

THE EXPERIENCES OF WOMEN COMPETITIVE ROAD CYCLISTS:  
A QUALITATIVE STUDY

A THESIS

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## ABSTRACT

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Cycling has been recognized in scientific research for numerous benefits to well-being. The benefits to cycling are clear, but barriers are present for women who wish to participate in the sport. While there have been substantial gains in understanding aspects of cycling, there remains a lack of in-depth phenomenological descriptions from a woman's perspective, as the sport is dominated by men. This study explored the lived experiences of 8-12 women competitive road cyclists in relation to their thoughts, feelings, and actions. This inquiry used interpretive phenomenological analysis of semi-structured interviews. The analysis revealed several themes, including sexist attitudes and behaviors, gendered barriers such as size, interpersonal dynamics between cyclists, and inclusive transitions for women competitive road cyclists. These findings suggest that cycling may be a microcosm for broader societal trends, and implications for reducing gendered cycling barriers, promoting women cyclists, and creating an inclusive road cycling community are discussed.

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## CHAPTER I

### INTRODUCTION

#### **Background**

Bicycles as we know them today, with two equal-sized wheels and pedals connected to a chain, emerged in England in 1885, and the creator, John Starley, deemed them safety bicycles (Heijmans & Mallon, 2011). The safety bicycle began gaining attention across countries, with individuals holding mixed views of this new technology. Some saw this machine as a symbol of modernity or a ticket to freedom, while others saw it as a passing fad that might have societal repercussions, particularly for women and family structure (Mignot, 2016; Strange 2002). Despite ambivalent social opinions, the sport of cycling made its way to the United States. In 1888, women were joining bicycle clubs in Chicago, and in 1889, the first six-day race for women took place in New York's Madison Square Garden (Heijmans & Mallon, 2011). In 1898, five years prior to the first Tour de France, three women competed in an endurance cycling contest with the winner, Jane Lindsay, completing 600 miles in 72 hours (Heijmans & Mallon., 2011).

Simultaneously in the 1890s, women cyclists began to receive backlash for their participation in the sport, mirroring the experiences of women athletes in other sports, such as pedestrianism (Christie-Robin, Orzada, & Lopez-Gydosh, 2012; Gems, 1993; Shaulis, 1996; Strange, 2002). In the society that was dominated by men, a delegitimization of women cyclists initially occurred in journals. Shortly after, medical practitioners began reporting the physical dangers of women riding bicycles (Boutilier &



San Giovanni, 1983; Shaulis, 1996). Some women cyclists continued to participate in the sport in the midst of gender-based controversy, but even today, cycling still remains a sport dominated by men (De Geus et al., 2014; Heesch, Sahlqvist, & Garrard, 2012; Ogilvie & Goodman, 2012; Sá, Duran, Tainio, Monteiro, & Woodcock, 2016). Despite the level of women's participation in cycling, the benefits of the sport are obtainable for all who choose to engage in riding bicycles.

Cycling benefits cover a range of aspects that are linked to well-being such as improving physical health, psychological functioning, social connections, and transportation ability (De Geus, Bourdeaudhuij, Jannes, & Meeusen, 2008; Götschi, Garrard, & Giles-Corti, 2015; Handy, van Wee, & Kroesen, 2014). While physical benefits such as fitness and decreased risk of disease are often noticed, other positive results from cycling are commonly unrecognized. Mental health improvements, such as increased self-esteem and decreases in depression, resulting from psychological and social advantages to cycling have been demonstrated (Barton & Pretty, 2010; Brown, O'Connor, & Barkatsas, 2009). Cycling's influence on transportation has also been examined with results concluding enhancements, such as decreased traffic congestion, are present for both cyclists and cities alike (Tapp, Davis, Nancarrow, & Jones, 2016). It is evident that the sport of cycling has numerous benefits; however, gender-specific barriers hinder the participation of women cyclists.

Women cyclists experience obstacles either they must overcome or about which they must promote awareness and change if they wish to engage in cycling. One barrier that women face is that few women cycle when compared to men, as cycling is a sport

dominated by men (De Geus et al., 2014; Heesch et al., 2012; Ogilvie & Goodman, 2012; Sá et al., 2016). Without the norm of women participating, woman cycling is not modeled, which, in turn, simultaneously decreases the likelihood that women will cycle and increases the likelihood that individuals who do not identify as women will continue to conceptualize the sport of cycling without being mindful of the experience of women cyclists.

In addition, perceptions of safety and risk are influenced by gender. Women cyclists generally report higher perceptions of risk and lower perceptions of safety when compared to men cyclists (Félonneau et al., 2013; Vanparijs, Int Panis, Meeusen, & De Geus, 2015). Perceptions of safety and risk, which are reinforced by a realistic lack of infrastructure, is a barrier that women cyclists experience and either overcome or are prevented from participating (Garrard, Rose, & Lo, 2008). Additional barriers to cycling are also present for women such as social criticism and expectations, stigma in the sport of cycling, and harassment (Dickinson, Kingham, Copsey, & Hougie, 2003; Heesch, Sahlqvist, & Garrard, 2011; Horton, Rosen, & Cox, 2007; Lucas, 2012). Women cyclists are at a disadvantage in obtaining the benefits from cycling as a result of gender-specific barriers. While the benefits of the sport have been demonstrated in numerous studies, research focusing on the barriers and needs of women cyclists is lacking.

### **Statement of Purpose**

The purpose of this study was to understand the experiences of women competitive road cyclists (WCRC) using a qualitative approach. This study aimed to establish phenomenological insight about the thoughts, feelings, and actions associated

with experiences and expectations that women are faced with in the sport of competitive road cycling. While this was an exploratory study, understanding the perspective of women cyclists provided crucial insight into barriers that hinder women's participation in cycling, which in turn, may serve as the initial step toward changing the accessibility and environment of the sport.

### **Definition of Terms**

*Attack or Attacking:* An aggressive, high-speed acceleration in an attempt to break free from other riders in the peloton. For example, on flat roads, the cyclist who is attacking rides alongside other riders in the pack, when the attacking cyclist reaches the rider at the front of the peloton, their cycling speed is too fast for the pack to easily react. Therefore, the attacking cyclist typically separates from the peloton in which they were previously cycling (McGann, 2019; Road Bike Rider, 2018).

*Bib ("Bibshorts"):* Cycling shorts with a foam pad to increase comfort in the saddle and shoulder straps. The shoulder straps serve to remove the need for an elastic waistband, which may cause discomfort to cyclists (Barton, 2011).

*Bonk ("Blow Up"):* A loss of energy and feeling of weakness in the legs as a cyclist's body runs out of sustenance. Often cyclists who bonk are unable to keep pace in the group (Barton, 2011).

*Chamois:* Pronounced as "shammy," this foam padding serves as cushions in cycling shorts or bibs. Chamois help to wick sweat from the cyclist and minimize friction, which reduces pressure points and chafing. Most chamois today are made of synthetic fabric

with antibacterial properties in an effort to ensure comfort and protection for cyclists (O'Brien, 2019).

*Clip-Ins (“Clipless Pedals”)*: Modern pedals in which the cyclist’s shoe is attached to the pedal. Cyclists release their shoes by slightly twisting (Heijmans & Mallon, 2011).

*Criterium (“Crit”)*: Mass start road races consisting of multiple laps on a course that is typically 2-5 kilometers long (Heijmans & Mallon, 2011).

*Individual Time Trial*: Road races in which each rider begins the course in an individual interval. Cyclists are then rank ordered by the time it took to complete the course (Heijmans & Mallon, 2011).

*Jersey*: A cycling top typically cut longer in the back to allow for pockets in which to store snacks, tools, and other supplies (Barton, 2011).

*Kit*: Combination of cycling attire often including bibs, jerseys, socks, and gloves (Barton, 2011).

*Lycra (“Spandex”)*: A stretchy, man-made, skin-tight fabric that allows freedom of movement. Cycling garments are often made of this material to allow for a light, comfortable feeling for cyclists; this fabric wicks, or absorbs, sweat from the skin. The close-fitting material prevents snags while simultaneously supporting muscles (Barton, 2011).

*Mass Start Races*: All cyclists begin mass start races at the same time and ride a specified course in this type of road race. The winner of mass start races is the first cyclist to cross the finish line (Heijmans & Mallon, 2011).

*Peloton (“Pack” or “Field”)*: A tightly-bunched group of cyclists in a race or large cycling event (Barton, 2011; Road Bike Rider, 2018).

*Pulling or Pulling the Pack*: Riding at the front of the group, which breaks the wind for other cyclists in the group. The cyclist who is pulling the group is expending more energy than the other riders in the group, which is why road cyclists often take turns pulling (Marsh, 2019; Road Bike Rider, 2018).

*Rally*: A type of road racing event in which a USA Cycling (USAC) license is not required for participation (Barton, 2011).

*Road Racing*: Along with mountain biking and BMX, road racing is one of the disciplines of cycling. Road races take place outside on roads, and different types of road races include stage races, mass start races, criteriums, individual time trials, and team time trials (Heijmans & Mallon, 2011).

*Stage Races*: A type of road race divided into stages, which take place over days or weeks. The Tour de France, Giro d’Italia, and Vuelta a España are examples of three-week-long grand tour stage races, but stage races can also be as short as two days. Stage races generally consist of a variety of stages such as mountainous, flat stages, individual time trials, and team time trials (Heijmans & Mallon, 2011).

*Team Time Trials*: Mirroring individual time trials, team time trials consist of several riders working together to achieve the quickest time for riding a specific course. The cycling team ideally stays together to aid in drafting and pulling on the front (Heijmans & Mallon, 2011).

## CHAPTER II

### LITERATURE REVIEW

In this review, gendered differences in sports and a history of women in cycling are covered as a broad historical framework. Following that, the benefits and barriers to the sport of cycling are discussed. The literature review concludes with a rationale for the proposed investigation and statement of the primary research question.

#### **Gendered Differences in Sports**

One of the first noted examples of United States (US) women actively taking part in competitive sports took place during the 19th century in the sport of pedestrianism (professional walking), which was gaining in popularity at the time. Most of the participants in this sport were men, but girls as young as seven and women up to the age of 85 competed in pedestrianism as early as 1816 (Shaulis, 1996). Prize money, notoriety, and legitimacy of women's role in sports were all clear incentives for these women (Shaulis, 1996). Unfortunately, common ideologies regarding morality and the role of women in society and the family prevented many women from attending sporting events, taking part in rough or aggressive sports, and even using sports as a form of entertainment (Gems, 1993). Despite these gendered beliefs, women's sports gained comparable media attention to men's events as the years progressed, with an article about a contest between a woman pedestrian and a newspaper editor appearing in the New York Times in 1875 (Shaulis, 1996).

A delegitimization of women athletes began to occur at the end of the 19th century. Humor, sarcasm, and scorn were used by journalists to marginalize women pedestrians, and fashion comments often took priority over the race results. Some suggested that if a woman were to engage in pedestrianism, she should not only have endurance capabilities, but that she should also be skilled in singing and entertaining. Others minimized the accomplishments of women athletes by stating that women's contests were rigged or fraudulent. Trivialization was also accomplished by the medical community endorsing women's frailty. Both medical and moral arguments were made to end women's participation in sports based on health concerns (Shaulis, 1996). Universities and schools continued the delegitimization over the years, with specific rules forbidding women from endurance walking and running. Even in the Olympics, female running was not allowed until 1928 (Boutilier & San Giovanni, 1983).

Over the next 30 years, little attention, if any, was given to women's sports. Only men competed in sports such as marathons because of concerns as unfounded as the belief that a woman's reproductive organs would fall out as a result of running or playing sports. In 1967, Kathrine Switzer decided that she was willing to conquer the risks and worries about endurance sports that had been taught her whole life. Switzer signed up for the Boston Marathon under the guise of a man, using only her initials as opposed to her full name. Four miles into the race, she was yelled at and physically pushed by a race official because running was considered inappropriate for women. Switzer completed the marathon, leading to an outcry for gender equality (Pauline, 2014). Today women are allowed to compete in endurance sports, but myths about the perceived weakness of

women's body continue. In the United States, the physical strength and power of women is often still undermined due to beliefs about the meaning and implications of femininity (Roth & Basow, 2004). It is clear that misconceptions about women in sports have been pervasive. One sport in particular that has not been thoroughly researched is cycling.

### **History of Women in Cycling**

Bicycles as we know them today emerged in the 1880s, and because of their speed and transportation abilities, they were seen as a symbol of modernity (Mignot, 2016). Most Americans thought of bicycles as a fleeting trend in the early 1880s. By 1895, installment plans and secondhand stores increased the availability of bicycle purchases and expanded the market. The bicycle produced industry worth 75 million dollars, and its popularity in US society was growing (Strange, 2002).

During the late 1800s, men dominated society. For many women, bikes were a method of gaining freedom. Cycling was an activity that women could engage in unchaperoned, as men and women cyclists were equally unbridled contrary to other situations in daily life (Luetjens, 2013). By the second half of the 1890s, bicycles began to expand the perceived social role of women past domestic obligations in the minds of some individuals, but this freedom raised questions for others (Christie-Robin et al., 2012). The independence, body autonomy, individuality, and strength that women experienced from cycling fueled a new conceptualization of what feminine virtue entailed (Ebert, 2010), and the rights of women began to come into question by many as a result of cycling (Strange, 2002). While some members of society believed that women should



have more rights, other individuals believed that women should not be allowed to be free and physically active (Strange, 2002).

In an 1896 publication of *The Forum*, a well-known monthly issue of societal commentary, historian Joseph Bishop was concerned that the unprecedented popularity of cycling had begun to shift the appearance of US society, particularly for women. In the same issue of *The Forum*, Bishop discussed the health and recreational benefits from the new sport, making his excitement for the invention evident. While Bishop did not generalize benefits across genders, making it unclear whether he believed women were in danger from bicycles, there was no mention of the inability for women to achieve benefits (Strange, 2002). The debate over the duties and morality of women surged, with inclusion of women in cycling first being celebrated and then, later, receiving social backlash fueled by men. Anti-bicyclers argued that riding bikes threatened a women's social role and intrinsically feminine identities because women cyclists were considered stubborn, domineering, and drunk on the freedom that bicycles allowed. These traditionally gendered beliefs served to maintain men's power and control over women's behavior, and any depictions of women outside of the domestic realm was shunned by traditional US society (Christie-Robin et al., 2012).

Even personal choices such as attire and sexuality, were used as reasons for prohibiting women from cycling at the end of the 19th century. When women did cycle, the pedaling movement was deemed unattractive and inelegant, so dresses or long skirts were still a necessity for women because men's opinions regarding women's aesthetic during cycling was more valued than the independent locomotion of women (Ebert,

2010). As women refused to give up the freedom that cycling provided, changes in socially acceptable women's dress ensued at the turn of the 19th century. It was hazardous for women to cycle when their dresses or skirts could jam the bike components and send the rider flying off the bike. More masculine apparel allowed for a safe range of leg movements began to become more commonplace for women cyclists. Yet at the same time, publications like an 1896 cycling manual implored women cyclists to be graceful and present themselves well at all times on the bicycle (Strange, 2002).

Late 19th century arguments in the medical and journalistic settings as well as a greater societal level, the belief that women's sexual health was at risk, served to minimize the benefits of cycling and maximize attempts at controlling women. Bicycles were thought to increase women's masturbation, decrease sexual purity, and undermine the definition of femininity. These unfounded concerns were combated by the alternative belief that cycling benefitted women's bodies. The power and strength that resulted from riding was argued to make women stronger and more prepared for their role as mothers (Christie-Robin et al., 2012; Garvey, 1995).

After the turn of the 19th century, the new innovation of the horseless carriage began to draw the attention of the US public, but the societal changes in dress that were produced by bicycles remained. Although radical social changes did not begin to actualize for another century when the feminist movement occurred, bicycles were one of the first steps in shifting the societal conceptualizations of gender roles (Strange, 2002). Cycling continues to be a niche-market today, and men still dominate the sport (De Geus et al., 2014; Heesch et al., 2012; Ogilvie & Goodman, 2012; Sá et al., 2016). Despite

controversies, today it is clear that cycling imparts several benefits. These benefits may be physiological, emotional, social, or practical and are evidenced cross-culturally.

### **Benefits of Cycling**

Cycling is one form of exercise that has multiple advantages to participants, but US research is limited, particularly for women. This research becomes increasingly scarce when the cycling population is further stratified by separating types of cycling such as commuter cycling, competitive cycling, and mountain biking. Thus, to obtain a clearer conceptualization of cycling benefits, various types of cycling research taking place in the US and abroad are examined. Physical health, psychological well-being, social connections, and transportation are all realms in which cycling has demonstrated clear benefits. Benefits related to each of these areas will be reviewed next.

#### **Physical Benefits**

Unfortunately, only around half of the adults in the US meet Physical Activity Guidelines for aerobic exercise, and a mere one-fifth meet the Physical Activity Guidelines for both aerobic and muscle-strengthening activity (Center for Disease Control, 2017). Cycling is a moderate to strenuous method of aerobic and muscle-strengthening physical activity. Engaging in this type of exercise leads to numerous physical health advantages including decreased risk of heart disease, type 2 diabetes, and certain cancers (Götschi et al., 2015; Handy et al., 2014; Oja et al., 2011).

Götschi et al. (2015) conducted a research review examining the impact of daily cycling in the US on health. Risks of riding, such as crashes and air pollution, were compared to health benefits. A vast number of health benefits were found and included

both physical and psychological well-being. Life expectancy, cardio-respiratory fitness, bone health, sleep quality, body composition, quality of life, and cognitive functioning were all improved due to cycling while the risk of coronary heart disease, high blood pressure, stroke, type-2 diabetes, metabolic syndrome, colon and breast cancer, and depression were reduced. These health benefits were found to outweigh potential deterrents to cycling. This suggests that the physical activity incurred from cycling results in health outcomes that are worth pursuing. While future safety improvements would continue to lower risks for cyclists, current levels of infrastructure and pollution allow physical benefits to nonetheless outshine risks for cyclists (Götschi et al., 2015).

Hartog, Boogaard, Nijland, and Hoek (2011) reviewed whether health benefits also outweighed risks for cyclists in the Netherlands. Studies examining air pollution, traffic accidents, and physical activity from cycling were included. Mortality rates were quantified using life-years gained or lost for 500,000 individuals transitioning from vehicle to bicycle for transport. Using bicycles for transportation on short trips five times a week was found to increase life expectancy by 3-14 months, even when reductions for air pollution (.8-40 days lost) and traffic accidents (5-9 days lost) were considered (Hartog et al., 2011). In addition, societal benefits of a reduction in pollution and greenhouse gas emissions and less traffic accidents were found. These findings suggest that the health benefits of cycling are substantially greater than the risks associated with cycling for transport (Hartog et al., 2011).

Oja et al. (2011) conducted a systematic review of 16 cycling-specific studies in an attempt to update the evidence on the health benefits of cycling. Both cross-sectional

and longitudinal studies demonstrated a strong association between cycling and increased muscle fitness and increased cardio-respiratory endurance for children and adolescents. Also, it was concluded that the cardiovascular risk factors of heart disease, high blood pressure, and risk of early death were reduced for adults who cycled (Oja et al., 2011). These findings verify that physical health improvements result from cycling.

Fishman, Schepers, and Kamphuis (2015) quantified health and economic benefits to cycling in the Netherlands using the Health Economic Assessment Tool (HEAT), which was developed by the World Health Organization. HEAT used cycling or walking levels to estimate mortality rates. The Netherlands has the highest rates of cycling in the world (averaging 74 minutes per week for each individual), and results demonstrated that 6,500 deaths per year were prevented due to the high cycling levels. It was also found that without cycling, people in the Netherlands would die six months earlier on average. In addition to finding health benefits, financial incentives were discovered. The total economic benefits from cycling prevented deaths were found to be 19 billion euros per year. This suggests that the physical benefits to cycling reach beyond increases in health well-being and physical improvements from cycling have financial and implications as well that often go unrecognized.

Handy et al. (2014) explored the research needs and challenges to promoting cycling in the US by analyzing empirical evidence of current rates of cycling, the benefits of cycling, and promising strategies to increase participation in cycling. A physical benefit was improved cardiovascular fitness. Additionally, the perceived health benefit of weight management was found as a result of cycling. This suggests that in addition to the

environmental, economic, and psychological benefits that were found, physical health was positively affected from cycling (Handy et al., 2014).

In summary, the physical benefits of cycling are numerous. Life expectancy increases; risks of diseases such as type 2 diabetes, heart disease, and certain cancers are lowered; and improvements in areas including cardio-respiratory fitness and muscle strength result from cycling. While the physical advantages to cycling alone may encourage individuals to ride, there are also additional benefits that cyclists experience from engaging in the sport.

### **Psychological Benefits**

An often-unrecognized impact of cycling is the positive role it plays on mental health. Psychological benefits to cycling include resolution and prevention of depression, cognitive functioning enhancements, heightened memory, and emotional well-being (Barton & Pretty, 2010; De Geus et al., 2008; Gatersleben & Uzzell, 2007; Hötting et al., 2012; Sperlich, Zinner, Hébert-Losier, Born, & Holmberg, 2012). This section focuses on the psychological benefits that cycling can provide.

Slapsinskaite García, Razon, Balagué, Hristovski, and Tenenbaum (2016) examined how cycling impacts endurance and thought dynamics for indoor riders compared to outdoor riders in Barcelona, Spain. Participants cycled at a level of sustained constant power until volitional exhaustion. Results indicated that expending more energy while outside on the bike (in terms of distance and time) positively correlated with task-related thoughts (e.g., somatic cues, effort, pace, etc.) and negatively correlated with task-unrelated thoughts (e.g., outward stimuli such as traffic). Attention was found to shift

from external stimuli (e.g., route, weather, etc.) to internal processes (e.g., engaging core while riding, consistency of pedal strokes, etc.) as the effort expended increased, increasing levels of fatigue that cyclists experienced. Participants cycling outdoors exhibited more focus on external stimuli and less fatigue when compared to those cycling in the laboratory setting. Results suggest that a cognitive focus on external objects, such as a tree or a wall, functioned as a distraction, therefore increasing endurance while cycling. Outdoor road cycling was found to positively affect cognition by facilitating an environment that is rich in external stimuli and it is, therefore, more likely to induce external thoughts. Performance also benefits when cycling outdoors, as perception of fatigue decreases with increases in external thoughts. Both performance and cognition are pivotal aspects to a cyclist's experience, suggesting that advantages may be present for cyclists who ride outdoors (Slapsinskaite et al., 2016).

Barton and Pretty (2010) conducted a meta-analysis using ten United Kingdom studies to determine the impact of green exercise on mental health. Green exercise takes place in the presence of nature, such as rural road cycling or mountain biking. Mood and self-esteem levels were used to assess mental health functioning. Outcomes showed statically significant improvements in both mood and self-esteem from green exercise as short as five minutes. Every natural environment was found to improve mood and self-esteem, and the presence of water led to even greater levels of mental health benefits. In addition, individuals diagnosed with mental illnesses (e.g., Major Depressive Disorder) showed the largest mood and self-esteem increases from green exercise (Barton & Pretty,

2010). These findings suggest that cycling outdoors should be encouraged, as it aids in improving mental health, particularly for individuals experiencing mental illness.

Hötting et al. (2012) examined whether cardiovascular fitness and exercise aid in cognitive functioning and brain plasticity for aging adults. The sample consisted of men and women in Hamburg, Germany who did not engage in regular exercise. Participants were assigned to either cycling (aerobic exercise) or stretching and coordination training groups, and both groups exercised twice weekly for 6 months. Results showed that there was a positive correlation between episodic memory and the increase in cardiovascular fitness as a result of cycling. This suggests that incorporating cycling in daily life has positive impacts on cognitive functions (Hötting et al., 2012).

Miki, Kataoka, and Okamura (2014) explored the effectiveness of speed-feedback therapy using a bicycle ergometer on the cognitive functioning of elderly cancer patients in Japan. A bicycle ergometer is a stationary bike that measures the output by the rider and displays the level of output on a computer screen. Participants in the intervention group were instructed to pedal the bicycle ergometer until the output level matched the target level on the computer screen. The target level was determined by the path being used, so participants had to pay attention to the changes as the path progressed. Participants in the control group engaged in their routine activities. After 4 weeks, cognitive functioning was evaluated in both groups. Statistically significant improvements in cognitive functioning were found to be present for the intervention group. This suggests that cognitive functioning can be increased in elderly cancer patients using a bicycle ergometer and speed-feedback therapy (Miki et al., 2014).



In Wuppertal, Germany, Sperlich et al. (2012) explored the impact of using electronically-assisted bicycles for women who did not previously engage in exercise. This study found numerous physical health benefits (biomechanical, cardiorespiratory, and metabolic), high rates of enjoyment, and lower rates of perceived exertion during rides as a result of increased enjoyment. It was recommended that the enjoyment of electronically-assisted cycling could encourage individuals living a sedentary life to incorporate physical activity (Sperlich et al., 2012). This suggests that in addition to the physical benefits that result from cycling, emotional well-being may also be a cycling benefit.

Affective appraisals in relation to form of commuting (i.e., driving, public transit, walking, or cycling) in the United Kingdom were examined by Gatersleben and Uzzell (2007). Survey results found that the active forms of transport, cycling and walking, were the least stressful, most exciting, and most relaxing mode when compared to driving and using public transport (Gatersleben & Uzzell, 2007). Commuting is a part of daily life for many individuals, and these findings suggest that consequences from commuter cycling entail positive affective responses.

De Geus et al. (2008) conducted a study of psychosocial and environmental factors associated with commuter cycling in Flanders, Belgium. Self-report questionnaires were used to compare cyclist and non-cyclist participants. Statically significant differences were found between the two groups. When compared to non-cyclists, cyclists were found to have higher levels of social support from the community, greater social influence and motivation from other individuals, and increased internal and

external self-efficacy. In addition, factors that were found to predict commuter cycling were modeling (i.e., a relative who cycled, other people accompanying on commutes), high levels of self-efficacy, ecological-economic awareness (e.g., cycling is cheaper, better for the environment, etc.), and workplace facilities for cyclists (e.g., showers, bike racks, etc.; De Geus et al., 2008). This suggests that psychosocial benefits to cycling are present, and cycling can be promoted via education and social influence.

In summary, incorporating cycling in daily life can affect personal experiences outside of cycling. Increases in emotional well-being, self-esteem, cognitive functioning, and self-efficacy are some of the psychological benefits to cycling. Individuals who engage in cycling reap enhancements that influence their personal reality as well as their interactions with others.

### **Social Benefits**

The current level of loneliness in the US has been found to be a greater health risk for Americans than obesity, and this sense of social isolation raised the risk of premature mortality for citizens (American Psychological Association [APA], 2017). Interpersonal interactions, feelings of community connectedness and support, and team building are some of the areas in which cycling has social benefits (Ghekiere et al., 2016; Kent & Thompson, 2014). Cycling leads to multiple social benefits, which decreases loneliness and increase participants' ability to associate with others.

O'Connor and Brown (2007) qualitatively examined the culture of cycling in Melbourne, Australia using observations and focus group interviews. A sense of affiliation for cyclists became clear, and it was categorized into five social themes. The

five social themes that were found were geographical space, normative space, identity space, individual variation, and emotional and social investment (O'Connor & Brown, 2007).

Geographical space, which consisted of meeting places for group rides, sprinting or attacking locations, and areas with consistently large numbers of cyclists, was the first theme that was identified (O'Connor & Brown, 2007). The second category found was normative space, which centered around social rituals that the cyclists used to define acceptable behavior and establish group norms such as verbal exchanges, hand signals, and self-organizing or internally regulated group dynamics. The third category was identity space, which encompassed factors regarding impression management and identity manufacturing such as equipment, shaved legs, and lycra uniforms. The next category found was individual variation. Generally, the faster, fitter, and larger the group was, the more risky, aggressive, assertive, and exclusive the group of cyclists became; slower groups tended to highlight a steady pace, smooth rotations, and a formation that made conversation more accessible. The final category found was emotional and social investment. For faster groups, the seriousness, effort, and rationality of competition were present, and for slower groups, socialization was prominent (O'Connor & Brown, 2007). These findings suggest that the sport of cycling is inherently social. Attraction to group settings included the opportunity to belong to a system that is stronger together than as individual parts. Personal challenge, hedonism, and strength are combined with a shared sense of meaning and group participation that allures cyclists to participate.

Using a mixed-methods approach consisting of both focus group interviews and questionnaires, organized cycling motivations in Melbourne, Australia were explored by Brown et al. (2009). Five factors were found to stimulate cyclists. First was social motivation including aspects such as spending time with other cyclists and similar apparel choices. Second was embodiment, which consisted of features like accomplishment and learning. Third was self-preservation, in which cyclists optimized social impression and status levels. Fourth was exploring environments that consisted of travel and the freedom to examine surroundings. The final factor found was physical health, incorporating motivations such as strength and the perceived health benefit of weight management (Brown et al., 2009). These findings suggest that social factors, in addition to personal well-being, pivotally influence cyclists.

LaChausse (2006) studied the motivations for competitive and non-competitive cyclists in the US. A modified version of Motivations of Marathoners Scales (MOMS) was completed by cyclists to explore psychological, physical, social, and achievement motives. Results demonstrated that goal achievement and health concerns were the primary motivation for cyclists as a whole. A sense of affiliation begins to develop when people cycle together, and women tend to endorse this social motivation more than men. Women reported being most motivated to cycle by this sense of affiliation and self-esteem for both competitive and non-competitive cyclists. Goal-achievement, competition, and recognition were found to be most motivational for competitive cyclists. In contrast, affiliation and weight management were primary motivations for non-competitive cyclists. All of these influential motivators were found to have social factors

for competitive cyclists. For non-competitive cyclists, the motivation of affiliation is also socially driven. This research suggests that regardless of the specific goals of individual cyclists, there is a social component to riding (LaChausse, 2006).

Springer (2013) studied the impact of incorporating cycling in rehabilitation. Ride 2 Recovery aims to help heal wounded US service members and veterans through cycling, and the most notable program within Ride 2 Recovery is Project HERO (Healing Exercise Rehabilitation Opportunity), which is available at select military facilities. The purpose of Project HERO is to aid in physical, psychological, and social recovery for service members and veterans using road bikes and custom-made bikes. Individuals who participated in this program noted that strength and endurance increased, as did psychological well-being. In addition, social benefits were found. Experiences within families of the riders were more positive. Bonds and trust developed with other riders, and friendships and support systems that were initiated on the bike began to be incorporated into activities other than cycling. These findings suggest that team building and social connections are another benefit that cyclists take away from riding (Springer, 2013).

In Auckley, England, a social education center for individuals with learning disabilities began incorporating cycling in their programming (Brewster, 2006). The goal was to aid in physical fitness and learning skills to maintain bikes. In addition to the physical benefits and skill building from cycling, increased levels of social interaction were found. Enjoyment from being outdoors and meeting new people increased enthusiasm for participants, and the number of members involved in the program grew.

Members then began completing a nationally recognized course in bike maintenance and repair, and the surrounding community began to take notice. Involvement has increased to the point that the program is now a self-sufficient, non-profit company offering bike repairs to the public, training in employment skills for members, and social interaction in a physical realm for individuals with learning disabilities (Brewster, 2006). This suggests that benefits from cycling for individuals with learning disabilities encompass social connectedness, physical health, and increases in skill development, as well as benefitting communities as a whole.

The psychosocial factors related to children's cycling for transport (e.g., parents cycling for transport, parent's educational attainment, child's independent mobility, child's gender) in Flanders, Belgium were explored by Ghekiere et al. (2016). Children between the ages of 10 and 12 years completed an online questionnaire at school. Parental reports of the child's typical distance cycled and how far their child was permitted to cycle unsupervised were also used. Results demonstrated that support from friends was found to prompt cycling for transport among children, as was parental modeling and norms of cycling for transportation. Also, children's self-efficacy, or feeling that they are able to accomplish a task, was found to be positively associated with the likelihood of being a cyclist. This suggests that social support and modeling increase the likelihood of children cycling. In addition, social forces may impact how comfortable a child feels about initially trying and later practicing their skills on the bike (Ghekiere et al., 2016).

In a systematic review, Barton (2009) studied the relationship between health and environment based on lifestyle choices (i.e., physical activity and diet), mental well-being and community, pollution and urbanization, and local economy. Results demonstrated in the United Kingdom, locations where active methods of travel (i.e., cycling or walking) were accessible, benefits included better mental well-being, increased social connections, lower transportation costs, more successful local economies, physical health improvements, and decreases in pollution. Cycling was found to increase informal meetings with other people and build social networks, which made individuals feel that they were part of a supportive environment. These findings suggest that in addition to physical benefits from cycling, psychological and social benefits are also present (Barton, 2009).

Kent and Thompson (2014) reviewed interdisciplinary research to conceptualize three domains of urban planning that could elevate health and well-being for residents in Sydney, Australia. The three domains of physical activity, community interaction, and healthy eating were used to address the primary risk factors for contemporary chronic disease—insufficient physical activity, social isolation, and obesity. To promote physical activity, Kent and Thompson (2014) concluded that infrastructure, street networks, and open spaces would foster cycling and walking for recreation and transport. Mental and physical health were also found to be profoundly influenced by a sense of belonging and community. This feeling of connectedness increased perceptions of safety, confidence, social connections, and caring, while decreasing loneliness, isolation, and fear. Streets catering to cyclists and pedestrians were found to promote social interactions, benefit

mental health, and aid physical well-being because cycling and walking increase the chance for social encounters. These findings suggest that environments accommodating cycling and walking through urban planning and infrastructure result in social, psychological, physical wellness for residents (Kent & Thompson, 2014).

In summary, social interactions greatly influence health. Cycling is an inherently social sport, and a sense of affiliation often develops. Individuals who engage in cycling find increases in their social connectedness, which improves their general well-being.

### **Transportation Benefits**

Commuter cyclists use bicycles to travel to their target destinations. By using bicycles as a mode of transportation, both the cyclist and society as a whole benefit (Tapp et al., 2016). Cyclists experience decreases in travel time, transportation cost, and commuting stress (Börjesson & Eliasson, 2012; Gatersleben & Uzzell, 2007; Handy et al., 2014; Hoffman, Hayes, & Napolitano, 2014). Advantages for society include decreased levels of traffic congestion, motor-vehicle emissions, and infrastructure costs (Börjesson & Eliasson, 2012; Handy et al., 2014; Tapp et al., 2016).

Tapp et al. (2016) evaluated the attitudes of adults in Great Britain regarding cyclists to aid in understanding the implications of such for policy. Two large-scale surveys regarding the practice of cycling and its role in society were conducted within the span of three years. The results of these surveys indicated that attitudes were supportive of cyclists, and participants overwhelmingly agreed that cyclists reduce traffic congestion and emissions (Tapp et al., 2016). This indicates that transportation benefits not only impact cyclists, but also society as a whole both environmentally and timewise.



In a cost-benefit analysis of cycling investments, Börjesson and Eliasson (2012) surveyed cyclists in Stockholm, Sweden to determine the value of time and external beliefs in cycling appraisal as a mode of transportation. Questionnaire results showed that cyclists found bicycles to be an efficient mode of transport due to a reduction in travel time, lower travel costs, and higher space efficiency when compared to other modes such as motorized vehicles. These findings suggest that in addition to health benefits and reduced car traffic, using bicycles as a travel method increases travel time savings and comfort more than alternative modes of transport (Börjesson & Eliasson, 2012).

Many opportunities may be out of reach for disadvantaged young people such as participation in recreational or sports teams such as cycling. Crawford et al. (2012) explored attitudes toward cycling for young people in Sydney, Australia who were experiencing or at risk of homelessness. Eight focus groups consisting of 47 individuals were used. Results showed that cycling was an effective method of personal transport although use of helmets, lack of cycling experience, and insufficient infrastructure were found to be consistent barriers. In addition to a mode of transport, cycling increased social inclusion, physical activity, and fostered independence for these young people (Crawford et al., 2012). These findings indicate that using bicycles as a mode of transport is a promising approach in assisting marginalized young people.

Hoffman et al. (2014) demonstrated that an urban Philadelphia community cycling initiative known as Earn-A-Bike resulted in positive perceptions and intentions to continue cycling in the future. Hoffman et al. (2014) used focus groups to conduct interviews regarding cycling benefits, barriers to cycling, cycling knowledge, social

support, and self-efficacy themes of health improvements. Cost reductions, and less pollution, in addition to transport opportunities among urban youth were found. The freedom to travel using bikes not only served as an accessible method of transport, but it also facilitated self-esteem through skill mastery and independence for the participants (Hoffman et al., 2014). This suggests that cycling is a competitive method of transportation that also elicits environmental, financial, and psychological improvements.

Handy et al. (2014) found that in addition to being a low-polluting method of transportation, cycling is also more cost efficient than motorized vehicles for both the cyclists and US cities. By choosing to bike for transport, cyclists save money when compared to driving and cities save money on infrastructure costs. Also, commercial and residential property value increases when near bicycle facilities. Handy et al. (2014) concluded that these financial benefits could then be invested in other ways to promote cycling for transport such as better access to businesses and cycling-based tourism.

Cycling results in a range of benefits for participants. Physical health, such as fitness and decreased risk of disease, are present. Mental health is improved through psychological and social advantages to cycling. Transportation enhancements for both cyclists and cities are evident. Involvement in cycling is a behavior in which individuals seeking improvements in general well-being can engage. It is clear cycling has many benefits. Yet the reality is that roadblocks to participation in cycling still exist for women.

## **Barriers to Cycling for Women**

The benefits of cycling are unmistakable, and these benefits exist for all individuals who partake in the sport. However, women often experience barriers to participation that limit their involvement in cycling and prevent experiences of benefits. The rates of cycling, perception of safety and risk, and additional barriers for women such as stigma in the sport of cycling and social expectations are outlined in this section. For women to gain equal benefits from cycling, these barriers must be removed.

### **Rates of Cycling**

When we look at rates of cycling in the US, western US states have the highest rates of cyclists, while southern states, such as Texas, have the lowest rates (Pucher, Buehler, & Seinen, 2011), highlighting the uneven distribution of cyclist presence across the country. Furthermore, cycling is a sport dominated by men, in which woman cyclists are not the norm (De Geus et al., 2014; Heesch et al., 2012; Ogilvie & Goodman, 2012; Sá et al., 2016; Szczepanski, 2013). Women riders account for less than a quarter of bicycle trips in the US, with 76% of all bicycle trips being made by men (Buehler & Pucher, 2012). The number of women competitive cyclists is even less. In the US, 83% of USA Cycling (USAC) license holders are men, demonstrating the scarcity of women in the competitive cycling realm (USA Cycling, 2018a). In addition, rates of older cyclists wane, particularly for women (Macgregor, Roby, Reaburn, & Walla, 2017). Nearly a quarter (24%) of USAC license holders are age 45-54 (USAC, 2018a). That number sharply decreases for cyclists age 55-64, who comprise 12% of USAC licensed cyclists (USAC, 2018a). USAC licensed cyclists over the age of 64 account for less than

3% of the competitive cyclists in the US (USAC, 2018a). Also, perceptions of barriers such as infrastructure and environmental constraints are more pronounced for women, likely impacting the number of women cyclists (Heesch et al., 2012).

At the 2012 National Bike Summit, the first National Women Cycling Forum commenced; high-powered women in diverse realms of cycling were allotted a medium to discuss key issues that women who cycle face in the US (Szczepanski, 2013). Five barriers to cycling were identified for US women—advocacy, policy, education, promotion, and retail/product. Advocacy referred to the low, but increasing, numbers of women cyclists present both in the sport and in cycling organizations. Policy included the need for more cycling-friendly infrastructure and government policies. Conversation regarding education incorporated the lack of accessibility for women to learn cycling specific skills and knowledge. Discussion of promotion included necessary shifts in merchandising and attitude in advocacy. The lack of women-specific cycling retail and products was also identified (Szczepanski, 2013). The themes that were present in the Women Cycling Forum demonstrate barriers to cycling that US women face and highlight the need for more conversation about women cycling needs and experiences.

Using a qualitative approach, Heesch et al. (2012) examined cycling patterns, motivations, and barriers between genders in Queensland, Australia. Heesch et al. found that men were more likely to engage in cycling overall, and men rode for longer lengths of time. Men also were more likely to use bicycles to commute. Men were also found to cycle on the road at higher rates, while women showed higher levels of off-road cycling (e.g., bike trails). Personal factors (e.g., health, enjoyment) were motivating for both

genders, but women were more likely to also agree that social and environmental factors were motivational. Traffic conditions, motorist aggression, and safety were the primary constraints across genders, but women reported additional environmental barriers in addition to other personal factors that were not typical for men cyclists. Environmental concerns for women included inhaling car fumes, inability to bring bicycles on public transport, and target destination being too far away. Other perceived constraints for women cyclists were decreased daylight hours in the winter, rain, wind, snow, humidity, heat, presence of hills, lack of fitness, and low levels of confidence in cycling abilities (Heesch et al., 2012). These findings suggest that cyclists as a whole recognize barriers to cycling, including weather and infrastructure, but gender does play a role in the perception of constraints. This demonstrates the need to understand women's perspectives of cycling more clearly and completely.

De Geus et al. (2014) explored individual variations in bicycle use. Adult cyclists in Belgium completed travel diaries that were used to conduct linear regressions to understand the association between environmental and individual correlates to bicycle usage. Results showed that women were found to ride significantly less than men. Lower availability to bicycle paths and lower levels of urbanization also lowered the likelihood of choosing cycling for transport (De Geus et al., 2014). This suggests that gender, bicycle infrastructure accessibility, and urbanization influence the motivation to cycle even for individuals who regularly choose to cycle.

Ogilvie and Goodman (2012) examined inequalities in the usage of a public bike-sharing scheme in London, England. Using London's Barclays Cycle Hire (BCH)

registration data of 100,801 individuals, users were compared to the general public. Results found that women made less than a fifth of the total trips examined. Also, individuals with less financial flexibility on average were found to be underrepresented in the BCH (Ogilvie & Goodman, 2012). This suggests that in addition to gender, social class is a barrier to cycling.

Sá et al. (2016) conducted a cross-sectional analysis of travel surveys to examine correlates, time trends, and health impacts of cycling in Brazil from 1997 to 2012. Outcomes showed that men cycled six times more than women. Rates of bicycle use rose in the wealthiest quartile of the population, while rates dropped among individuals with less financial flexibility over the years studied. Also, individuals over the age of 60 were eight times less likely to cycle than individuals between the ages of 20-30 and five times less likely to cycle than individuals between the ages of 40-59. These findings suggest extensive gender, financial flexibility, and age inequalities in the sport of cycling that create barriers to participation (Sá et al., 2016).

Macgregor et al. (2017) explored how age impacted perceived benefits and constraints for master cyclists, or cyclists aged 35 years or older, in Queensland, Australia. A social-ecology framework, which aids in conceptualizing the dynamic interconnection between nature and nurture, was used to explain differences found in master cyclists. Master cyclists who were women were found to cycle less than master cyclists who were men. Fewer perceived benefits of cycling were found for women master cyclists when compared to men master cyclists. Social, interpersonal, physical, and community constraints were perceived for master cyclists. These constraints lowered

participation for older adults despite perceived benefits such as health improvements and social interaction. This suggests that the perceived barriers that older cyclists experience begin to overshadow the advantages that cycling offers, limiting involvement in the sport particularly for women (Macgregor et al., 2017).

Women cyclists are a minority in the sport of cycling. Furthermore, fewer women cyclists are present on roads shared with motor vehicles. As age increases, the already small number of women cyclists decreases even more. For the rates of women cyclists to grow, barriers such as infrastructure need to be addressed.

### **Perceptions of Safety and Risk**

Safety is increased when cyclists behave as operators of vehicles and are treated as such, but perceptions of risk reduce the number of women cyclists present on roads shared with motor vehicles (Vanparijs, et al., 2015). Similar to driving behavior, women and men have demonstrated different levels of risk taking while cycling. Men have higher levels of cycling accidents than women, which may be in part to risk assessment differences or that cycling is a sport dominated by men (Vanparijs et al., 2015). These findings suggest that sex is a factor of perception of risk and safety for cyclists

Individuals tend to conceptualize themselves as being more cautious and more competent than others when driving, which is known as the superior conformity of the self (SCS). Félonneau et al. (2013) examined whether the same SCS phenomenon was present in cycling. Self-assessment structured interviews of cyclists in Bordeaux, France were used to gather data on beliefs of personal cautiousness and skill and the cautiousness and skill of other cyclists. Cyclists across sexes were found to overestimate

their cycling ability. Participants perceived themselves as being less likely to wreck than they are in actuality, which verified that SCS is also a component of cycling. When analysis was done between sexes, females were found to have higher rates of cautiousness and lower levels of overestimating cycling skills when compared to male cyclists. Female cyclists, as a whole, take less risks while cycling than their male counterparts (Félonneau et al., 2013). This suggests that perceived safety and security for women cyclists are likely different from men cyclists despite individual levels of cautiousness and competence.

Using a mixed-methods study, Garrard, Crawford, and Hakman (2006) explored women's participation in cycling in Melbourne, Australia. Researchers found that personal constraint factors included low confidence, lack of cycling skills particularly in traffic and groups, perceptions of environmental hazards, and limited confidence in bicycle maintenance. Socio-environmental constraints included traffic conditions, driver aggression and assault, dress and appearance norms, and cyclists being primarily men. While barriers were similar for men and women, concerns about not knowing cycling routes, aggressive motorists, motor vehicle traffic, lack of self-confidence, and self-consciousness were significantly more pronounced for women cyclists. Perceptions of risk due to traffic are higher, and lower levels of confidence are present for women cyclists (Garrard et al., 2006). This suggests that compared to men, women may perceive greater barriers to cycling.

Garrard et al. (2008) studied the impact of infrastructure on transportation choices to determine whether women cyclists preferred more separation from motor vehicle



traffic when cycling than men. Observations of cyclists at 15 locations (off-road bike paths, on-road bike paths, and roads with no bike facilities) in Melbourne, Australia were studied. Researchers found that women used routes that were more isolated from vehicular traffic. Of the cyclists observed, only 20% were women. In addition to the lower number of women cyclists, a preference of routes separated from motor vehicles was found for women. Women did use roads with bicycle lanes and roads without any bicycle facilities, but the rates of such were much lower when compared to rates for men cyclists. This pattern suggests that women are not as comfortable riding on the road as men, which further isolates an already marginalized group of cyclists. Changes in infrastructure are suggested to encourage women to ride (Garrard et al., 2008).

Akar, Fischer, and Namgung (2012) conducted a case study at large US university exploring bicycling choice and gender. They found that perceptions of safety differ based on gender in a bicycling choice and gender case study. A survey of faculty, staff, graduate students, and undergraduate students was available online to both cyclist and non-cyclists in an effort to understand the perceptions and patterns of cycling behavior on the campus as a whole. Results showed that while environmental opportunities and constraints were similar regardless of gender, perceptions of safety and practicability differed. Women placed more significance on being close to a bike trail as a result of feeling less safe in other locations, when compared to men. This suggests that infrastructure and policy changes may be necessary to increase cycling for women (Akar et al., 2012).

Manton, Rau, Fahy, Sheahan, and Clifford (2016) explored perceived cycling risk using mental mapping. Mental mapping uses an individual's knowledge about an area as well as their feelings about the location to reflect their personal visualizations of experiences in physical and social surroundings. A sample of US commuter cyclists participated, and a preference survey, transport infrastructure inventory, and mental maps were all used to understand perceived cycling risk. Results found that bicycle routes separate from vehicles, lower traffic volumes, and wider roads lowered cyclists' perceptions of risks. Cycling experience also played a role in risk perception. Inexperienced cyclists were more likely to perceive risk than experienced cyclists. Women also demonstrated higher rates of perceived risk than men (Manton et al., 2016). This suggests that in addition to gender, experience also influences the level of safety that cyclists report when riding. Novice women cyclists therefore have an added disadvantage to engaging in the sport of cycling.

This research suggests that one of the most prominent factors in risk taking for cyclists is gender. Women cyclists perceive more risk than men cyclists (Akar et al., 2012; Félonneau et al., 2013; Garrard et al., 2008; Manton et al., 2016; Van Bekkum, Williams, & Morris, 2011). A pattern of low risk taking emerges particularly for novice women cyclists (Manton et al., 2016; Van Bekkum et al., 2011). Given that the Twin Cities, or the Minneapolis-Saint Paul metropolitan area, recently added cycling-friendly infrastructure and now has the highest rates of women cyclists (between 37-45%), there is evidence that US cities can increase women's participation in bicycling via infrastructure improvements (Reeves, 2012).

## **Additional Barriers**

Other barriers to cycling are present for women as well. Additional barriers such as stigma in the sport, social expectations and criticism, harassment, race, and ethnicity further contribute to the difficulties that women cyclists experience. To engage in the sport of cycling, women are faced with obstacles that either they must overcome or that men could change.

Van Bekkum et al. (2011) used a cross-sectional questionnaire to investigate perceived barriers to cycling in relation to gender and stage of change in the United Kingdom. Using the transtheoretical model of behavior change as a model, progression through the stages of change (i.e., precontemplation, contemplation, preparation, action, and maintenance) was predicted to impact perception of decisional balance (i.e., pros versus cons) and level of self-efficacy. Results found that environmental barriers (e.g., bad weather, poor road quality, etc.) were the primary constraint across genders. Cyclists who were in the precontemplation stage were found to identify more barriers when compared to cyclists in all other stages. Women cyclists were also found to have more perceived barriers than men cyclists such as inability to carry belongings, danger on the road, darkness, exhaust fumes, and casual clothing (Van Bekkum et al., 2011). This suggests that individuals who have not committed to consistently cycling or are new to the sport may shy away from cycling despite an initial interest. Women cyclists are also less likely to cycle due to the heightened perception of barriers.

A stigma stemming from gender is present for cyclists. For women, the expectations of other cyclists and fans creates a powerful stigma that permeates through

the sport. Lucas (2012) examined how distance takes on meaning in women's long-distance road cycling racing, and three main patterns were noted. Women are perceived to have discrepancies in strength, stamina, and speed. This perception manifests in actuality, and as a result, men's competitive endurance road races are of a significantly longer distance than the routes for women. Women are also thought to use fewer team tactics and be less aggressive in races. This belief leads to more interest, media attention, and funding in men's cycling. And finally, because long-distance road races can span hours and copious amounts of water are ingested for hydration, public urination becomes necessary for the cyclists. Oftentimes entire groups will collectively decide to stop during the race and relieve themselves before restarting in unison. The external concerns (i.e., fans) surrounding public urination for women cyclists becomes increasingly uncomfortable as the race gets longer, and Lucas (2012) concluded that this fear is a relevant factor when considering why women's long-distance races are less valued and less lengthy than those for men.

Dickinson et al. (2003) conducted three company-wide case studies regarding gender and commuter habits in the United Kingdom. While cycling was the least chosen method of commuting to work across genders, women chose to cycle to work at significantly lower rates than men. After evaluating for the proportion of participants who lived close enough to cycle (less than five miles), women were still found to bicycle to work less often. Women reported that life obligations interfere with their ability to ride, even when the desire to do so is present. Personal barriers that women disclosed included transporting children or other individuals, inability to transport items after shopping, and

lack of personal security during the journey (Dickinson et al., 2003). Men mentioned significantly less constraints due to the barriers of shopping, collecting children, and personal safety. Social norms, security, and a sense of life obligations differ between genders, influencing whether or not women feel able to cycle.

Horton et al. (2007) detailed the interconnection between cycling and society in the United Kingdom. A fear of cycling stemming from cyclists being a minority on the road subject to harassment and victimization was present for both men and women, although women reported safety concerns more often. In addition, a particular dilemma for women resulted from social norms and values surrounding motherhood. Women who permitted their children to be independently mobile via bicycle use were often deemed irresponsible, uncaring, and unconcerned with the danger their children are facing while cycling (Horton et al., 2007). This suggests that in addition to the fear of cycling that may deter participants, women are also socially criticized for allowing their children to cycle even if they do not engage in cycling themselves.

Heesch et al. (2011) surveyed cyclists' experiences of harassment from motorists in Queensland, Australia. Results demonstrated that drivers had provoked three-fourths of cyclists in the past year. The most frequent forms of harassment were driving too closely, shouting abuse, and obscene gestures including sexual harassment. These findings suggest that cyclists may be deterred from riding due to proximity to motor vehicle traffic and motorist attitudes or behaviors. Also, while no gender differences were found in rates of motorist harassment experiences, women cyclists preferring bike routes separate from motor vehicles may be related to these experiences (Heesch et al., 2011).

In the US, United Kingdom, and Australia cyclists are predominately White, affluent, men. Steinbach, Green, Datta, and Edwards (2011) explored why the decision to cycle was not representative of the general population in the UK. In London, England, 78 interviews were conducted to examine meaning of cycling across genders, classes, and ethnicities. Results suggested that the lack of visibility of cycling in general leads to a gendered public perception where cyclists are generally thought to be men. Also, the very low rates of Black and Asian cyclists minimize the opportunity for individuals with these identities to see cycling as a prospective mode of transport. In addition, the cyclists rely on cultivating an assertive approach to cycling in order to protect themselves from risks on the road such as vehicles and driver aggression, which may not be conducive in promoting cycling for more passive individuals (Steinbach et al., 2011). These findings suggest that while individuals falling into perceptions of the typical cyclist (i.e., affluent, White, man), individuals of other classes, genders, and ethnicities may perceive the goals of cycling to be less appealing. This appears to also be taking place in the US. According to The Gluskin Townley Group's 2011 American Bicyclist Study, the population of Black adults in the US is 11%, but only 5.1% of US cyclists in 2010 were Black; additionally, while 14% of US adults in 2010 were Hispanic, only 6.4% of US cyclists identified as Hispanic (as cited in People for Bikes, 2018). Additionally, in a series of focus groups in Portland, Oregon, 100% of Black participants reported experiencing fear that motor vehicle drivers would be aggressive or hostile to them while cycling (Community Cycling Center, 2012). This echoes the common perception that cycling

caters chiefly to the needs and desires of White, upper class men, often creating an uninviting environment for other individuals.

Dixon, Graham, Hartzell, and Forrest (2017) qualitatively explored gendered barriers specific to US competitive cyclists were qualitatively explored by in an effort to increase participation and advancement of women in the sport. Interviews revealed three themes regarding barriers that all participants noted—category lumping, upgrading system, and prize money. Category lumping refers to combining groups of competitive cyclists for races. These groups had previously been separated due to differences in experience and skill level between cyclists. For men, five categories, which are referred to as Cat(s), are available Cat 5, Cat 4, Cat 3, Cat 2, and Cat 1. For women, there are four available categories: Cat 4, Cat 3, Cat 2, and Cat 1. When category lumping occurs, women are typically faced with two divisions—Cat 4, which consists of novice cyclists, or Open, which includes members of the three other categories combined; men are typically given four divisions—Cat 5, Cat 4, Cat 3, and Open. Participants explained that the lack of an intermediate category for women might be the greatest barrier for women who cycle competitively, particularly evidencing the disadvantage that novices experience. The second theme, upgrading system, refers to the lack of cyclist understanding and USAC official subjectivity surrounding the process of category advancement. The final theme that was expressed was that of prize money, with cyclists expressing that increases in prize money may motivate both participation and advancement in competitive cycling for women (Dixon et al., 2017). These findings

demonstrate that even women who have overcome various obstacles to cycling participation and have further committed to cycling competitively still encounter barriers.

### **Rationale for the Current Study**

All individuals who participate in cycling deserve to enjoy the benefits at hand. Cyclists can capitalize on physical, psychological, social, and transportation benefits. Cycling has played a historic role in shifting social perceptions of gender, but currently women are faced with obstacles that they must overcome to participate in the sport such as, social expectations and criticism, harassment, and infrastructure that is not compatible with perceptions of safety. To help women gain the benefits of cycling, barriers must be reduced. By addressing constraints such as infrastructure, harassment, and stigma, the environment that women cyclists experience while cycling could improve. These types of changes may also heighten the rates of women cyclists because women would encounter fewer deterrents from the sport. In order to increase understanding of this phenomenon and address areas for change, the experience of women cyclists in the US was explored. In this study, WCRC were interviewed in order to answer the research question, “What are the experiences of women competitive road cyclists?”



## CHAPTER III

### METHODS

The method section includes the researcher's qualifications and biases in conducting a qualitative, phenomenological inquiry of competitive road cycling culture as experienced by women cyclists. Sampling methods and recruitment are outlined followed by interview procedures in this section. The phenomenological approach of data analysis is described, and the process of conducting and interpreting interviews is addressed. The aim of this study was to gather knowledge and insight about marginalized members of cycling culture using semi-structured interviews. A qualitative approach has been beneficial for examining the phenomenon as well as the related, contextual data that was uncovered.

#### **Researcher Qualifications and Biases**

As the primary investigator in this study, I am a 24-year-old European-American woman graduate student in counseling psychology. I have a history of conducting quantitative research. Previous experience includes membership on a research team examining rape myth acceptance during my undergraduate education. In the process of obtaining my Master's degree, I attended a qualitative research methods course. During this time, I carried out a small qualitative study that consisted of three interviews. After participating in the theoretical and practical training within the qualitative research methods class, I decided to conduct this research study.

My biases, which will be articulated further in depth later in the paper, include experience as a road cyclist. Due to a cycling accident in which I obtained a traumatic brain injury (TBI), major life changes took place that only made cycling more prominent in my life. My love of cycling may serve as both a benefit and a hindrance in this research study, as I have developed personal beliefs and perceptions related to my own experiences. In addition, I am a feminist, and my convictions about sexism and gendered experiences are quite pronounced. My feminist values impact the importance that I place on equality and social justice, and these beliefs, in turn, influenced my expectations about the inequalities in cycling experience between genders that I believed I would find in this study.

My views on cycling have been informed by personal observations and experiences. I have observed the *Hotter than Hell* road race in Wichita Falls, Texas in 2017, and I noticed some differences in the group dynamics based on where the riders began the race. Riders in the front were much more serious and quiet than the cyclists in the back who displayed more laughter, talking, and relaxed body language. I have noticed few women overall and even fewer women completing the race at the front. I observed two general types of WCRC, although I recognize that generalizing in this manner is most likely inaccurate and incomplete. One type of WCRC that I saw seemed easy going and accepting toward others. Their behaviors included laughing, playful conversation, open body language, and smiles. The second type of WCRC that I observed seemed to be more aggressive, particularly toward other women riders. This conceptualization was evidenced by facial expressions, such as scowls, and closed body language, particularly

after the race. I also observed instances in which the intonation that was used toward other women appeared to be hostile and audacious, particularly when compared to the playful conversation that was observed with the first type of women cyclists. The second type of women riders seemed more serious than the first group of women cyclists. Men that I observed appeared to treat women with respect, but at times there were instances that I perceived as benevolent sexism (e.g., opening doors only for women riders, letting women enter busy areas such as sidewalks before they did, etc.).

My cycling observations continued at bike shops. I tended to see women positioning themselves behind the men who accompanied them. The women who were with men did not ask questions of the people working at the shop, all of whom were men. When women came into the shop, I noticed that they knew what they wanted quite readily without guidance from the shop workers, and they did not engage in conversation after they purchased what they needed. A sense of community appeared to be present with men in the bike shop. I observed men lingering in the bike shop after buying objects to converse, and they generally asked more questions than their women counterparts. Men appeared to be more open to assistance from the shop workers as well. These observations lead me to believe that the experiences of men and women cyclists are different in substantive ways.

As a cycling participant, I have noticed that men cyclists seem to be accepting of women cyclists; however, it should be noted that I am typically in the presence of my partner, who is a man, when engaging in cycling activities. I have noticed that men cyclists tend to be eager to help women cyclists, particularly with equipment. This may be an example of benevolent sexism believing that women need help from men. Another possibility is that men are offering help in order to make a social connection. In addition, I have heard men cyclists discuss or joke about *getting chicked*. This slang term in the cycling community refers to a man who has been passed or beaten by a woman in a ride, race, rally, or criterium. This term spurs the notion that men cyclists tend to believe that they should be at a higher level of achievement than women cyclists.

Before conducting this study, I believed that some WCRC would report experiences with sexism, particularly in the competitive realm. In addition, I believed that WCRC might have felt a need to prove themselves to men cyclists in order to gain respect. I anticipated that WCRC would endorse positive experiences related to cycling such as physical benefits, increased psychological well-being, a sense of community, and heightened transportation options based on the literature that I had reviewed. I expected that WCRC would also disclose negative experiences from cycling based on my literature findings regarding the barriers to cycling that women experience. These negative experiences were predicted to be related to social dynamics as well as thoughts, feelings, and actions. I believed that WCRC would report a different experience when cycling in all-women groups compared to mixed gender groups based on my observations and

personal experiences. Also, I expected that WCRC would highly value cycling apparel and cycling equipment based on my own values and experiences. These beliefs are biases that have evolved from my personal observations and experiences. While support for some of these convictions was found in this study, other expectations were not supported by the findings in this study.

## **Data Collection**

### **Participants**

Purposeful sampling was used for this study in order to acquire a deeper understanding of the experience of WCRC. Qualitative sampling aims to select information-rich participants in an attempt to gather more applicable data and understand the phenomenon more clearly (Patton, 2015). Phenomenological researchers are seeking participants who are information-rich, or have powerful experience with the phenomenon, in order to obtain detailed content, as fewer participants are used than in quantitative studies (Patton, 2015; Willig, 2007). For this study, 8-12 participants were sought; however, saturation (no new data emerging) was met with eight participants. Criterion sampling was initially used to select participants who meet inclusion criteria.

The first criterion was for all participants to competitively cycle road bikes, and only road cyclists were studied. Cycling competitively was defined in this study as participation in at least one 25-mile race, 25-mile rally, or 20-minute criterium at any category level (i.e., Cat 1-5). Cyclists who identified only as mountain bikers, commuter cyclists, or recreational cyclists were not included in this study. Individuals with the most experience competitively cycling road bike were selected to participate in the study.

The second criterion was that the individual to possessed a USAC license. This license is required in order to engage in cycling competitions, and, therefore, cycling competitively would necessitate a USAC license. Participants were at any USAC category level (i.e., Cat 1, Cat 2, Cat 3, Cat 4, or Cat 5).

The third criterion was for the individual to self-identify as a woman. Gender, as opposed to sex, was used as the second criterion to allow space for all competitive cyclists who identify as a woman. Cycling is a sport dominated by men, and research focusing on women cyclists is lacking, which creates a necessity of more exploration into the experience of women in the sport of cycling (Letherby & Reynolds, 2009).

Following criterion sampling, maximum variation sampling was used to allow for diversity within the sample. For example, variation in age, race/ethnicity, income, education level, body size/type, and sexual orientation were sought. A minimum competitive experience level was present for this study, but there was no criterion regarding additional experience with group rides, commuting, mountain biking, or recreational cycling to allow for variation. Riding bikes can take place in many different types of situations, and the majority cyclists have experience in multiple biking environments. In allowing variation in cycling experience as well as demographics, a more complete picture of the experience of WCRC was obtained. This sampling approach honors both unique and individual perspectives and experiences as well as allowing for the examination of shared themes across participants (Patton, 2015). Demographic information for the participants who were formally interviewed can be found in Table 1.

Table 1

*Participant Demographics*

Code Name	USAC Cat	Ethnicity	Age	Education	Sexual Orientation	Annual Income
Taylor	Cat 3	White	42	PhD	Heterosexual	More than \$100,000
Judit	Cat 4	Indian	24	BA/BS	Heterosexual	\$61,000- \$80,000
Khadijah	Cat 4	White	35	MA/MS	Heterosexual	---
Kayla	Cat 5	White	31	MA/MS	Heterosexual	\$21,000- \$40,000
Kassie	Cat 4	White	50	MA/MS	Heterosexual	\$61,000- \$80,000
Jaylen	Cat 2	White	38	BA/BS	---	---
Josefina	Cat 3	White	49	MA/MS	Heterosexual	\$61,000- \$80,000
Francesca	Cat 1 (Pro)	Asian	22	Post-grad medical student	Heterosexual	Less than \$20,000

## **Instrumentation**

**Pre-screening.** Pre-screening consisted of three steps. First, a recruitment script was used to outline the purpose of the research study and the eligibility criteria (see Appendix A). Second, informed consent forms describing the risks, benefits, and procedures of the study in detail were dispersed to potential participants (see Appendix B). Third, a demographics questionnaire was used to ensure that inclusion criteria are met and maximum variation is achieved within the sample. The demographics questionnaire sought information regarding self-identified gender, sexual orientation, race/ethnicity, income, education level, body size/type, age, and cycling experience (see Appendix C).

**Interview guide.** A semi-structured interview guide was used when interviewing to assure that all participants are given the opportunity to speak to the same topics and focal points using similar lines of inquiry (see Appendix D). An interview guide aided in obtaining relevant, reliable, and comparable qualitative data by maintaining the researcher's focus (Patton, 2015). Semi-structured interviews allowed space for follow-up questions to be explored by the researcher when necessary, while the interview guide prevented focus from being lost during the interview.

**Procedure.** After receiving approval from the TWU IRB, recruitment took place. This involved announcement of the study being displayed at bike shops, events, and social media outlets. Interested participants were directed to the PsychData link that took them to the informed consent page. If they agreed to participate, they indicated their consent by clicking "I agree to participate" and digitally signing the informed consent form, which directed the individual to the demographic questionnaire. A list of referral



resources were provided to all participants before leaving the website should they experience any discomfort at any point in the research process (see Appendix E). I also recruited participants through snowball sampling. A recruitment flyer was given to interested individuals to forward to any WCRC who may be interested in participating. After collecting a group of potential interview participants, I reviewed their demographic information and selected the most information rich individuals based on highest levels of experience. It was expected that the typical respondent would be in her 20s, White, and a heterosexual, cis-gendered woman. It was also expected that the typical respondent would have high levels of financial flexibility. Respondents who identified with characteristics that differed from these were selected in order to maximize diversity among the sample used. Participants who were selected were contacted through the phone or email to set an interview time.

Interviews were conducted in person, in order to allow the researcher to attend to body language throughout the interview process. Prior to the interview, I emailed participants the interview questions to ensure that they have had time to think about their responses to questions and reflect on their cycling experience. Informed consent and confidentiality were reviewed at the initiation of the interview. Participants were also explicitly informed of their rights as a research participant, including that participation was voluntary and could stop at any time without penalty. Participants were told that they also had the right to refuse to answer questions and provide as much or as little detail in their responses as they choose. Once participants provided written and verbal consent, semi-structured interviews began.

Interviews were recorded on a video recorder. I used video recording in order to incorporate both non-verbal and verbal behavioral data exhibited by participants during interviews into the study. Video recordings of the interviews were accessible only to members of the research team, and will be permanently deleted within five years of the completion of this study. Participants were asked the questions that they were provided and which are outlined on the interview guide. Participants were occasionally asked to elaborate, clarify, or provide more detail. At the end of each interview, I asked whether the participant would like to change any responses or add additional information. The digitally recorded interviews were then transcribed using pseudonyms to de-identify the participants. The pseudonyms were used for all ongoing data usage, and all research materials were stored in password-protected files.

## **Data Analysis**

### **Philosophical Approach**

Qualitative research looks at non-numerical data that is found in aspects of life such as actions, documents, and language (Miles, Huberman, & Saldaña, 2014; Patton, 2015). Qualitative research aims to interpret the meaning that is made by the studied population (Patton, 2015). To interpret meaning qualitatively, researchers search for patterns and themes in text and/or image-based records (Patton, 2015).

The specific qualitative methodological approach that I used in this study was interpretive phenomenological analysis (IPA). The purpose of IPA is to understand how individuals make sense of their experiences, and the basis of IPA is that humans are interpretive beings. The three aspects of philosophical inquiry used in IPA are

phenomenology, hermeneutics, and ideography (Charlick, Pincombe, McKellar, & Fielder, 2016).

A phenomenological approach to qualitative research examines the subjects' perspective of the world and experience in an attempt to describe the diverse themes and structure of the phenomenon. Shared experiences between subjects are emphasized in order to detect patterns and themes related to a phenomenon (Willig, 2007). Lived experiences are described and interpreted to reveal meaning (Charlick et al., 2016). Hermeneutics is the theory of interpretation and focuses on words. Both the grammar and the individuality of the speaker or author are examined to process text (Charlick et al., 2016). Ideographic foundations of IPA are concerned with the particular, necessitating in-depth analysis of individual cases. IPA uses a small sample size that is purposefully selected to allow for extensive and individual attention of cases before exploring shared patterns, themes, or differences between cases (Smith, Flowers, & Larkin, 2013).

In phenomenological research, the researcher plays a personal, active role in what emerges from the study (Miles et al., 2014; Patton, 2015; Willig, 2007). The researcher's biases and assumptions are, therefore, made explicit (Willig, 2007). As a woman road cyclist, I am aware of the lack of research on the unique experiences for women cyclists. I chose IPA for this study to shed light on themes and patterns within the experience of WCRC using a personal and individual approach.

### **Analysis Process**

IPA provides a flexible framework to analyze data, and researchers are also encouraged to adapt methods when necessary to achieve study objectives. Codes are

created directly from the data following in-depth, individual review (Smith et al., 2013). I used six steps to guide the analysis for this study: (1) reading and re-reading within an individual case, (2) initial note-taking, (3) developing emergent themes within an individual case, (4) searching for connections among themes, (5) moving to the next case and continuing steps 1-4 for each case, and then (6) looking for patterns across cases (Smith et al., 2013).

**Reading and re-reading.** The first step involved immersing myself in the existing data (Charlick et al., 2016; Smith et al., 2013). I intended to read with a receptive attitude to remain open of new ways of viewing participant experiences beyond what was found while conducting interviews in this research study. It was crucial to be mindful of slowing down and minimizing the habitual tendency to quickly make conclusions (Smith et al., 2013).

**Initial note-taking.** After familiarizing myself with the transcriptions, I wrote notes and comments. I also kept memos of my personal reactions, biases, and assumptions as I progressed through each transcript. These memos helped me remain aware and mindful of how my experience may have impacted the process of analysis.

**Emergent theme development.** Using my initial comments, I began to develop themes regarding emerging concepts. As Smith et al. (2013) suggested, I attempted to capture the richness of the participant's experience using concise themes. The themes consisted of a phrase or short sentence that could be tracked back to the original transcript.

**Searching for connections among themes.** The emergent themes that were identified were then grouped together. A new, descriptive label for the superordinate theme was generated for this group (Smith et al., 2013). The themes were analyzed in relation to the research question, and short excerpts from the interviews that can be traced back to the transcripts, were used to exemplify themes.

**Moving to the next case.** Steps one through four were repeated for each case. Each transcript was individually interpreted, and the interpretations were subsequently bracketed to avoid imposing conceptual categories other cases. Each case had individual themes. Memos were also kept throughout the analysis process of each case.

**Looking for patterns across cases.** After individually interpreting each case separately, I looked for shared themes across cases. Shared patterns were grouped to connect cases. Superordinate themes were assessed to determine what themes may be of importance, discarded, or altered to a status of across cases or within cases. Memoing took place in this step, as in other steps, as needed.

### **Triangulation**

A key aspect of qualitative research is triangulation. Triangulation increases the credibility of research by using multiple methods to support the study findings (Patton, 2015). The aim of triangulation is to not only confirm findings across cases, but to also remain mindful of data uncovered by both consistencies and inconsistencies across data sources (Patton, 2015). I used review by participants, or member checking, and documentation for triangulation in this study.

## **Review by Participants**

Participants are able to validate the meaning that the researcher interpreted in the final draft of the research and provide feedback to the researcher using member checks (Patton, 2015; Willig, 2007). The depth of the data used and the extensive contact and feedback from participants following interviews is only feasible for researchers due to the small number of subjects studied (Patton, 2015). Member checks allowed the participants to provide feedback regarding findings, descriptions, interpretations, and themes. Member checks increased the validity of research findings by examining completeness and accuracy (Patton, 2015). Participants in this study were provided with a summary of the themes that were interpreted from their own data as well as the overall themes derived from all participants. I emailed each participant individually requesting that they review the findings. Participants were encouraged to verbalize their reactions and reflections of accuracy regarding the themes. Participants were asked if they would like to add any information or if their experiences were captured in the research. The participants' feedback was then incorporated into the results and discussion.

## **Documentation**

In contemporary society, rich data is present in multiple forms, one of which is documents (Patton, 2015). Documentation examining the online presence of the cycling community will also be used in this study to triangulate. Analysis of cycling websites, social media, and online cycling groups will be used as concrete artifacts to support the qualitative inquiry of this study.

## CHAPTER IV

### RESULTS

Four broad themes across cases were uncovered related to the experience of WCRC—cycling benefits, identifying with cycling, cycling culture, and gender differences. The four broad themes were then divided into subthemes, which will be outlined in more detail below. These themes and subthemes are used to make meaning of the data, which reflects how the participants make meaning out of their lived experiences (Charlick et al., 2016). Results from the triangulation process will then be presented.

#### **Theme 1: Road Cycling Benefits**

All participants reported achieving benefits as a result of road cycling, highlighting the prevalence of this theme across cases. Within the broad theme of cycling benefits, sub-themes regarding the benefit type were also reported. These sub-themes include the following: (a) physical benefits, (b) psychological benefits, (c) social benefits, (d) transportation benefits, and (e) new experiences/travel benefits.

#### **Physical Benefits**

The first type of benefit that participants reported from road cycling were physical benefits, such as fitness, weight loss when desired, and cross training for other physical activities such as swimming or running. Many women also spoke to being motivated to cycle as a result of the physical benefits that they experienced. The following quotes are supportive examples of physical benefits that participants shared:

Jaylen:

Cycling gives me a purpose for staying fit that's not just staying fit to stay healthy. It's...I want to stay fit, so I can go on these epic long rides (smiles).

Francesca:

My motivation has been for myself to get stronger—myself to get, you know, stronger; to be a more well-rounded cyclist.

Judit:

Physically, when I got into riding, my running got better...So, that was pretty exciting...to know that my running was getting better by just causally riding, by doing that cross training.

### **Psychological Benefits**

Psychological benefits were another sub-theme reported by participants. A spectrum of psychological benefits was outlined which ranged from a feeling of joy to one participant attributing cycling with “saving [her] life.” This sub-theme was separated into the following additional subcategories: (a) increased confidence, (b) mental clarity, (c) stress relief, (d) psychological well-being from being outdoors, and (e) enjoyment.

**Increased confidence.** Many women reported that they had experienced an increase in confidence as a result of cycling. Some women ascribed this confidence increase to weight loss from road cycling while others reported feeling empowered from road cycling, and in turn, more confident. Additionally, women also noted that when



other cyclists in the road cycling community mentioned recognition of observable improvements in areas such as racing speed or bike handling, heightened confidence was often consequence. Some supportive quotes include:

Kassie:

The more I was riding, the more the weight came off. The more the weight came off, the more the self-confidence went up. And I found the confidence to ask my husband for a divorce.

Kayla:

...building up my confidence a little bit more in road, I do have more pride in myself about...wow, these women thought I did well enough...that they asked me to come back (smiles).

**Mental clarity.** Participants reported that road cycling allowed them mental clarity. One participant stated that the “mind numbing” process of riding, particularly endurance rides, created space in her head to contemplate and logically resolve issues on which she had been ruminating, or feeling “over-anxious.” Other women conceptualized their experience on the bike as an opportunity to clear their minds and “reset.” Some women concluded that their mental clarity was a result of being present and mindful of their body cues while on the bike. The following quotes demonstrate this theme:

Taylor:

It’s just kind of that time to like, turn off the front of my brain and...just be present and kind of reset...it’s a very in the moment, present activity that kind of forces you to be nowhere else but on the bike.

Francesca:

I'll go on a ride, maybe anxious, or confused, or unhappy about something, and then like, I find by the end of the ride, my thoughts have usually self-resolved.

Kayla:

Psychologically, it's a great way to turn off your brain a little bit and get out—get away from everything.

Jaylen:

It's also helped psychologically. I had a fairly rough childhood, so it's really helped me process that and actually do the personal growth work.

**Stress relief.** Participants reported that stress relief was among the benefits that they receive from road cycling. While some women credited exercise for the stress relief achieved from road cycling, others attributed stress relief to other aspects of the sport. For example, one participant shared that road cycling became a coping mechanism for her from an early age; she reported that cycling helped her ameliorate stress pertaining to her upbringing and family dynamics. This participant stated that she was grateful to have developed cycling as a coping mechanism, given that many of her family members had turned to substances to manage stress. Additionally, Francesca, a student in her third year of medical school, reported that her academic success was contingent on her ability to cycle. Francesca told the researcher, "I don't think people realize that I would be a terrible, terrible student if I didn't ride." While this theme appears to have many dimensions, the experience of stress relief from road cycling is apparent.

**Psychological well-being from being outdoors.** Being in nature was another theme that emerged across participants. Many women reported that being outside while they exercised was a motivation for them to cycle. One participant spoke to living in an area that experienced long, dark winters; this participant reported that cycling outside was an asset to her obtaining the sunlight that her body necessitated to maintain her psychological well-being. Another participant referred to the time she spends outside on the bike as her “meditation” and her “Zen,” as she subsequently felt “balanced” and “happy.”

**Enjoyment.** All of the participants endorsed a feeling of enjoyment from road cycling. Many women reported feeling “happy,” “elated,” and “awesome” from road cycling. Other women reported that witnessing self-improvement, such as increased strength or speed on the bike, brought them joy. Most participants stated that their experience while cycling competitively, such as feeling adrenaline or winning a race, brought them happiness. The competitive environment and interpersonal dynamics associated with road cycling events also motivated many participants to cycle. The enjoyment sub-theme is evident in the following supportive quotes:

Francesca:

I like competition, so, that was my primary motivator... I think without the racing, I'll always still ride because for it's like part of my routine. I feel like if I don't exercise at some point, I'm just kind of cranky. I'm pretty unhappy.

Kassie:

There's something about road, and especially the racing of road that really appeals to my competitive nature.

Taylor:

I love the adrenaline aspect of it.

### **Social Benefits**

Another type of benefit that was reported by participants related to the social component of road cycling. Two of the women who were interviewed spoke to road cycling being a method of connection in their romantic relationships, with one woman even meeting her husband through cycling. Most women stated that road cycling served as a medium to grow their friend group and meet new people. Also, one participant mentioned that cycling allowed her to feel more secure meeting her basic needs, such as eating, when she did not feel "presentable." The following quotes evidence the social benefits theme:

Josefina:

[Cycling] was a huge social factor because you're part of a group, and when you ride every week, several days a week with people...you build a lot of comradery. And you share things...for years, that was my social outlet.

Jaylen:

Socially, it took me from feeling that everyone had to like me all the time and I had to always be presentable. I think we as women really struggle with that. To

screw it. I haven't showered in days. I'm walking into this restaurant because I'm starving. I don't care. It is what it is, and becoming more comfortable with that.

### **Transportation Benefits**

Transportation was another road cycling benefit that was reported, particularly in reference to saving money. One woman noted that while at university, she could not afford to own a car and simultaneously pay the rent for her apartment. This participant told the researcher that she sold her car, and she began commuting by bike. While this woman no longer commutes on her bike out of necessity, she continues to ride her bike to work when the weather permits out of preference. Another participant mentioned that she was able to maintain her job while she was homeless by commuting with her bike. While participants did note that drivers of cars were often disrespectful to cyclists on the road (e.g., driving too close to cyclists, driving in bike lanes, yelling at cyclists, etc.), a transportation benefit from cycling was evident.

### **New Experiences/Travel Benefits**

New experiences, including travel, were the final type of benefit endorsed by participants. These new experiences were discussed by participants in reference to seeing, feeling, and learning new things while cycling, and this pattern was most evident to participants on longer, training rides. One participant reported that her cycling adventures lead to a sense of "enjoyment and relief" for her. Other women stated that their experience with competitive road cycling allowed them the opportunity to travel for races. One woman noted that because she was on a road cycling team, hosts frequently housed the team's cyclists, which freed the team members from the financial obligation

and stress of a locating a place to stay while traveling. The same participant disclosed that if she were not on a competitive cycling team, she would have been unable to travel to the locations which she had visited as a WCRC.

As a whole, road cycling seems to provide a wide assortment of benefits to women. The benefits that participants in this study endorsed mirror those that were found in the road cycling research literature, particularly the physical, psychological, social, and transportation benefits that were found. A novel type of benefit was also reported in this study—new experiences/travel. In addition to the theme of benefits that emerged, a theme of conceptualizing the role of a cyclist as an identity characteristic became evident.

### **Theme 2: Identifying as a Road Cyclist**

Participants reported that being a competitive road cyclist was an identity characteristic for them, which was the second theme found across cases. The road cyclist identity was discussed by participants in a positive regard overall, with many of the women endorsing “passion” about the sport. One participant also mentioned frequent use of cycling metaphors during interpersonal interactions, as “there’s just so much to learn for [cycling] that relates to life.” The experience that other participants reported illuminated a range of reactions that participants attributed to identifying as a road cyclist. A common theme among these reactions was cycling becoming, as Josefina referred to it, “an all-consuming passion,” which impacted areas such as dress, scheduling the day, and even the “bike clutter” that begins to “take over” cyclists’ homes. Some participants discussed being attracted to other cyclists, as the shared cyclist identity often reflected common interests and values. Accounts from participants who told the researcher that

road cycling became their “whole life” shed light on a sub-theme of the cyclist identity—time commitment.

### **Time Commitment**

Participants reported the need for daily training in order to maintain the identity as a competitive road cyclist, which participants stated required more strength, speed, and handling skills than the identity of a recreational road cyclist. One participant stated, “If you don’t train on a regular basis, you’re not strong.” Other participants noted that as women, more effort was typically required to compete at the same level as other, typically male, cyclists. The time commitment sub-theme is bolstered by the following supportive quotes:

Jaylen:

I was a competitive road racer, so my days were structured around training. Even when I was working a regular job, my day was always structured. Like, how do I fit my training in?

Josefina:

I was obsessive...I nearly lost my job because I was so wrapped up in my cycling...I spend so much time on my team riding Saturday/Sunday morning with my team, riding Wednesday night. In the summertime, we ride Tuesday/Thursday/Saturday/Sunday. It’s a lot of time that you put in on the bike.

Judit:

I used to lead those group rides, and I noticed, I stopped leading just because I didn’t want the time commitment.

As a result of the regular training and competitive environments that WCRC experienced, some participants reported related emotional reactions. Feelings of “stress,” “pressure,” “panic,” and being “burnt out,” among others, were endorsed during the interviews. The following quotes are examples of these types of emotional reactions from participants:

Jaylen:

[Road cycling had] constant stress—the constant feeling like people are watching me and my results.

Kayla:

I immediately finished the race, and I got like a bunch of criticism (leans back) all at once...after the race I did there, I actually had a panic attack in the car.

Judit:

When I first started, it was exciting to go to races and crits, but then... like I had to back off the competitive cycling part. And in general, the training just burnt me out from everything.

**Family responsibility.** Although most of the participants in this study did not have children, both women who identified as mothers reported that family responsibility was a factor in their time commitment to road cycling. For example, Taylor told the researcher, while she had a previous career as a professional pole vaulter, she now has a child and a career which requires that cycling remains a “hobby, not a career path.” Josefina also discussed how balancing road cycling with her role as a mother was a struggle for her at times:



I never regret cycling, but I regret all the mornings that I left my kids in bed; or left them with a babysitter; or I didn't go to their event because I wanted to go ride my bike; or I needed to race; or I needed to train. And, I didn't go to—I didn't value my little babies...I go to bed at 9:30, get up at 4 or 5, go race my bike, come home and take care of my kids...the cycling circle is really tough because for me, my whole life was about cycling...[but] every decision I made to be on my bike was a decision to take away from another thing—my career or my kids...cycling was my third shift because I had my full-time job. And I had my house, I had my kids, and I got two master's along the way. But I gave up some time with my kids, and I'll never get that back. And I do regret that.

In summary, identifying as a road cyclist was the second broad theme that was found in this study. Participants mentioned the road cyclist identity affected their appearance and dress, attraction to other cyclists, daily schedule, and even the contents of their homes. The time commitment that the road cyclist identity required was also noted by participants, with the two women who identified as mothers discussing the hardship associated with balancing the role of WCRC and mother.

### **Theme 3: Road Cycling Culture**

The third theme that was found across cases described the road cycling culture that participants experienced from their personal perspectives. The most prominent aspect that was endorsed regarding road cycling culture was a sense of community between cyclists. While there were individual differences between participants, most women reported that they experienced the road cycling community to be positive and supportive.

For example, Kassie reported that her “community is the cycling community; they’re just so welcoming.” Participants reported that the road cycling community was a platform to make friends with women, and participants stated that these friendships were “lasting” and not limited to road cycling activities. Judit told the researcher, “I moved to Texas not knowing anybody, and, like, Dallas Racing being the first people or group that I met here was pretty special to me.”

Although the road cycling community was reported to be supportive overall, some women noted a gender difference within the community. Compared to the group dynamic that was present in mixed-gender road cycling groups, the group dynamic that participants experienced when in women-only road cycling groups was reported to be more supportive. The following quotes evidence this cycling community gender difference:

Jaylen:

All women is definitely more supportive...(laughs). More supportive, more freeing, and I feel like maybe the conversations go a bit deeper.

Kassie:

The women especially, we do respect each other and build each other up. And we kind of call each other out when we’re not doing that.

Amongst the overarching road cycling culture theme, sub-themes were identified. These sub-themes included: (a) few women, (b) “rules,” (c) competition, (d) teaching other cyclists, (e) evaluating others (f) bikes, (g) clothing, (h) diversity, and (i) barriers. Subsequently, these sub-themes were further divides into sub-categories. The sub-

categories for competition, the largest of the road cycling community sub-themes, include the following: (a) strategy, (b) teamwork, (c) present/in the moment, (d) attention to non-verbal communication, (e) self-talk, (f) perceived risk, (g) negative race experiences, (h) effective team efforts, and (i) combined races.

### **Few Women**

The sport of road cycling was reported to be dominated by men with substantially fewer women cycling road bikes competitively. As a result of this gender discrepancy, participants reported that they perceived women to be insufficiently represented by the media. The following supportive quotes detail this sub-theme of the cycling culture:

Kayla:

Women aren't represented as much and they're not taken as seriously. They're not paid as much, umm, put on tv as much. They have to fight for sponsorships. I think that that kind of trickles down the sport and it makes it hard for women to want to join or start or kind of just put their foot in the water. Because if they don't get that representation of people getting respect at the highest level, then how do you feel like you're being supported at the lower level?

Judit:

I started out in a women's group, I guess because when I thought about cycling, I didn't know any female outdoor cyclists. At all. They were all men.

Josefina:

There are way fewer women in the sport of cycling.

Taylor:

In general cycling is male dominated. Most of the woman's racing, it's so small, umm, and the fields are so small.

**Growth.** While the number of women participating in road cycling is far fewer than the number of men, participants noted that the women's competitive cycling field was growing, particularly as of late. Participants stated that within the road cycling community, a recent shift to grow and encourage women's road cycling is taking place. On an individual level, the motivation from other cyclists was mentioned as an individual factor for this growth. Kayla reported that higher-level WCRC possess influence which can promote growth in the sport of women's competitive road cycling. Support, particularly for novice riders, was highlighted as a catalyst for increasing the population of women cyclists, with participants speaking to the unmotivating effect of harsh criticism, judgement, and/or sexism in the sport. Conversely, a welcoming environment propelled some participants to cycle competitively, as evidenced by the following quotes:

Kayla:

They wanted me to come to their practices, and they wanted me to come to their crit that they were doing. And then, I met their club that had a lot of support for women. They were just so positive about it, and there wasn't that cattiness. So, it just built my confidence and made me feel a lot better.

Judit:

I used to lead a group ride out of Lifetime Fitness, and after a group ride, you'd get all these new people new to cycling. And we'd tell them it's a no drop ride.

We'll go whatever pace they need, and motivating them and showing them that they can do their first 10-mile, then 20-mile, then 30-mile ride. And you can build them up to do their first bike rally of like 100-kilometers. Like, that's a pretty good feeling to get people into it, and sometimes it even started from cycle classes.

Also, some participants reported that supporting women cyclists was becoming a priority on a broader, social level in their areas. Participants evidenced equal payouts and individual races available to WCRC in these locations. The following are supportive quotes for the sub-category of growth:

Judit:

It's growing, and I can see more women's teams growing. So, I guess, I like the direction it's taking, women's cycling.

Khadijah:

I think that there's been a big push to get more women involved in cycling at least in my area. I think that the women's and kid's/youth cycling is going to make a huge difference...There's been a big movement to embrace women's cycling, equal payouts for men and women.

Kayla:

Bring in people so they feel, they're not the worst one, and if they don't know anything then they can use the other people around them who will support them. That can be really positive and supportive. That's how people get their toe into

the water. So, seeing little groups pop up of higher-level women supporting lower level women.

### **“Rules”**

Participants endorsed that individuals within the road cycling community are guided by social norms which some participants conceptualized as “rules,” although the only official USAC cycling rule that is explicitly outlined demands mere adherence to traffic laws (USAC, 2019). The “rules” that participants described took numerous forms; however, the most predominant “rules” that were reported related to etiquette while cycling. Examples of road cycling etiquette provided by participants included: (a) holding your line, or riding in a straight and uniform manner; (b) do not overlap wheels with other cyclists in the group; (c) verbal cues (e.g., calling out potholes, vehicles, stopping at traffic lights, etc.); and (d) working with other cyclists (e.g., rotating pulls, stopping if a group member gets a flat, etc.). Some participants compared these cycling etiquette behaviors to the “rules of the road” that drivers must abide by while operating vehicles, such as allowing adequate space between other vehicles when driving on the interstate. Other road cycling social norms that were mentioned by participants referred to bike handling skills and safety, as Josefina noted, “everything you do with your handlebars on your bike affects people in front of you and behind you.” Although clothing in the road cycling community will be discussed in further depth in an upcoming section, social norms about clothing were also reported as the following quote details:

Josefina:

You only wear team kits. So, nobody on my team would wear a jersey that they saw, say, on the Tour de France. If you're not part of a team, you don't wear that kit. So, you only wear a kit that you've been a team member of. So, I can wear my old team kits if I want to, or I can wear my current team kit. Now, if I wear an old team kit while I'm on a team with somebody, I might get shit about wearing the wrong kit... So, in my circle, you only wear team kits.

### **Competition**

An overarching theme that was present when exploring the road cycling community was competition. Participants spoke to the structure present in road racing with Jaylen reporting that as a competitive racer, her days were structured around training, even while maintaining a job. Another dimension of competition that women reported was determination and persistence, particularly in reference to training. While structure and persistence are generally not perceived as negative traits, participants reported instances in which these traits were taken to extremes, as Jaylen explains in the following quote:

I feel like sometimes in road when I would hit a wall, it would be more of this kind of 'suck it up and continue. Like, suck it up. You've got this, keep doing it.' In the road racing, it felt like, 'Well why, this isn't hard? Why are you struggling? It's all in your head. It's not that hard. Keep going.' Kind of that drill instructor mentality instead of that caring friend mentality.

Another component of women's competitive cycling was "mind games."

Participants reported that while interpersonal connections are often formed while cycling, those bonds can be exploited during competition as a tactic for success. The following quote from Josefina serves as an example:

I have an inhaler. I have asthma. And I learned a little trick. I would start puffing on my inhaler going, 'Oh wow, I'm having trouble breathing.' There's a lot of mental stuff that women do. I remember sometimes a couple of women would be like, 'Oh, I'm tired. Oh, I have to go to my daughter's volleyball.'

"Mind games" seem to be used as a tool in women's competitive road cycling to advance one's standing in the race or crit. Multiple other distinct aspects of competition were reported also by participants. The following sub-categories explore these patterns in more detail.

**Strategy.** Regarding competition, a pattern that was evident across participants was strategy. The use of strategy when competing was discussed by participants in reference to energy expenditure (e.g., while cycling on hills, pulling the pack, etc.) awareness of other cyclists, and patience for the appropriate moments in the competition for attacks. Additionally, when discussing strategy in road cycling competitions, women reported that road racing differed from other disciplines of cycling such as mountain biking, with many women referring to road racing as a "chess game." The following quotes are examples of participants' perceptions of strategy when competitively cycling:



Kassie:

There's something about road, and especially the racing of road, that really appeals to my competitive nature. And true racing, it's like a game of chess, which you don't get that with mountain biking; you don't get that with gravel; you don't get that with the others. There's a whole different element that comes into play in road that isn't there in the other disciplines. That's why I love road.

Josefina:

And that's where I learned about weight and hills. That if you're on a rolling hill situation, don't kill yourself going up the hills. You're gonna have to get them on the sprint because their weight will carry them right back to you. And they're not even working.

Francesca:

So, what will happen is like everyone will focus on like 1 or 2 people who are like the strongest... it will be focused on their actions and how they decide to attack or whatever, breakaway. So, it will just be like slow, and some people will be reactive; and it will be fast for a bit, and then slow back down.

**Teamwork.** Another aspect of competitive road cycling that participants discussed was teamwork or a collaborative effort with other cyclists during the race or crit. Two types of teamwork were mentioned—a cyclist's role on a team (e.g., sprinter, climber, etc.) and taking turns pulling the pack, which requires greater energy expenditure for the road cyclist leading the pack, or pulling. In reference to roles on a road cycling team, women reported individual sacrifices were often required to achieve

team goals. Examples of quotes that were classified in the teamwork sub-category include:

Taylor:

When I know my job is to help get a hill climber up to a break away, I can totally do that. And then when I do that, if I don't even finish the race and she gets first or second, then it's like, I did my job. When she's successful, then I feel like I was successful...That is what I like about the team racing is when I know what my job is, I'm totally comfortable killing myself...if it's to help someone else.

Francesca:

If I do even one thing, one or two things, that my team, breakaways, or if I lead someone out, and it benefitted my team, and I finished last, and I just beat myself up for my teammate, I'm totally cool. Like, I did something. I was productive...But usually, it's kind of like, I don't know, you've got other girls who are suffering, I feel like it's somewhat positive because we have to rotate just to make it easier.

**Present/in the moment.** Being present and in the moment was another sub-category of road racing that participants discussed. The results of not being present during cycling competitions included subpar performance, as awareness of other cyclists is decreased, and more generally, compromised safety for both the individual and other cyclists in the group. Participants also discussed being present during cycling competitions in reference to psychological benefits such as mental clarity. Examples of participant quotes included in this sub-category are:

Taylor:

Racing a crit or in a group ride, just kind of getting into that flow state and just being present, and centered, and nothing else matters...if you don't, the consequences are pretty significant...On the bike if you're not paying attention to what you're doing, you're either running into the wheel in front of you or you're, you know, hitting a pothole or something like that...that kind of forces you to be nowhere else but on the bike.

Khadijah:

It's hard to think during racing for me. It's more like, process focused, like, grab this wheel and stay here. I tend to be very process-focused.

**Self-talk.** Self-talk during road cycling competitions was a sub-category that emerged from participant interviews. Positive self-talk included breaking the competition into smaller and more manageable goals or “mental chunking,” reminding oneself that the pain they were experiencing was temporary, encouraging oneself, and displaying a growth mindset. Comments related to negative self-talk included judgment of oneself, uncertainty of abilities, and doubting one's chance at success. Effects of both positive and negative self-talk were noted, highlighting the mind-body connection during competition. The participants noted a connection between positive self-talk and productive performance at road cycling competitions; conversely, a relationship between negative self-talk and poor performance during competitions was also reported. The following supportive quotes refer to positive self-talk regarding road cycling competitions:

Taylor:

I just have to break it into those pieces. And a lot of times you go okay what is the pace I can sustain for 60 miles? For 100 miles? For whatever it is?

Jaylen:

I just told myself, 'Screw it (laughs). You've got third for sure, why not go for first?' So, it was a freeing moment (smiles).

Kassie:

There is a lot of positive self-talk. You know, 'Yes, it's hurting, but it's going to end. I can outlast everybody else's hurt.'

Francesca:

If I do badly on a race...I won't think of it as a bad race, but then I'll spend the next couple days being like, 'What did I do wrong? Like, how am I supposed to fix this? Like, how do I make it better?'

The following quotes refer to negative self-talk regarding competitions:

Kassie:

The teeniest, tinniest, 'I'm tired, I can't do this,' and immediately I was like, 'Shut up, yes you can.' But that split-second thought, a gap opened, and I lost the race.

Josefina:

Getting back on the bike and thinking I might die was really hard.

Khadijah:

It was a lot of, ‘Why am I doing this right now in the pouring rain when I could be at home on my trainer right now?’

**Attention to non-verbal communication.** Participants stressed the importance of awareness to non-verbal cues during competition. Women reported that road cycling competitions required that cyclists were cognizant of the body language that other cyclists were displaying. Many participants noted that after riding with certain cyclists repeatedly, non-verbal cues, or “tells” as some participants referred to them, were apparent for behaviors such as attacking. Participants told the researcher that it was also crucial for cyclists to be conscious of their own non-verbal behaviors during competitions in order to minimize any potential “tells” that they may display. Supportive quotes for this sub-category of the competition theme include the following:

Josefina:

I watched people’s feet. I watched their legs. I anticipate their moving; I know their moves. I know how to tell when someone’s getting ready to make a move. I know—I learned how to read all the signs in a group, and...I learned how to not give away my moves.

Kassie:

When you’re in the race, you’re reading it; you’re watching it; you’re paying attention. You have to be so aware of everybody else and what they’re doing, their positioning. It’s not really a matter of who’s the strongest.

Khadijah:

I kind of started to know who the strong people were, who likes to attack.

Watching for them and watching the body language of the pack. Kind of anticipate when somebody might be making a move... Looking for people who are twitchy or knocking through the corners.

**Perceived risk.** While all participants acknowledged that road cycling is a dangerous sport, when discussing cycling competition, some participants mentioned higher levels of perceived risk than others. However, most participants noted a gendered difference in perception of risk with WCRC typically displaying more cautious behaviors while road cycling when compared to men. Participants reported that experiences with crashes during road cycling competitions were also a factor that influenced their perception of risk. Individuals who endorsed greater levels of perceived risk reported engaging in behaviors they perceived to be safer, and less aggressive on the bike.

Personality and safety appeared to be the motivation for avoiding behaviors and situations that were perceived to be too risky. Participants reported that both children and their career were motivators for avoiding risk while road cycling. The following quotes are examples of the perceived risk sub-category:

Khadijah: I think I'm less likely to take risks...but I think that I'm a little bit more cautious.

Judit:

I can't go breaking my shoulder blade, dislocating my shoulder. Like even just a scratch, it's like, or even just messing up my hands. It's like I got a job to go to (laughs). I just can't get injured like that anymore.

Josefina:

I hit a point where I just—and I'm there now—where I could not risk another crash. I was just too afraid. I became too afraid.

**Negative race experiences.** Regarding negative race experiences reported by participants, negative self-talk was typically present. Additionally, interpersonal dynamics were often a component of negative race experiences. For example, Jaylen reported feeling pressured by her coach and peers in the racing community, which resulted in negative experiences. Additionally, Josefina stated that the feelings of “fear” related to her perception of risk as well as the feelings of “embarrassment” and “humiliation” when she did not perform at her expected level led to negative race experiences for her.

**Effective team efforts.** When exploring the experience of competitive road cycling with participants, some women presented behaviors that were conducive to group or team success. The most predominant type of effective team efforts involved healthy communication between cyclists, including conflict resolution, delivering and receiving constructive feedback, and supportive dialogue between cyclists. Teamwork and respect were also reported to be necessary for successful teams. The following quote from Kayla is an example of effective communication within a cycling team:

The coaches there were giving criticism, but they weren't giving criticism like, 'Here's all the things you did wrong.' It was sort of like, 'Hey, this is how you can be even better. But you also did this—you held on for the laps, and that was great!'

**Combined races.** The final dimension of road cycling competition reported by participants was combined races. According to USAC road racing regulations, races are combined at the discretion of the race director (USAC, 2019). Races are typically combined due to the limited number of cyclists registered in individual race categories. Given the low number of WCRC in the sport, women's races are often combined across category levels or across genders. When women and men did race together, the women were typically combined with the master's field or the junior boys, as opposed to men at equivalent category levels. During combined road races, cyclists of different categories, and in turn, different strength and skill levels, are forced to race together. Participants reported that combined races appeared fairly gendered, as men typically had individual race options for cyclists of across racing categories. Additionally, men are given a choice of which field they will compete in, general categories or Master's, regardless of their age, whereas the only race option available to many WCRC is a combined race. Participants spoke to the demotivating effect that combined races often had on current competitive cyclists as well as a deterrent to new women competitive cyclists. The following are supportive quotes for this sub-category:



Khadijah:

I get really frustrated when they combine fields. I don't think that the men would put up with being put on the course at the same time as another race. And that's like the only race I can do... The men don't have to race as master's, but that's the only race I can do that day. That can get really frustrating especially when they know that we're gonna get lapped multiple times by the faster groups. It's really demotivating to have people seem so much stronger in the same race.

Jaylen:

You'd have some women that are actually kind of interested in racing, and then they see us go out there with the junior boys...Like, what is this?

Judit:

For men... like there's so many options, and they can do multiple races. Like a men's 3 or 4 can do two races. And they're long. They're like between 40-60 minutes long. But for women, sometimes it's just, like I've seen races where it's just a women's open. No 3/4, no 2/3, just 1/2/3/4.

Josefina reported another gendered issue for WCRC, which was associated with combined races—being neutralized. Being neutralized refers to being stopped by race officials. Being put in neutral occasionally takes place during races, particularly for WCRC as many women's road races are combined. Multiple fields, or classifications, of cyclists are present within the same, combined race. According to the USAC 2019 road racing regulations, race directors are responsible for coordinating races in an effort to prevent overlap between groups during multiple field races. Race directors are also

allotted the authority to neutralize racers at their discretion, in addition to other permitted responses such as rerouting or restarting races, if an incident transpires which interferes with “the proper conduct of the race” (USA Cycling, 2019, p. 78). For example, if a WCRC was beginning to overtake the men’s field in a combined race, race directors may force the WCRC to stop, or be neutralized, to prevent her from overlapping the men cyclists. Josefina reported that she had never witnessed, experienced, or heard of an instance in which men competitive road cyclists had been put in neutral during a combined race, although there are no explicit USAC rules that prevent men’s neutralization during races. Forcing WCRC to stop during a race may allow competition to catch up to the leader during the race, and Josefina also spoke of an instance in which this happened during a recent professional WCRC event. Josefina told the researcher the following about being neutralized during races:

They put us into neutral so that the men could get more time on us. That’s happened. And then another time of course, the pro men caught us, and they put us in neutral so that the pro men could pass us. Well, you’re in a breakaway, and you’re busting your ass, you’re doing all these strategic moves, and all the sudden, you’re put in neutral so that the men can pass you...So, we get neutralized so that the men can do whatever they’re doing. It just doesn’t seem fair because we’re fighting, and working, and turning ourselves inside out just as hard as they are.

### **Teaching Other Cyclists**

A pattern that was consistently mentioned when discussing the road cycling community was being mentored by more experienced cyclists during early development. Participants who were at higher competitive levels also reported teaching younger cyclists and encouraging women in the sport. Most participants experienced this to be a positive, supportive aspect of the road cycling community, although some women reported that cyclists attempting to “teach” them had done so in a critical, disrespectful, or inconsiderate manner. Participants also noted that women’s groups, which were generally more social and specific to development of bike handling skills, cycling strength, and bike maintenance, were becoming more prominent within the road cycling community.

### **Evaluating Others**

Participants disclosed that the behavior of evaluating other individuals within the road cycling community was a frequent occurrence. Generally, road cycling experience level was the trait examined by other cyclists. The level of experience was assessed by a number of identifiers such as positioning on the bike, attire, bike components, and interactions with other cyclists while on group rides (e.g., ability to hold one’s line, rotating pulls, etc.). Participants stated that if a road cyclist were to display poor performance in any of the previous areas, judgement from individuals in the road cycling community ensued. Ultimately, while the theme of evaluating other cyclists was framed in the context fortifying safety while cycling, many participants noted the presence of individual differences between cyclists. Some participants acknowledged that because

cyclists are multifaceted individuals, with many aspects to their identity, basing one's conceptualization of a cyclist on such rudimentary set of traits often results in inaccuracy. The subcategories of evaluating others—earned respect, judgement, and individual differences—are assessed in greater detail below.

**Earned respect/having to prove oneself.** Many interpersonal groups exhibit a respectful dynamic regardless of experience level of group members; however, it appears that this phenomenon is not always present within the cycling community. Participants divulged a phenomenon of gaining respect from other cyclists in the community via proving oneself, such as by demonstrating bike handling skills, strength while cycling, or attire approved by the road cycling community (e.g., tall socks, lycra jerseys with sleeves, etc.). Women disclosed that individuals in the competitive cycling community formed assumptions about the experience level of cyclists that they were not familiar with based on these observable traits. If cyclists in the road cycling community perceived other riders to lack experience, these unexperienced riders were avoided in an effort to minimize the likelihood of a cycling crash. While this reaction was reported to be intended to maximize safety while cycling, some participants stated that it is crucial to remember that they were all beginners at some point; offering compassion, support, and empathy to new members of the sport was encouraged by these participants as opposed to judgment and criticism. Participants also reported a perceived gender difference in the phenomenon of earning respect with the desire to prove oneself as an equal in the community being heightened for women, as evidenced by the following quote from Judit:

Women in general, I think that they want to prove that they can stick with that first group and stick with the faster guys. And guys won't have that problem because they are guys. I mean, guys in general, they don't have to worry about just being dropped, it's...it's like for women, I don't want to be dropped by a group of men kind of thing.

Participants also revealed that they perceived that the experience level of the cyclist who was evaluating others was an important factor. Many women noted that as road cyclists became more seasoned in the sport, which, in turn, allowed greater opportunities to interact with capable women cyclists, the level of respect that women cyclists received was bolstered. Differences between the community of competitive road cyclists and recreational cyclists regarding earned respect were pronounced, with negative experiences such as benevolent sexism, reportedly occurring less frequently in the competitive road cycling community than with recreational cycling. Examples of supportive quotes for this pattern include:

Jaylen:

When I was a cat 2, there was a specific race where we got thrown in with the master's men b+ field, and...You have ex-pros that could still be pros (laughs) racing that field. And suddenly it was, I was treated differently. It's like I was almost treated as a...threat in that race. Like, if I went those guys were like, 'Oh, I better watch what she's doing because one of our guys might follow her.' Instead of, 'Oh, well, isn't that cute?'

Josefina:

When you move up to a very elite level, and umm, you're holding your own, you get so much respect from those men...But when you get to where you can't hold your own anymore, they leave you. And the comradery ends.

Taylor:

I feel like when I ride, the guys respect me because they all, like, know me and know I'm able to outsprint them, too.

Kassie:

Male racers have raced with enough strong females that they have that respect.

The guys recognize that we're just as strong, so they're like, 'Yeah, you can come pull.'

**Judgement.** Participants reported that when they were perceived to be breaking the rules or social norms of the road cycling community, such as by wearing a sleeveless lycra jersey or displaying a lower level of bike handling skills, judgement resulted within the cycling community. This judgement took the form of criticism, distance in the relationships with other cyclists in the competitive road cycling community, and mocking. The following examples are quotes categorized in the judgement sub-category:

Kayla:

I felt like I immediately finished the race, and I got like a bunch of criticism (leans back) all at once about, 'This is what you did. And I think you weren't a great wheel. You weren't a great wheel to draft, or whatever.' And...I didn't feel like I want[ed] to go back.

Kassie:

Here's the thing that people get judged on—what they're wearing. You show up in tennis shoes and a t-shirt, they're gonna judge you.

Jaylen:

In road racing, well your kit needs to be pristine. Your tan lines need to be crisp. Your sock height has to be correct. Everything has to be right. If you're riding a nice bike with crappy components, you're judged for that...Even just road riding in general, racers make fun of anyone who wears a tank top. Like, 'Oh, they're a triathlete; they must be a triathlete. Or, they're not strong on the bike if they're wearing a sleeveless jersey...you don't know how to ride in a group.'

Being one of the two mothers in this study, Josefina also shared that she experienced judgement as a result of her family responsibility. As competitive road cycling demands a substantial time commitment, the sport typically becomes a priority for individuals wishing to compete. As a parent, children are often prioritized, as well. Finding the balance between competitive cycling and her children was difficult for Josefina, and she reported that when she chose to prioritize her children over her cycling, judgment from other cyclists occurred. For example, when Josefina chose to make her children pancakes on a Saturday morning as opposed to going on a 5-hour group ride, she reported that judgmental comments were made such as, "I hope you had a productive morning because we rode 100-miles without you." Josefina believed that these types of interpersonal interactions served as a deterrent for mothers in the competitive cycling realm, as evidenced by the following quote:

I'm the only single mom out here. And by the way, no one gave me a trophy for that. I just got judgment.

**Individual differences within the community.** When exploring the community of women competitive road cyclists, participants underscored individual differences in reference to evaluating others. Particularly regarding bike components, body size, and attire, women cautioned about forming assumptions about other cyclists. With the population of women cyclists growing, the diversity within the community was perceived to be heightened, as evidenced by Judit's quote:

I've seen like a diverse set of women, so it's not like we all fit into this mold that people can be like, 'Oh, women cyclists do this and that.' Like, I've seen like the girly girls; I've seen the kind of hard-core girls; I've seen the *laisser-faire* kind of girls. I mean, it's just like with men. Where we come from all walks of the community, so it's hard to just pin down one stereotype for female cyclists.

In summary, WCRC reported that the competition sub-theme was comprised of multiple sub-categories. The following sub-categories were assessed: (a) strategy, (b) teamwork, (c) present/in the moment, (d) attention to non-verbal communication, (e) self-talk, (f) perceived risk, (g) negative race experiences, (h) effective team efforts, and (i) combined races. Participants told the researcher that these sub-themes were pivotal dimensions of their competitive road cycling experience. Additionally, participants reported other sub-themes, such as bikes, of the road cycling community.



## **Bikes**

Bikes were a key element in the road cycling community according to participants' accounts. Given that aesthetics were a major component of evaluating others, participants reported that road cyclists aim to present themselves favorably in this regard with bikes and bike components being a dimension of appearance in the sport of cycling. However, some participants clarified that the focus on aesthetics is not gender specific in road cycling. The following supportive quotes are evidence for this sub-theme:

Kayla:

When you get into the performance side of things everything has to be the best, top-quality type of stuff... I think there is kind of a focus on looking cool and having matching stuff especially when it comes to people's gear on their bikes and having their valves lined up with their, the labels on their tires. Everything has to be pristine and making sure the bikes are washed. Not just for function but they look good for the race.

Taylor:

The arms race is pretty big. We call it the arms race because it is everyone trying to get the best bike.

Jaylen:

The bike you have will dictate people's perceptions about the rest of what you have. So, if you're on a super nice bike, but you have plastic bottle cages, I think there's gonna be more judgement. If you're on a super nice bike, but wearing a tank top, a sleeveless jersey, I think there's gonna be more of that.

When discussing bikes, participants also mentioned the importance of the fit between the type of bike and the cyclist's needs. Different types of bikes such as road bikes, mountain bikes, and gravel bikes were used for varying disciplines of cycling. As many of the participants engaged in multiple types of cycling, women spoke to the significance of riding types of bikes that were specific to cycling disciplines. Also, in reference to bike type, the shape of the bike was noted. For example, bikes that had tighter handlebars, which rotated at sharper angles than wider handlebar, were considered more aggressive, as they allowed for a finer gradient of movement during cycling competitions. While more aggressive bikes were reported to be advantageous during cycling competitions, these bikes required a higher level of skill in order to safely ride. Participants stated that as they developed more experience and skill in the sport, they began to value more aggressive road bikes when competition.

Additionally, participants reported that they experienced a noticeable difference in performance when higher-quality bikes were ridden compared to lower-quality bikes. While certain bike brands were well-known in the cycling community for producing quality road bikes, such as Specialized and Cannondale, participants stressed the value of fit between the bike and the individual regardless of bike brand.

Prices of bikes and bike components were the final aspects of bikes about which participants talked. Although higher quality bikes were valued in the cycling community, these bikes could routinely cost up to \$15,000. Many participants disclosed that they developed strategies that allowed them to save money on bikes and bike maintenance. For example, Khadijah said:

I stalked Craigslist twice a day for six months to find [my bike]. So, it's a huge deal, and if you don't know bikes, you're not going to buy a used bike off a Craigslist unless you know what you're looking at. There's an advantage to being where I am and knowing what to buy, but it's a crazy expensive sport. I don't know, spending over \$1000 on a used bike, that's just crazy to some people.

### **Clothing**

Individual differences were found between participant reports of the importance of clothing in the road cycling community, although the majority of participants stated that clothing was important to them. Clothing which was reported to be scrutinized in the road cycling community were the following: (a) cycling cleats, (b) lycra kits/jerseys with sleeves, (c) lycra bibs/chamois, (d) tall socks, (e) cycling glasses, (f) cycling hats, and (g) cycling gloves. Kayla told the researcher that in the road cycling community, she perceived women were "expected to be very stylish," although she reported that men were "focused on the aesthetics of [road cycling] as much as women are, or as much as women are expected to be."

Team jerseys were a clothing choice that many participants preferred. Some women told the researcher that team jerseys serve as cues to the cyclist's identity, as cycling helmets and glasses often obscure facial features. The following quote from Kassie is an example of this trend:

You see people that you know, and I have found if you're not wearing your team jersey, they don't know who you are because you don't recognize each other. If

you see each other outside without the kit on, then you really don't know anybody (laughs).

Participants mentioned a mind-body connection associated with road cycling clothing. Taylor reported that if she did not feel confident in the road cycling clothing that she was wearing, she would not perform well on the bike. Khadijah also told the researcher that her road cycling attire helped her transition between disciplines of cycling, as evidenced by the following supportive quote:

I find that wearing my baggy clothes when I'm mountain biking helps me to reframe versus when I'm wearing super tight spandex on the road bike. What I'm wearing helps my brain adjust to what I'm going to do. Like, when I'm wearing my road kit, I'm ready to go and ride fast. When I put my baggies on, I'm more ready to relax and work out some tactical skills.

Comfort of cycling clothing was also highlighted by participants. Some participants stated that they found bibs (particularly women's specific bibs) to be more comfortable than cycling shorts while other women reported the opposite. However, all stressed the importance of wearing a chamois when competitively road cycling.

### **Diversity**

Some participants reported that road cycling had helped to diversify their group of friends, as road cycling served as a medium for meeting people with unique backgrounds yet a shared passion for cycling. Road cyclists were reported to be predominately White, although many women stated that they were beginning to see more cultural diversity in the sport. The following quotes serve as supportive examples:

Taylor:

I will say, I don't think that there's (deep exhale) ...as much diversity as we would like to see in cycling. It seems more, predominantly White... So, not a lot of diversity, especially among the women.

Kayla:

Not a lot of cultural diversity in cycling where we are, but it predominantly seems to be White people cycling. So, there's obviously some marginalization going on there. Or they don't have access.

Khadijah:

I've noticed maybe the past three years that there's been more diversity in the sport, but it's definitely a very White sport for most of my life... It's not quite balanced out yet, but it definitely seems like it's moving forward a little bit.

Judit told the researcher that as an Indian woman, cycling had not been modeled in her childhood. While she reported that her parents were supportive of her cycling, she said that cycling was "not the first thing they thought of to encourage me to do." Judit told the researcher that many of the cyclists that she knew had been introduced to road cycling through family members, an opportunity that she did not experience as a child in the Indian community. Judit told the researcher the following:

I've seen a lot of cyclists and triathletes, they come from parents who like came from a cycling or athletic background. So, it kind of carried through to the next generation. Meanwhile for me, and maybe for others, it didn't work that way. So

maybe with other cultures, it's like, now that I'm into it, if I have a family, that, maybe my kids will get into it. And that will introduce more diversity into it.

Road cycling was considered a sport that equalized people by participants who identified with races other than White. Francesca, who identified as an Asian woman, disclosed that despite cultural differences, when people are wearing road cycling attire, "everyone pretty much looks the same." Judit also reported that despite the small number of Indians in the road cycling community, she felt welcomed and respected. Judit reported that at times she is not aware of her race, as evidenced by the following quote:

I've never felt Indian in the cycling community. I just feel like I'm a cyclist. Like, I forget that I'm a darker skin tone than most of them, but when you really think about it, it's like, 'Oh, everyone is kind of Caucasian.'

Some women told the researcher that they preferred to be on mixed-gender cycling teams or group rides in order to interact with a more diverse group. Also, while some participants experienced the road cycling community to be accepting of LGBTQ individuals, others reported being uncomfortable with transgender women competing in road cycling events. For example, consider the following quotes:

Jaylen:

For me, when I was racing, it really felt like unless you were a cis female interested in all the things that cis females are interested in, you didn't really have a place. You didn't really have a community that you could belong to or fit in with.

Kayla:

Women feel pushed out of cycling by men, but then as women, we're pushing other women out because they're trans... We're already feeling marginalized by the men's community; trans women must feel super marginalized if other women are causing problems.

Taylor:

When I step on the line, and it's, some of the women who—the transgender athletes who identify themselves as women now, umm, it is very apparent the differences...that you're up against. So, that's hard because it feels for a lot of competitors that the feelings that I've gotten are it doesn't feel fair...these are their words, 'It doesn't feel fair that I'm racing against a man.'

**Age.** Participants reported that younger women race road bikes more than older women. Although there are fewer women cyclists as age increases, participants cautioned against assuming age was equated with weakness. Participants told the researcher that cycling insight increased with experience, which suggested that many older women road cyclists possessed vast awareness of the sport and were considered “well-seasoned.”

**Size.** Participants expressed that size was a profound component of the road cycling community. Some participants cautioned against making assumptions that larger cyclists would be slower than smaller cyclists, but other women spoke of the expectation for women road cyclists to have a small body. The following supportive quotes are evidence of this expectation in the road cycling community:

Kayla:

In cycling you see a lot of people who are sort of similar body type. I think that becomes a gendered aspect, that it's more accessible for bigger men than women. A lot of men it seems to be more comfortable in a spandex body suit and it seems like for women, there's pressure to look a certain way when you put on a skin suit. Even me, as a smaller person, I've had days where I've put on my lycra like, 'Ehhhh, man, this is tight and not super forgiving.' And sort of we internalize those expectations as well.

Jaylen:

I'm a sprinter, it's just the way I'm built. I'm never gonna be a tiny climber. And so, I had difficulty with that. With being told, 'I've seen you. You have the weight to lose.' Even though I was at 11% body fat. You know, and producing 1200 watts in a sprint. I feel like there's this image that a female cyclist should be a svelte cyclist. You know, the lean, no excess fat, you know, almost to me the eating disorder look. So, I feel like size definitely comes into play.

Khadijah identified as a bigger woman, and she reported that "it can be very frustrating to be a bigger person in road cycling." Khadijah spoke to feeling frustrated about having a difficult time finding clothes and bikes for road cycling. She told the researcher that the process of finding road cycling clothing "can be pretty hard emotionally." Khadijah also said that often when she locates bigger sized kits, only options of lower-quality options are available as opposed to race-quality kits. While "little niche markets" serving the road cycling clothing needs of bigger women were



reported by Khadijah, she stated that she and other bigger women have resorted to wearing “one-piece tri kits” or men’s cycling kits. Khadijah told the researcher that it is easier to find options that fit with these types of kits. She emphasized that it seemed to be easier for men to find larger sized road cycling kits that fit compared to women, as evidenced by the following quotes:

I know that there’s other bigger women who ride that don’t, you don’t usually see them racing to be honest. I’m much bigger, and I don’t think I’m that big, but I don’t know, maybe I am. And I see the men racing, and I’m like why can they find clothes, and there’s nothing for the women?

Socially, Khadijah reported that no explicit judgement of her size had taken place in the road cycling community. Khadijah did unfortunately report that she felt somewhat isolated from groups of women cyclists. She also endorsed that the uncomfortable emotional experience associated with her size has felt demotivating for her. The following is a supportive quote from Khadijah:

It’s hard to race bikes if you’re not super skinny. No one ever says anything to me, but I definitely feel like the odd man out a lot of times. And that’s hard. You feel like you don’t quite fit in. Especially race pictures are not flattering. You bend over, and your stomach hangs down (laughs and looks down). I don’t—I’ve never heard anyone say anything outright to me or in the sidelines, but it does bother me. I feel like because of it, I don’t put in as much as I would like to.

**Income.** Given that quality bikes and clothing for road cycling, which are typically expensive, are valued in the road cycling community, income is an impactful

identity characteristic. Competitive road cycling expenses mentioned by participants included bike maintenance, clothing, bikes/bike components, and travel for competitions. For example, Josefina mentioned an instance in which her derailleur had cracked on her bike, which cost \$800 to repair at a bike shop. Josefina also reported the following in regards to income:

I would save up. I would scrimp around for extra shot blocks, you know. And I remember one time after a ride, I was so hungry. I did 100 miles; I was so hungry. But I had no money, so I ate a goo on the way home.

When discussing income with participants, education was often addressed.

Participants reported that while there were individuals in the road cycling community that did not possess higher education, due to the financial demands of the sport, most competitive road cyclists did have college degrees. In this study for example, all of the participants had a Bachelor's degree, and five of the women also had graduate degrees.

The following quotes are supportive examples:

Jaylen:

When I was racing it was definitely a—people that were racing had money. And generally, if you have money, you have education.

Taylor:

I think cycling is an expensive sport, so for the most part you have people who are a little bit more established in the lives. Umm, usually have had some success.

Although participants endorsed the hefty financial demands of competitive road cycling, some women mentioned that cycling saved them money. Participants who

reported that cycling saved them money were comparing the cost of a road bike to the cost of a vehicle. When considering her overall financial expenditure for competitive road cycling, Kayla concluded the following:

Economically [cycling], saved me a lot of money on gas, which is nice even though it doesn't save us a lot of money because when you get into the performance side of things, everything has to be the best, top-quality type of stuff.

### **Barriers**

Participants reported barriers to competitive road cycling. Some reported social aspects of the competitive road cycling community were a barrier, as the tight-knit bonds that form between cyclists is difficult to overcome. Kayla stated the following about the social barrier:

I feel like with cycling, if you're not already in it, then you have a barrier socially to getting in it because people look at you like, 'Oh, who's the newbie? Are they gonna be safe, we don't know.' They already know all of the people who are there, especially in women's racing. It's so small. It tends to be, 'Oh, we already know all the people we race with, and we're comfortable with them. So, as much as they want to grow the sport, they're like, 'Oh, we don't know if we want to let these new people in.'

The cost of competitive road cycling was also identified as another barrier to the sport. Spending on bikes, bike components, cycling clothing, and road cycling competitions/travel can prevent many individuals with lower levels of income from participating in the sport. Additionally, having multiple roles as a woman was a barrier.

For women in this study, balancing children and career demands with competitive road cycling was a barrier. Also, women with larger body sizes may encounter barriers to competitive road cycling due to lack of accessible clothing.

The road cycling community that was reported by participants entailed many sub-themes. The sub-themes which were explored in this section include the following: (a) few women, (b) gendered social norms, (c) competition, (d) teaching other cyclists, (e) evaluating others (f) bikes, (g) clothing, (h) diversity, and (i) barriers. While some instances of gender differences were mentioned in the road cycling community section, such as being neutralized during combined races, a more detailed analysis of gendered experiences for WCRC are subsequently assessed.

#### **Theme 4: Gender Differences**

Gender differences were apparent in during the interviews with WCRC. Given that little research has examined the experiences of women in the sport of cycling, participants in this study revealed many gendered patterns that took place during their road cycling experiences. One of the first gender differences that WCRC reported was being identified by their errors in the cycling community. For example, if a WCRC did not call out a pothole in the road, as a result, they would be identified in the road cycling community as a person who never calls out potholes. The following quotes are examples of this gendered pattern:

Judit:

The male cyclists seem to let things roll off their back. And I think with females if you make one mistake it's like, 'Oh, you're that person.' That one mistake person, and they'll remember that for life.

Taylor:

If there's a dude in there in the peloton who's making dumb errors, there's—it's just like there's a dude. But if it's a girl, it's that girl.

Another gendered experience that was reported by participants involved instances at bike shops. Similar to the overall cycling community, bike shops are generally dominated by men. Some participants mentioned encounters at bike shops in which employees assumed that they had little (if any) knowledge about their bike. However, with the growth of the women's road cycling community, participants noted that many bike shops are hosting women's rides, bike maintenance training for women, and hiring staff who identify as women. Khadijah perceived that women tended to be more resistant to attempting to fix their own bikes than men, and she noted that the events offered at bike shops seemed to be addressing this gendered difference in the cycling community. Judit reported feeling empowered by women bike mechanics in the cycling community, as evidenced by the following quote:

It's just nice feeling empowered by these other women and seeing these women kind of do what they want, and seeing women, like, they're their own bike mechanics. They're like taking care of their bikes, and they can like take everything apart. And they're teaching me how to do it. And it's like, I was so

used to going to a cycle shop, and it's all men doing that. So, it's so cool seeing women be self-sufficient.

Harassment was another gendered experience that WCRC reported. Motorists were often the perpetrators of this harassment, as opposed to individuals in the road cycling community. Jaylen told the researcher of a specific encounter while on a training ride in which she had been harassed. She reported that as a result of cycling experiences such as these, she oftentimes finds herself feeling “hypervigilant” in regards to her safety while on rides as a WCRC, which she believed to be a gender-specific experience. Jaylen reported the following:

Road racing, when I was going on long 6-hour rides, and I'd be solo. And I'd walk into a convenience store, or I'd just have a—some dude in a truck come by and harass me. It's, I feel like it takes on a different context as a woman then it does as a man.

### **Talking**

Participants reported that compared to men, women talked more while road cycling. The gendered level of talking while riding extended to road racing as well. The following quote from Kassie is a supportive example:

Women are more chatty. We do talk a lot more... Actually, if you look at the start line up, the girls will be joking and laughing and smiling and talking to each other at the line up a lot more so than the guys who are in the zone.

The presence of talking between women road cyclists was reported to continue after the race. Participants stated that WCRC would interact with each other after races at

higher levels than competitive men road cyclists. For example, the following quote from Khadijah outlines this gendered difference:

Even after the race, the women will sit around and talk. Like, ‘Good job. And how did you feel today? Whatever, you looked strong.’ And the men tend to split up a little bit more, go back to their cars and change and cool down.

Participants also told the researcher that the social interactions and communication between cyclists tends to cover more intimate aspects of life in women-only road cycling groups when compared to mixed-gender road cycling groups. Consider the following quote from Josefina:

...some you learn about every child they gave birth to. (Laughs) women get really chatty in a race, which I’ve heard men don’t do...The few times I’ve actually been on all female rides, group ride, it’s actually kind of nice to take the guys out. And we just talk. And if we’re not racing, and we’re just talking, it’s actually nice...we talk about guys we’re dating, talk about our children, things like that.

When discussing talking while cycling, many participants mentioned experiencing the presence of a specific pattern within WCRC communication. WCRC were reported to apologize more than men competitive road cyclists. The following are supportive example for this pattern:

Kayla:

the sort of apologetic-ness...which is—it’s really hard to be a people pleaser in a competitive situation...That feels really gendered to me. That I want to make sure that I’m not making anybody mad.

Taylor:

[For WCRC] there's a lot more (raises voice/tone), 'Oh, sorry;' 'Oh, hey;' 'Sorry, sorry, sorry.'

Khadijah:

The men are more aggressive and less apologetic about passing and getting through the group.

### **Aggression Toward Other WCRC**

The overall social climate between WCRC was reported to feel warm, supportive, and welcoming. However, participants told the researcher that moments of aggression toward other WCRC were present. Some participants reported that this aggression was motivated by a need for WCRC to prove themselves, which came at the expense of other WCRC. Judit disclosed the following regarding WCRC aggression toward other women:

When I race on road, the women are a little more aggressive or maybe trying to prove themselves more... but sometimes it's at the expense of other women...I feel like in road racing, I've met more women where just during the race it's like every woman for herself. Especially in like group rides or even these crit races where it's women and men combined, I feel like maybe the women are trying to keep up with the men so much and prove themselves to the men so much that they get aggressive toward the other women kind of thing. It's like they'll cut you off or be like I want to be the first woman up there. It's like (widens eyes and leans back)...



As a result of this interpersonal aggression between WCRC, Josefina reported that she struggled to develop comradery with other WCRC. Josefina reported that she was able to develop a sense of comradery with men competitive road cyclists, but she generally did not experience the same type of connected and supportive dynamic with WCRC. Josefina also explained that she perceived the process of developing comradery with other WCRC to be more attainable when the other woman was “a lot faster” on the bike. Josefina suggested that it was easier for her to find comradery in the WCRC community if she was not perceived as a competitive threat to the other WCRC.

### **Less Aggressive than Men**

Despite occasional aggression between WCRC, men competitive road cyclists were perceived to generally display more aggressive behaviors when cycling than WCRC. The aggressive behavior that participants experienced was reported to be directed at other men competitive road cyclists as well as WCRC. The following are supportive quotes for this sub-theme:

Khadijah:

The men are a lot more aggressive. When you're like warming up on the course ahead of time, and the men are like much more aggressive most of the time. And when the women pass, it's like, 'Oh, good job. Keep going.' Like, even if you're in the middle of a race, they're much more polite when they pass you, and the men are just like (throws up hand, and speaks gruffly), 'Left.'

Josefina:

Men can get really, really, really aggressive... I've seen men punch each other in the middle of a ride (laughs) going 20-something miles per hour, grab each other's jersey, get in a fist fight riding their bike.

### **Intimidation**

Participants reported a sense of intimidation related to their gender, particularly when initially entering the sport of road cycling. Women reported that the road cycling community being dominated by men was a contributing factor for this reaction. One participant noted that she was initially unsure if men cyclists would be willing to assist in her development. The following quotes are additional examples of this gendered theme:

Taylor:

It's keeping a lot of other women from trying it because it's a really intimidating environment to walk into... in general cycling is male dominated.

Kassie:

Fear. And intimidation...afraid of men

### **Flirting**

Another gendered theme that participants reported was flirting between cyclists during rides, particularly during mixed-gender rides. Flirting was reported to take place predominately during social rides as opposed to training rides or competitive events.

Consider the following example from Francesca:

Non-training rides, it's just kind of like hanging out, and that kind of dynamic is more conducive to talking to you like you're a girl or whatever. Like if someone's

trying to flirt with you or whatever, it's more palpable at those social rides versus like on training rides.

### **Gendered Social Norms**

Participants reported gendered social norms. In the road cycling community, participants stated that language was a gendered aspect, with some participants reporting reactions from other cyclists when using aggressive language or cussing while riding, which was reported to be a common occurrence among men competitive road cyclists. If WCRC did speak aggressively on the bike, even when they were communicating the same message as their men competitive road cyclist counterparts, participants reported that WCRC were perceived as “bitchy.” Another rule that was specific to WCRC was that “snot rockets” were not appropriate. Participants disclosed that men were permitted to clear their noses by forcefully blowing snot while cycling; however, participants reported that the behavior of blowing a “snot rocket” was not allowed for women, as it was “gross.” The following quotes are example of participants’ discussion of the gendered “snot rocket” rule:

Jaylen:

We’re not allowed to blow snot rockets. We’re not allowed to talk as aggressive on the bike as men.

Josefina:

I’m actually quite proud of this, I am snot rocket queen...the men hate it... when they see any woman, but probably especially an attractive woman, blowing a snot

rocket, it's just something that is unnerving to them. They just can't stand it. It like drops you several levels in their eyes.

### **Patronizing/Condescending**

Participants reported that as WCRC, they experienced patronizing or condescending attitudes from men competitive road cyclists, although a decrease in patronizing attitudes with greater levels of cycling experience was noted. One form of patronizing experience that was reported across cases was unsolicited advice or “help” from men competitive road cyclists, some of which were less experienced than the WCRC they were attempting to aid. This supportive quote from Jaylen details an example of an experience that was considered patronizing:

I was sitting towards the back of the pack at the beginning, and I was sitting back there with a guy that was clearly fairly new to riding, but for some reason he felt like I needed help (scoffs). Like I needed his assistance, so it was very patronizing. But then when I got up towards the front of the ride when I realized that other people were tired, now I'll go up there and push the pace, or do some work, or this is a sprint. Then he came up and said, “Did you race or something?” I was like, “Yeah, I was a cat 2.” And he just went straight to the back of the group.

Assuming that WCRC were slower or weaker than men competitive road cyclists was another type of experience considered condescending. For example, Kayla disclosed an experience in which her coach had placed her at the back of a mixed-gender cycling group, despite Kayla having a greater level of cycling experience than the men cyclists in

front of her. Kayla told the researcher that in the middle of the ride, she was forced to go to the front of the pack and pull because the cyclists in front of her became too tired during the ride. Kayla reported that she believed her coach put her on the back of the cycling pack because he had assumed that she would be weaker than the men competitive road cyclists in the group. Kayla advised the following in an effort to minimize patronizing experiences for WCRC:

If you're predominately a male-dominated cycling club, and you have women who are joining you, treat them like everyone else. Treat them like people, don't be condescending; don't assume that they're gonna be slower than you.

Other participants noted that they felt as though they were not taken seriously in the road cycling community as a WCRC. Participants reported that they often experienced other cyclists to perceive efforts by WCRC as "cute." The following supportive quotes detail this pattern:

Josefina:

I think that if I tried to coach a man, I don't think it would be well-received.

Kayla:

Women aren't represented as much, and they're not taken as seriously... walking into your local bike shop and it's all staffed by cis men, and you feel like you're not necessarily being represented there. Maybe not taken seriously.

Francesca also reported that she perceived WCRC who were in a relationship with other cyclists to have a hard time establishing an identity as an individual in the road cycling community. Francesca told the researcher that oftentimes WCRC are identified

by their relationship partner. For example, Francesca said, “it’s kinda like, you’re the girlfriend of so and so racer.”

Overall, Jaylen reported noticing improvement in the level of patronizing/condescending behaviors in the road cycling community. She attributed this changed to the growth of the WCRC community. Jaylen said the following:

It kind of seems like [attitudes] may have shifted a little bit. Into ‘Oh, no, these women are really capable. They just need to be encouraged to continue on.’

Instead of, ‘Well, isn’t that cute. You’re trying.’

**Benevolent sexism.** A sub-category of patronizing/condescending experiences that WCRC reported in the competitive road cycling community was benevolent sexism. Two types of benevolent sexism were reported by participants—men competitive road cyclists who “coddled” WCRC while riding and those who assumed WCRC needed assistance maintaining their bikes (e.g., changing a tire). The following supportive quotes are examples of WCRC being “coddled” while cycling:

Francesca:

If there’s like a girl on the group ride, it’s almost like people feel like it’s someone’s little sister. Like, they’re slower; they might get dropped; they might get a flat. We’ve gotta make sure she’s okay.

Taylor:

They’ll protect me more in a group...When we’re on a group ride and we’re first starting out, if I got dropped, they waited for me. When guys get dropped, they don’t wait for them.

Jaylen:

It was kind of a—patronizing experience. Kind of that ‘Oh, this (raised tone of voice and added emphasis) *girl* is not as strong on the bike. So, we need to make sure you know that we’re coddling them.’

Supportive quotes for the pattern of benevolent sexism in which mechanical “help” was offered include:

Khadijah:

I was changing my tube, and someone tried to help me while I was already taking the tube out of the tire...which really pissed me off because he didn’t even ask like, ‘Is it okay if I do this?’

Kayla:

That benevolent sexism sometimes where it’s like oh, something happened to my bike and it broke or whatever. Like, when you go to go fix it yourself and somebody wants to go step in and try to fix it for you, even though they might have less knowledge about your bike than you do.

Francesca:

When guys try to like change my tire if I get a flat, and more times than not, I can do it faster than them, but I let them do it because they’re like, hey, there’s a girl on the ride and I want to change her tire.

### **Sexualizing Women Road Cyclists**

Participants reported that they had encountered instances in which people had sexualized women road cyclists. This phenomenon was reported to be prominent on

social media platforms, in particular. For example, consider the following quote from Judit:

You see more and more of these Instagram posts of women with their jerseys unbutton—undone, half zipped, and their boobs just popping out, it like, that's not real women's cycling but you're making it seem like that's what women's cycling is. But it's not. And I feel like when you talk to real cyclists, they know it's not that way, but... half of [social media posts], yeah, it's like boobs.

Jaylen also discussed makeup in the road cycling community. She reported that WCRC with team sponsors were covertly encouraged to wear makeup during competitive road cycling events. Jaylen said the following about this pattern:

If you watch women's racing, look how many women go to the starting line with earrings and makeup on. It may not be a full face of it, but you can tell they have mascara on; they've done some minimal stuff. I understand that can be a personal preference thing, but then when you look at the professional women racers or cyclists that are successful, and have contracts, and have sponsors, there's a theme (smiles). These companies and stuff, they don't want women who look natural. They want the women that they can promote in their eyes ... Are they focused on making their sponsors happy because they can have photo opportunities? Or do they make their sponsors happy because they will have results?

Additionally, Josefina mentioned an interpersonal dimension of sexualizing WCRC. The terms "cycling whore" or "pro hoe" were reportedly used to identify WCRC who have dated other competitive road cyclists. While many participants spoke to being



attracted to individuals with a shared road cycling interest, Josefina reported that in the road cycling community this is often perceived negatively, or as a reason for judgment.

Josefina told the researcher the following supportive quote:

I've heard men say, 'Oh, yeah, she's a cycling whore. She likes to date different racers.'...I had heard that said about some of the women who were long established cyclists...Things like that that they said about women that I never heard anyone say about men.

### **Balancing Gendered Responsibilities with Cycling**

Being a mother comes with a number of social expectations regarding gendered responsibilities. Josefina spoke with the researcher in detail about her struggle to balance her home life, career, and competitive road cycling. Josefina reported that she perceived the gendered responsibilities for WCRC to be different from those for men competitive road cyclists. Josefina said the following:

The men, it's different for the men because they've got wives at home. So, the wives will take care of the babies and all that, and they'll go ride early and come home and they have their families. Well, I was a single mom. So, I came home, I was just tired, but I still had to feed the kids, bathe the kids, fix whatever broke in the house, mow the lawn, you know, just...different....

Participants in this study outlined many gendered experiences that women experience when cycling road bikes competitively. Sub-themes of the gender differences included: (a) talking, (b) aggression toward other WCRC, (c) less aggressive than men, (d) intimidation, (e) flirting, (f) gendered social norms, (g) patronizing/condescending,

(h) sexualizing women road cyclists, and (i) balancing gendered responsibilities with cycling. As research examining women road cyclists is very limited, the gendered patterns that participants divulged will aid in creating a more complete understanding of the experiences of WCRC.

### **Triangulation**

Member checking and documentation were used to triangulate the results found in this study. Of the eight participants in this study, five women chose to take part in the member check. All five women reported that the researcher's findings and interpretations were accurate. While no additional data regarding road cycling was disclosed, three of the women told the researcher that they appreciated the opportunity to discuss road cycling in depth, as they are not typically allotted this opportunity.

For the documentation process, I began by exploring cycling apparel. As some participants had noted during interviews, social media and Google were useful tools when attempting to access the road cycling community, so that was where I started. I came across an article that detailed 15 road cycling apparel brands "you should know" (DiGiovanni, 2019, p. 1). This article discussed the following road cycling apparel brands: (a) Assos, (b) Attaquer, (c) Black Sheep Cycling, (d) Cadence, (e) Café Du Cycliste, (f) God & Famous, (g) MAAP, (h) Ornot, (i) Pedla, (j) Podia, (k) Rapha, (l) Search and State, (m) Velocio, (n) Void, and (o) Volero. Unfortunately, the website for Volero was unable to be accessed by the researcher, leaving 14 road cycling clothing brands to explore. Of these 14 brands, only one of the brands offered a variety of jersey sizes—Velocio; chest measurements ranging from 29 to 43 inches, or size 0 to size 22

were available. Gender differences in size ranges were also apparent when these brands were assessed, with men's clothing typically having larger size options available. In road cycling apparel lines from the brands Assos, Attaquer, and Black Sheep Cycling, this pattern was even more apparent. For these three brands, not only were the measurements of men's clothing larger than women's, but men also had an additional size option. For Attaquer and Black Sheep Cycling, XXL sizes were available in men's clothing, but women's clothing sizes stopped at XL. Additionally, two of these 15 brands did not offer women's clothing options—God & Famous and Cadence. When the other eight brands were assessed, the average chest measurement for the largest jersey size available was found to be 38.6, which corresponds with a size 14. Based on this information, the finding of gender differences in road cycling clothing was supported.

Then I began to explore some of the brands that participants had explicitly mentioned during interviews. These brands included: (a) She Beest, (b) Machines for Freedom, (c) Tenspeed Hero (d) Liv, (e) Pearl Izumi, and (f) Voler. Greater ranges in average chest measurements for jersey sizes (30 to 51.5 inches, or size zero to size 28) were found for these brands than the previous brands that were assessed. It is important to remember, however, that many of these brands were specifically mentioned as “little niche markets,” which met the clothing needs of larger sized competitive women road cyclists.

Next, prices of jerseys were assessed. All of the 20 brands that were explored regarding size were also examined in regards to jersey prices. The average jersey price across brands was found to be \$162.95. When considering that jerseys are merely one

element of competitive road cycling and other items such as bikes, cleats, and bibs much also be accounted, the interpretation that monetary barriers may deter new people from joining the sport of road cycling was supported.

### **T-F-B Framework**

In an effort to bolster the credibility and trustworthiness of this study, in addition to the triangulation component, the original Thoughts-Feelings-Behaviors framework was also briefly revisited. While a T-F-B framework informed interview questions and the interpretation of resulting participant data, an a priori coding system based on T-F-B was not used. As an IPA framework was implemented in this study, which is inductive and emergent (Smith et al., 2013), I found inadequate alignment between the T-F-B model and IPA. Despite the informal use of a T-F-B outline, I noticed several ways in which the interview question formation influenced participant responses and appeared to manifest in their road cycling experiences. For example, self-talk was discussed with participants, which revealed a link between a cyclist's internal messages and their level of performance on the bike. Also, the T-F-B emphasis in this study uncovered an emotional barrier for women—intimidation. A final example of an overarching impact that was noted was the attention placed on the interpersonal dynamics between cyclists, which participants reported to be a dimension of their road cycling experiences that was highly relevant to them.

### **Personal and Professional Impacts**

Given that the researcher plays an active role in phenomenological research (Miles et al., 2014; Patton, 2015; Willig, 2007), I was mindful of my personal process throughout this study. Speaking with the women in this study illuminated both the joys and the hardships associated with a sport that I love, which was difficult for me to hear at times. Nonetheless, the participants emphasized the shift toward inclusivity that was taking place in the road cycling community. I felt encouraged and excited after interviews, and even though I faced difficulties in relation to processing my cycling accident and TBI, I found myself beginning to cycle more and more throughout this research process. Based on participant reports and my personal experience with healing both physically and mentally on the bike, I am passionate about sharing this insight and potential vehicle for growth. I am interested in school psychology, and I hope to establish a cycling group for girls in public schools with a focus on processing gendered experiences and issues. I believe that this type of program would facilitate the development of healthy self-concepts for girls, promote supportive interpersonal relationships, and offer sound coping skills such as spending time outdoors, exercise, and communication.

### **Ethical Considerations**

This study contributes to the body of research literature about WCRC, and given that research specific to WCRC in the United States is practically non-existent, this study outlined the unique experiences that these women encounter in the sport. The challenges, benefits, social dynamics, and barriers of women's competitive road cycling were

assessed in this study to fortify the understanding of competitive road cycling across genders. This information is impactful for comprehending the understudied and marginalized population of WCRC in addition to contributing to potential future research. I am qualified to conduct an accurate and valid research study, and my work has been evaluated by my thesis committee to ensure proper execution.

Informed consent was given by email to the volunteers before being interviewed. Consent was given uncoerced and with full knowledge of the study. Participants invested only time and the benefits were awareness, insight, and knowledge regarding the research process and the findings. All of the participants appeared eager and willing to share their stories with me, as rapport was quickly established with all participants before the time of their interviews. Additionally, participants were de-identified using pseudonyms. Communication continued throughout the study as well, so that any concerns from participants could be addressed promptly. However, communication with the researcher consisted solely of interview scheduling, member checks, and exchanges of gratitude for the platform to discuss WCRC experiences, as opposed to concerns from participants. Also, recordings and documents have been kept secure, and this information will be deleted or shredded within five years of the completion of this study.

## CHAPTER V

### DISCUSSION

#### **Integration with Prior Literature**

The existing body of research literature regarding competitive road cycling focuses on the perspective of men cyclists, who comprise the majority of the road cycling community (De Geus et al., 2014; Heesch et al., 2012; Ogilvie & Goodman, 2012; Sá et al., 2016). While findings from this study supported previous research regarding the number of men in the sport, this research study aimed to expand our understanding by investigating the experiences of WCRC, an understudied minority in the road cycling community. Many of the findings from this study mirrored the experiences of men competitive road cyclists in previous research literature, although novel findings also emerged.

Multiple benefits from road cycling were endorsed by participants, which supported previous research findings. Assertions regarding physical benefits from cycling, such as cardio-respiratory fitness and muscle strength, which had been noted in prior studies (Götschi et al., 2015; Handy et al., 2014; Oja et al., 2011), were supported by this study's findings. Psychological benefits, for example, a reduction in depressive symptoms and emotional well-being were found in this study, which added support for psychological benefits from road cycling across genders (Barton & Pretty, 2010; De Geus et al., 2008; Gatersleben & Uzzell, 2007; Hötting et al., 2012; Sperlich et al., 2012). Social benefits, like a sense of affiliation, which had been evident in preceding literature,

were also supported by the findings from this study (Brown et al., 2009; LaChausse, 2006; O'Connor & Brown, 2007; Springer, 2013). Lastly, transportation benefits, such as decreased transportation costs, were found in this study further increasing support for road cycling benefits for both men and women (Börjesson & Eliasson, 2012; Gatersleben & Uzzell, 2007; Handy et al., 2014; Hoffman et al., 2014). The results from this study demonstrate that regardless of the gender identity of road cyclists, many benefits from the sport are attainable, expanding our understanding of road cycling across genders.

However, this study examined the thoughts, feelings, and actions that WCRC encountered, which resulted in a unique vantage point to analyze the data. Participants were found to identify with the sport of road cycling, and novel research aspects of road cycling culture, such as earned respect, were established. Additionally, this study provided the opportunity to evaluate ways in which experiences of US WCRC varied from the subject of previous research, men road cyclists who often resided abroad. Given the unbalanced treatment that women face in a number of sports (Boutilier & San Giovanni, 1983; Pauline, 2014; Roth & Basow, 2004), it was crucial to investigate the experience of this underrepresented population in order to ensure that cycling continued its history as a vehicle for women's liberation. While gender differences in cycling have been found to be minute or absent within high cycling countries, low cycling countries such as the UK, display a persistence of gender inequality in the sport, despite overall increases in the number of cyclists (Aldred, Woodcock, & Goodman, 2016). Therefore, the findings of this study aided in identifying and subsequently addressing gender



discrepancies within US road cycling, a low cycling country, in an effort to construct an inclusive foundation within the sport, which promotes women cyclists.

A social aspect of road cycling emerged in this study, which enhances our understanding of interpersonal dynamics between women in the sport. While the majority of participants disclosed experiencing the community of WCRC as warm, positive, and welcoming, this was juxtaposed by other participant reports of criticism, judgment, and “cattiness” among WCRC. Additionally, a sense of intimidation, coupled with a need to prove oneself, was endorsed, particularly for beginner WCRC. Often feelings of uncertainty and vulnerability result when judgment, criticism, and intimidation take place, and, in turn, projection of discomfort is a potential explanation for the reported pattern of interpersonal conflicts in the community of WCRC.

The current debate regarding transgender WCRC may also be an extension of this potential projection trend, with some women within the marginalized population of WCRC projecting discriminatory behaviors toward transgender cyclists. Rachel McKinnon’s competitive cycling experiences and resulting controversy, as well as concerns following the Rio 2016 Olympics, have spurred research regarding potential advantages for transgender athletes (Ballinger, 2019). Unfortunately, it seems that a research consensus has not yet been reached. Some studies have found that testosterone suppression has a minimal reduction impact on muscle strength (Ballinger, 2019). Other studies have found no biological advantage for transgender athletes. These studies concluded that national and international transgender sporting policies were predominantly discriminatory, particularly for transgender women, as no participation

requirements for transgender men were found (Ballinger, 2019). Regardless of the potential research conclusions regarding transgender athletes, systematic biases are apparent for transgender athletes, as clear regulatory variances on the basis of gender were found across sporting policies. For elite road cycling competitions (Cat 1 and Cat 2) sanctioned by USAC, transgender men cyclists are able to race with no restrictions (USA Cycling, 2018b). However, transgender women cyclists must satisfy the following conditions before they are able to compete: (a) declare their gender identity as a female for at least four consecutive years; (b) have a testosterone level less than 10 nmol/L for at least a year before competing as well as the entire competitive period; (c) consent to random or for-cause testing to ensure compliance with the previous regulations (USAC, 2018b). If a transgender woman cyclist is found to be in non-compliance with these rules, her eligibility for competing as a woman cyclist is suspended for one year (USAC, 2018b). In order for road cycling to become more accessible for women, these unequal and discriminatory USAC policies must be adjusted. While further analysis of potential biological advantages for transgender WCRC is required before appropriate conclusions may be drawn, the gendered USAC rules for transgender cyclists are in need of adjustment to rectify inequalities.

Expanding on previous research regarding stigma in cycling (Lucas, 2012), this study revealed multiple examples of sexist attitudes in the road cycling community. While the cycling community and related popular press articles have begun to explore issues including financial control, psychological manipulation, and physical abuse, which resulted in the formation of the first labor union for women cyclists in 2018 (Rook, 2017;

Slappendel, 2019), academic research is lacking. In the present study, patronizing and condescending exchanges were divulged by participants such as assumptions about strength and speed based on the gender of the cyclist. Benevolent sexism was also apparent in participant interviews, and this type of sexism was frequently reported to involve bike maintenance such as unrequested assistance while a WCRC was changing a tire. As participants noted a reduction in sexist interactions when the experience level of men competitive road cyclists increased, a parsimonious explanation for this negatively correlated relationship is exposure to capable WCRC. Therefore, with the current growth in the number of WCRC, these findings indicate a continuation in the reduction of sexist attitudes in the sport of road cycling is likely. With a decrease in sexist attitudes, which were reported to be demotivating by participants, the influx of WCRC will be further fortified.

Barriers to road cycling, such as perceptions of risk and mixed category races, were detailed in the current study. These barriers have also been found within the existing body of research (Akar et al., 2012; Dixon et al., 2017; Félonneau et al., 2013; Garrard et al., 2006; Garrard et al., 2008; Manton et al., 2016; Vanparijs et al., 2015). The size barrier, which emerged in this study, appeared to be a novel finding. However, popular press articles divulging experiences of fat shaming, food restriction, and over-training are prominent within the cycling community, underscoring the importance of this pattern within the road cycling community (Rook, 2017). For example, one participant in this study reported that her coach insisted that she lose weight despite having a body fat rate of 11%. Given that body fat serves to conserve body heat, insulate organs, and fuel

energy production, the optimal body fat percentage for healthy women falls between 20-25%, with a range of 15-20% considered healthy for women cyclists (Human Kinetics, 2009). Therefore, body fat percentages for women below 14% have been associated with decreased athletic performance and health risks including amenorrhea and reproductive complications, heart damage, shrinkage of internal organs, and death, among others (Human Kinetics, 2009; Occhipinti, 2019). Additionally, the finding of size discrepancies between men and women's road cycling clothing highlights the gendered bias that WCRC must overcome in order to engage in road cycling events. Based on the findings from this study, it seems as though the broader social trends of fat-phobia and fat-shaming (Fikkan & Rothblum, 2012) are also evident in the road cycling community. While some may argue that body size is an influential characteristic when road cycling, as certain routes, such as mountain terrain, may be more conducive to smaller or larger body sizes, blatant discrimination, which some participants described, is never justified. Perceptions of and attitudes toward size are certainly an area of growth within the sport in order for health, well-being, and physical function for cyclists to take precedence in the road cycling community.

Another gendered barrier that was reported by participants involved life obligations, such as family or career responsibilities, particularly for participants who identified as mothers. Previous research had described a gendered pattern in this regard, with men cyclists identifying fewer, if any, barriers associated with family roles (Dickinson et al., 2003), and this trend was supported by reported participant perceptions in this study. In addition to the difficulty associated with balancing multiple life roles,

such as mother, employee, and cyclist, one participant reported that as a single mother committing to the sport, she received judgment from other cyclists as well as criticism from her employer. This finding expanded on previous research (Dickinson et al., 2003), as occupational barriers to cycling also appear to be gender-specific.

In order to more fully understand the phenomenon associated with the sport of road cycling, the accounts of WCRC needed to be respected, documented, and incorporated. This study allowed space for WCRC to detail the events that they had undergone to escalate our understanding of road cycling. Participants outlined numerous benefits that are achieved from road cycling as well as multiple barriers to the sport. In order to allow the number of WCRC to continue to grow, these barriers must be addressed. Gender specific hindrances were also found in this study, such as sexist attitudes and size. While participants suggested societal level changes, individual changes such as avoiding assumptions about WCRC strength and speed were also reported to contribute to reductions in sexist attitudes. Overall, this study described multiple paths toward positive improvements for WCRC, and the greater road cycling community as a whole.

### **Implications for Practice, Policy, and Advocacy**

This study served as a platform for WCRC to describe their experiences in an effort to promote women cyclists, reduce gendered barriers, and further our understanding of competitive road cycling. As a psychological perspective focusing on participant thoughts, feelings, and actions was used, implications for clinical practice in reference to the American Psychological Association treatment guidelines for girls and

women were investigated. In accordance with the sixth guideline regarding promoting client agency, road cycling may be offered as a medium for mental health benefits, such as emotional well-being and social support (APA, 2018). An additional clinical aspect stems from identifying with cycling, as women cyclists are a marginalized population increasing the risk of potential harassment, sexism, and stigma. Clinical intervention may be necessary for clients to process experiences of discrimination, and these interventions should be individualized to the client's culture and gender, affirmative, and developmentally appropriate (APA, 2018). Psychologists are urged to obtain insight regarding current structural discrimination and trends of oppression, as these institutional barriers, such as those within the sport of road cycling, continue to hinder the psychological well-being of girls and women (APA, 2018). Also, the 10th guideline outlines the impact of discrimination for girls and women and, in turn, the necessity of efforts for improvement of hostile or biased systemic barriers from psychologists (APA, 2018). Strides toward social justice for WCRC are encouraged for psychologists.

University counseling centers may consider implementing women's group rides followed by therapist-led processing of the experience in terms of gender concerns or related women's issues. This practice could also be extended as an extracurricular activity to girls in public schools. Based on participant reports of road cycling serving as a platform for mental well-being and social connection, clinical practices such as these may facilitate group cohesiveness as well as individual growth. Opportunities for psychoeducation, such as healthy coping skills and interpersonal communication, may also arise while processing with women and girl cyclists. Additionally, bike shops often

organize women-specific group rides; if bike shops were to dedicate time and space to discuss gendered issues at the conclusion of group rides, feelings of intimidation about cycling, which participants reported as a barrier to the sport, may be minimized.

Regarding practices within the cycling community, a potentially beneficial strategy to augment the population of WCRC, may be increasing the accessibility of the sport to minimize reported barriers such as size, income, and intimidation. This may take the forms of introducing larger road cycling clothing size ranges for women; bike share programs allowing lower bike maintenance fees; and developmental groups for women, minorities, and children. In a therapeutic setting, discussions with women about topics such as size discrimination, beauty culture, and the thin-ideal may be fruitful a lead toward personal growth for clients.

Policy changes in the sport are also necessary for WCRC. Currently, WCRC must report concerns or harassment without anonymity (Rook, 2017), which often prevents reporting due to fear of exposure. By ensuring anonymity, the voices of WCRC would no longer be silenced, allowing for improvements in the sport to transpire. An additional policy issues within USAC involves combined races and neutralization of WCRC. Although the elimination of these practices is unlikely in the sport due to the low number of competitive road cyclists in the US, particularly for WCRC, a reduction in the gendered display of neutralization is a potential compromise for this dilemma. Multiple paths could achieve this shift, such as greater lengths of time between starts for combined races or removing race directors' ability to neutralize racers at their own discretion.

Opportunities for advocacy include dialogue and support for the labor union for women cyclists, The Cyclists' Alliance (Rook, 2017; Slappendel, 2019). Encouraging healthy team dynamics such as communication and inclusive practices is another advocacy area. Community and social support, such as being mindful of bike lanes while driving and giving cyclists adequate space on the road also advocates for cyclists' safety and well-being. The size barrier that is evident in the sport presents also presents additional avenues for advocacy. Biking organizations such as USAC, businesses, sponsors, and policy-makers in the sport could potentially address both size-based barriers and sexist/sexualized advertising. Advocacy could target women's image with support for cyclists of all body sizes and by offering opportunities for women cyclists to process their experiences following social rides or competitive events as well as encouraging women's participation in the sport. Lastly, research investigating US cycling demonstrates that cyclists are valued, and research exposes potential areas of growth within the sport. By improving cycling's practices, policies, and advocacy, individual and societal benefits will result.

### **Limitations**

Snowball sampling was used in this study, which was a limitation. Because some of the participants knew each other, it is possible that participants shared similar experiences and/or views. Snowball sampling limits the generalizability of the findings from this study.

Participant demographics such as education, sexual orientation, and race/ethnicity, were another limitation in this study. All of the participants in this study



have obtained a Bachelor's degree, and six of the eight participants possessed a graduate degree. The level of education that participants reported may have altered their perceptions and experiences in the road cycling community, as most adults in the US currently do not receive graduate degrees. Regarding sexual orientation, while one participant did not disclose her sexual orientation, all of the other seven participants identified as heterosexual. This may have skewed the findings from this study. Thus far, there is little written about gay, lesbian, and bisexual (GLB) cyclists, and most information about this topic appears predominately within cyclist dialogue, blogs, and magazines discussing the acceptance of GLB cyclists in the community, although the rates of GLB cyclists are unknown (Marsal, 2019). Research studies on this topic were unable to be located, which suggests GLB cycling research is necessary to complete our understanding of the sport. Additionally, while maximum diversity sampling was used in this study, only two participants did not identify as White. As a result, the scope of insight in reference to cultural differences in this study is limited.

Also, all participants in this study were willing to volunteer at least an hour and a half of their time for an interview as well as approximately ten minutes for the demographic questionnaire in order to participate in this study. Individuals who were willing to dedicate this amount of time to a research study may be more altruistic than the general population. Given that many of the findings from this study involved teaching, helping, and supporting others, this potential participant characteristic may have been a limitation in this study.

## **Personal Reactions**

I was surprised to discover the debate in the WCRC community about transgender racers, which may have been a reflection of my feminist worldview. I was unaware of the difficulties that larger women in the sport of road cycling face, and I was disheartened when I examined clothing brands. I believe that in order to grow the community of women road cyclists, elements such as clothing need to be addressed to allow for greater accessibility. I did not anticipate the finding that participants reported more experiences of sexism with recreational and less experienced road cyclists compared to more experienced road cyclists. Personal reactions were included in memos to ensure that my responses did not bias my understanding and interpretations. As more participants noted this trend of sexist experiences, it became apparent that while surprising to me, there was clearly an overarching pattern in the sport of road cycling.

As researcher inputs are pivotal to study outcomes in qualitative research, I was careful to memo and be mindful of my reactions to both the findings and the qualitative process overall. Many participants reported that as a whole, the sport was beginning to become more inclusive of WCRC, which I found to be motivating and exciting as a woman who engages in road cycling. I recognized that I felt more comfortable while cycling as a result of my awareness of changes within the road cycling community. I found myself feeling very connected with participants during interviews as well as member checks, and I believe that this dynamic facilitated discussion of more intimate experiences, such as harassment or sexism. Also, I noticed that during the process of the

study, I began to become more involved in developmental aspects of cycling for women, such as all women group rides and bike maintenance workshops.

### **Conclusion**

This study verified that women continue to be marginalized in road cycling, as the sport remains dominated by men. Similar to the broad societal trends that women experience, expectations, attitudes, and behaviors in competitive road cycling seem to focus on appearance, sexuality, double standards between genders, and balancing multiple life roles for WCRC. Overall, cycling appears to be a microcosm for these greater social trends, which are possibly magnified by competitive aspects of road cycling in addition to the unique clothing and cycling components required in the sport.

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APPENDIX A  
Recruitment Script



## Recruitment Script

Women Competitive Road Cyclists,

Would you like to support research on women competitive road cycling and share your personal experiences? Please consider being part of the following study!

In order to be eligible, you must self-identify as a woman and have participated in one or more road race, rally, or criterium requiring a USA Cycling (USAC) license. Riders of all USAC Categories are welcome! Races and rallies must have had a distance of 25-miles or more, and criteriums must have been at least 20 minutes in duration for this study. If you are interested in being interviewed for this study, please click the link below. You will be directed to an informed consent form, which provides details of the study procedures. Then you will be asked to complete a demographic questionnaire, which will take 5 minutes or less to complete. This study is being conducted through the Department of Psychology and Philosophy at Texas Woman's University.

If you are a woman competitive road cyclist interested in participating, please click the link below! If you know any women competitive road cyclists who may be interested in participating, please share!

<https://www.psychdata.com/s.asp?SID=184636>

Kindly,

Annamaria DellaNebbia, B.A.

Master's Candidate  
Counseling Psychology  
Texas Woman's University  
adellanebbia@twu.edu

APPENDIX B  
Consent Form

**Informed Consent**

TEXAS WOMAN’S UNIVERSITY

CONSENT TO PARTICIPATE IN RESEARCH

Title: The Experiences of Women Competitive Road Cyclists: A Qualitative Study

Investigator: Annamaria DellaNebbia, BA.....adellanebbia@twu.edu  
940/782/6800

Advisor: Sally Stabb, PhD.....sstabb@twu.edu  
940/898/2301

Summary and Key Information about the Study

You are being asked to participate in a research study at Texas Woman’s University as part of Annamaria’s thesis. The purpose of this research is to gain insight into the experience of women competitive road cyclists. You have been asked to participate in this study because you are a self-identified woman with competitive road cycling experience. As a participant, you will be asked to take part in a face-to-face interview regarding your experiences as a woman competitive road cyclist. Video recording of this interview will take place, and we will use a code name to protect your confidentiality. The total time commitment for this study will be about one hour and 30 minutes. The greatest risks of this study include potential loss of confidentiality and emotional discomfort. We will discuss these risks and the rest of the study procedures in greater detail below.

Your participation in this study is completely voluntary. If you are interested in learning more about this study, please review this consent form carefully and take your time deciding whether or not you would like to participate. The researcher welcomes any questions that you may have about this study, and she encourages you to ask questions at any point.

\_\_\_\_\_  
Initials  
Page 1 of 4

## Description of Procedures

In order to be a participant in this study, you must be at least 18 years of age or older, self-identify as a woman, and have experience with competitive cycling. As a participant in this study you will be asked to spend approximately 60-90 minutes of your time in a face-to-face interview with the researcher. The researcher will ask you questions about your perceptions and experiences regarding competitive cycling as a woman. You and the researcher will collaboratively decide on a private location where the interview will take place. The interview will be recorded using a video recorder and then written down. This allows the researcher to be accurate when studying what you have said both with your body language and your words. Only members of the research team will have access to video recordings, and these recordings will be permanently deleted within five years of the completion of the study. Written transcripts of the interview will be deidentified using a pseudonym to ensure confidentiality. Following interpretation of the data, results will be emailed to you to allow any feedback that you may offer about the study to be incorporated before the study is completed.

## Potential Risks

The researcher will ask you questions about competitive cycling. The researcher will also ask you questions about how your gender has impacted your experience of competitive cycling. A potential risk in this study is discomfort with these questions you are asked.

If you become tired or upset, you may take breaks as needed. You may stop answering questions at any time, and you may also end the interview at any time. If you feel you need to talk to a professional about your discomfort, the researcher has provided you with a list of resources.

Another risk in this study is loss of confidentiality. Confidentiality will be protected to the extent that is allowed by law. The interview will be held at a private location that you and the researcher have agreed upon. A pseudonym, not your real name, will be used during the interview. No one but the researcher will know your real name. The tapes and digital transcripts of the interview will be stored in password protected files, and any physical data will be stored in a locked cabinet in the researcher's office. Only members of the research team will hear the tapes and see the written interviews. The video tapes, transcripts, and any physical data will be deleted or shredded within five years after the study is finished. The signed consent form will be stored separately from all collected information and will be destroyed five years after the study

is closed. The results of the study may be reported in scientific magazines or journals but your name or any other identifying information will not be included. There is a potential risk of loss of confidentiality in all email, downloading, electronic meetings, and transactions.

The researcher will remove all of your personal or identifiable information (e.g., your name, date of birth, contact information) from the video recordings and/or any study information. After all identifiable information is removed, your video recordings and or/any personal information collected for this study may be used for future research or be given to another researcher for future research without additional informed consent.

If you would like to participate in the current study but not allow your de-identified data to be used for future research, please initial here \_\_\_\_\_.

The researcher will try to prevent any problem that could happen because of this research. You should let the researcher know at once if there is a problem, and she will help you. However, TWU does not provide medical services or financial assistance for injuries that might happen because you are taking part in this research.

#### Participation and Benefits

Your involvement in this study is completely voluntary, and you may withdraw from the study at any time. Benefits of participating in this study are space to speak to your personal experiences as a woman who competitively cycles; contributing to an increase in cycling research; and assisting in research exploring the needs and experiences of women competitive cyclists. If you would like to know the final results of this study, the researcher will mail or email them to you.

#### Questions Regarding the Study

You will be given a copy of this signed and dated consent form to keep. If you have any questions about the research study, you should ask the researcher; her phone number and email address are at the top of this form. If you have questions about your rights as a participant in this research or the way this study has been conducted, you may contact the Texas Woman's University Office of Research and Sponsored Programs at 940-898-3378 or via email at [IRB@twu.edu](mailto:IRB@twu.edu).

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Initials  
Page 3 of 4

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

\*If you would like to know the results of this study, tell us where you want them to be sent:

Email: \_\_\_\_\_

and/or

Address: \_\_\_\_\_

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APPENDIX C

Pre-Screening Interview

## Pre-Screening Interview

PsychData Link to survey: <https://www.psychdata.com/s.asp?SID=184636>

Yearly Income (please circle):

Less than \$20,000

\$21,000-\$40,000

\$41,000-\$60,000

\$61,000-\$80,000

\$81,000-\$100,000

More than \$100,000

Self-Identified Gender:

Sexual Orientation:

Race/Ethnicity:

Age:

Level of Education:

Body Size/Type:

What is your current USAC Category? \_\_\_\_\_

How many years have you competitively cycled? \_\_\_\_\_

How many road races of at least 25 miles have you completed in the last 5 years? \_\_\_\_\_

At which CAT(s) were you racing? \_\_\_\_\_

How many rallies of at least 25 miles have you completed in the last 5 years? \_\_\_\_\_

How many criteriums of at least 20 minutes have you completed in the last 5 years? \_\_\_\_\_

At which CAT were you racing? \_\_\_\_\_

How often do you complete group rides per month on average? \_\_\_\_\_

Have you ridden in groups of only women cyclists? \_\_\_\_\_ Yes \_\_\_\_\_ No

*Road race* is defined in this study as a cycling competition that takes place on pavement for USA Cycling (USAC) licensed racers. Experiences with single-day road races, time trials, team time trials, and stage races will be used in the road race category for this study.



*Rally* is defined in this study as a cycling road race in which USAC licensure is not required to participate.

*criterium* is defined in this study as a race on a closed, short distance course with multiple laps. Course length varies from 800 meters to 5 kilometers, and length of time spent cycling, as opposed to distance, is tracked.

APPENDIX D  
Interview Questions

## Interview Questions

1. What motivates you to ride road bikes?
  - What motivated you to begin riding road bikes?
  - What are your goals as a road cyclist?
2. In what ways, if any, has cycling benefitted you?
  - If any, what physical benefits have you noticed?
  - If any, what psychological benefits have you noticed?
  - If any, what social benefits have you noticed?
  - If any, what benefits from cycling do others obtain?
3. For the next set of questions, I will be asking about thoughts, actions, and feelings. Thoughts will be defined as notions, attitudes, or beliefs, such as ‘I need to drink more water.’ Actions will be defined as behaviors that an individual exhibits in response to a particular situation or stimulus, such as laughing, arguing, or sleeping. Feelings will be defined as an emotional state of mind related to one’s mood, relationships, or circumstance, such as sad, angry, or excited. Now I want you to think of the most positive experience that you have had with a race, rally, or criterium:
  - When you consider what you were thinking, what thoughts, attitudes, or beliefs were present?
  - When you think of your actions or behaviors related to this positive experience, what did you do?
  - When you recall what you were feeling, what emotions were you experiencing?
  - What did you learn as a result of this experience? What were your takeaway points?
4. During your most positive race, rally, or criterium experience, what did you notice about other cyclists’ actions?
5. Tell me about a challenging or negative experience you have had with a race or rally.
  - When you think of your actions or behaviors related to this negative experience, how did you behave?
  - When you consider what you were thinking, what thoughts, attitudes, or beliefs were present for you?
  - When you recall what you were feeling, what emotions were you experiencing?
  - What did you learn as a result of this experience? What were your takeaway points?

6. During your negative race, rally, or criterium experience, what did you notice about other cyclists' actions?
7. Both men and women cycle. The next set of questions is pertaining to perceptions of gender or gendered social patterns in the cycling world. The first set of questions is about your personal thoughts, actions, and feelings. The second set of questions, is about how you perceive others.
  - When you ride competitively, what types of gendered social patterns do you notice?
  - What types of thoughts do you have about being a woman in this sport?
  - Feelings are about your emotions, and many women experience a range of emotions related to competitive cycling. What is the experience of competitive cycling like for you?
  - What behaviors do you notice that you engage in as a woman cyclist that are unique to your gender?
8. The next set of questions is about your perceptions of others.
  - What kinds of attitudes, ideas, or beliefs do you perceive others to have about women cyclists? And for men cyclists?
  - What kinds of emotions have you noticed in others regarding women cyclists? And for men cyclists?
  - What types of behaviors have you noticed others expect from women cyclists? And for men cyclists?
9. If you have ridden in both an all-women group and a mixed-gender group, what differences did you notice between the two?
10. What social barriers, if any, have you experienced related to gender?
  - Do you notice any stigma related to being a woman cyclist?
11. How important is it to you to wear certain types of cycling clothing?
  - How significant, if at all, do you perceive clothing and appearance to be for women cyclists?
12. How important is it to you to own or ride a certain type of bike?
  - How significant, if at all, do you perceive bikes and bike accessories to be for women cyclists?
13. We've discussed several aspects of cycling related to gender. What other experiences or thoughts do you have about gender and cycling that I may not have thought to ask you?
14. We've explored the relationship between gender and cycling. In what ways, if any, do other identity characteristics such as income, education, sexual orientation, race/ethnicity, age, or size impact your cycling experience?

APPENDIX E  
Referral Resources

## **Referral Resources**

The following resources are available to you to help you locate assistance:

American Psychological Association Psychologist Locator  
<http://locator.apa.org/>

National Register of Health Service Psychologists  
<http://www.findapsychologist.org/>

Mental Health of America Referrals  
<http://www.nmha.org/go/searchMHA>

Psychology Today Find a Therapist  
<http://therapists.psychologytoday.com/rms/>

National Board for Certified Counselors  
<http://www.nbcc.org/CounselorFind>