, we are more likely to be included in the in group, which may come with a reward or aid in meeting the individual's needs (Cialdini & Trost, 1998). Therefore, if it is believed that using a safety vest while riding is deemed socially acceptable by the community, individuals are more likely to use one themselves.

The observed finding that adherence to peer injunctive norms has an inverse relationship with the proportion of safety vest use contradicts the findings of previous studies. Previous studies have established that behaviour often increases after observing another engaging in the behaviour (Cialdini et al., 1990). It has also been previously established that safety equipment use often increases when those within the group also utilise it (Finnoff et al., 2001). In contrast, the proportion of safety vest use was lower in those with high agreeance to peer injunctive norms. That is, participants who believed their peers perceived wearing a safety vest while riding was socially acceptable were less likely to wear one themselves when riding. A few possible explanations for this finding exist. One possible explanation for the result is the low rate of safety vest use among participants. The average proportion of safety vest use among participants was only 21% of the time while riding. This finding is consistent with other studies that have concluded the overall use of safety vests is low among the

equestrian community (Guyton et al., 2013). Rider attitudes towards safety vests may be another possible explanation for the observed relationship. Concerns around the effectiveness, cost, and comfort of safety vests may explain why they are used less, even when peers believe they are socially acceptable.

The findings of the present study indicate that our proportion of safety vest use is influenced by what we believe is the acceptable norm. The findings of this study are important as they highlight an area that can be targeted to increase safety equipment use among equestrians. As previous research has established that our behaviour can be modified based on what we believe our peers perceive as the norm (Rivis & Sheeran, 2003), the findings of this study suggest that by targeting rider's perception of socially acceptable behaviour, the proportion of safety vest use can be increased. Given the high risk of the sport and the low reported use of safety vests, this may contribute to increasing overall safety in the equestrian community.

Personal Descriptive Norms and Safety Stirrup Use

The current study's finding that there is a correlation between social norms and safety stirrup use is consistent with previous research. Personal descriptive norms were found to have a significant positive correlation with the proportion of safety stirrup use among participants. More specifically, this result suggests that participants with greater agreeance that their peers use safety stirrups a high proportion of the time are more likely to report using safety stirrups a higher proportion of the time. Of the three types of social norms examined, only descriptive norms were found to influence the proportion of safety stirrup use. No other variables examined, including internal factors and demographic variables, were found to influence the proportion of safety stirrup use.

The findings were consistent with existing literature that the observed protective behaviour of peers is a key factor in altering the safety behaviour of other equestrians (Ikinger et al., 2016). As stated previously, the influence observed in the current study may be due to the pressure to follow others (Asch, 1951; Barauskaite et al., 2018). Early studies suggest that adherence to the common behaviour holds rewards for the individual, such as inclusion in the community or social approval, which reinforces the behaviour for the individual (Cialdini and Trost, 1998). The findings of both the

current study and previous studies suggest that the perception of what safety equipment is commonly used among most equestrians influences our likelihood of using that method of injury prevention.

Existing literature on what influences the use of safety stirrups is extremely limited. Despite the need for safety equipment to prevent injuries to the feet (Ceroni et al., 2007), safety stirrup use among equestrians remains low. The findings thus add insight to an area of safety improvement in equestrian sports that is lacking in the literature. The findings of the study are important as they have highlighted another area, peer safety stirrup use, that can be used to promote safety equipment used to increase the overall use of safety equipment in equestrian sports. Given the low reported use of safety stirrups among equestrians, the implications of these findings may contribute to increasing safety among equestrian sports.

Sensation Seeking and Helmet Use

Consistent with previous literature, the current study found that sensation seeking was significantly related to the proportion of participants' helmet use. A significant, negative relationship was found between sensation seeking and the proportion of helmet use. More specifically, participants who reported lower levels of sensation seeking were more likely to report using a helmet a higher proportion of the time, and individuals reporting higher levels of sensation seeking were more likely to report using a helmet a lower proportion of the time. Conscientiousness was not found to be significantly correlated to the proportion of helmet use.

The results were similar to those found in previous studies that examined sensation seeking and risky behaviour, including helmet wearing (Wong et al., 2010; Masson, Lamoureux, & De Guise, 2020). Those with high levels of sensation seeking are believed to feel less anxiety towards risky activities (Zuckerman et al., 1972), making them more likely to engage in risky behaviour. Therefore, participants with high levels of sensation seeking may perceive equestrian sports to be less dangerous than those with lower reported levels of sensation seeking. In contrast, individuals with lower levels of sensation seeking may perceive equestrian sports as dangerous, therefore making them more likely to make use of existing safety equipment. This perception of the safety and risk of the sport may then influence the participants' decision to use safety equipment.

These findings are significant as they highlight how the perception of risk influences the likelihood of using safety equipment in equestrian sports. The findings also display the internal influences on the use of safety equipment. This is significant as it adds to the existing literature on what internal factors influence equestrians' use of safety equipment, which can better inform possible interventions to increase safety in equestrian sports.

Other Findings

Contradictory to previous literature, rider experience level was not found to have a significant correlation to the proportion of safety equipment use among any of the three types examined. Haigh and Thompson (2015) believed the reason more experienced riders showed less pronounced safety behaviour was due to their increased perception of control and improved ability to read equine behaviour over their less experienced peers. Ikinger et al (2016) also suggested this may be due to experiences with minor injuries leading to a decreased perception of risk. The findings of this study may be due to the higher average experience levels of the participants. Within the present study, participants had been involved with horses for an average of seventeen years. Given the lower number of less experienced participants, the data collected may not be representative of the true population, which may be the explanation for the lack of relationship between experience level and safety equipment use.

Primary discipline was also not found to correlate with the proportion of safety equipment use among any of the three types examined, in contrast with current literature. It has been previously established that the various disciplines of equestrian sport hold their own views on safety equipment use. Eventers are reported to utilise safety vests more than other disciplines (Whitlock, 1999). Among the rough stock and western riding community, safety equipment use is notably lower (Ross et al., 2010). Previous findings have been attributed to the varying attitudes held by riders of each discipline, where some perceive safety equipment to not align with the norms of their discipline (Ross et al., 2010). A possible explanation for this finding is the lower number of riders within western disciplines, where safety equipment is less accepted (Ross et al., 2010). In the present study, only approximately 4% of participants reported a western discipline as their primary discipline, while over 70% of the participants reported an English discipline being their primary one. The overrepresentation

of riders from disciplines where safety equipment use is more the norm may contribute to the lack of relationship found between discipline and the proportion of safety behaviours.

Strengths, Limitations, and Future Direction

This study further explored what social norms influence various safety behaviours among equestrians. The results conclude that the most influential type of social norm differs depending on the safety equipment type, with personal descriptive norms influencing helmet and safety stirrup wearing most significantly, and personal and peer injunctive norms influencing safety vest use most significantly. For both types of norms, as scores of agreeance with the norm increased, so did the participants' proportion of safety equipment use. The study was also able to conclude that the personality trait sensation seeking also influences helmet wearing. Participants who reported higher levels of sensation seeking were more likely to report a lower proportion of helmet use than those with low levels of sensation seeking. This study adds to existing literature on what factors influence safety equipment compliance in equestrian sports. By examining various social norms, this study adds more understanding to what external factors influence safety behaviour. The inclusion of internal influences, such as sensation seeking, also furthers the understanding. Previous literature has focused on helmet use, whereas the present study expanded understanding by including a variety of safety equipment types. Most importantly, the findings of this study give readers a new perspective on how equestrians' peers can influence their use of safety equipment. The conclusion that both peer behaviour and perception of what is the acceptable norm can influence various safety equipment use can help inform intervention to increase overall safety equipment use in equestrian sports.

Several limitations exist within the present study. Firstly, the small sample size must be taken into consideration when applying the findings of the study. Given the low number of participants, there is an increased risk of type II error. A second limitation of the study is the lack of generalisability of the results due to the small sample size. As there was a limited number of participants in the study, it may not be an accurate representation of the wider population of equestrians. This limitation is highlighted again in the lack of diversity within the sample. Participants in the present study were largely female and were from only Canada and New Zealand. The lack of male participants within the study again makes it difficult to generalise the results to a larger

population. Another limitation of the present study exists within the design. Self report data was used and may have lower reliability due to participants potentially not answering the questions honestly. The correlational design of the study also limits the conclusions of the study, as it is only able to draw correlational conclusions, not causal conclusions. The present study also was unable to take into account other factors that have been established as influences of helmet wearing, including cost and comfort. A final limitation of the present study is the inclusion of all safety equipment in the injunctive norms measure. Measures of injunctive norms were not separated by safety equipment type, which risks interference with other safety equipment norms among the data.

The present study builds on existing literature examining what influences equestrians' safety behaviours. To address the present limitations, future research can investigate the subject among a larger, more diverse population. As previous research has noted a difference in the proportion of safety equipment use among men versus women, including more male participants within a larger sample in future research may provide valuable insight into individual differences. Future research measuring personal and peer injunctive norms specific to each safety behaviour separately will also reduce the limitations of the present study. Given the difference in proportion of use between the three safety equipment types examined, it will be important for future research to investigate injunctive norms separately so as to accurately determine the influence the safety equipment specific norms have on safety equipment use. Finally, to further the results found within this study, future research may wish to include other variables that have been determined to influence the proportion of safety use, including cost, comfort, and attitudes.

Conclusion

This study was able to conclude that both descriptive and injunctive norms influence equestrians' proportion of safety equipment use. The present study was able to conclude that personal descriptive norms influenced helmet wearing and safety stirrup use, while personal and peer injunctive norms influenced safety vest use. It was also concluded that levels of sensation seeking negatively influenced helmet use. Some of the findings supported previous research that has established that peer's own safety behaviour influenced the safety behaviour of others in sport, as well as equestrian specific research that concluded the use of safety equipment is influenced by the

perception of peers. However, contradictory findings were also found that the observation of peer behaviour only influenced helmet wearing, and not the use of safety vests and safety stirrups. It was also found that personal factors, such as conscientiousness and sensation seeking, and other variables including discipline and experience level, did not influence most safety equipment use. The present study adds to the current literature on the influences of safety behaviour among equestrians. These findings are thus important as they add to the existing literature on influences of safety equipment use, which highlights an area that can be targeted to increase the overall proportion of safety equipment use within a dangerous sport.

References

- Asch, S. E. (1951). Effects of group pressure upon the modification and distortion of judgments. In H. Guetzkow (Ed.), *Groups, leadership and men; research in human relations* (pp. 177–190). Carnegie Press.
- Aronson, H., & Tough, S. C. (1993). Horse-related fatalities in the Province of Alberta, 1975–1990. *The American Journal of Forensic Medicine and Pathology*, 14(1), 28-30. [10.1097/00000433-199303000-00006](https://doi.org/10.1097/00000433-199303000-00006)
- Ashton, M. C., & Lee, K. (2005). Honesty-humility, the Big Five, and the five-factor model. *Journal of personality*, 73(5), 1321-1354. <https://doi.org/10.1111/j.1467-6494.2005.00351.x>
- Ajzen, I. (2002). Constructing a TPB questionnaire: Conceptual and methodological considerations.
- Ball, C. G., Ball, J. E., Kirkpatrick, A. W., & Mulloy, R. H. (2007). Equestrian injuries: incidence, injury patterns, and risk factors for 10 years of major traumatic injuries. *The American Journal of Surgery*, 193(5), 636-640. <https://doi.org/10.1016/j.amjsurg.2007.01.016>
- Barauskaite, D., Gineikiene, J., Fennis, B. M., Auruskeviciene, V., Yamaguchi, M., & Kondo, N. (2018). Eating healthy to impress: How conspicuous consumption, perceived self-control motivation, and descriptive normative influence determine functional food choices. *Appetite*, 131, 59-67. <https://doi.org/10.1016/j.appet.2018.08.015>
- Barone, G.W. M.D.; Rodgers, B.M. M.D.. Pediatric Equestrian Injuries: A 14-year Review. *The Journal of Trauma: Injury, Infection, and Critical Care* 29(2):p 245-247, February 1989.
- Baumgartner, S. E., Valkenburg, P. M., & Peter, J. (2011). The influence of descriptive and injunctive peer norms on adolescents' risky sexual online behavior. *Cyberpsychology, Behavior, and Social Networking*, 14(12), 753-758. <https://doi.org/10.1089/cyber.2010.0510>
- Berger, J., & Rand, L. (2008). Shifting signals to help health: Using identity signaling to reduce risky health behaviors. *Journal of Consumer Research*, 35(3), 509–518. <https://doi.org/10.1086/587632>
- Bixby-Hammett, D. M. (1992). Pediatric equestrian injuries. *Pediatrics*, 89(6), 1173-1176. <https://doi.org/10.1542/peds.89.6.1173>

- Bixby-Hammett, D., & Brooks, W. H. (1990). Common injuries in horseback riding: a review. *Sports Medicine*, 9, 36-47. <https://doi.org/10.2165/00007256-199009010-00004>
- Bogg, T., & Roberts, B. W. (2004). Conscientiousness and health-related behaviors: a meta-analysis of the leading behavioral contributors to mortality. *Psychological bulletin*, 130(6), 887. <https://doi.org/10.1037/0033-2909.130.6.887>
- Ceroni, D., De Rosa, V., De Coulon, G., & Kaelin, A. (2007). The importance of proper shoe gear and safety stirrups in the prevention of equestrian foot injuries. *The journal of foot and ankle surgery*, 46(1), 32-39. <https://doi.org/10.1053/j.jfas.2006.10.010>
- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, 58(6), 1015–1026. <https://doi.org/10.1037/0022-3514.58.6.1015>
- Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A focus theory of normative conduct: A theoretical refinement and reevaluation of the role of norms in human behavior. In *Advances in experimental social psychology* (Vol. 24, pp. 201-234). Academic Press. [https://doi.org/10.1016/S0065-2601\(08\)60330-5](https://doi.org/10.1016/S0065-2601(08)60330-5)
- Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity and compliance. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (pp. 151–192). McGraw-Hill.
- Condie, C., Rivara, F. P., & Bergman, A. B. (1993). Strategies of a successful campaign to promote the use of equestrian helmets. *Public health reports* (Washington, D.C. : 1974), 108(1), 121–126.
- Finnoff, J. T., Laskowski, E. R., Altman, K. L., & Diehl, N. N. (2001). Barriers to bicycle helmet use. *Pediatrics*, 108(1), e4-e4. <https://doi.org/10.1542/peds.108.1.e4>
- Firth, J.L. (1985). Equestrian Injuries. In (eds) Schneider RC, Kennedy JC, Plan ML: *Sports injuries: mechanisms, prevention and treatment*. Baltimore: Williams and Wilkins.
- Guyton K, Houchen-Wise E, Peck E, Mayberry J. (2013). Equestrian Injury is Costly, Disabling, and Frequently Preventable: The Imperative for Improved Safety Awareness. *The American Surgeon*TM.79(1):76-83. doi:10.1177/000313481307900134

- Haigh, L., & Thompson, K. (2015). Helmet Use Amongst Equestrians: Harnessing Social and Attitudinal Factors Revealed in Online Forums. *Animals : an open access journal from MDPI*, 5(3), 576–591. <https://doi.org/10.3390/ani5030373>
- Hansen, E. B., & Breivik, G. (2001). Sensation seeking as a predictor of positive and negative risk behaviour among adolescents. *Personality and individual differences*, 30(4), 627-640. [https://doi.org/10.1016/S0191-8869\(00\)00061-1](https://doi.org/10.1016/S0191-8869(00)00061-1)
- Haqverdi, M. Q., Seyedabrishami, S., & Groeger, J. A. (2015). Identifying psychological and socio-economic factors affecting motorcycle helmet use. *Accident Analysis & Prevention*, 85, 102-110. <https://doi.org/10.1016/j.aap.2015.09.007>
- Havlik H. S. (2010). Equestrian sport-related injuries: a review of current literature. *Current sports medicine reports*, 9(5), 299–302. <https://doi.org/10.1249/JSR.0b013e3181f32056>
- Hedenborg, S., & White, M.H., (2012). Changes and variations in patterns of gender relations in equestrian sports during the second half of the twentieth century, *Sport in Society*, 15:3, 302-319. <http://dx.doi.org/10.1080/17430437.2012.653202>
- Hobbs, G. D., Yealy, D. M., & Rivas, J. (1994). Equestrian injuries: a five-year review. *The Journal of emergency medicine*, 12(2), 143-145. [https://doi.org/10.1016/0736-4679\(94\)90690-4](https://doi.org/10.1016/0736-4679(94)90690-4)
- Hunt, H., & Mills, N. J. (1989). The protection of horse riders in impacts with the ground. In *International IRCOBI conference* (pp. 157-68).
- Ikinger, C. M., Baldamus, J., & Spiller, A. (2016). Factors influencing the safety behavior of German equestrians: attitudes towards protective equipment and peer behaviors. *Animals*, 6(2), 14. <https://doi.org/10.3390/ani6020014>
- Ingemarson, H., Grevsten, S., & Thorean, L. (1989). Lethal horse-riding injuries. *Journal of Trauma and Acute Care Surgery*, 29(1), 25-30. [10.1097/00005373-198901000-00005](https://doi.org/10.1097/00005373-198901000-00005)
- Krieger, H., Neighbors, C., Lewis, M. A., LaBrie, J. W., Foster, D. W., & Larimer, M. E. (2016). Injunctive norms and alcohol consumption: A revised conceptualization. *Alcoholism: Clinical and Experimental Research*, 40(5), 1083-1092. <https://doi.org/10.1111/acer.13037>
- Masson, M., Lamoureux, J., & De Guise, E. (2020). Self-reported risk-taking and sensation-seeking behavior predict helmet wear amongst Canadian ski and snowboard instructors. *Canadian*

- Journal of Behavioural Science/Revue canadienne des sciences du comportement, 52(2), 121.
DOI:10.1037/cbs0000153
- Mottola, F., Senese, V. P., Perugini, M., Gnisci, A., & Sergi, I. (2023). The Role of HEXACO Personality Traits on Predicting Problematic and Risky Behaviors in Adolescents. In Applications of Artificial Intelligence and Neural Systems to Data Science (pp. 303-316). Singapore: Springer Nature Singapore. DOI:10.1007/978-981-99-3592-5_29
- Nelson, D. E., & Bixby-Hammett, D. (1992). Equestrian injuries in children and young adults. American journal of diseases of children, 146(5), 611-614.
doi:10.1001/archpedi.1992.02160170091022
- Nelson, D. E., Rivara, F. P., & Condie, C. (1994). Helmets and horseback riders. American journal of preventive medicine, 10(1), 15-19. [https://doi.org/10.1016/S0749-3797\(18\)30641-X](https://doi.org/10.1016/S0749-3797(18)30641-X)
- Pepitone, A. (1976). Toward a normative and comparative biocultural social psychology. Journal of Personality and Social Psychology, 34(4), 641. <https://doi.org/10.1177/097133368900100103>
- Opp, K. D. (1982). The evolutionary emergence of norms. British Journal of Social Psychology, 21(2), 139-149. <https://doi.org/10.1111/j.2044-8309.1982.tb00522.x>
- Reid, A. E., Cialdini, R. B., & Aiken, L. S. (2010). Social norms and health behavior. Handbook of behavioral medicine: Methods and applications, 263-274. https://doi.org/10.1007/978-0-387-09488-5_19
- Rivis, A., & Sheeran, P. (2003). Descriptive Norms as an Additional Predictor in the Theory of Planned Behaviour: A Meta-Analysis. Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues, 22(3), 218–233.
<https://doi.org/10.1007/s12144-003-1018-2>
- Roberts, B. W., Jackson, J. J., Fayard, J. V., Edmonds, G., & Meints, J. (2009). Conscientiousness. In M. R. Leary, & R. H. Hoyle (Eds.), Handbook of Individual Differences in Social Behavior (pp. 369-381). The Guilford Press.
- Ross, D. S., Ferguson, A., Bosha, P., & Cassas, K. (2010). Factors that prevent roughstock rodeo athletes from wearing protective equipment. Current sports medicine reports, 9(6), 342-346.
DOI: 10.1249/JSR.0b013e3181fc7357

- Sherif M. (1936). The psychology of social norms. Harper & Brothers.
- Sherif, M. (1937). An experimental approach to the study of attitudes. *Sociometry*, 1(1/2), 90-98.
<https://doi.org/10.2307/2785261>
- Silver, J. R., & Parry, J. M. (1991). Hazards of horse-riding as a popular sport. *British Journal of Sports Medicine*, 25(2), 105. doi: 10.1136/bjism.25.2.105
- Solomon, S., Greenberg, J., & Pyszczynski, T. (1991). A terror management theory of social behavior: The psychological functions of self-esteem and cultural worldviews. In *Advances in experimental social psychology* (Vol. 24, pp. 93-159). Academic Press.
[https://doi.org/10.1016/S0065-2601\(08\)60328-7](https://doi.org/10.1016/S0065-2601(08)60328-7)
- Triandis, H. C. (1994). *Culture and social behavior*. McGraw-Hill Book Company.
- Watt, G. M., & Finch, C. F. (1996). Preventing equestrian injuries. Locking the stable door. *Sports medicine (Auckland, N.Z.)*, 22(3), 187–197. <https://doi.org/10.2165/00007256-199622030-00005>
- Whitlock M. R. (1999). Injuries to riders in the cross country phase of eventing: the importance of protective equipment. *British journal of sports medicine*, 33(3), 212–214.
<https://doi.org/10.1136/bjism.33.3.212>
- Whitlock, M. R., Whitlock, J., & Johnston, B. (1987). Equestrian injuries: a comparison of professional and amateur injuries in Berkshire. *British journal of sports medicine*, 21(1), 25–26. <https://doi.org/10.1136/bjism.21.1.25>
- Williams, F., & Ashby, K. (1992). Horse related injuries. *Hospital*, 1989(93).
- Wong, J. T., Chung, Y. S., & Huang, S. H. (2010). Determinants behind young motorcyclists' risky riding behavior. *Accident Analysis & Prevention*, 42(1), 275-281.
<https://doi.org/10.1016/j.aap.2009.08.004>
- Zuckerman, M., Kolin, E. A., Price, L., & Zoob, I. (1964). Development of a sensation-seeking scale. *Journal of consulting psychology*, 28(6), 477. <https://doi.org/10.1037/h0040995>
- Zuckerman, M., Bone, R. N., Neary, R., Mangelsdorff, D., & Brustman, B. (1972). What is the sensation seeker? Personality trait and experience correlates of the Sensation-Seeking Scales. *Journal of consulting and clinical psychology*, 39(2), 308.

