'IT'S A MAGNIFYING GLASS': THE COMMUNICATION OF POWER IN A REMOTE FIELD STATION

By

Victoria McDermott, M.A.

A Thesis Submitted in Partial Fulfillment of the Requirements

for the Degree of

Master of Arts

in

Professional Communication

University of Alaska Fairbanks

May 2019

APPROVED:

Dr. Amy May, Committee Chair
Dr. Karen Taylor, Committee Member
Dr. Jean Richey, Committee Member
Dr. Charles Mason, Chair
Department of Communication and Journalism
Dr. Michael Castellini, *Dean of the Graduate School*

Abstract

Remote field stations play a critical role in advancing our understanding of the world and how humans cause environmental change. Remote field stations are sentinels of Earth's climate, environment, and biodiversity that provide scientists with the infrastructure to collect data in inaccessible areas of the globe. These research stations are considered isolated, confined and extreme (ICE) environments which provide people with unique opportunities and intensely stressful potentially life-threatening situations to overcome. Traditionally, remote field stations have been considered harassment hell for men and women, alike. There is little research on the impact of remote field stations on communication and factors that influence power communication within remote field stations. In the present study, the researcher traveled 10 hours north of Fairbanks, Alaska to Toolik Field Station in the Brooks Range of the Alaskan Mountains. The researcher interviewed 20 participants, 15 males and 5 females, willing to talk about their experiences in remote field stations and especially their experiences at Toolik. Using theories of power construction, standpoint theory, and contrapower harassment this study sought to understand how remote field stations impact communication dynamics and the influence of gender on communication within a remote field station. Findings in the present study suggest that gender is a crucial factor that impacts power dynamics in remote field station. Through the data collected in this study, three areas of opportunity were identified for overall camp improvement, including group cohesion, reintegration coping strategies and overcoming gender barriers.

TABLE OF CONTENTS

Page

CHAPTER 7: APPENDICES

CHAPTER 1: Introduction and Literature Review

1.1 Introduction

In an era filled with the overexploitation of natural resources, unstable food production and rapid climate change, a strong and clear understanding of the natural world is more important than ever (National Research Council, 2014). Human nature fundamentally impacts the natural world and how it functions, driving the need to better understand how the presence of humans continually changes the environment. Scientists utilize a variety of different ways to conduct, collect and analyze data, however; experiments in the lab setting offer a limited understanding of the complexities of entire ecosystems. Remote field stations provide scientists with a window into the most remote parts of globe, allowing researchers to collect untainted data directly from relatively untouched environments and extremely isolated and unique habitats.

Field stations require economic, social and networking capital to allow scientists and staff to live, work, and study uninhibited. While remote field stations provide invaluable access and opportunity for scientists to explore untouched terrain, the remoteness can be demanding and often requires people to take extreme measures to adapt and survive. These intense social circumstances are known as isolated, confined and extreme (ICE) environments. Previous studies have explored the impact of ICE on individuals and groups through the lens of disciplines such as psychology and neuroscience (Palinkas et. al., 2004; Steel at. el., 2000; Steinach et. al., 2016). Most of the current research has examined the emotional, physical and psychological impacts on scientists in these ICE conditions, but little research seeks to understand the experiences and communication dynamics that occur among scientists, support staff and outside personnel in these remote field stations. Support staff play a critical role in maintaining the infrastructure of the camp by providing prepared meals, sleeping accommodations and lab equipment. Despite

playing a pivotal role in field station life, the lived experiences of staff members and the power dynamics that occur throughout remote field stations between staff and scientists have largely been unacknowledged and under researched.

The field of communication provides a novel context for investigating power dynamics in a remote field station. Groups and individuals who go to remote field stations come in with their own pre-determined biases, values and beliefs that can impact the stratification of power and perceived power throughout camp. Through the lens of power construction theories and feminist standpoint theory, this study seeks to uncover the impact of social power structures and the marginalized perspective among people who have lived, worked and researched in a remote field station.

1.2 Literature Review

1.2.1 Cultural Norms in Western Society

Power structures are ingrained in people through the reinforcement of social norms and values, and impact individual perceptions of the self, others and society. Through the socialization of norms, such as traditional gender roles, these power structures are sustained and perpetuated. To better understand the organizational power dynamics inherent in Western society, it is important to comprehend the role of power structures, particularly in regard to the distribution of power between men and women. The present literature review provides a general framework for understanding the following: the construction of power, standpoint theory, traditional gender roles, the lack of women in masculine environments and contrapower harassment.

1.2.2 Construction of Power

For millennia "power" has been difficult to define. Seen as more of an abstract and complex concept, theorist have developed a multitude of theories as to how power is constructed, wielded and replicated in society. While there are a variety of approaches that attempt to outline the idea of "power", the present study utilized three main theories that influenced the author's overall understanding and personal definition of power. These theories include: social stratification, taxonomy of power and social capital.

Weber's social power. Social stratification is the overall creation and distribution of power in society (Mann, 1986; Weber, 1947). Power is defined as the ability to get one's way in the face of opposition (Weber, 1947). The distribution of power and the ways in which it is wielded play a crucial role in allowing people to achieve their goals in society, i.e. career plans or change of socioeconomic status (Mann, 1986).

According to German sociologist Max Weber, people gain power from three social resources: class, prestige and social power. These three resources are inextricably linked. Each of the resources can be inherited at birth or people can try to gain access to them through the change of socioeconomic status, prestige or successful networking (Weber, 1947, 1958).

Socioeconomic status (SES). Weber suggests that SES is a result of power (Weber, 1947, 1958). SES is defined by the economic position a person obtains based on birth or individual achievement. As suggested by Pyakuryal (2001) in an analysis of Weber's social stratification theory, SES can refer to any group of people who have the same chance or access to goods, external living conditions and personal life experiences. Wealthy people tend to be more powerful than poor people and are more likely to get their way in the face of opposition. This can be attributed to their access to opportunities, including increased levels of disposable income, access to social goods such as prestigious educational institutions and their social power, through connections with other people of the same level of power (Pyakuryal 2001).

Prestige. Prestige is a person's social standing or honor in relation to that of others, which determines how well-known a person is, how respected they are, and how much they are admired. Prestige and status can be influenced by class, but can also be attained through other means, such as athletic or intellectual ability or property ownership (Foley, 2010; Kerbo, 2017; Pyakuryal, 2001). For example, a person of low SES may not begin in a position of wealth but could rise to a higher SES by becoming a professional athlete. Due to the quality of expertise they bring to a specific team, their prestige rises. As they become more well-known, the level of respect and admiration for them increase because of their athletic talent. With a rise in prestige can come a rise in SES and social power as a result of their new prestigious status.

Social power. Social power is the degree to which an individual or organization has influence over others. Class and prestige can influence the amount of social power a person has

available to them (Foley, 2010; Kerbo, 2017; Pyakuryal, 2001). Persons of a higher socioeconomic class may have more money to use as influence or may use their high level of prestige to exert social power over others (Kerbo, 2017). People use social power to overcome barriers and to achieve their goals, such as influencing an organization to vote a specific way or convincing a person on a grant committee to accept their proposal.

Social stratification. Within society, people are grouped into specific strata. This is influenced by a multitude of factors, including race and gender. Previous research has used the idea of social stratification to better understand how power is situated in organizations and society. While some people are born with more social power than others, social power can be gained or lost, and the strict hierarchical systems found in particular structures, such as Western colonialism, can make it difficult for people to gain social power (Grusky, 2011; Mann, 2012). For example, a person is not able to control the color of their skin, yet racism transcends the lines of socioeconomic classes (Grusky, 2011; Mann, 2012; Weber, 1958). People of color remain marginalized within Western society, no matter what socio-economic status or level of prestige they obtain (Grusky, 2011; Mann, 2012).

Likewise, women have been marginalized by power structures. Women have held a lower-class position in society for centuries (Foley, 2010; Kerbo, 2017). Weber (1998) analyzed how the history of race, class and gender are rooted in time and the social development of these constructs. Within the current patriarchal system, women have less power, prestige and class than men. This has been established through a multitude of research identifying how women must find and use alternative means to gain organizational power (Foley, 2010; Kerbo, 2017) and the backlash the can occur when power is shifted from white men to women and minorities (Weber, 1998, p. 28). For instance, a woman born into a wealthy family will be able to gain power within society more easily than a woman of the same intelligence with a lower

socioeconomic status. Even with her higher class and economic status, a man of the same standing will still hold more overall power (Foley, 2010; Kerbo, 2017; Weber, 1998). If a woman were to rise over a man in prestige with a Ph.D. in academia, there could be a large shift in the power dynamic. This shift in power has the potential for consequences or retaliation from the male as a way of regaining power and reestablishing the status quo (Weber, 1998).

French and Raven's taxonomy of power. With a definition of power outlined through Weber's (1947) lens of social stratification, French and Raven (1959) further refined how power can be wielded through the identification of the five bases of power. These bases explored the sources of power in organizations. French and Raven (1959) argue power is related to social influence and limited to the influence on a person produced by a social agent. Social agents can be anything from another person, role, social norm, group or part of a group (French & Raven, 1959). Much like with Weber's interpretation of power, external factors impact and influence how and the amount of power a person has access to using. The five base sources of power include the following; reward power, coercive power, legitimate power, referent power and expert power (French & Raven, 1959).

Reward power. Reward power is defined as the use of offering or denying tangible, social, emotional or spiritual rewards to others for doing what is wanted or expected of them (French & Raven, 1959). Reward power can be positive in the sense of earning a dollar for better grades or negative if a driver is fined for illegal parking. If the reward power is relied upon too heavily, people can become fixated and dependent on the reward. If the fear of punishment is too severe, it can immobilize people and over time past rewards may become insufficient to continue motivating people (Petress, 2003).

Coercive power. Coercive power is characterized as the perception that the social agent has the ability to mediate punishments. Those who use coercive power gain compliance through

the use of threats, including physical, social, emotional, political or economic means (Petress, 2003). Coercive power is based in the idea that someone is forced to do something that they do not desire to do. This base of power is dependent on how the person perceives the impact and consequences of the intended punishment (Pierro, Cicero, & Raven, 2008).

Legitimate power. Legitimate power is based on the idea that a social agent has a legitimate right to prescribe behavior for a person (French & Raven, 1959, p. 253). This source of power can come from an elected, selected or appointed position of authority (Raven, 1992). Legitimate power relies on position in an authority hierarchy. The amount of legitimate power available can be limited and those possessing legitimate power may fail to recognize they have it. For legitimate power to work cultural values, acceptance of social structure and designation must be accepted for this form of power to be accepted (French & Raven, 1959).

Referent power. Referent power is based on the personal identification with the social agent. Referent power is rooted in the affiliations and associations we make (French & Raven, 1959; Petress, 2003). For this form of power to be successful similarity and respect are required (Raven, 1965). The concern of likability and/or lack of respect can undermine the base of referent power.

Expert power. Expert power is defined as perception that the social agent has some special knowledge or power (French & Raven, 1959). Through reputation, credentials certifying expertise and actions, one can acquire expert power. Raven (1965) argued that expert power will be used more often if the motive is a need for achievement. This power base relies on the perception of expertise, meaning that if the expertise is not genuine can create mistrust among subordinates.

Bases of power in previous research. Previous research has used French and Raven (1959) to better understand the impact of these forms of power for job satisfaction and

organizational buy-in. Soft forms of power, such as referent or expert power, have been connected to higher levels of job commitment, satisfaction, empowerment, productivity, self-confidence and organizational citizenship behavior (Elias, 2008; Randolph & Kemery, 2011; Chiu, Balkundi, Weinberg, 2017). Conversely, hard forms of power, such as coercive and legitimate, have been associated with greater burnout, absenteeism and lower productivity (Elias, 2008; Randolph & Kemery, 2011; Chiu, Balkundi, Weinberg, 2017). Pierro, Raven, Amato and Belanger (2012) used the framework of taxonomy of power to better understand the impact on leadership and organizational commitment. After identifying the bases of social power, they explored the impact of leadership using these forms of power and the impact on organizational commitment. Their findings indicate that people were more apt to be persuaded by the use of soft power tactics, such as economic or cultural influences, and this persuasion increased their overall organizational commitment.

Additionally, the different levels of influence regarding soft and hard power were supported by research conducted by Zigarmi, Roberts and Randolph (2015) who explored the impact of employees' perceptions of their leader's use of power. Findings indicate that various forms of power shape the structure and quality of role relationships at work (Zigarmi, Roberts & Randolp, 2015). Moreover to increase work morale, inspire creativity through autonomy, and build pride in ownership of daily tasks, leadership should employ the use of soft power. For delineating boundary formation and management, hard forms of power such as coercive, legitimate and reward must be used for optimal results (Zigarmi, Roberts & Randolp, 2015).

Bourdieu's social capital. Similarly to the previous power theories mentioned, in the third interpretation of power, Bourdieu's (1984) social capital identifies how power is reproduced with the use of social strata. According to Bourdieu (1984), much like Weber (1947), there are three forms of capital, economic capital, cultural capital and social capital. Economic

capital is the root of all capital, providing the monetary resources to access exclusive levels of the hierarchy. Cultural capital is shaped through factors such as family circumstances. Through the use of cultural knowledge, people secure their place in the hierarchy. Finally, social capital is defined as "the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition" (Bourdieu, 1992, p. 119). Social capital can be used to practically produce or reproduce inequality through the direct or indirect employment of social connections. Social capital can be summarized by the colloquial phrase, it's not what you know, but *who* you know. Additionally, to influence social standing, economic, cultural and social capital must be enacted. Bourdieu (1986) argues that social capital is heavily based on the context of a particular social space. Through this definition, social capital is used as an exclusionary device to make sure that specific spheres remain exclusive (Bourdieu, 1986).

Social capital in research. People use cultural signifiers to identify themselves with those 'above' and to distance themselves from those 'below' them on the social ladder. For example, having a country club or golf membership has been known as a symbol of wealth and connection (Bourdieu, 1984). The struggle for exclusivity serves to reinforce inequalities and maintain the status quo. The overt use of cultural symbols distinguishes people, both signaling and constituting their position in the social structure. Fields (2016) interpreted Bourdieu's social capital as the:

> interplay between connections and cultural or financial capital drawing examples from professions such as lawyer or doctors who exploit their social capital – namely, 'a capital of social connections, honorability and respectability' to win the confidence of a clientele in high society, or even make a career in politics. By contrast, those who rely primarily on their educational qualification are, the most vulnerable in the event of 'credential

> deflation', not only because they lack connections but also because their weak cultural capital reduces their knowledge about fluctuations in the market for credentials. (p. 17)

Social context and connections heavily impact a person's access to power. Nicholson and Cleland (2016) suggest the same findings in their research regarding the success of lower SES groups in medical school. Their findings suggest that lower SES students do no inherently look to increase their social capital while in medical school which creates further disadvantages (Nicholson & Cleland, 2016). Moreover, while students may have used social capital to receive admission into medical school, once in medical school they did not recognize the continued need for social capital negotiation. "Making contacts" was not seen as a priority, and ultimately impacted their access to valuable resources in medical school and once they graduated (Nicholson & Cleland, 2016). Through social capital resources can be used to obtain or maintain positions of power (Ihlen, 2005). Without the implementation of social capital, people are left at a disadvantage for exerting and acquiring more power.

Summation. All in all, power breeds inequality. The nature of power requires people to perceive themselves as unequal to others and is inherently exclusive. Weber's (1947) definition of power identifies the three resources that impact a person's level of power including SES, prestige and social power. Through the interpretation of social stratification, French and Raven (1959) suggested the five bases of power people can use to exercise power or perceive the power being exerted on them. Finally, through Bourdieu's (1984) rationale of social capital, power is reproduced within society by the use of economic, cultural and social capital. The three interpretations of power compile to constitute the definition of power for this particular study as: the summation of one's goods, tangible or intangible that accumulate to their perceived status in social hierarchy.

1.2.3 Standpoint Theory

Feminist standpoint theory, or standpoint theory, seeks to understand the relationship between power and knowledge, specifically the access to knowledge systems possessed by those with power and those without. Women are considered a marginalized group because they have less power and remain on the peripherals when it comes to access to the dominant group's knowledge. Even though those with less access to power and knowledge may feel weak and oppressed, these social and political disadvantages can be turned into scientific, epistemological and political advantages (Harding, 2004; Intelmann, 2010; Wylie, 2003). As a result of their specific standpoint, women's knowledge gained from the perspective of the disenfranchised can serve as an alternative for the homogeneous problem-solving skills of men in power who have not had the same lived experiences.

There are three principal tenets of standpoint theory. First, knowledge is socially situated, and therefore stems from group-based experiences of people who are in close proximity to those with the same amount of knowledge and power (Cockburn, 2015; Collins, 1997; Intelmann, 2010; Wylie, 2003). In 1983, Hartsock argued that women and men create their own realities through their different experiences. Since women's roles and lives are significantly different than men's, they hold a different type of knowledge. According to Hartsock (1983) "there are some perspectives on society from which, however well-intentioned one may be, the real relations of humans with each other and with the natural world are not visible" (p. 117). For example, men may never experience the social pressure to have children in the same way it is placed on women. These group experiences reinforce power relations and social inequality as a result of traditional gender roles (Cockburn, 2015; Collins, 1997; Wylie, 2003). Traditional gender roles make the gap in power and knowledge acceptable because of the different characteristics and role responsibilities each gender is required to play.

The second theme of standpoint theory is that those who share the common placement in hierarchical power relations will also share the same experiences with power relations. Marginalized groups are socially situated in a way that makes it possible for them to be more aware of unjust policies and/or frame questions differently than non-marginalized groups (Harding, 2004; Intelmann, 2010; Wylie, 2003). Proximity tends to group people together who experience the same power relations. Women, though dispersed in proximity throughout minority and class structures, share the same hierarchical space. Across social structures, they experience the same kind of oppression from men and obstacles to gaining knowledge and power because of their gender.

The final claim of standpoint theory is that research should begin with the lives of the marginalized, especially work on power relations (Cockburn, 2015; Harding, 1991; Intelmann, 2010). As the subordinate group, women see and understand the world in ways that are different and therefore challenge the existing knowledge and lived experiences of men (Intelmann, 2010; Wylie, 2003). By starting with the subordinate group, researchers and scholars can begin to see beneath the appearances created by an unjust social order to uncover the reality of how this social order is constructed and maintained (Harding, 1991). This need for struggle emphasizes the fact that a feminist standpoint is not simply something that anyone can have by claiming it, but rather is a lived experience people must endure (Harding, 1991).

Standpoint theory makes aspects of social relations from the marginalized available invisible to the dominant perspective (Harding, 2004; Intelmann, 2010; Wylie, 2003). Previous research has used standpoint theory to access the experiences and knowledge of the disenfranchised (Cockburn, 2010; Cockburn, 2015; Foley, 2003; Hesse-Bieber, 2012; Rolin, 2009). For example, a 2014 study of indigenous Australian women, suggested that the standpoint of indigenous women created new vital knowledge produced under the culturally specific social,

political, and historical oppression they have faced (Moreton-Robinson, 2014). Another study in 2016 looked at educational practices and policies from the perspective of indigenous students to better understand why indigenous students experience lower levels of academic success (Milne, Creedy & West, 2016). The study found that multifaceted, multi-layered support was critical for the success of indigenous students, as well as incorporating of cultural support into education (Milne, Creedy & West, 2016). Understanding and comparing Western cultural values of education with indigenous cultural values was crucial in uncovering the gaps in educational strategies to promote future academic success and resilience of indigenous students.

Additionally, many previous researchers have looked to uncover and empower the voices of black women, to better understand their standpoint and unique angle of vision (Brock, Kvasny & Hales, 2010; Harnois, 2010; Reynolds, 2010; Versey, 2014; Zin & Dill, 1996). An analysis of blog posts on the discourses of black womanhood employed women's personal experiences as a way to analyze the impact of racism and sexism, media criticism, and aesthetic arguments about Black women's worth, beauty, and value to sense-make the bloggers vision and understanding of Black womanhood (Brock, Kvasny & Hales, 2010). Their data suggests that information and communication technologies provide novel avenues for thinking about and increasing awareness of social inequalities that would have once been communicated face-to-face in gendered, private spaces.

In the same year, Reynolds (2010) analyzed Black women's writings within literature and popular culture to investigate the issues that make up and come to define Black female's lived experiences. Her findings suggest that tension and discontinuity emerge between the academic definitions of experience and the way that black women define their experience within their everyday social worlds. Versey (2014) explored the importance of hair from Black women's standpoint as it relates to health, obesity and physical exercise. Versey (2014) states that general

interventions targeted toward Black women addressing obesity and increasing physical exercise have been largely ineffective. Her study goes on to suggest that the sociocultural context of body appearance, especially hair has a different meaning for Black women that must be considered when constructing messages to change behavior (Versey, 2014). Understanding the standpoint of Black women, their daily struggles and the value they hold dear, such as their hair, are highlighted in the evidence of this study (Versey, 2014).

Since knowledge is socially situated, women's position in the marginalized group will continue to limit their access to knowledge and power. As this theory constructs power as a key to knowledge and vice versa, scholars have used this theory as a framework for empowering the voices of women and minorities who may have less power and, in theory, less knowledge (Cockburn, 2015; Hesse-Bieber, 2012). Although, women are "oppressed" (Wylie, 2003, p. 26), they also may be in fact be epistemically privileged in some crucial respects (Wylie, 2003). They may know different things than those who are comparatively privileged, by virtue of what they typically experience and how they sense-make their experience (Cockburn, 2015; Rolin, 2009; Wylie, 2003). For example, Cockburn (2010) analyzed the perspectives of women regarding war. Her research suggests that war is a predominantly masculine concept with little to no mention of femininity other than the victimization of the feminine. Through her research, she uncovers the voice of the anti-war feminine identity and finds practical applications to change the culture of war that begin with mixed-sex movements for demilitarization and disarmament (Cockburn, 2010).

Kronsell (2011) argued that vital knowledge about gender relations can be gained through the study of military and defense organizations. These masculine institutions tend to represent and reinforce specific notions of masculinity in ways that make it the norm. Her data further suggests that by critically analyzing what appears 'normal' in institutional practice and by

listening to the voices of women who challenge the norms of hegemonic masculinity, new perspectives and information about gender dynamics can be develop (Kronsell, 2011).

Heavily male dominated institutions, such as the academy and the military (Wylie, 2012), have the potential to benefit from the unique view points and critical analysis from women's perspectives. Science, especially the "hard" sciences, a colloquial term used to define perceived methodological rigor, exactitude and objectivity (Smith et. al., 2000), have been shown to favor the projects and theories put forth by Western, bourgeois, white, heterosexual men simply because they have traditionally held and continue to hold power. These male dominated environments continue to be analyzed and critiqued from one homogenous perspective which can lead to invisible gaps in understanding and difficulty creating new knowledge. The introduction of more women in the sciences and into positions of power could have vast implications for the future of scientific research and innovative knowledge development (Ceci & Williams, 2011; Wylie, 2012). For example, Rolin (2009) suggests that standpoint theory urges people "to reflect on relations of power as a distinctive kind of obstacle to the production of scientific knowledge" (para. 5). She also suggests that feminist standpoint theory outlines a method for producing scientific knowledge under circumstances that, given all other conditions, undermine the attempts to generate evidence (Rolin, 2009). Women provide unique insights and new perspectives for the scientific disciplines and feminist standpoint theory provides an avenue for these ideas to be explored and validated. Wylie (2012) also argues for the importance of standpoint theory in the formation of new knowledge and advantages that may arise from exploring the lives and voices of the marginalized. Her work suggests that the experiences of the marginalized when put in a position to recognize what may be invisible for members of the dominant culture will, in turn, start the process of developing counter-narratives and counter-norms that are lacking in dominant culture (Wylie, 2012). For now, however, through the use of

constructed traditional gender roles, women remain the marginalized group under the guise of social norms and expected role responsibilities.

Traditional Gender Roles. Society and agreed upon societal norms dictate how people individually sense-make their role expectations (Blackstone, 2003). Gender is a socially constructed concept (Blackstone, 2003), describing the meanings, values and characteristics that people ascribe to specific sexes (Blackstone, 2003). While sex describes the biological characteristics of male vs. female, gender is defined as the masculine and feminine identities. Traditional gender roles are defined by the responsibilities that males and females are expected to perform based on their sex that are decided upon and reinforced by Western culture (Blackstone, 2003; Prentice & Carranza, 2002; Tomasetto, Alparone & Cadinu, 2011).

The feminine identity is socialized to be more nurturing than the masculine (Blackstone, 2003; Prentice & Carranza, 2002; Tomasetto, Alparone & Cadinu, 2011). Traditionally, women are socialized to be in the home, caring for family, as opposed to working outside the home. Femininity is connected to gentleness, empathy and sensitivity (Blackstone, 2003; Prentice & Carranza, 2002; Tomasetto, Alparone & Cadinu, 2011); however, women may be perceived to be irrational and overly emotional. The feminine identity is seen as weaker, as it is more "attractive" for women to by quiet and reserved (Bem, 1981; Blackstone, 2003; Prentice & Carranza, 2002; Tomasetto, Alparone & Cadinu, 2011). As defined in the Bem Sex Role Inventory (1981), the 20 characteristics of the feminine can be summarized by nurturing and emotionally supportive themes, such as affectionate, cheerful, compassionate, gentle, gullible, sensitivity to the needs of others, soft-spoken and sympathetic (Bem, 1981).

Males, on the other hand, are expected to be leaders (Blackstone, 2003; Prentice & Carranza, 2002; Tomasetto, Alparone & Cadinu, 2011). Through this traditional view, the masculine identity suggests that a male should be head of the home, provide for his family and

make all important family decisions. The masculine identity is associated with being stoic and having little to no emotions (Blackstone, 2003; Prentice & Carranza, 2002; Tomasetto, Alparone & Cadinu, 2011). The traits of the masculine identity include strength, courage, independence, violence, and assertiveness. On the Bem Sex Role Inventory (1981), the 20 characteristics of the masculine identity can be summarized by independent and self-assertive themes, such as acts as a leader, aggressive, ambitious, competitive, dominant, forceful, has leadership abilities, individualistic, self-reliant, self-sufficient and willing to take risks.

The hypermasculine identity. The traditional masculine gender role encompasses the belief the men should be tough, act as a protector, and be resistant to femininity (Brannon, 1976; Corprew III & Mitchell, 2014). Hypermasculinity is an extreme form of masculinity based on polarized traditional gender roles, power, competition, control, pain tolerance, and mandatory heterosexuality (Hunter, 2007). Mosher and Sirkin (1984) originally conceptualized hypermasculinity as calloused sexual attitudes toward women, the view that violence is manly, and danger is exciting. Calloused sexual attitudes are categorized by the lack of "empathic concern for the female's subjective experience" (Mosher & Sirkin, 1984; pp. 151-152). These beliefs also demonstrate the misogynistic perspective of male dominance over female submission. Mosher and Sirkin (1984) suggested that hypermasculinity is a trait of the masculine identity that predisposes men to assert power to maintain dominance.

Parrott and Zeicher (2003), examined the influence of hypermasculinity on physical aggression towards women. After having 59 male participants take the Hypermasculinity Inventory (Mosher & Sirkin, 1984) which determines a person's level of hypermasculinity, they grouped participants into either high or low hypermasculinity groups. They measured aggression by the response-choice aggression paradigm, in which participants had the choice to administer shocks or not after being provoked by a fictitious female opponent in a laboratory setting (Parrott

& Zeicher, 2003). They found that hypermasculine men reported significantly more acts of assault against women than their lower-masculine counterparts. Overall these results suggest that hypermasculinity may be a risk factor for perpetrating violence against women and that these men may have a lower aggression threshold (Parrott & Zeicher, 2003).

Other studies have also concluded the same findings as Parrott and Zeicher (2003), including Burk, Burkhart and Sikorski (2004) and Websdale and Chesney-Lind (1998). Both studies found that hypermasculinity was a risk factor for perpetuating violence, especially reinforcing violence against women perceived to violate traditional gender role norms (Burk, Burkhart & Sikorski, 2004; Websdale & Chesney-Lind, 1998). These findings were strengthened through the research of Reidy, Shirk, Sloan, and Zeichner (2009), Tatum and Foubert (2009), and Corprew and Mitchell (2014), which also found that hypermasculine values were a predictor for sexual aggression towards women.

Hypermasculinity can have detrimental effects on both genders. The pressure to adhere to masculine characteristics damages men's mental and physical health (Courtenay, 2000) and social relationships (Burn & Ward, 2005). The stereotype of being self-reliant and stoic is associated with heightened levels of depression and psychological distress (Magovcevic & Addis, 2008; Real, 2000). Hypermasculinity can result in the violence against women (Burk, Burkhart & Sikorski, 2004; Corprew and Mitchell, 2014; Reidy, Shirk, & Zeichner, 2009; Tatum & Foubert, 2009) and in the reinforcement of traditional gender roles. These prescriptive gender roles leave little to no room for men or women to take on the characteristics of the opposite gender (Corprew III & Mitchell, 2014; Rudman & Phelan, 2008). Hypermasculinity can lead to tense situations and harmful work environments for men and women who violate these traditional gender role norms (Rudman & Phelan, 2008). Those who identify with the hypermasculine identity can use violence and aggression to try to realign people to their

prescriptive gender roles and reestablish power, leading to conflict, isolation and tension among colleagues (Dodge, Valcore & Gomez, 2010; Turchik & Wilson, 2010).

Dangers of gender roles stereotypes. In 2018, the characteristics of both the feminine and masculine were retested for their validity on a new generation. The findings suggested that they still held true (Koeing, 2018; Miller, 2018; Undem & Wang, 2018). Traditional gender roles still encompass the same beliefs for males and females as in 1981 (Bem, 1981; Prentice & Carranza, 2002; Tomasetto, Alparone & Cadinu, 2011). These traditional gender roles leave little room for difference or for having overlapping characteristics. Traditional gender roles have been known to limit both men and women's self-esteem, self-efficacy and overall levels of success (Rudman & Phelan, 2010; Shih, Pittinski & Ambady, 1999), impacting and influencing their future career choices.

Gender roles are learned early in life, leading to automatic associations with stereotypic traits (Koeing, 2018; Nosek, Banaji, & Greenwald, 2002; Rudman & Goodwin, 2004; Rudman & Phelan, 2010). These expected gender role characteristics can affect perceptions of others without conscious realization or intent (Greenwald & Banaji, 1995; Koeing, 2018; Rudman & Glick, 2001; Rudman & Kilianski, 2000). Girls and boys are socialized into gender stereotype roles from a young age, defining what counts as feminine or masculine jobs and narrowing their perceived access to education and interests. Gender stereotypes, such as "girls can't do math" create a threatening environment for females, resulting in poor performance and internalized self-doubt (Beilock, 2008; Shih, Pittinski, & Ambady, 1999; Tomasetto, Alparone & Cadinu, 2011). While gender stereotypes are highly oversimplified understandings of males and females, females are more likely to hold jobs such as an administrative support, whereas males are expected to hold more ambitious roles, such as managers and executives. Gender gaps in fields

such as mathematics and science that favor males reinforce the gender inequality that falls in line with traditional Western gender roles (Tomasetto, Alparone & Cadinu, 2011).

Additionally, gender roles can influence both male and female's self-concept, as well as, career aspirations (Rudman & Phelan, 2010) and can translate into expectations among peers into the workplace (Blackstone, 2003; Kanter, 1977). Females looking to rise into leadership roles may face discrimination from these long held traditional stereotypes. Due to the perceived incompetence based on the feminine stereotype, females are not always viewed as suitable leaders (Cejka & Eagly, 1999; Rudman & Glick, 2001). Since those who identify in the feminine are held to a higher standard of kindness and nurturing than those who identify in the masculine, females who violate these feminine gender stereotypes are not liked for adopting masculine qualities but are still deemed incompetent for being "too nice" (Rudman & Glick, 2001, p. 744). Likewise, for a male who wants to stay at home and raise his children, his lived experiences might be dismissed among his peers for not being "manly enough", or he may be mocked and demeaned for taking on feminine responsibilities (Fischer & Anderson, 2012; Rushing & Powell, 2015). As a current example, Piers Morgan, a television personality, mocked Daniel Craig, the former actor in the role of James Bond, for carrying his child in a papoose in public (Frisk, 2018). Piers Morgan used the hashtag #emasculatedBond to mock and shame Daniel Craig for violating the masculine identity and taking on a "feminine characteristic". Traditional gender role stereotypes do not allow for either gender to take on characteristics or traits of the other, leading those who do break these stereotypes to be ostracized, dismissed or mocked in order to realign them with expected role responsibilities.

1.2.4 Lack of Women in Traditional "Masculine Environments"

Even though women currently make up half of the workforce, many occupations remain gender segregated whether or not they intend to be (Oswald, 2008). In 2010, nearly 80% of jobs

were performed predominately by one gender (U.S. Department of Labor, 2011). For years, social scientists have been working to understand the underrepresentation of women in fields traditionally designated as masculine, including physically demanding jobs, jobs that require an extensive amount of math or science and managerial roles (Oswald, 2008). The impact of gender stereotyping may affect people's perceived abilities and the occupations in which they believe they will succeed (Oswald, 2008; Rudman & Phelan, 2010; Shih, Pittinski & Ambady, 1999). This gender segregation in occupational choices restricts the freedom of males and females to choose jobs based on their interests and aptitudes. Instead, it forces them to choose jobs based on prescriptive gender roles (Oswald, 2008; Rudman & Phelan, 2010; Shih, Pittinski & Ambady, 1999).

In work environments that are considered traditionally masculine, i.e. the military, science, politics and many leadership roles, women must overcome extensive barriers to compete with men (Germain, Herzog & Hamilton, 2012). For example, a female veteran stated that she needed to adopt masculine qualities in order to survive when in the military (Maples, 2017). She continued to describe how the military, a highly male dominant field, "requires women, if they want to succeed" to behave and perform in traditionally masculine ways (Maples, 2017, para. 2).

Similarly, this is the same for women in science who want to succeed. A study by Fouad and Singh (2011) took an in-depth look at how women with engineering degrees who left the field, women who left the field after a few years of work and women who were still in the field felt about their current working conditions and careers. Beginning in 2009 to 2011, researchers collected 3,700 surveys of women from over 230 universities. The evidence in this study suggested that, because of the requirement for women to adopt unfamiliar masculine characteristics and the overall masculine environment, women felt isolated and disparaged for being female (Fouad & Singh, 2011). Some women reported feeling as though they spent their

entire career trying to act like a man, while still feeling unsupported by colleagues (Fouad & Singh, 2011). This is a common theme among traditionally masculine work environments (Fouad & Singh, 2011; Germain, Herzog & Hamilton, 2012; Maples, 2017).

Within these traditionally masculine work environments, it can be difficult for women to feel comfortable. Largely masculine work environments also have the potential to develop and foster hypermasculine ideals (Hunter, 2007). In both a masculine and hypermasculine work environment, femininity is unwelcome and associated with weakness. For example, a soldier who falls outside the hypermasculine identity is often scrutinized or ostracized, regardless of gender identity (Fassinger, 2008; Johnson et al., 2015; Weitz, 2015). These required hypermasculine characteristics create almost insurmountable barriers for women to feel valued for their abilities, accepted for their identity and gain organizational power based on achievement.

Women in the Sciences. Women are globally underrepresented within the academic and scientific community. In 2013, women made up 28.4% of the world's scientist employed in research and development ('Women in Sciences,' 2016). Minority women comprise fewer than 1 in 10 employed scientists or engineers ('Women, minorities and people with disabilities,' 2015). Previous research has explored the many disadvantages women face in the sciences, such as low representation and gender discrimination (Holmes et. al., 2008; McGuire, Primack & Losos, 2012; Rosser, 2004; Valian, 1998).

Once in the field, women were likely to leave the scientific field due to isolation, hostile male-dominated work environments, ineffective executive feedback and lack of effective sponsors ('Women in STEM,' 2016). While there have been many initiatives to facilitate the advancement and representation of women in the science, there is still a notable lack of women scientists at the higher levels (McGuire, Primack & Losos, 2012; Xie & Shauman, 2003). In

2010, a study of employees in the European Union found that 23% of the women in science, technology, engineering and mathematics (STEM) fields are mid-level faculty and a scarce 11% of the senior faculty are women. As family life is socialized to place a heavier burden on women than men (Ceci & Williams, 2011), women are often required to sacrifices work towards promotions, research rigor and number of projects in order to satisfy both the needs of family and the academy.

Some of the institutional barriers to the success, for women in the sciences, such as access to grant funding, were highlighted in a 2007 study that suggested that men have a 7% increased chance of receiving grants (Bornmann et. al., 2007; Ledin et. al., 2007). In 2012, when McGuire, Primack and Losos evaluated both men's and women's grant acquisitions, research suggested that a lower quantity of grant money was awarded to women, a stark contrast to the higher numbers of grant proposals submitted by women. This observation proposes that women may spend more time writing grants than their male counterparts, but with a smaller payoff (McGuire, Primack & Losos, 2012). This could be attributed to a variety of causes, including the socialization of women in education and grant writing, or limited access to mentor support systems.

Low overall representation of women in the sciences and even lower representation of women within positions of power sets up the potential for tense interactions and communication dynamics in this heavily male dominated field. Blickenstaff (2005) argues that the nature of science contributes to the removal of women from the pipeline of potential employees. In STEM majors, the metaphor of a "leaky pipeline" is used to describe the number of students who show an interest in a STEM career and at some point, change to a different career field. Fifty three percent of women leave STEM fields as compared to 31% of men (Beninger, 2014; Blickenstaff, 2005; UNESCO, 2017). There are a multitude of reasons for the underrepresentation of women

in STEM. Some of these reasons include the pedagogy of science classes favoring males, the lack of academic preparation women receive for STEM degrees, the sociocultural pressure women face to conform to traditional gender roles, and the masculine worldview in science epistemology (Blickenstaff, 2005).

Lack of role models for women in the sciences. The lack of women in role model positions has led to some women taking extreme measures to serve as models for young girls. Two women successfully traversed the length of the Antarctic continent in 2001 (Atlis, et al., 2004) and acknowledged their main motivations for the expedition were not only to experience the challenge of the environment, but also to act as role models to girls and women across the globe (Atlis, et al., 2004). With the overall lack of women in science, and the lack of women in power, it can be difficult for women to find role models early on in their careers to emulate.

Fouad and Singh's (2011) survey of 3,700 women regarding why they leave the field of engineering suggests that the lack of women and lack of women mentors made engineering a lonely field for women and decreased their desire to stay. A 2007 study found that only 32% of female participants had a mentor, while 49% of the male participants had a mentor (Ledin et. al., 2007). Of the women who did not have a mentor, 71% would have liked to have one. In addition to these findings, the study went on to further suggest that 34% of the women surveyed felt like they had witnessed discrimination towards women, while only 8% of men reported seeing discrimination against women (Ledin et. al., 2007).

1.2.5 Contrapower Harassment

Harassment was originally defined as the behavior or actions of a person with more organizational power, intimidating, persecuting or tormenting a person with less power. Over time, three main areas of harassment have been identified: traditional sexual harassment, peer

sexual harassment and contrapower harassment (Mckinney, 1990). In a majority of reported cases of traditional sexual and contrapower harassment situations, the male is the perpetrator and the female is the target (DeSouza, 2010; Holland & Cortina, 2016; McKinney, Olson & Satterfield, 1988). Traditional sexual harassment is defined as bullying or coercion of a sexual nature, and the unwelcome or inappropriate promise of rewards in exchange for sexual favors from a person in a position of power to a subordinate (Paludi & Barickman, 1991). Peer sexual harassment is unwanted or unwelcome coercion of a sexual nature from a person of the same rank (Charmarman, Jones, Stein & Espelage, 2013; Hill & Kearl, 2011). Contrapower harassment is defined as a hostile environment which inverts power relations, such as when individuals in a subordinate position harasses those in a superior position (Benson, 1984; Lampman, 2012, 2016, 2009). Contrapower harassment also includes a subtle form of sexual harassment such as unwanted and inappropriate sexual comments or solicitations (Ryan & Branscombe, 2013; Lampman, 2012, 2016).

Contrapower harassment is an inverse hierarchical harassment that is typically seen in circumstances such as students harassing faculty, or employees harassing managers. These acts of harassment can range from texting in class to aggressive and threatening behavior, such as violating a faculty members' personal space or threats of personal harm (Lampman, 2012, 2016, 2009). Women continue to experience higher rates of contrapower harassment and in turn, more negative consequences as a result of their experiences (DeSouza, 2010; Lampman, 2012, 2016, 2009). Even though the woman holds more organizational power, she lacks the power of status in terms of her gender (Benson, 1984), which is often the origin of such harassment.

Academic contrapower harassment (ACH). In 1984, the idea of contrapower harassment was introduced in relation to academia. Contrapower harassment has largely been explored in the academic setting (DeSouza, 2010; Kauppi & Pörhölä, 2012; Lampman, 2012, 2016, 2009; May

& Tenzek, 2017). Even with the enforcement of federal laws such as Title IX, harassment in universities is still a serious problem (DeSouza, 2010; DeSouza & Fansler, 2003). With the increase in diverse faculty members and pushes to create more inclusive learning environments, ACH has become a way to vie for power in the classroom (Lampman, 2012, 2016, 2009).

It has been estimated that 10-53% of all university faculty have experienced ACH (Buchanan & Bruce, 2005), with women experiencing significantly increased rates of ACH compared to men. A survey done by Eros DeSouza (2010) found that 72% of female faculty at a medium-sized midwestern state university had experienced some type of mistreatment from students during the past two years. The evolving idea that the students are the consumers "allows students to designate the teacher as a service instead of a person, negating the need for civility or respect" (May & Tenzek, 2017, p. 287). Students have a certain degree of reward or coercive power over faculty, since promotions and hirings are partially based on teacher evaluations by the students (Rospenda, Richman & Nawyn, 1998). Both students and parents have begun to feel as though they are 'customers' or 'consumers' of college, and that faculty should serve them, leading to increased instances of contrapower harassment towards faculty members (Delucchi & Korgen, 2002; Schnieder, 1998).

Some of the behaviors associated with ACH include being rude or disrespectful, challenging a professor's authority, using bullying, threats, or intimidation. These behaviors can also include being hostile or aggressive and/or involving racial/ethnic or sexual harassment (DeSouza, 2010; Kauppi & Pörhölä, 2012; Lampman, 2012; Lampman et. al., 2016; Lampman et. al., 2009; May & Tenzek, 2017). Through these previous studies, evidence suggests that these unexpected power negotiations have the potential to create long-lasting negative effects on a person's sense of self.

Long-term effects of academic contrapower harassment. Studies have explored the long-term effects of contrapower harassment on overall health and mental well-being of victims (Lampman, 2012; Lampman et. al., 2016; Lampman et. al., 2009). In a study examining faculty experiences with ACH, participants reported lack of sleep, being afraid of students who harassed them, and constant feelings of anxiety or stress (Lampman, 2012; Lampman et. al., 2016; May & Tenzek, 2017). In some cases, the incidents even lead to depression or other stress-related illnesses (Lampman, 2012; Lampman et. al., 2016). Respondents' work lives were negatively impacted by the effects of ACH and some noted that the ACH impacted and damaged personal relationships (Lampman, 2012; Lampman et. al., 2016). Faculty also reported difficulty concentrating on work, decreased work productivity and fear of being alone with the harassing student (Lampman et. al., 2016). Lampman (2016) surveyed faculty who had experienced ACH. A quarter of the 524 respondents in the study indicated that the harassment made them want to stay home from work and "20% indicated they felt like quitting their jobs" (Lampman et. al., 2016, para. 34). While a majority of the research regarding contrapower harassment has been collected and conducted within the academic setting, contrapower harassment, regardless of setting, strips women's power and creates long-term mental consequences regardless of occupation (Keashly, 2012; McLaughlin, Uggen, & Blackstone, 2012).

Characteristics of contrapower harassment perpetrators. Perpetrators of contrapower harassment have shared characteristics (Epps, 2016; Gutek, 1985). Contrapower harassers have power through race, gender and sociocultural status, and the majority are heterosexual men (Epps, 2016). Harassers utilize sexism and traditional gender roles to justify the harassment and maintain patriarchal social structures (Glick & Fiske, 1997). Traditionally men have competed with men for "control of institutions," while women have competed with women to affiliate themselves with powerful men (Rospenda, Richman & Nawyn, 1998). Hypermasculine work

environments perpetuate the cycle of contrapower harassment, and reinforce dismissal of the feminine identity (Hunter, 2007; Rospenda, Richman & Nawyn, 1998).

Race and sociocultural status may influence contrapower harassment. Although white women have been encouraged to challenge patriarchal gender-role attitudes, black or minority women have been left out (Dugger, 1988). Women of color may not feel supported when reporting contrapower harassment to supervisors, which can impact a person's decision to report harassment and to what extent they disclose information. Sociocultural power and class seem to have an effect on hostility towards powerful women. Using sociocultural power, an aggressor is able to derive power from being a man (Wylie, 2003). A white person who is an aggressor is able to derive sociocultural power through race (Brock, Kvasny & Hales, 2010; Moreton-Robinson, 2014).

Summation. Overall, the accumulation of tangible and intangible goods impacts people's perceived level of power within social hierarchies. Due to socialized cultural norms, the organizational power structures put forth in our society leave women with less power, class and status. As men and women continue to be indoctrinated into these prescriptive traditional gender roles from a young age, women may continue to face more barriers breaking into traditionally masculine environments and rising to organizational power. Fields like the hard sciences favor men and narrow the perspective lens through which scientific data is analyzed. The standpoint of women can have a large impact on the future of science and scientific discoveries due to their unique perspectives and lived experiences as the marginalized. When women do take on masculine qualities and rise to positions of power, there is the potential for them to be contrapower harassed as people try to rebalance the power dynamics and regain the status quo. The aggressor will use tactics of contrapower harassment to attempt to exert control or influence

through the power they perceive to be rightfully theirs. Contrapower harassment can have detrimental long terms effects on self-efficacy, career trajectory and overall well-being.

1.2.6 Ways of conducting scientific research: Remote field stations

With a foundational understanding of the construction of power within organization in Western society, these frameworks can be applied to specific situations to better understand the power dynamics occurring. As previously mentioned the lack of women in science leads to a reinforcement of traditional gender roles and stratification of power. This has detrimental impacts on career paths for both genders. For women in science, it can be especially difficult to juggle traditional gender role expectations with their own career desires, and women may have to give up opportunities such as promotions or leadership positions.

Likewise, an important career step for many students, scientists and professors to gain status in their field is data collection and publishing. Research and publishing can be make or break moments for many people's careers ("In the field," 2018). Drummond and Markin (2008) surveyed 300 geology undergraduates and reported that 99% of the respondents were required to take a field work course at some point throughout their college career.

Field work is a way many people get first-hand experience with conducting experiments and collecting data. Field work is usually regarded as a broad term, referring to any work-related activities outside of the home institution ("In the field," 2018). One way to conduct field work is to stay at a remote field station. These remote field stations pose unique challenges for many people who go to them to live and research, including the distance from personal support networks at home, long days with physically strenuous work, exhaustion, exposure to harsh environmental conditions, and reduced access to transportation, food, and medical resources. To fully understand the atmosphere cultivated by a remote field station, the present review of

literature will provide an overview of what a remote field station is and the basic factors that impact remote field stations.

1.2.7 What is a remote field station?

One of the ways to conduct scientific research is through data collection at a remote field station. While the specific criteria for identifying a remote field station is constantly in flux, collectively remote field stations provide a living library and outdoor laboratory for students and researchers to further their knowledge of the environment and contribute vital new research to their discipline (OBFS, 2018). Field stations are a "home for science" (p. 798), providing researchers a place of residence (Geissler & Kelly, 2016) from just a few days to months on end. Likened to a research hotel, remote field stations are spread throughout the world in different forms with the maintained purpose and goal of protecting the environment and ecosystems (Geissler & Kelly, 2016). Found in all biomes, they tend to be heavily concentrated in marine, terrestrial and freshwater systems (National Research Council, 2014; Tydecks et. al., 2016). Field stations provide immediate entry to the environment and allow researchers to access everything immediately available in the environment, from collecting samples directly from the ecosystem, to seeing wildlife in its natural habitat (OBFS, 2018; Tydecks et. al., 2016).

History of field stations. Humans have observed nature since the beginning of recorded history (Tydecks et. al., 2016). The concept of field stations has existed since at least 1843, and some of the earliest field stations in North America were developed in the late 1800s (Arvey & Riemer, 1966; McNulty et. al., 2017). The exploration of Charles Darwin in 1859 is frequently acknowledged as one of the first remote explorations (Arvey & Riemer, 1966; McNulty et. al., 2017). Darwin used his ships as research stations to document diversity in the Earth's ecosystems (Arvey & Riemer, 1966; Darwin, 1859; McNulty et. al., 2017).

With the development of more frequently used, permanent locations for field stations during the early 1900s, the once passive process of observing nature became an active practice of studying natural history. This cemented the study of natural history into a scientific discipline. Throughout the 1900s, field station activity evolved from natural history to studies of ecology, evolution and animal behavior, before transforming again into studies of ecosystems, genomics and conservation biology (Dolan, 2007; Wyman, Wallensky, & Blaine, 2009). Every field station has a unique history that continues to represent the goals of its founders, the ecosystem where it is located, and its scientific culture (McNulty et. al., 2017).

Purpose of remote field stations. The ultimate goal of research stations is to provide researchers with the opportunity for free and open inquiry, supporting a culture of scientific research through offering a secure outdoor facility with all required infrastructure to further educational and research opportunities. No matter the form of the individual field stations, remote field stations are on the front lines of understanding shifting climates and ecosystems to better understand future conditions. All stations share the same commitment to advancing understanding through the support of teaching, research, and public education.

Teaching. Field stations are a hub for undergraduate, graduate and postdoctoral students to receive first-hand experience collecting data in the field (Elser, 2016). As previously mentioned, of the 300 undergraduate geology students surveyed in a 2008 study, 99% had to take a field work course at some point in their college career (Drummond & Markin, 2008). The hands-on nature of remote field stations provides young students with educational opportunities and skills that cannot be replicated within a college campus or classroom (Billick, et. al., 2013; Janovy & Major, 2009; Tydeck, et. al., 2016). For many students and researchers in training, spending a season in a remote field station collecting data can become a "life changing experience" (Elser, 2016, p. 19). Remote field stations provide opportunities for new

understandings of the world. For example, James Elser, the director of the Flathead Lake Biological Station of the University of Montana stated that his summer at the University of Notre Dame's Environmental Research Station (UNDERC) was where he "found [his] life's vocation" (Elser, 2016, p. 19). This was a formative experience in Elser's life that shaped his future love of oceanography and remote field station research. Many field stations are university affiliated (Elser, 2016; Stevens & Gilson, 2016) and benefit their associated university through curriculum enrichment and off-campus facilities in a novel environment (Elser, 2016; Stevens & Gilson, 2016). Field stations are crucial for training the next generation of scientists, and continuing training of educators and natural resource professionals (McNulty et. al., 2017; National Research Council, 2014).

Research. Field stations bridge the gap between the basic tools of science and field life, connecting researchers to the environment (National Research Council, 2014). The remote locations of the field stations provide the necessary settings for studying biodiversity and ecosystem processes untouched and within their natural settings (Tydeck, et. al., 2016). Field stations facilitate the research, observation and tracking of environmental change (McNulty et. al., 2017). Field stations are living repositories of long-term data sets and plant and animal collections. These data sets are vital in understanding and the potential subsequent solutions for global changes in temperature, precipitation, storm intensity, and other factors associated with climate change (McNulty et. al., 2017).

Research stations contribute scientific information to help key stakeholders, i.e. local governments and communities. This information is used to tackle critical environmental issues and assist with evidenced-based decision-making as is relates to the regional area (OBFS, 2018). Field station staff and researchers also often play a critical role in ensuring that environmental considerations are factored into local and regional planning and development decisions.

Remote field stations play a large role not just at the local level, but also globally, providing decision makers all over the world with science and evidence for assessing and understanding global environment change. Field stations play a fundamental role in long-term solutions to support global programs and understanding the integration of social and environmental impacts when attempting to solve problems caused by global change (Perrings, et. al., 2011). The large intertwined network of research stations also provides contexts for great efforts of collaboration between researchers, universities, stations, and countries.

Public education. As living laboratories, field stations play an important role in giving K–12 students, members of the public, media, and elected officials direct access to research being conducted in the natural world, and to opportunities for citizen science (Baker, 2015). At the regional level, remote field stations have an impact in the local communities where they are situated. Field stations provide local learning opportunities for students and the public to collaborate in the scientific process (Tydeck, et. al., 2016). The educational opportunities presented through the research stations may vary from courses for students and teachers, to workshops for local farmers or conservation workers (Whitesell et. al., 2002).

Summation. With around 1,268 biological field stations located in 120 countries around the world, field stations provide the necessary infrastructures to contribute crucial information worldwide on environmental events (Billick, et. at., 2013; National Research Council, 2014; Tydeck, et. al. 2016). Research stations are a vital place for significant advancements made in ecology, ecosystems, animal research, evolution and conservation biology. Field stations play a fundamental role in the education of future generations of scientists and researchers, providing a platform for training future researchers. The importance of field stations and the knowledge they contribute tends to go unrecognized (Baker, 2015; Pang, 1996). Despite their important

contributions, power dynamics restrict the access to research stations, funding and recognition of work.

1.2.8 Basics of remote field stations

There are a multitude of factors that define a remote field station and impact dynamics. These factors include location, lack of community support, stability of funding, staffing, power, the impacts of isolation and the transitioning of staff and researchers from camp life back into society. All of these have an effect on overall functioning at both the individual and camp wide level.

Where are remote field stations? Field stations are capable of studying a variety of environmental phenomena, ranging from mammal migrations to plant growth (Baker, 2015; Raby, 2017). Globally field stations can be found in all climates and biomes (Baker, 2015); however, due to the colonialist origins of field stations, they tend to be located in North America and Europe (Raby, 2017). For example, over one-third of all research stations are located in the United States alone (Baker, 2015). Stocks, Seales, Paniagua, Maehr, and Bruna (2008) suggested that the uneven representation of field stations across the globe has contributed to unevenness in patterns of fieldwork, as well as, unevenness in scientific knowledge and conservation in these neglected locations (Amano & Sutherland, 2013). Only 10% of published ecological studies are based at tropical field sites, although tropical countries make up about 40% of the global land area (Martin, Blossey & Ellis, 2012; Raby, 2017). Tropical field stations tend to cluster in a handful of locations in Central America, and there are sections of the world, such as tropical Africa and Asia, that remain unrepresented in published field work.

Lack of Community Support. While field stations may not be directly located in a remote village or community, there has been tension between indigenous people and scientists for decades (Raby, 2017; Tydecks et. al., 2016). Tense histories of scientists infiltrating and

ruining indigenous people and cultures is still readily felt today. There is a long history of racially segregating the local populations after using them and their resources to build the field stations (Anderson, 2009; Geissler, 2015; Geissler et al., 2016; Tilley, 2011). This use of imperialism has prevented indigenous peoples from accessing remote field stations and collaborating on scientific discoveries.

In the mid 20th century, as tropical field stations in South America began to rise in prominence and popularity, it was made extremely clear to local scientists and indigenous people that field stations were solely oriented towards the research goals of the United States and that the lands and facilities were for researchers from the United States (Raby, 2017). For example, at the Barro Colorado field station in Panama, Latin American researchers were "welcome" to research; however, they were racially segregated and controlled (Raby, 2017). The implications of this domination of local communities and colonialism still impacts the scientific community today. While there are a significant number of authors within academia from across the globe, the United States still dominates paper authorship in comparison to small, tropical countries (Raby, 2017).

Much like the history of tropical field stations, polar stations have a history of racially segregating local populations after using them and their resources to build the field stations. Polar field stations were originally used as a way for countries to stake claim on land and compete with each other for knowledge (Geissler & Kelly, 2016). Unlike the tropical research stations, polar research stations had to work with the indigenous people earlier on and more closely to survive life-threatening weather in places such as Greenland or Alaska (Geissler & Kelly, 2016). Researchers had to work with the indigenous people to develop skills for adapting to the extreme cold and weather conditions.

The impacts of the geopolitical race to own Antarctica can still be seen today. Due to the enactment of the Antarctic Treaty in 1959 Antarctica is not owned by one specific country ("The Antarctic Treaty", 2011). Many countries have their own research stations in Antarctica to maintain autonomy and national interests, even though resources might be better spent developing a shared research station.

Due to the nature of field stations and their affiliation with the government, local inhabitants can become suspicious and resentful of the station's motivations (Wyman, Wallensky, & Blaine, 2009). In 2012, the Italian government charged six scientists from a volcanic observatory with multiple counts of manslaughter because they did not communicate the potential risk of the L'Aquila earthquake to the public (Donovan & Oppenheimer, 2015; IAVCEI, 2012; Marzocchi, 2012). Scientists have "civil responsibilities and act as channels for scientific data collections" (Donovan & Oppenheimer, 2015, p. 156). When incidents like this occur, the scientists who are responsible for communicating the threat of earthquakes or other environmental impacts often become the scapegoats for local or federal governments to deflect blame and anger from the community. This has the potential to further strain the relationship between local communities and scientists, dismantling any previously built trust. Since decisions such as evacuation and land-use planning are heavily dependent on scientific advice, observatories may be 'blamed' for unpopular political decisions, such as decision to evacuate from an area or not evacuate (Donovan et. al., 2013). While scientists are available to governments for advice, in practice scientists may be influenced by the will of politicians (Donovan & Oppenheimer, 2015). For example, if an alert-level system is directly tied to a particular social action, such as an evacuation, and the decision is based solely on scientist's advice, public perception may be that scientists are responsible (Donovan & Oppenheimer, 2015; Haynes, 2005; Pattullo, 2000).

Summation. The historical exclusivity of field stations continues to impact the success of remote field stations. These barriers of exclusion are still being removed (Raby, 2017; Tydecks et. al., 2016). Until recently, local and indigenous people were excluded from equal participation in remote field stations through the use of the colonial system of hierarchy and segregation (Raby, 2017). Indigenous people were treated more like servants by researchers and scientists than equal scientific counterparts. This lack of support from the indigenous or local people can add pressure to the fate of remote field stations. The clash of religious or cultural beliefs and practices can impact the objectives of a remote field station (Wyman, Wallensky, & Blaine, 2009). Long established practices, like hunting or fishing, can interrupt research and lead to conflicts between locals and the field station.

Indigenous people and locals are a part of the ecosystem that must be considered for the survival of remote field stations. Therefore, there is now a heightened focus on including the local publics in field station activities, such as enrolling rural communities in research, building platforms for local scientists, and enhancing public engagement through media and schools (Crane, 2011; Graboyes, 2015; Moyi Okwaro & Geissler, 2015). Scientists must explore the potential knowledge of native populations in order to collaborate and coproduce innovative information (Bodenhorn, 2012; Geissler & Kelly, 2016; O'Reilly, 2016). Without the invaluable insights and support of local communities, scientific discoveries and research may remain at a standstill. Building trust and rapport with locals is a vital element of keeping field stations alive and ensuring the safety of the surrounding communities.

How field stations are funded. Much like the diversity among the specific objectives of each research station, the sources of station's funding also vary (Tydecks, et. al., 2016; Wyman, Wallensky, & Blaine, 2009). Many field stations are funded through grants awarded to scientists who wish to study at the field station, individual grants awarded to the station, funding from the

station's affiliated university or through governmental funding. These forms of funding are highly volatile and lack long-term sustainability (Wyman, Wallensky, & Blaine, 2009). Three quarters of all field stations are affiliated with universities that are under intense budget pressure (Baker, 2015).

The threat of closure and lack of funding for remote field stations is not a new issue plaguing the system and can be attributed to the financial insecurity, weak governance and the lack of public awareness and support (National Research Council, 2014; Schubel, 2015; Tydeck, et. al., 2016). Field stations must always be on the lookout for grants, outside scientists, and opportunities for adaptability to stay afloat. Stations funded by governments or universities are repeatedly at risk for loss of funding at the whim of the policies of the current government or administration (Wyman, Wallensky, & Blaine, 2009). The pressures surrounding the threat of loss of funding cause field stations to remain constantly aware of new technology and scientific research needs. Field stations that cannot adapt and do not dynamically evolve are at risk for being left by the wayside (Tydeck, et. al., 2016). In 1945, there were 53 biological field stations operating in the United States. By 1966, only 20 of the original 53 biological field stations remained (Arvey & Riemer, 1966; Tydeck, et. al., 2016).

Staffing. Field stations tend to vary in size and technological advancement, from "trail networks to state-of-the-art laboratories" (OBFS, 2018, para. 2). This means the variability of staffing between field stations is high, with 60% of remote field station having 10 or fewer employees, and only 2% of all research stations having between 250-500 employees (Baker, 2015). Staffing at field stations tends to be minimal (Stevens & Gilson, 2016). This leads to staff having increased job responsibilities to keep the station running and the scientists' content. There is little research on the impact of staff responsibilities on researcher's experiences and communication. The hierarchy of staff may change from station to station, but many of the roles

and responsibilities are consistent. The most influential role in camp tends to be the station leader, however, the second most important role is the camp head chef. With the responsibility of having to cater for the entire camp, the chef impacts the team and individual level of morale (Schmidt, Wood & Lugg, 2005b; Yan, Ye & Tang, 2011). Other than the impact of the top chef, little knowledge is known about the involvement of the staff in other aspects of camp life. Overall, there is dearth of research on the staffing and impacts of staff and scientists in remote field stations. However, current research solely focuses on the experiences and repercussions the scientists must endure and not on the experiences of the staff themselves.

Power. Power plays a role in the functioning of field stations. Whether it is the hierarchical power system of the staff or the bureaucracy of the affiliated university, power impacts dynamics at remote field stations. Research to date has looked at women's experiences in the past at remote field stations, the impact of gender roles on productivity and the impact of harassment within remote field stations.

Gender. Women have been conducting fieldwork for centuries (Pang, 1996). During the 19th century, when the natural science discipline was cemented, upper-class women with scientifically minded husbands or fathers were able to cultivate their own interests in science and participate in research, often serving as assistants, translators and illustrators (Pang, 1996). Since the introduction of women into field stations, women have been forced into the traditionally feminine role of nurturer, caretaker and mother (Pang, 1996). An analysis of journals kept by one of the first woman to take a lead role in field work, Elizabeth Campbell, recounted how her role as caretaker and mother revolved around taking care of the camp and her husband on long expeditions. When all else failed, Elizabeth was required to find living arrangements, coordinate logistics for food and maintain high camp morale high in order to maintain the health and productivity of the researchers (Pang, 1996). Her husband's memoirs only mention Elizabeth in

passing and make no note of her work managing the campsites and logistics (Pang, 1996). These diverse accounts of the same events suggest that "other women who received little mention in eclipse narratives may have done far more on their expeditions than the poverty of description of their roles would indicate" (Pang, 1996, p. 42). This further illustrates the marginalization indicated in feminist standpoint theory, where the lived experiences of those in the minority are discounted by those in power.

Women leaders within remote field stations are still rare compared to their male counterparts, leading to the different lived experiences and sense-making processes for both genders (Burns, 2001; Rothblum, Weinstock & Morris, 1998; Schmidt, Wood & Lugg, 2005a). In a study in a remote station in Antarctica, findings suggested that women in leadership receive less social support than other expeditioners (Rothblum, Weinstock & Morris, 1998). Previous research has suggested that the lack of social support for women in leadership can be an additional source of stress for leaders, especially leaders who highly value group cohesion more than male leaders (Rothblum, Weinstock & Morris, 1998; Schmidt, Wood & Lugg, 2005a). The social roles assumed by males and females and the perceptions of interpersonal interactions and social support fall in line with prescriptive traditional gender roles (Burns, 2001; Rothblum, Weinstock & Morris, 1998; Weinstock, 1998). Women became nurtures, and men continued to thrive in positions of power.

Socialized gender roles. Even with original field work, researchers like Elizabeth Campbell were forced to choose between traveling to complete expeditions, or staying behind with her children (Pang, 1996). She made the almost unheard-of progressive decision to travel and conduct research, leaving her children in the hands of another highly capable woman (Pang, 1996). Remote field station life is not conducive to families or relationships. McGuire, Primack & Losos (2012) had a high proportion of single respondents for both men and women in their

survey about field station life, which is a phenomenon that has been found in other disciplines of academia (Fox et al., 2011). The rigorous demands of academia and field work do not assist in fostering or maintaining serious relationships and family development (McGuire, Primack & Losos, 2012).

Women are also more likely to bring children with them while conducting field research. Men, on the other hand, are more likely to have their spouse take care of their children at home (McGuire, Primack & Losos, 2012). Due to the ability to leave their children at home, men are able to work longer and more flexible hours when collecting data at a remote field station (McGuire, Primack & Losos, 2012). A longitudinal study conducted in 2012 highlighted the differences between men and women in terms of how their career choices affected their decision to have children, and the percentage of childcare responsibilities taken on by each (McGuire, Primack & Losos, 2012). While younger male and female scientists were more likely to have an equal percentage of childcare duties, the obstacle of the work-family balance remained prevalent for women in remote field stations (Ceci & Williams, 2011). The ramifications of these decisions contribute to the higher observed rates of women leaving the field of science, and lower levels of productivity, promotion, and salaries in comparison with those of men (Ceci & Williams, 2011; McGuire, Primack & Losos, 2012).

Harassment within remote field stations. Previous research has demonstrated that sexual abuse and harassment exists within remote field camps or stations (Clancy et. al., 2014; Gass, 2014; Gluckman, 2018; Wadman, 2017). The groundbreaking study of Clancy, Nelson, Rutherford and Hinde (2014) sounded an alarm for the science community and field camps alike. Their study explored the rates of sexual assault and harassment among scientists across all disciplines in field camps. Of the 600 respondents surveyed, 74.2% said they had seen first-hand or been told about colleagues making sexual comments in field sites, and 64% of the respondents

had personally been verbally sexually harassed (Clancy et. al., 2014). Over 20% of the respondents had been sexually assaulted, defined as "physical sexual harassment, unwanted sexual contact, or sexual contact in which they could not or did not give consent or felt it would be unsafe to fight back or not give consent" (Clancy et. al., 2014, para. 19). In the survey, women were 3.5 times more likely to report experiencing sexual harassment than men. Women were much more likely to report being sexual harassed or assaulted from men in positions of power; men were also likely to receive inappropriate sexual comment or actions, but from peers of the same sex (Clancy et. al., 2014). Of the women and men surveyed, the overarching theme of age seemed to emerge. Most of the female victims were young researchers or postdocs (Clancy et. al., 2014; Gass, 2014).

While there has been a great deal of literature and research surrounding sexual assault within traditional academic settings, such as hospitals and college campuses, this was the first study to question the abuse happening in remote field stations. This study was replicated in two other disciplines that require field work or field placement. In 2014, the Southeastern Archaeological Conference (SEAC) conducted a sexual harassment survey of its members (Meyers et. al., 2015). The survey sought to investigate whether or not sexual harassment was occurring in field placements, and to document sexual harassment rates and demographics. Sixty six percent of participants reported harassment, primarily women, with an additional 13% of respondents reporting sexual assault. These data suggest that women are more likely to "to be harassed and/or assaulted" (Meyers et. al., 2015, p. 7). Of the respondents, 12% reported that the sexual harassment or assault negatively impacted their career.

This was followed by a study from Moylan and Wood (2016) conducted with several hundred social work students to learn more about sexual harassment or assault during their social work field placements. Their study of 515 undergraduate and graduate social work students

reported that 55% of participants had experienced at least one incident of sexual harassment while on the job. Their findings also suggested that those who were younger, a minority and in a committed relationship were more likely to report harassment, and that the most common perpetrators of harassment were other staff and clients (Moylan & Wood, 2016). While not all these assaults or harassment incidents may have been reported to officials, these experiences have the potential to influence opportunities for continued access to research sites and data, degree completion, and career success (Stephens & Levine, 2011).

Another study by Clancy, Lee, Rodgers and Richey (2017) conducted in the field of planetary sciences found that harassment and sexual assault was even worse for minorities and women of color (Clancy et. al., 2017; Gluckman, 2018). In astronomy and other planetary science related fields, women of color reported feeling unsafe at work 40% of the time because of their gender, and 28% of the time because of their race. Women of color not only faced a greater risk of sexism, they also faced higher risks of negative workplace interactions (Clancy et. al., 2017). Eighteen percent of women of color and 12% of white women reported skipping professional events because they did not feel safe attending and felt that the hostile climate had effected their overall career trajectory (Clancy et. al., 2017).

As an extension of traditional academic environments, remote field stations create unique situations for both men and women to navigate when it comes to harassment. Unlike a classic 9-to-5 job, where person can leave the office and their harasser to go home, the remote nature of camps may make it next to impossible for victims to leave camp, talk with people within their normal support network, or even report the incident (Gluckman, 2018). Field camps tend to rely on a strict hierarchy for both staff and researchers, meaning that sometimes only one person has access to vehicles or satellite phones to connect with the outside world (Gluckman, 2018). The remoteness can make it difficult to have a harasser removed from camp and the lack of clear

boundaries can make certain rules seem less clear or less likely to be enforced (Gluckman, 2018). With the added complexity of colleagues spending days together for weeks on end, sleeping in close quarters and socializing together at night, the norms and customs that develop within a season at a remote field station can be remarkably different than the rules within a normal work or academic setting (Gluckman, 2018). Remote field work may even amplify the damaging effects of sexual harassment, as the distance from society may become both physical and emotional (Wadman, 2017). Victims may feel completely helpless as the abuse is magnified and they have nowhere to turn for support (Wadman, 2017).

Effects of Isolated, Confined and Extreme Environments (ICE). Remote field stations are isolated, confined and extreme (ICE) environments. Previous research has explored the impact of ICE environments in places such as military deployments and the work done by the National Aeronautics and Space Administration (NASA). Research stations, like those located in Antarctica, have been likened to extreme circumstances such as spaceflights and deep-sea exploration (Sandal, Lean & Palinkas, 2006; Suedfeld & Weiss, 2000; Yan, Ye & Tang, 2011). Current research on ICE has focused on isolation and its effects, confinement, extreme environment and the positive impacts of ICE on those living and working in such conditions.

Isolation. People in ICE must deal with a lack of contact and connection to their normal social networks (Golden, Chang & Kozlowski, 2017). For example, both staff and researchers living in Antarctica or arctic remote field stations must deal with the physical separation from friends and family (Golden, Chang & Kozlowski, 2017). The extreme isolation can impact individuals, as well as, how situations among groups are handled. Long-term isolation has been linked to a reduction in sleep quality, impaired cognitive ability, interpersonal tension and other negative effects (Palinkas & Suedfeld, 2007).

Sleep disruptions. Previous studies have explored the decrease in sleep time and sleep efficiency, as well as increased sleep latency that prevail in Antarctic field stations (Bhattacharyyas et. al., 2008; Steinach et. al., 2016). Palinkas (1992) explored the sleep patterns of people at McMurdo Station in Antarctica, and 64.1% of people reported difficulty sleeping in the winter. These sleeping problems are not specific to the winter months; during summer expeditions, two out of every three people report poor sleep (Barabasz, 1980; Steel et. al., 2000). These problems can mostly be attributed to disruption of circadian rhythms, in both summer (Steel et. al., 2000) and winter, exposure to extreme cold temperatures in winter (Angus et. al., 1979) and psychosocial stress (Palinkas, Houseal & Miller, 2000).

With the decrease in quality sleep, many people report impaired memory, concentration difficulties, and reduced alertness (Angus et. al., 1979; Mullin, 1960; Reed et. al., 2001). A study during the 1989 winter season at McMurdo station in Antarctica reported that 51.5% of the participants had difficulties with concentration and memory (Palinkas, 1992). Subsequent studies have reported an increase in susceptibility to hypnosis and suggestion. These symptoms have been attributed to the effects of long-term exposure to the cold, lack of cognitive environmental stimulation, and fatigue (Angus et. al., 1979; Mullin, 1960; Reed et. al., 2001).

Interpersonal tensions. The stress of interpersonal conflicts and tensions has been suggested to impact sleep efficiency (Palinkas, 1992; Palmai, 1963; Steinach et. al., 2016). Psychosocial stress is defined as the experience of stress as a result of social interactions with others (Birchler-Pedross et. al., 2009; Hankin, 2009). While it has been shown that women might be more susceptible to the effects of psychosocial stress, alluding to the feminine stereotype (Haminen & Aro, 1996; Hankin, 2009), psychosocial stress can provoke a greater disturbance of sleep in both sexes (Birchler-Pedross et. al., 2009).

Long-term isolation and psychosocial stress can lead to the development of different solutions to problems, i.e. regarding how to handle incidents of harassment or bullying, and consequences given as a result of the perceived circumstances (Golden, Chang & Kozlowski, 2017; Gushin, et. al., 2001). The absence of privacy and gossip that accompany the remote field station experience can have a negative effect on social relations between peers, especially between men and women (Palinkas, 1992; Palinkas & Suedfeld, 2007). In a study of a simulated space mission, an incident of sexual assault between a man and women led to an increased group hatred for the harasser. As a result of the sexual assault, the group members erected walls to separate the perpetrator from the group (Palinkas, 1992; Palinkas & Suedfeld, 2007), creating further isolation. Due to the extreme isolation, with no way to remove the aggressor, the space available was utilized to the best of their ability to create a physical barrier. While this solution is not an applicable punishment in a workplace outside of this place of extreme isolation, this was the agreed upon solution proposed by the group as a result of their isolation.

Negative affect. An extremely common symptom reported during ICE conditions is depression, with an increase in anxiety and irritability. Participants in polar treks have frequently cited long periods of self-doubt of their own performance or sadness that they are unable to meet group or personal expectations (Mear & Swan, 1987; Steeger & Schurke, 1987). The intense separation can magnify the effects and impact of a personal crisis while at a remote field station (Palinkas & Suedfeld, 2007). A study in the 1989 winter season at McMurdo, found that 62.1% of the residents reported feeling depressed, and 47.6% reported feeling more irritable than usual (Palinkas, 1992). Several other symptoms have been commonly reported by participants in polar expeditions that include boredom, fatigue, inattention to personal hygiene, reduced motivation, headaches and increased appetite resulting in weight gain and stomach issues. These symptoms are similar to the symptoms of depression (American Psychiatric Association, 2013).

Confinement. Remote field stations grant the unique opportunity for extreme confinement and remoteness. A second defining factor of ICE environments is the lack of mobility and forced confinement, often due to dangerous outside conditions. For both staff and researchers that work in places like Antarctica for a season, after the last plane leaves at the end of the summer season, there is no way to get staff or researchers in or out of Antarctica until the thaw several months later.

The lack of space and having to live and work in the same environment adds to confinement. In polar field stations, people may be limited to just a few tents and laboratories for months on end (Yan, Ye & Tang, 2011). People are confined to the remote field camp often without choice and without an abundance of space.

Forced Teamwork. While there has been extensive research on exploring small group and team effectiveness (McGrath, 1964), it has been hypothesized by Golden, Chang & Kozlowski (2017) that the previous theoretical framework for small group communication and team effectiveness may not work in ICE settings. The extreme conditions faced in an isolated, confined and extreme environment require people to approach teamwork from a different perspective. People in ICE environments often experience an increase in negative emotions and tension, paired with a decrease in group cohesion over long periods of time (Golden, Chang & Kozlowski, 2017; Kanas, et. al., 2007; Palinkas, et. al., 1989; Wood, et. al., 1999). A study of participants throughout a season in Antarctica explored how over the duration of isolation and confinement, people reported an increase in their levels of hostility (Palinkas, Johnson, & Boster, 2004). This study provided a framework for further exploration in a 2011 study of a 105-day long space mission that found an increase in group tension and decrease in group cohesion over time (Kanas, et. al., 2007; Sandal, Bye, & van de Vijver, 2011; Wood, et. al., 1999). These group tensions and conflicts arose from problems that may happen in any work environment, but that

were escalated due to the impact of the ICE environment (Gushin, et. al., 2001; Kanas, et. al., 2007; Wood, et. al., 1999). In order to cope with these heightened tensions and situations, people were more likely to remove themselves from contact and further isolate themselves to avoid conflict (Golden, Chang & Kozlowski, 2017).

Social support and group cohesion play a vital role in group functioning, group performance, and individual achievement (Clarke, 2002; Griffith & Vatikus, 1999; Madjer, Oldham & Pratt, 2002; Oliver et. al., 2002). Due to the constant interactions required in a remote field station, social conflicts may increase between workers and supervisors, co-workers or cliques because of the lack of separation between work and leisure (Palinkas & Suedfeld, 2007). Since the working and living spaces are so close to one another and not always well defined, people must interact with the exact same people in both sets of activities (Palinkas & Suedfeld, 2007).

Overtime, due to the negative emotions and lack of group cohesion, the search for social support among ICE peers decreased as well (Palinkas, et. al., 2004). Social support has traditionally been operationalized as any assistance or help that people may receive from others through interpersonal interactions, transfer of information, emotional care, or tangible resources (Schmidt, Wood & Lugg, 2005b). In ICE, people looked for less advice and social support as they attempted to avoid decreased morale, negative emotions, and bad interactions with peers (Palinkas, et. al., 2004). People using outside networks, such as family and friends, for social and emotional support, also showed a significant decrease in satisfaction with the support they received from their peers towards the end of year-long expeditions.

The impact of long-term forced teamwork led people in ICE to use avoidance responses and techniques to avoid conflict and negative interactions (Golden, Chang & Kozlowski, 2017). Avoidance is defined as the cognitive or behavioral withdrawal from stressors or problems

(Barbarito, Baldanaza, & Peri, 2001; Peri, Scarlata & Barbarito; 2000). Participants in Antarctica were found to have an increase in multiple forms of avoidance, such as giving up or reducing efforts for dealing with a problem, denial and restraint coping, defined as waiting for an appropriate time to handle a situation (Baldanaza, & Peri, 2001). With a lack of expendable resources and energy, avoidance coping has been hypothesized as a way to cope with problems that cannot be dealt with effectively after a long time use of energy and resources (Palinkas & Browner, 1995).

Extreme Environment. Finally, ICE situations present inhabitants with treacherous and life-threatening conditions (Golden, Chang & Kozlowski, 2017). Extreme environments are defined as harsh and challenging conditions (Steinach et. al., 2016). Some characteristics of extreme environments can be extremely high or low temperatures, absence of water, high or low atmospheric content of oxygen or carbon dioxide, high levels of radiation or acidity or the presence of toxic substances [such as harsh weather conditions, below freezing temperatures or even low oxygen levels]. Examples of these locations include volcanoes, deep ocean trenches, deserts, polar regions and even outer space (Golden, Chang & Kozlowski, 2017; Steinach et. al., 2016). These environments make it difficult for survival, requiring all species to adapt in order to survive.

Being an arctic field station. Life and work for people close to polar regions are often associated with extreme and adverse weather conditions, such as a cold climate and fluctuating exposure to sunlight (Broadway, Arendt & Folkard, 1987; Kennaway & Van Dorp, 1998; Palinkas, Houseal & Miller, 2000; Steinach et. al., 2016). Temperatures during a winter in Antarctica can range from 14 to -120 degrees Fahrenheit. In 2013, the coldest reported temperature in Antarctica was -135 degrees Fahrenheit, which was then revised with new data in a 2016 study reporting that the lowest actual temperature was -144 degrees Fahrenheit in the

winter (Borunda, 2018). Throughout the arctic polar regions, temperatures can range from -90 degrees Fahrenheit to 20 degrees Fahrenheit and tend to average out to -34 degrees Fahrenheit throughout the winter months. These extreme temperatures impact the humidity levels, and arctic polar regions have low humidity with harshly dry air (Borunda, 2018). Dry air can have detrimental health effects on individuals, leading to increased susceptibility to colds and respiratory illness, dry skin, and dehydration (Felson, 2017).

In addition to extreme temperatures and low humidity, sunlight in the polar regions hits the Earth differently, leading to complete months of darkness in the winter to 24-hours of sunlight in the summer (Steinach et. al., 2016). Palinkas, Houseal and Miller (2000) suggested that individuals in Antarctica exhibited an initial decrease in both anxiety and fatigue from March to August, but an increase in anxiety and fatigue from August to October in response to the light variation. The lack of stable daily sunlight levels may lead to negatively altering a person's circadian cycle, impacting sleep efficiency, anxiety levels and fatigue (Arendt, 2012).

Positive impacts of ICE. A majority of research focuses on the negative aspects of polar life. However, these ICE environments have the potential to provide some positive outcomes for people on polar expeditions. Palinkas and Suedfeld (2007) suggested two major categories of positive outcomes from ICE expeditions; "the inherently enjoyable characteristics of the situation" (p. 158) and "positive reactions to challenges of the environment and having encountered and successfully surmounted these challenges" (p. 158). Many participants in previous studies and in personal ethnographies have acknowledged the grandeur and beauty of the landscape. People also noted the camaraderie and thrill of facing the life-threatening challenges of the environment alone and together with their peers (Mocellin & Suedfeld, 1991).

People who have been to Antarctica consider it to be one of the best experiences of their lives (Oliver, 1991). The positive effects of personal growth and increased enjoyment from

overcoming perceivably insurmountable challenges provides people in polar regions with some effective coping mechanisms to overcome the negative aspects of the experience (Palinkas & Suedfeld, 2007). Post-traumatic growth, a term coined to describe post-return growth following polar expeditions (Palinkas & Suedfeld, 2007; Tedeschi & Calhoun, 1995), is the idea that traumatic experiences can lead to personal growth, positive changes in characteristics such as resilience, confidence, coping skills and changes in perspectives and values (Palinkas & Suedfeld, 2007). The experience and challenges of spending extended time in extreme and unusual environments, like polar exploration, has been suggested to produce the same result as traumatic experiences (Suedfeld, 2002; Suedfeld, 2005).

Summation. Historically, people have been debilitated by depression, anxiety, sleep disorders and alcoholism while on arctic expeditions (Jacka & Jacka, 1988; Palinkas & Suedfeld, 2007). Today, polar explorations still entail extreme exposure to cold, danger, sleep deprivation and heavy physical demands (Palinkas & Suedfeld, 2007). No matter the type of expedition, participants in polar treks must deal with great physical exertion, exhaustion and fatigue (Guthridge, 2000). The addition of severely cold temperatures, fluctuation in light, and low humidity have the potential to develop some intense mental and physiological responses to these extreme environmental conditions. Not all the aspects of ICE situations are negative, people have reported life changing experiences and tremendous personal growth from surviving such extreme conditions.

Transitioning between camp life and the real world. Living and working at a remote field station has the potential to impact the way people live, conduct themselves, and complete their daily tasks (Palinkas & Suedfeld, 2008). After spending a prolonged time in a remote location, people may find it difficult to transition back to the real world. While the specific

transition of people from a remote field station back into society has not been thoroughly explored, the effects can be likened to troops on deployment returning home.

When a soldier comes home from deployment, or even just visits home for a few weeks of rest and recuperation, it can be difficult for them to fully adjust to civilian life (Westwood, 1999; Westwood et. al., 2002). While deployed, military personnel in active combat situations are constantly exposed to high stress and unfamiliar experiences (Currie, Day & Kelloway, 2011; Ray & Heaslip, 2011). These experiences can have long-lasting effects on the physical and psychological well-being of a person, altering personality traits such as coping skills or ability to handle high levels of stress (Basham, 2008; Currie, Day & Kelloway, 2011). This transition has been coined 'reverse culture shock', as personnel face unexpected difficulties with adjustment after returning home (Basham, 2008; Currie, Day & Kelloway, 2011). Having to navigate the dual identities of soldier and civilian can also be compared to a 'cross cultural transition' experience, which requires the development of new cultural skills and understanding in order to adapt back to civilian life (Black et. al., 2007; Currie, Day & Kelloway, 2011; Ray & Heaslip, 2011).

Much like military members who are deployed, people who live at remote field stations must endure the procedure of reintegration. Reintegration is the process of personnel transitioning back into personal and organizational roles after deployment or work at a remote field station (Basham, 2008; Currie, Day & Kelloway, 2011). People in remote field station are extremely removed from social networks, confined for long periods of time, and must endure high stress situations that have the potential for long-lasting effects on the physical and psychological health (Palinkas & Suedfeld, 2008). It can be difficult for polar explorers to reintegrate themselves into society after having to construct a new identity, that of a person who works in a polar station. Akin to the difficulty troops may have maneuvering the balance

between the two cultural identities of service member and civilian, people may have trouble navigating the identities of station resident and non-resident after a long stint in a remote field station.

Summation. Remote field stations provide a crucial avenue of data collection for scientists. Remote field stations benefit not only scientists, but also future researchers, students, the local community, and the globe through their innovative research, teaching and public engagement. With a long history of poor funding and social support, field stations are always looking to improve their networks and relationships to strengthen their influence within the global community. The ICE conditions associated with remote field stations provide people with unique experiences and opportunities for personal growth after having survived the long-term effects of isolation, confinement and extreme environments. These intense situation and environments may result in the development of different coping mechanisms for the uncommon and stressful situations that may arise. With the limited resources available in ICE situations, resources must be shared when everyone is experiencing the same stressors, leading to a taxing situation on both resources and people (Palinkas, et. al., 2004). It may be difficult for people in ICE situations to reintegrate themselves into society. However, not everything within an ICE environment has negative consequences (Palinkas & Suedfeld, 2007). Due to the extreme conditions and the determination required to survive and thrive in ICE situations, increased self-efficacy and a better understanding of sense-making processes may occur.

1.2.9 Current investigation

Currently, there is a dearth of evidence on how power is communicated in a remote field station between staff and scientists. The research to date focuses solely on the researchers and scientists that inhabit the field camps and conduct the field work. As the work and data completed at remote field stations can be a critical part of a scientist's career development,

scientists rely on staff to provide the infrastructure and accommodate daily needs critical for scientists to be able to collect vital data to supplement their research (Stephens & Levine, 2011). Without the help of a staff to maintain a remote field camp, these vital projects, which help to increase understanding about changing biospheres would not be possible.

As a result of the dearth of research on the communication dynamics that include staff and scientists, it is important to understand how power is communicated between people in remote field stations. The difference in SES, prestige and social power, as well as the socialized norms and traditional gender role bias may implicitly impact power dynamics among people at remote field stations. The research presented in this paper explores the factors that influence the way power is communicated in a remote arctic field setting by examining the lived experiences of people who have lived, researched, worked and supported a remote polar field station.

RQ1: What factors influence how power is communicated in a remote field station?

CHAPTER 2: Methodology

2.1 Methodology

In chapter 2, literature relevant to this study was explored in-depth. To answer the research question, the researcher used affiliation with a remote field station Toolik Field Station to employ qualitative methods to collect data from participants. As previously described, remote field stations are located in isolated parts of the world and remain closed to student researchers not affiliated with a host institution or grant. The University of Alaska-Fairbanks (UAF) operates and manages the TFS (see appendix F), providing the researcher with access to a remote biological field station to collect data on-site. Demographic surveys were distributed, and semi-structured interviews were conducted with participants who self-identified as having lived or worked at or for Toolik Field Station (TFS). As a human research study looking to uncover the lived experiences of people with affiliation to Toolik Field Station, this research recognizes that human meanings are always contextual and are created through the discourse and experiences of others. Content analysis of the interview transcriptions was used to identify themes and answer the research question. In the present chapter, I explain: my researcher reflexivity, the methods that guided this study and the process for gathering participants.

2.2 Reflexivity

A researcher's background and position will not only affect what they choose to investigate but also impacts the angle of the investigation, methods, findings and framing of the conclusions (Malterud, 2001). Through prospective reflexivity (Attia & Edge, 2016) I sought to deepen my understanding of the significance of the knowledge, feelings, and values I bring into the research, analysis and overall conclusions. As a female in academia, my previous experiences

and knowledge frame my sensemaking process (Palaganas, Sanchez, Molintas, & Caricativo, 2017).

Originally from the east coast, I am now a graduate student at the University of Alaska-Fairbanks. I have worked outside of academia in public relations and marketing before returning to get my master's degree. My early consciousness was shaped by gender inequality and extreme competition as a female in Long Island, New York. Since entering into my undergraduate program, I have been hyper aware of the struggles associated with gender, race, ethnicity and socio-economic status. My advocacy for gender, education and health rights has been nourished by my exposure to the plight of females in the workplace, the rural poor in South Carolina and North Carolina, and the indigenous populations of Alaska. I have spent my time in undergraduate and graduate studies engaging with different marginalized communities through education programs. I have also perceived the experience of gender inequalities in a variety of settings. It is through these lived experiences and conditions I have been shaped as an educator, student and scholar.

Epistemology. An epistemology is a theory of knowledge that informs and influences the research process. This can impact the researcher's perspective understanding how humans know what they know. My understanding of epistemology has been impacted by the definition and application of standpoint theory. Standpoint theory looks at the epistemological origins of the relationship between power and knowledge. Feminist standpoint theory considers the relationship between gender and power as integral elements in the processes of construction (Locher & Prugl, 2001). Epistemologically standpoint impacts the way people interact with the realities of the world, their sense-making processes and how they construct meanings and understandings (Crotty, 2003). In this way, people can construct meaning in different ways and through different lenses in regard to the same phenomena.

2.3 Methods

Data collection site. Due to university affiliation with TFS, the researcher was able to gain access to the remote field station's population. To obtain access the researcher met with the management team of TFS three times. The researcher first contacted the management team in Fairbanks to propose the study. This meeting briefly overviewed the aim and goals of the study, how it would benefit and construct new knowledge related to the communication dynamics at TFS and outlined the requirements necessary from both parties to complete the study. After a successful first meeting, the researcher met with the management team a second time to overview the progress of developing the instrument and obtaining IRB. This second meeting also included discussion about the goals and logistics of data collection. The final meeting was a debrief for the researcher regarding the logistics of transportation to TFS and the itinerary for the week-long trip, as well as collaborating to create future timelines for the post data collection phase. The researcher and the management team also decided to partner at this meeting to strategize a recruitment plan. In June of 2018 the researcher was able to travel to TFS for data collection. TFS funded the researcher's travel to TFS providing housing, meals and accommodations for the week. The researcher also conducted interviews on the University of Alaska-Fairbanks (UAF) campus, as the management and logistics team for TFS are located in Fairbanks.

2.2.1 Population and Sampling

Recruitment. After gaining permission from the management team to interview the TFS population, the researcher began the recruitment phase. The researcher started by creating advertisements to be sent to potential participants. After obtaining IRB approval for the advertisements the researcher recruited participants using the following strategies: manager sent

emails to a listserv, advertisement placement in camp, and talk of the study in weekly staff meeting leading up to the researcher's stay and onsite recruitment during her stay.

Recruitment began with the manager sending emails to a list serve. Participants were directed to contact the researcher directly to set up an interview appointment. Next, the researcher emailed the manager flyers (see Appendix D) to be used as advertisements. These flyers were then sent to leadership at TFS to be placed on the whiteboard in the main dining hall. As this board is considered the communication hub of the camp and is used to promote camp events and communicate messages with the scientists and staff, it proved an effective location for study promotion. Likewise, through this flyer placement, everyone who entered into the dining hall was able to see and learn about the study.

The management team encouraged staff members to participate in the study during weekly staff meetings throughout the weeks leading up to the researcher's stay. The researcher provided the management team with an interview sign-up sheet a (see Appendix E) that was placed in the main manager's office at the field station for staff to sign-up for specific interview time slots when the researcher was in camp. During the management strategy session for recruiting participants the management team asked for a sign-up sheet for staff to be made and put in the manager's office. The sign-up sheet included two interview slots per hour to keep so that the staff could schedule their breaks accordingly. The sign-up sheet was also created because originally the researcher was going to have another person travel with her to TFS to conduct interviews. Due to unforeseen circumstances only the researcher traveled to TFS to conduct the interviews.

While at the camp, the researcher partnered with the management team and directly solicited participants during her stay. TFS study participants were recruited both through face-to-face interactions with the researcher and by the TFS management team, who also stayed the

week at the field station. The management team contact also recruited influential scientists that often worked directly with staff or in positions of conflict resolution by mediating the relationships between scientists and staff.

Following recruitment, the researcher conducted interviews in two locations, both at TFS and at various locations on the UAF campus. The researcher wanted a diverse sample of data and found it critically important to include staff members primarily based in Fairbanks, as well as staff members who solely lived at TFS in order to document and make sense of their experiences. These voices brought a variety of perspectives to the research and helped to develop a fuller picture of life and work experiences at TFS.

Inclusion Criteria. In order to meet inclusion criteria, participants had to self-identify as having had experience at TFS, either by working for or conducting research at TFS, or working for the field station in Fairbanks. The study was open to both employees of TFS and scientists at TFS. Staff and scientists who had temporarily lived at the TFS for a research project were still qualified for the study. Additionally, participants had to be over 18 years of age. People with no experience at TFS were excluded from the study.

Instrument. Each interview was structured the same, beginning with a personal introduction of the researcher and the purpose of the study. Next, the researcher presented the participant with an informed consent document. Using an iPad, the researcher overviewed informed consent (Appendix H), by explaining the potential benefits, risks, and a brief overview of the study and contact information for the principal investigator and the UAF Institutional Review Board (IRB). The contact information was presented to give participants the opportunity to contact the UAF IRB board directly about any questions about project approval or research process that may arise. The researcher then gave the participants a moment to ask any questions

about the study. After all the questions were answered, participants typed their name at the bottom of the form, which served as their consent, and the official start of data collection.

Following obtaining informed consent, the researcher asked participants for permission to record the audio of the interview. Through the use of audio recording, the researcher was able to focus more fully on the participant and refer back to exact quotes during the interview. Nineteen out of 20 of the interviews were recorded on the researcher's MacBook Air and one interview was recorded using a recording app on the researcher's phone due to lack of cellular service and/or Wifi on a particular day at the camp. After requesting permission, the researcher was allowed to record for all twenty interviews.

Participants then continued to the data collection phase. Data was collected using demographic surveys (see Appendix A) and semi-structured interviews (see Appendix B). The demographic information was collected using a survey powered by Qualtrics, a web-based survey tool used to conduct survey research and evaluation ("Research software", 2018). The survey was presented to participants on an iPad and collected the following data: participant's age, gender identity, ethnicity, relationship status, child status, months out of the year spent at TFS, religious affiliation, level of religious commitment, and political affiliation.

After the demographic survey, semi-structured interviews were used to collect the lived experiences of participants. A total of 43 interview questions were asked during the survey (see Appendix B). The open-ended, loosely structured interview questions, 4-43, were broken down into specific variables based off the literature to better understand the specific factors that impact/influence communication dynamics at a remote field station. The categories of variables were broken down into: physical environment, boundary management, power, seasonality,

interpersonal dynamics, leadership/conflict management styles, cultural norms (workplace policies), external pressure (funding, pressure to publish, etc.) and training[1].

The interview began with questions 1-3, which sought to build a rapport with the participants and ease participants into the interview. Some example questions from this section were: how long the participant has worked for TFS, the participant's job, if they have lived or worked at any other field stations, and how those experiences compared with their experience at TFS. Questions 4-9 examined the interpersonal dynamics that occur at the field station. Some of the questions in this section asked participants to characterize their experiences with their peers both on and off-site at Toolik. This section also required the participants to reflect on their interactions with leadership and the factors that contribute to positive and negative workplace interactions. Questions 10 and 11 inquired about the culture of TFS. The two questions in this section were: How would you characterize the overall culture of Toolik? What are the values? Cultural norms? and How does communication flow at Toolik?. These questions about culture led into questions 12-14, which questioned the seasonal nature of work at TFS and its impacts on levels of conflict and communication.

The next two sections of questions related to the impact of the environment on communication at TSF and boundary management. Questions 15-18 asked the participants to reflect on what they felt the main challenges of living and working in a remote field location were, how the remote location impacted their communication with peers and co-workers on and off site, and how they thought the remote location impacted people's decision to work there.

---

[1] Due to the large amounts of data collected through the categorization of these variables the researcher decided to narrow down the data for the purpose of this paper. The data was divided into three different communication tracks: organizational communication, power communication and interpersonal communication. As the focus of this thesis was to examine power communication in a remote field site, all interview responses and themes not related to power communication were not considered for this particular paper. For a brief overview of the questions related to variables not mentioned in this section (see Appendix G).

Questions 19-21 asked about the impact of boundary management on communication. These questions asked how participants felt the remote station created a different work/life balance, how people stake their claim at TFS, how roles/responsibilities are assigned, and the consequences of role conflict.

Questions 22-31 examined the impact of power dynamics on the workplace and life at TFS. These questions ranged from investigating the personality characteristics people needed to thrive in a remote location, to the characteristics that lead to people's downfall at a remote field station, to how gender might have an impact on communication at TFS and how inclusive participants felt remote locations were.

The final variable investigated in this interview was training. Questions 41-43 pertained to the trainings people received before coming to the TFS. Questions 42 specifically asked what workplace harassment trainings people had received or were required to take, and question 43 once again required the participants to reflect on their overall experiences at TFS and describe the most significant general training needs for TFS. The researcher ended each interview with the opportunity for participants to add anything else they felt might be relevant to the study. Additionally, this question allowed the researcher to collect any data that may have been missed during the data collection process. Once the participant had signaled they had nothing more to say, the researcher stopped recording. After the recording stopped, the research thanked the participant for their time and finished writing down some last-minute observations from the interview. The researcher also reflected and took notes at the end of each interview, as well as at the end of the day, when unpackaging the interactions that had occurred throughout both the interviews and at the station.

Qualitative analysis. Qualitative analysis has been used in a multitude of studies to collect in-depth data (Kauppi & Pörhölä, 2012; Lampman, 2012; Lampman et. a., 2016; May & Tenzek, 2017). The narratives shared with the researcher provide an insight into the lived experiences of the participants that cannot be quantified through numbers and statistical analysis. To begin the qualitative analysis process, the researcher transcribed all of the audio recording into a script format. Not all the audio content was transcribed by the researcher, due to the large quantity of data collected. With the permission of the IRB, thirteen of the blind audio files were sent to a transcription company to be transcribed. Any identifiable content was removed from the audio files before it was sent to the transcription company to maintain the participants' anonymity. After all the interviews had been transcribed, the researcher printed and performed a first read through on the files. The interviews yielded 668 pages of transcriptions.

In total, the researcher read through all twenty interview transcriptions three times. The first read through was for a general understanding, read in-depth without notes, comments or highlights. Throughout the second read, the researcher began by highlighting key quotes and taking notes on repeated concepts and lived experiences. Only during and after the third read through did the researcher employ analytic coding to identify common themes shared among people's experiences at TFS. The researcher then coded for themes in emotion, values, motifs and themes in verbal discourse (Lindlof & Taylor, 2017).

First, the researcher coded the data into as many categories as possible using open coding. The researcher originally ended up with twenty-five categories, encompassing all of the data. After the data had been thoroughly coded into the twenty-five different categories, the researcher compared key ideas within the data to organize the data into larger, overarching themes while pulling key quotes from the data set in the third read through. These key quotes were used in the results section to exemplify the themes. Anything identifiable was left out of the

quotes in order to ensure participant confidentiality. Using grounded theory and thematic framework provided by Owen (1984), these categories were reconfigured using axial coding to create new encompassing themes (Strauss & Corbin, 1990). The researcher identified five themes that answered the research question[2]: Blurred lines, It's a Magnifying Glass, Title IX Talk, Crucial Aspects to Consider and It's Inclusive Because I'm on the Inside.

[2] Due to the large quantity of data collected, the researcher decided to narrow down the information into three different communication tracks: organizational communication, power communication and interpersonal communication. The focus of this thesis was to examine power communication in a remote field site. All the responses and themes not related to power communication were not considered for this particular paper.

CHAPTER 3: Results

3.1 Results

3.1.1 Demographic Data

The researcher conducted a total of 20 interviews. Out of the 20 interviews, 5 participants identified as feminine and 15 identified as masculine. No diversity on the gender spectrum was noted. Seventeen participants identified as white. Two of the participants identified as Hispanic or Latino and 1 participant identified as other. Of those interviewed, 8 identified in the 18-34 age range, 9 identified as being in the 34-53 age range, and 3 identified in the 54-69 age range.

Only half of the participants disclosed that they were in a committed relationship and only 2 out of 20 people surveyed had children. When asked about religion, only 4 out of the 20 people surveyed felt as though they identified with a specific religious group and of the choices given for political affiliation, i.e., republican, democrat, independent and apolitical, none of the participants identified as republican. The interviews ranged from 15 minutes to 80 minutes, taking place in various places all over UAF campus and within ATCOs at the field station. The transcripts produced 668 pages of script, which were narrowed down to 13 pages of results answering the research question:

RQ1: What factors influence how power is communicated in a remote field station?

Results of the content analysis resulted in the following themes: Blurred Lines, It's a Magnifying Glass, Title IX Talk, Crucial Aspects to Consider and It's Inclusive Because I'm on the Inside.

3.1.2 Blurred lines

Blurred lines is defined as the lack of boundary management, specifically the lack of boundaries for on vs. off the clock and friends vs. co-workers. Due to the nature of field camp life, boundary management is a significant concern. These blurred lines affect the

communication within camp and among genders within the field station. The lines between professionalism and friendliness tend to become muddled due to the lack of structure around on and off the clock boundaries. As participants mentioned the impact of the remoteness created blurry lines between professionalism, the demand to keep scientists happy and friendliness.

On vs. off the clock. When you live and work in the same environment, differentiating on the clock vs off the clock can be almost impossible leading to impacts on communication between genders. Both genders report the blurry lines between on and off the clock; however, each gender deals with the boundaries differently. The data suggests that women were better at managing their personal time and planning ahead to try to avoid overload and working long hours every day. For example, one female participant stated, "I'm always try to compensate or adjust for whatever might be coming down the road." The men, on the other hand, expected the long days and saw the long days as better for their wallets. A female participant explained about some men at the camp, "[he] likes to deal with stuff off-the-cuff…and he could prevent a lot of stress if he would just think ahead." Most of the men were there to make money to last the rest of the year so they did not have to work again till the next research season. The data suggested the men were more apt to throw themselves fully into their work and life at TFS while they were there, putting their personal life on the sidelines.

Additionally, there are no enforced policies for being on the clock. Many of the staff jobs are expected to be on-call 24/7 in case of an emergency or work overtime hours for scientists' needs at any time of day or night. As mentioned frequently by staff members, "it's hard to have boundaries. You know, you can't get away necessarily…physically get away" or "there really isn't one" in relation to the idea of on the clock, off the clock boundaries. It can be difficult for staff and researchers to allow themselves to be off the clock and not begin feeling guilty for not

working. As stated by one participant, "there is kind of a culture of taking Sundays off, but it's not required."

Without a strong sense of your own personal boundaries, it can be extremely easy to work 10-12-hour workdays at TFS. One participant stated that, "there's the challenge of. . . lack of separation between work and home." For people who lack the self-awareness needed take themselves off the clock, your job at TFS can easily oversaturate your life. As mentioned by one participant:

> Uh, well, I can't really get away from, yeah, the work/life boundary. I'm tied to these things all the time, 24 hours a day. Um, you know, the best I can hope for is, like I can take a Sunday off and go fishing or go for a hike or something. Um, which would be fine, and I do, do that from time to time, but I still feel, um, you know a little obligated to be here and, um, and make sure that things are, are okay and run smooth. And, I, I don't wanna put that on somebody who, you know, isn't getting paid for that obligation.

There is a lack of personal time when in TFS. Staff are not only required to be on-duty all the time but are required to be personable 24/7 as well. Living and working with your cliental requires that you remain on good terms with everyone. While you may not be performing your job duties all the time, maintaining positive interpersonal relationships is required 100% of the time. Even just walking to get food or to the outhouse late at night, staff may feel obligated to maintain a friendly atmosphere for scientists.

The lack of clear lines being on and off the clock at a remote field station can impact the overall communication between scientists and staff and between genders. Both men and women in the camp have the potential to be overwhelmed and oversaturated with work and the pressure to maintain interpersonal relationships is felt by all. By the end of the summer, this lack of structured boundaries, may have detrimental effects on the interpersonal communication among

genders, who may feel burnt out after 5 months of being "on-the-clock" 24 hours a day, 7 days a week.

Friends vs. co-workers. While at TFS you can't leave on your own accord, everyone's comings and goings are specially coordinated. Even with the trucks at the field station, you must schedule your trips up and back from the camp site. The idea of working together and living together can cause some tense communication dynamics. For men and women, the idea that you cannot leave on your own volition can impact the way communications and interactions with co-workers are handled, since "you are stuck there. You are off the clock but then you're still stuck in camp."

Forced friendships. You cannot just have co-workers when you live and work with people, you have to become friends with them to survive. The complex situation of living and working together causes interactions and friendships that might not be fostered in the real world, mandatory within camp. One participant stated that, "it's like you're not hang…you're not necessarily hanging out 'cause you're friends.'" Having to save face with relationship was a critical part of TFS life and blurred the lines between colleagues and friends. "It's like we're friendly. We're not friends," was commonly repeated among women when speaking about other staff members in the camp.

Many participants alluded to the idea that you cannot fight with a co-worker and then have to ask them for help an hour later. Just to complete some simple daily tasks, staff members noted that, "you have to be friendly, and open, and approachable to get things done." TFS staff members remarked when asked if you could keep the lines between co-worker and friends distinct while at the field station stated, "that [it] would be more challenging because, uh, if you just have co-workers, it is gonna be twice as hard [to do your job] then when you have friends."

Intense bonds were also fostered through remoteness, leading to the blurry lines between peers and friends. One participant recounted, "And you really do develop deep bonds with the people and, I mean, it's your family." When you are stuck with people in a 42-acre camp, with nothing else around, you are bound to have intense experiences and emotional moments with people you wouldn't normally associate with. These bonding moments can blur the line of professionalism and friendship that tend to be well defined in a normal work setting.

3.1.3 It's a magnifying glass

In general, the remote field station was noted to have the same problems with gaps in expected and performed gender roles as found in Western society but at a larger scale due to smaller amount of people and remote location. As one participant stated, "I feel like it's not really different here than it is anywhere else." These factors and more, such a generational gaps and political affiliations, added to the belief and perpetuation of prescriptive traditional gender roles of the feminine and masculine identities.

Traditional gender roles, women are emotional. The women within TFS were stuck within the specific traditional gender roles with little to no flexibility to change their role. Women were expected to be more emotional in camp. A female participant stated "generally I tend to get along a little better with the guys. Because I can joke around with them a bit more, whereas the females are a bit more sensitive." The participant went on to further explain how female staff were attributed to being more emotional and unpredictable:

> I think sometimes I've hurt their feelings [females] unintentionally either through my sarcasm or whatever, but with the guys, usually you can joke around a bit more and take a different approach. Whereas with the females, I find I have to, you know, take them aside and talk to them one-on-one and ask them about their feelings, and you know, 'What else is going on in your life right now?' and things like that.'

Women were also expected to perform the role of emotional caretaker and mother to the camp. No matter the time women were constantly being pigeonholed into the role of emotional caretaker and mother. Women were expected to be the shoulder to cry on for everyone, researchers, peers and staff alike. This was fostered under the guise of "culture of approachability". While all of the staff members were expected to be approachable 24/7 for scientists, this inevitably led to women being placed in the position of nurturer, even within the harsh remote setting. It was also mentioned that it was "assume[d] that women are going to be better listeners." Emotional burnout was a cause for concern for the women staff TFS, as men were not placed within the role of emotional nurturers. As a new female was being brought into the staff in a power position, some staff stated, "Maybe she'll have new great ideas and, um, maybe as a female she might be a little more sensitive to, and more perceptive of things that are, you know, the underlying." This alludes to the traditional gender role idea that women are more perceptive to emotions, whereas men lack the ability to read or determine emotions.

The women of TFS were also expected to take on the role of relationship facilitators. Women were expected to fit into roles of fostering a bridge for the gap between scientists and staff members. As an influential female in power had recently left the station, participants were leery of the backsliding that could occur between staff and scientist because there was not another female there to foster friendships between staff and researchers. While women felt they need to play a friendlier role in camp, men were not mentioned to have any role in helping to break down barriers between the researcher and staff.

Lack of women in staff. This lack of representation of women within the staff in general caused issues for the female staff members they do have, "It's tough… if it's all men in these, like, managerial or, like, maintenance roles. . . It's tough for women to want to, like, go to them." When one of the most influential women quit, participants commented that, "that's a big blow,

because that was, you know, their, their, their shoulder. That was, you know, the person that they could run things by and ask." This particular former staff member caused participants to show a lot of emotion across the interviews. Crucial women in the staff play a major role in the overall emotional well-being of the camp.

The lack of women within the staff is so significant, the 'year-round Fairbanks female' has her own name and 'her own category.' The lack of women in remote field stations is well documented and the women who do work for TFS season after season or year-round were hyperaware of the gender gap. A female staff member reflected on her time dealing with being the only female:

> I don't think any of that is intended that way but then I think by default being female, I hear things differently. If you ask me where the paper is for the copier I hear, 50 years of sexism assuming that the woman is the secretary and I would have to take your notes and fix the copier. There are 6 of us in here. Go ask one of the other 5 males. By percentage I should only get 12% of these questions, not 90%.

The lack of female staff in positions of power caused problems, as well. As mentioned by a staff member regarding the end of this previous 2017 summer season, "So all the full-time females quit, except for [one]." When the females within the power positions did leave, there were large repercussions throughout the camp, such as with individual morale and the camp atmosphere.

Traditional gender roles for men. Overall, the men interviewed subscribed to traditional gender role stereotypes. One participant stated, "at Toolik, I would say I am probably more on the typically American male masculine role side of the spectrum." Participants explained that, "it can happen fast to become just a boys' club." While the number of each

gender seemed to balance out during the summer with equal men and women within the camp, the idea of a 'boys club' during the winter months was emphasized by multiple participants.

Men had a history of showcasing traditionally masculine characteristics such as being dominant in situations such as breaking camp rules without consequences. Some men followed the prescriptive masculine gender role of needing to assert leadership. Many of the men made references to the competitiveness of camp life and feeling that they needed to be self-reliant due to lack of strong leadership. For example, one male participant stated "I personally started working on [my communication]" since he perceived conflicts and miscommunications to not be fully resolved. Another participant also stated the impact of "territorialism" on communication with people who identify in the masculine. The participant mentioned that territorialism over job role specifics and boundary management led to conflicts with people in the masculine identity.

Men were more independent and felt more a peace in the remoteness and isolation of the remote field station. For example, one male participant stated, "I think that's one of the reasons why I kind of like it in the winter. . . there's usually between three and at most ten of us here." The participant went on to explain his preference for isolation and less people. The participant mentioned that with less people in camp, he is able to independently move about his routine without worrying about others invading his space.

Perceived hypermasculine characteristics identified. Through data provide by both males and females, evidence of hypermasculine characteristics were perceived and played a role in the traditional male gender role acceptance at the field station. This was seen through previous events where men executed their inherited dominance and were mentioned to have problems taking "orders from women". Other hypermasculine characteristics identified from the list of hypermasculine qualities were, dismissing women who violated traditional gender norms and exercising of power based strictly on sex. For instance, one participant explained how a previous

female employee was so "unqualified and immature for a [leadership] position" dismissing her position of power because it fell outside the traditional gender norms for the feminine identity. Women who fell outside the traditional feminine role expectations, who showcased masculine qualities i.e. assertiveness and ambition experienced resistance through the use of hypermasculine characteristics.

Furthermore, when exercising power to change camp policies for further equality more resistance was met through the employment of hypermasculine qualities. One female staff member recalled how another female staff member was bullied in camp, 'He used to yell and bitch about her [assistant manager]. And like, say stuff in front of people about what an idiot she was…. He wanted her job.' Men's ideas for things like new policy implementations were not challenged. When a woman adopted more masculine characteristics to enforce a policy change to foster a friendlier atmosphere in camp, she was demeaned with her reputation destroyed behind her back. Bullying or burning out women to quit was a common theme found within the study. As a staff member stated, 'all the people quitting, like, he was just…he roared louder, and he's still here' when it came to a staff member who bullied numerous women in power into quitting.

The evidence also suggested another characteristic of the hypermasculine, the need for control and toleration of pain. One participant mentioned how he had "never encountered [bullying]... so I didn't even know what to call it." This quote suggests the hypermasculine identity characteristic of maintaining control. The participant had never encountered bullying in his life and even when someone was "bullying" him, he refused to acknowledge it as bullying and shrugged it off as a failed attempt at bullying. From the participant's perspective, he maintained control of the situation and emotional pain of bullying did not affect him.

Hypermasculinity in the sciences. There was also a noticeable difference in the field work being conducted by men and women. Men in the sciences tend to be on the "harsher" projects. As one participant explained:

> It tends to be men who are serving in research projects that require more remote work, like going out in the field for longer periods of time or coming up at more intense times of year like winter.' When I first started I definitely noticed that it tended to be more men in those positions. . . it's a broader kind of university selection issue. Men continue to be in positions of power within the scientific realm as well, 'and in the peak of summer when you have all the undergrads and graduate students and post-docs and everything it's like any academic community. The higher up you go, the fewer women there are.'

Along with the prescriptive gender roles that males and females were pushed into in camp, this data suggested this to be seen throughout academia as well. Males were more likely to be in the "hard" sciences. Women, on the other hand, were more likely to be in the "soft" sciences.

Power dynamics. The data suggests for women working at TFS having their authority challenged or undermined is a concern. The women interviewed for this study who were in positions of power had to deal with having their authority questioned, and their gender was used almost as a disadvantage against them. One participant recounted how she had been challenged by an employee she hired who did not believe in being managed by a female. This employee continued to explain, "I've had a couple of guys that had ego problems. I don't know if it was just taking order from a woman, or just the fact that they weren't in charge."

Women were also more likely to be challenged within the field station when they brought problems to male colleagues with comments such as, "Oh, you're just overreacting. You're being sensitive." Women were forced into traditional gender role stereotypes of being emotional. These were common phrases stated by a female staff member whose authority was undermined. Men's

opinions were more likely to be taken at face value while women's ideas were challenged. One female staff member shared a story of her struggles to be taken seriously:

> Like I had this one guy who was very problematic on my crew, and I had two female cooks say that they would quit unless I got rid of him. He was that much of a problem. And so, I knew from experience that correcting him in front of them would have made it worse. So, I would take him aside and I would say, "Hey, dude. You know, you need to change your attitude, you need to stop doing this." And he'd roll his eyes. He was like, "Oh, yeah the girls are complaining, aren't they?" I'm like, "Yeah, but you need take it seriously and you need to make these changes." And he'd be like, he was a real brown-noser. He'd be like, "Oh, yeah, yeah. I'll do what you say." And then as soon as I'm not around, he goes back. And, and being worse. And so, then I had to go to upper management and get him involved, and have him written up, and say, "Okay, these are official warnings now. You need to change your behavior." And, he wasn't. And so, the, the women were coming to me and saying, "Why aren't you doing anything about this?" And I'm like, "I'm doing all I can. He's been reprimanded, he's been warned. I can't do anything else." And as much as I know you want me to fire him, I still need another cook to replace him. So, you have to give me time to find his replacement. And one of these women only had two more weeks left before she was done for the season. I'm like, "Can you hold on for two more weeks? And she's like, she's like, "No, and you're not doing anything, and this is a toxic environment." But, because of confidentiality, you know, I'm not allowed to tell her exactly what is being done on the other levels. So, all I can say is, "I'm doing the best I can," and she thinks I'm not doing anything. And this has happened more than once. And I'm like, "No. I said I said I'm letting you know. This is not an ultimatum. All I'm telling you is that the situation is bad enough, that the rest of my crew

is ready to walk out because this one guy is causing all the problems. That's how bad it is. So, we need to deal with this guy. And he was like, "Well, I don't respond to blackmail, and rah, rah, rah, rah." I'm like, "This is not, it's not really a threat," but that's how he perceived it. I said, "These people are gonna leave, and then, and then I'm not gonna have any cooks. So, but he completely turned it around, and so, and it happened with another situation as well in another department. And so, he chose to take the side of the perpetrator, of the person who was, who was being the problem. And so, how do, you how do you go from there, you know. . . And I'm like, "You need to talk with everyone involved, and you need to hear how upset they are and take that into account. That they're not attacking this guy because they don't like him, they're, they are defending themselves, because they feel threatened or whatever.

Women felt like their power and lived experiences were being undermined because of the power dynamics at play. Many of the men claimed to not see an issue between genders or an issue for women within the field station. "Archaic, egotistical, insecure, inappropriate, and totally misses the mark of what others are trying to communicate," was just one of the statements made by a female staff member regarding the communication conflicts between genders. The friction between traditionally masculine identities and women taking on masculine qualities was a cause for tense and frustrating communication interactions.

The researcher of the present study perceived one participant within the study attempting to undermine her authority by questioning her. A male participant, of high-level power within the organization began interrupting the researcher during the interview. He questioned the interview questions presented by the researcher, questioned her competence and attempted to establish control during the interview to guide it where he wanted to take it.

While the researcher was in charge of running the interview, she was frequently interrupted with statements like, "I would re...rewrite that question", "so, I'm going to answer the question to help you better get a handle on what you just asked" and even "I'll say why are you asking this… I would have never asked how roles are assigned in your questions." Some of the other statements made to the researcher included, "are you going to ask that to everybody?", "is that an official question?... so, you could do me a favor, what you could do without breaking [confidentiality] or just send me an email with what people dreamed up on that one," and "what you bring is what you get, say it three times, 'what you bring is what you get."' This perceived undermining of authority and questioning of competence even spanned to questioning the intelligence of his own employees to handle answering the researcher's questions, "[with] some of my suggestions, if you had just immediate follow up to make sure they're understanding what you're after. . . Cause in one sense you can see I paused and I followed up as like woah what are you really after here."

Men being hyperaware. There are more men in the staff and in management positions in general. Due to this power deferential, some of the men were aware of the possible impact of power on women. Men and women were aware of the fact that people don't tend to go to the men with emotional issues or baggage. With the lack of women in management positions participants stated, "I've definitely heard the opposite that females in camp, especially when it was three guys in the assistant manager, manager role didn't always feel comfortable and didn't always have someone to come to." Some of the men in TFS conceded that, "I think, um, being male, um, I can be less approachable for, for, uh, females in the community. . .So, I think, I think it's tougher for females to approach males, um, and it makes sense to me."

Other men feel as though they must watch their actions more closely. These men are hyperaware of the power differentials and worry about, "being creepy". As one participant explained to the researcher:

> So, you are in a social environment, you know we have a bon fire here and there, and you know I don't want to risk it and be out there and say like should I offer her a beer because she kind of needs one. For instance, when '[name] do you have a beer', 'yes I have a beer', if I am offering my friend a beer and a female is just right beside them, I question what to do. Cause someone might be seeing from a different angle like 'oh he is giving her a beer' you know what I am saying?

Because of the changing rules of engagement for interactions across genders, participants had to monitor "how [they] behave in social [situations], so I am extra careful about how I behave in social settings because I don't want someone to see what I am doing and think differently than what I am actually doing." Another male participant stated that, "If either a female staff member or user or something, and I am in a room alone, like I check myself. And I was like, 'I'm not being creepy am I? Or anything.' I try not to give off any creepy vibes. You know? So, that's the dynamic that I feel can be difficult." Men were afraid to offend women and with a lack of agreed upon norms for engagement, many men felt more comfortable just leaving or avoiding situations with women all together.

Stereotyping and labeling. Both genders were at fault for stereotyping and labeling. The stereotyping and labeling perpetuated the cycle of restrictive traditional gender roles. Through stereotyping and labeling, both genders dismissed the lived experiences and voices of the opposite gender. For example, hypermasculine men labeled the women who were trying to implement policy changes for a more inclusive environment "the three feminists", meant to be taken in a derogatory way. The term feminist in this instance, was meant as a mocking and

offense term for progressive people who identify in the feminine. In turn, these men were dubbed the "anti-title nine guys". In this instance, the term was meant to mock men who identify in the hypermasculine and refuse to acknowledge the possibility of other types of gender roles besides traditional gender roles.

Men labeled women with their prescriptive gender role stereotypes associating women who tried to show initiative and take lead as, "bossy" or "he thinks I'm being too controlling for thinking ahead." While these would be considered leadership qualities for a male in the same role, these traits were dismissed as annoying qualities when associated with strong women. The data suggests that women, on the other hand, have created an atmosphere of uncertainty at the camp for some men. As the rules of engagement have changed, men are weary of their actions in camp and are unsure of how to act around women to avoid being labeled or offend anyone.

Acknowledgement of effort to change. It was noted that "this camp has consciously been trying to make the effort and really push [gender equality] to staff and users." Some staff mentioned that they were taking it upon themselves to open people's minds and contribute to diversity initiatives. Other staff members were also working on themselves and their own communication habits to ensure more effective communication situation.

There is still a pervasive 'old school' mentality that exists within the camp, as one participant put the old school mentality, "is not welcome". Staff and bystanders are starting to slowly change the camp atmosphere to be less aligned with traditional gender roles and hyper-masculine values. One participant remarked there are, "more people who agree with the changes that are happening than are opposed to it.... so, they are going to catch, they're going to get some shit from people if they're going to say just some real old school shit." The staff members were slowly starting to self-regulate and develop new norms of acceptable language and communication. These communication norms were less strict with traditional gender role

stereotypes and were more integrative, allowing both sexes to ascribed to characteristics from both gender identities.

3.1.4 Title IX Talk

Title IX overall. Title IX was a hot topic of conversation in camp, from TFS management to among staff themselves. Participants frequently noted that "to be honest, there is so much talk, like, Title IX talk" and that "they make it known so much. You know? Like, I think every other door you open has a Title IX poster on it." While it was repeatedly mentioned that management is taking Title IX seriously, some people mentioned that it might have taken precedent over some of the real trainings and changes desperately needed by the field station.

The Title IX training originally sparked a hot debate, "three staff members that were really up in arms when we had a…started doing the Title IX stuff," but after a few seasons became a mundane part of the checklist to starting the season. People also claimed that, "especially when they are things like cultural changes happening at Toolik like Title IX. Um that maybe not everyone appreciates why it means a lot to other people in camp."

It was communicated by the staff that there was a lack of follow through for Title IX incidents, questioning the validity and purpose of the training, "I don't think they make much of a difference unless the problem is nipped in the bud and that action is taken." Management was also stated to have a lack of transparency when things in camp went wrong regarding IX. One participant mentioned:

> Absolutely, one thing I guess I would say is that Toolik has some work to do when communicating about things that go wrong between staff and scientists. Um, you know a lot of, I am highly confident that there have been a lot of Title IX violations at Toolik. And some of them have been absolutely reported to staff and the Title IX process. I don't think because of the confidentiality involved that there is like a pretty smooth mechanism

> for how staff talk to scientists when these things happen. You know because people know things happen, because another person gets kicked out of camp, the gossip network is strong. And I thinks it's a very difficult situation for staff to be in when there, you know the community is a little on edge because they know something happened, but they can't talk about it because of the confidentiality issues involved and I don't know of a legally appropriate way of resolving that communication challenge but it is absolutely a challenge that exists. And I don't know, but I would maybe speculate that it's not good for the victims to know that everyone is talking because they know something happened, but they don't know who it was, and they don't want it to be public and it is just a messy situation. Um, so, you know I know that Toolik must have stats because of the Clearly Act that like X incidents have happened over the past X years, um, and I have never seen them published for Toolik as opposed to UAF as a whole.

Participants felt that the lack of transparency from the management team effected the overall reputation of Title IX. One participant remarked, "I wonder if those numbers were available, if the people who were questioning the relevance of Title IX trainings to the Toolik communities, if it would be helpful to know like 'no actually this is a huge problem.'"

In regard to Title IX and sexual assault or harassment, participants noted that TFS is not alone in its problem. According to one participant, "I don't think Toolik is unique with the compounded problem of it being remote." A few participants who had also worked at other field stations, specifically Antarctica, mentioned that Title IX is heavily stressed to them from the first day of work, but issues with Title IX violations still arise.

The two extremes. TFS has a specific Title IX training required for every person in camp to complete. While there has been much controversy around the implementation of this training, there is still a lot of talk surrounding its effectiveness and purpose. Two clear camps

emerged when asked about Title IX training, those for and against. While the groups for and against Title IX were not completely gender specific the data suggests that patterns emerged between genders. Those who identified in the masculine, especially the hypermasculine were more likely to resist and be outspoken against the Title IX training. This was juxtaposed by those who identified in the feminine that were very supportive of Title IX.

I hate them. Some people felt that no one learns though these trainings. These trainings were just easy to click through and no learning occurred. These people felt the training was pointless. Many participants remarked that, "I hate doing them" but conceded that they would complete the training. They also mentioned how it was not just them who felt the training was pointless but everyone around them felt the same way, "people think of that stuff as bullshit honestly."

Others felt wouldn't stop the people from doing it in the first place. If a perpetrator of sexual violence was thinking of committing a harassment act, Title IX training it would not stop them or change their mind. A participant stated, "if people are bullies and they take the bully training, they're not gonna not be bullies afterwards." Due to the format of the training, one participant said, "I think the people that are going to abuse power and authority and get whatever they want aren't going to get anything out of those trainings." Participants noted management frequently stressed the importance of Title IX training leading to a few participants feeling that it had become a joke and was not meant for long lasting learning, "I feel like nobody actually learns anything when they do those trainings. Most of the time it's, like, on one ear, take the quiz, out the other afterwards, you know?"

People identifying in the hypermasculine were the first to resist the training when it was being implemented, complaining about its relevance and purpose. Those in the hypermasculine felt like the training was pointless. The original Title IX training was implemented by women in

leadership positions within the camp. Because of who introduced this training, it was met with backlash and resistance by mostly male staff members. As remarked by one male employee, "Which brings me to a greater point by the way, all the title 9 stuff is great, wonderful, not against it, but it seems like somebody latched on to the 2 years ago and that is all they talk about. And the whole-time last year when the whole fucking camp was falling apart it was 'oh did you take your title 9 training?" It was stated by a male participant that felt that the IX training was being "shoved down their throats".

Men tended to believe the training was a legality for UAF and not relevant information for them to receive. UAF was just 'covering their own ass'. Because of the legal implications for UAF, people mentioned, "Oh this is [just] UAF covering their ass… Yep, we trained everybody on this so don't, don't sue us." The idea of trainings being used to legally cover UAF seemed to upset and anger participants even more, creating more resistance to the training.

Good starting point. Even if they thought the Title IX training did not exactly provide them with new information, the training did to expose people to new thoughts and ideas. The data suggests that women were more likely to support Title IX training. As stated by a female participant the training clearly laid out "the legal reality of these actions." The participant went on to describe that it provided her with the resources, "I know who to call, I can find the chart, I have the numbers if I ever wanted to have access to them." Repeatedly, participants stated that, "it's certainly much more aware and on people's minds" because of the implementation of the training, and that "it's a very good, positive thing to expose other people to that, even if they think it's dumb or a waste of time." The Title IX training also opened up the conversation to talk about sexual assault and violence.

Others thought that this training was stuff they expected people to know but was a good reminder on good behavior for field camp. Participants stated that, "it's pretty reasonable. I think

it's a hard, it's a hard subject to get out," but, "they are awesome. They are brief, they still have to work in the way that they show the rules." While the training covers information that most people might assume is common knowledge, the TFS Title IX training provides specific examples that could happen within a remote situation, which helped people better understand the relationship Title IX has to TFS. Participants remarked that:

> I think the biggest obstacle for title 9 trainings is always, so that's the information but what's the emotional reality of taking advantage of those resources? And I think that an online training is never going to help people cope with the emotional reality of what it would be like to have to utilize those resources. . . But an online power point training is never going to make you like, emotionally ready for dealing with a title 9 situation.
>
> The Title IX training conveyed to the TFS community that, while field camps can be an isolated place, 'Uh, I think that our Title IX training goes a long way in just making people aware that people are watching, people are here, people, um, you know, we have a community that cares, and I think that helps a lot."

None of the women interviewed expressed anything negative feelings towards the Title IX training or its relevance in camp. Those who identified in the feminine, were extremely supportive of the Title IX training and some of the participants were even instrumental in its implementation.

One female staff member remarked that other field stations that had already been implementing Title IX trainings and policies for years, and she did not understand the controversy and resistance created by the hypermasculine. Women in camp heavily supported Title IX and the inclusive atmosphere it brought to the camp. Some of the men interviewed were also extremely supportive of the training and trying to create more inclusive environments for women, suggesting that not all men were resistant to the training.

3.1.5 Crucial Aspects to Consider

Personal struggles. People feel like they are living two lives. It can be almost impossible to have a relationship outside of TFS. For some of the year-round staff:

> Um, for this job specifically my biggest challenges, um, are that it's such a big part of my life. I don't need to go at home at night, I, um, you know, it's tough on relationships. It's, I can't have a dog or pets. Uh, so basically, I'm dedicating my life currently to Toolik, married to it. Um, that's the biggest challenge for me, and I think that's the biggest challenge for a lot of people that are doing this job.

People struggle to have a life outside of TFS, which can impact their communication with their colleagues and possibly even with members of the opposite gender. You have to live two distinct lives, a home life and a life at TFS. These two separate lives don't overlap, and they are in two completely different worlds. You get saturated with work when you are at TFS. As a participant remarked, "So when I am there for like a week or two, I just know that I am fully committed to Toolik and everything else just has to take a back seat."

One of the hardest parts of being in a remote field station was frequently mentioned to be, "a lot of times keeping in touch with people outside [is the hardest]." Staff work 2-4 weeks on shift and then 2-4 weeks off shift, making the transitions on and off shift difficult. When you are home you get saturated with life outside of TFS. People try not to think about TFS when they are not there. Unlike a normal office job where you can meet a friend for lunch during work or take a project home to work on it, TFS requires people to develop two distinct spheres to juggle, work life and home life.

The lack of overlap between the two lives caused concern for staff transitioning on and off shift. As one participant put it, "And it's difficult to when you, you get off shift and then you go home, and, and you kind of show up and it's like, 'Oh yeah, my friends. I haven't been part of

their lives for three weeks.'" TFS was called "cushy" by almost all of the staff who thought of TFS like:

> We're remote enough that we're not just here working and going home every night, you know. We, but we're not so remote that, that we just have to make a life here for a, for a whole season, you know. We're in this kind of middle ground, where kind of like Prudhoe Bay[3], where we're, where we're, we're yeah, too remote for normal relationships like you have if you are working in Fairbanks, and not remote enough for like the, the true like kind of tribal consciousness that I feel like develops in a lot of really remote field camps.

Both genders expressed the difficultly of the lack of stability over a long period of time left some staff questioning their decision to live the remote life. Some of these questionings included reflecting on "if they are doing life right" or "missing out on key aspects of life". People at a remote field station job can't partake in some of the little social events like having lunch with friends from Fairbanks or joining a kickball team. For example, one male participant lamented, "just the simple stuff of like, fun little things of, like whether someone wants to join a bowling league or little weird, what would be simple little life events that you have to be in one place to part take in, you are always jumping in and out of life."

3.1.6 It's inclusive because I am on the inside.

The nature of remote field stations being heavily connected with academia suggests that much of the same demographics found within universities will be found in remote field stations. Much like many disciplines within academia, there is a lack of women within TFS. While the management team recognizes this as a problem, the exclusive nature of the station leads to

[3] Prudhoe bay is transient population of oilfield workers who work month-on-month-off shifts in the ICE environment. Some workers even work for 6 months at a time on and 6 months off. The ICE situation makes it difficult for Prudhoe Bay workers to maintain a stable lifestyle back home, much like military personnel or remote field station workers.

impacts on communication between genders. According to one participant, life at TFS isn't hard "cause I'm on the inside, but I could imagine if you weren't on the inside that… we're probably fairly cliquey." TFS relies on tenure both in staff members and scientists with grants to keep their funding. Participants stated that, "mean, I think that because Toolik is in the middle of nowhere, because it's a place that people can go year after year after year, I do think that it can be challenging for new people at the field station to become a part of that community."

This exclusivity of the camp greatly increases as the camp season continues. For example, one participant stated how if "you weren't here at the beginning when all of this was taking shape" at the beginning of the field season, it will be even harder to become a part of. The participant continued on to mention how "people are getting tired, and they don't have, I don't know, the energy to, like, make the effort to incorporate new people" towards the middle and the end of the summer field season. Due to the lack of energy by the end of the season, staff mentioned that the camp becomes even more exclusive by August, "come August if, like, new people come, usually people are, like…people that have been here are less open to, like, engaging with people."

The lack of inclusivity of women makes it more difficult to attract more women to join the field camp life. Because field camps remain highly white and male, there are many opportunities for misunderstanding between men and women to occur. As one participant explained:

> Access to remote field stations is determined by access to grant money they are always going to be a place where there are haves and have-nots. Like if you want to get there, you have to an NSF or another grant that is going to raise you a successful amount of money. And so, like no I think it's hard for Toolik to ever be completely inclusive because just the amount of money to get there and be in the environment will always

exclude a lot of people. There is no reason that it should be imbalanced based on race gender, sexual orientation, all of these things.

There is a lack of diversity within the field camp, "I don't feel like we have outliers here. And a big chunk of the staff are the same age group, I guess I know we are all in the same socio-economic bracket, and so we aren't very diverse." Even just the age brackets remain exclusive as one participant explained, "we have a couple of older staff and I think a bunch of us are probably within a 5-year age range. And so, for me, that means I am working in a group of my peers in every way. And I think sometimes that some of the miscommunication occurs because of the age brackets. And so, I think they feel othered." Field stations are a self-selective group of people. Not everyone can handle a rough, remote and outdoorsy style job.

3.1.5 Summation

The present study explored the possible factors that impact communication dynamics at a remote field station. The data from the present study suggests that gender is a factor that impacts and influences the construction of power communication dynamics at remote field stations. The evidence suggests that gender is impacted and continues to impact the lack of structure in remote camp life, the perpetuation of traditional gender roles, the ramifications of trying to change the traditional gender roles, the personal struggles and exclusivity of remote field life. Overall, power impacts remote field station like and gender is large contributing factor to the stratification of power.

CHAPTER 4: Discussion, Limitations, Future Research

4.1 Discussion

Field stations remain a vital part of scientist's ability to understand the impacts of global environmental changes (OBFS, 2018; Tydecks et. el., 2016; Wyman, Wallensky, & Blaine, 2009). Remote field stations provide the invaluable services of: "research, education, preservation, and community interaction" (Wyman, Wallensky, & Blaine, 2009, p. 585), not only by allowing scientists to collect key data but also preserving fragile biomes through fostering the development of future researchers and promoting educational opportunities. Because of the critical role field stations play, it's important to understand how field stations perpetuate traditional gender roles, and reinforce current sociocultural, political and social power norms that discourage women from entering the world of field work, as well as by favoring men in positions of power on the sides of both researchers and staff.

4.1.1 Social Power

Within western society, men are seen a more powerful and women are seen as less powerful (Mohipp & Seann, 2008). Men have greater social power through the status of their gender and class position in the societal patriarchy (Mann, 1986; Weber, 1947). Women remain in the subordinate position with less organizational power. These power differentials are reinforced and perpetuated through the use of traditional gender role stereotypes (Blackstone, 2003; Tomasetto, Alparone & Cadinu, 2011).

The power stratification proposed by Weber (1947) was recognizable within TFS. People used the three social resources in the face of opposition and to achieve their daily job-related goals. Prestige remained the same at TFS, as people who were highly respected and had tenure were considered to be the top of the organizational hierarchy. New employees looked up to these well-seasoned employees. Class was not as prominent of a factor, however, there was a gap

between scientists and staff. Finally, the use of social power was stratified among the sexes. Men had greater influence and therefore more ability to achieve their goals without opposition or repercussion (Foley, 2010; Parkin, 1974). Women were not always able to overcome opposition at the field station, highlighting their lack of organizational power (Foley, 2010; Kerbo, 2017; Tomasetto, Alparone & Cadinu, 2011).

Due to the blurred lines between being on and off the both men and women are expected to be ready to work and personable 24/7 when they are at camp. Women were obligated to provide a shoulder to cry on or an open ear to listen whenever needed. The blurry lines can lessen the sense of personal boundaries (Clancy et. al, 2014). Overtime in an ICE environment, interpersonal tensions and conflict lead to negative affect and low camp morale (Palinkas & Suedfeld, 2007; Steinach et. al., 2016). The long-term effects of negative group cohesion can cause physiological symptoms, including decreased sleep quality, high levels of stress, anxiety and depression (Palinkas, 1992). Both men and women in the camp have the potential to be overwhelmed and overstimulated by both work and the pressure to maintain positive relationships. By the end of a season, the lack of structured boundaries may have detrimental effects on interpersonal communication among genders, who may feel burnt out over time (Clancy et. al., 2014).

Living and working together meant that differentiating the line of friendships vs co-worker was difficult. The lack of hard boundaries for professionalism suggested that forced friendships occurred. Many participants stated that it was necessary to be friendly in order to complete daily tasks. This falls in line with previous research that suggests that social support and group cohesion play a vital role in group functioning (Clarke, 2002; Madjer, Oldham & Pratt, 2002; Oliver et. al., 2002). With increased social support and positive group cohesion, performance on both the individual and group level are higher than when there is negative group

interactions and social support (Clarke, 2002; Madjer, Oldham & Pratt, 2002; Oliver et. al., 2002).

Whether or not participants in the current study felt that the camp group was cohesive, it was confirmed that being friendly was necessary to effectively finish work and have positive interactions. Nearly all of the participants made comments that either stated or implied that with the being friendly with everyone in a field camp was essential to successfully complete work and avoid conflict at every turn. These blurred lines of professionalism and friendliness have the potential to create extremely toxic environments and communication events (Nelson et. al., 2017). The extreme remoteness and isolation of the camp also led to the formation of relationships that would not have been cultivated in the real world. Furthering the potential for personal boundaries to be crossed and conflicts to occur. This theme reinforces the findings of previous studies about the impact of extreme isolation and confinement experienced at most remote field sites in Antarctica, Arctic and polar regions (McGuire, Primack & Losos, 2012; Schmidt, Wood, & Lugg, 2005b).

The evidence in the present study suggests that remote field stations have the potential to create muddy situations for both men and women. The extreme remoteness and isolation can impact how comfortable women feel expressing their true feelings for fear of retaliation or camp gossip. From the perspective of standpoint theory, women's voices and lived experiences will never be shared with those in power or seen as problematic for those with power (Harding, 1991). ICE situations make it even more difficult for women to speak up about uncomfortable situations, since they often have to face the repercussions of reporting harassment and the potential nothing being done to the perpetrator. Women may not feel comfortable reporting a harasser or saying no to requests for favors when the repercussions of their actions can be felt every day afterwards in camp. Fear from both genders regarding retaliation or the impact of

having a negative relationship with bosses, colleagues and throughout camp gossip networks are quite prominent and influence the filtered communication dynamics that occur among people.

4.1.2 Standpoint theory and the impact of traditional gender roles

Traditional gender role stereotypes categorize women as the caretaker, nurturer, the "warmer" gender and more soft-spoken (Blackstone, 2003; Prentice & Carranza, 2002; Tomasetto, Alparone & Cadinu, 2011). The masculine identity is expected to take charge, be assertive, dominate situations and display a strong personality (Prentice & Carranza, 2002; Tomasetto, Alparone & Cadinu, 2011). Data from this study suggest that, although ICE situations require more masculine qualities for surviving in a harsh and remote climate, men and women are still subconsciously forced into traditional gender roles. Even though the remote field station required women to have more masculine qualities to survive in the Alaskan outdoors, women in camp were forced into the traditionally feminine roles. Women in camp were obligated to take on the emotional burdens of others and act in a traditional motherly role as caretaker (Bem, 1981; Blackstone, 2003). Women were expected to cultivate relationships between staff and researchers with emotionally and mentally labor-intensive tasks, while men took care of the physically labor-intensive jobs such as maintaining the camp. Women tend to fall out of the "leaky pipeline" for remote field station jobs due to the traditional gender role characteristics required to work there, i.e. heavily masculine traits (Blickenstaff, 2005).

The reinforcement of these traditional gender roles led to the same stratification of power found in Western society (Blackstone, 2003; Kanter, 1977; Rudman & Kilianski, 2000). Women remain underrepresented in positions of power and are still burdened with a majority of the domestic responsibilities (England, 2006; Ridgeway, 2006; Rudman & Phelan, 2010). When women did attempt to exercise power at TFS, it was met with resistance from the hypermasculine. This suggests that women with little to no power to stand-up for themselves,

will not feel comfortable enough to report having a negative interaction with a scientist or co-worker without worrying about the repercussions.

As described by standpoint theory (Harding, 2004), men were not able to see the issues and struggles women face within the field because they were not the marginalized group (Harding, 2004; Intelmann, 2010; Wylie, 2003). Some men claimed they didn't believe that there was a difference in gender communication. The evidence in this study suggests that men were unable to understand the struggles and strife of women in camp. Few male participants mentioned comments ranging from, 'I don't think that gender really has an impact on communication' to 'I personally don't see it,'.

Men maintain the power and status within field camps, reaping the benefits of restricting women's roles in remote field stations to remaining traditionally feminine and motherly. Since men hold the power, they lack the socially situated knowledge regarding the lived experiences of women in remote field stations to make their roles more inclusive (Harding, 2004; Intelmann, 2010; Wylie, 2003). The knowledge and experiences of the marginalized group will remain unheard, if men continue to make decisions for the camp and there is a lack of female representation in positions of power (Cockburn, 2015; Collins, 1997; Harding, 2004).

The findings in the present study suggest that both men and women were at fault for stereotyping and labeling. Stereotyping and labeling were some of the ways both genders dismissed the power and claims of the other (Rudman & Phelan, 2010; Shih, Pittinski & Ambady, 1999). For example, some of the ways hypermasculinity used to dismiss Title IX was by complaining about the lack of other trainings and labeling it a "feminist" thing. In response to the backlash, women labeled men, the "anti-title nine guys" which perpetuated the reinforcement of traditional gender roles. By labeling these men the "anti-title nine guys", they became the embodiment of the hypermasculine identity without their consent. The labeling of men in the

hypermasculine (Hunter, 2007) led to the immediate dismissal of their thoughts, and reinforced the idea of gender as a binary, as opposed to as a spectrum. The act of stereotyping and labeling from the hypermasculine actively tried to maintain power through the use of traditional gender roles to sustain the status quo (Rudman & Phelan, 2010; Shih, Pittinski & Ambady, 1999). The stereotyping and labeling from the progressive feminine identity went against the goal of inclusion, excluding people who do not have the same views. The stereotyping and labeling of both genders removes people's power and restricts their voice.

Women in TFS continue to have the same experiences because they lack institutional power and voice within the organization to make any critical changes. As argued by Harding (2004), to make any changes to the experiences of women at TFS, research must begin with the lives of the marginalized (Cockburn, 2015; Harding, 2004; Intelmann, 2010). The present study sought out five women's experiences at TFS and compared them with that of fifteen of their male counterparts. Results suggest that men had less awareness of the difficulties that women faced and were less likely to recognize the complexities of daily life at TFS for most women. As women were forced to be emotional nurturers for the entire camp, the excessively emotional labor needed could eventually lead to burnout (Blackstone, 2003). None of the men interviewed dealt with the emotional labor expected of the women in camp, and men were not given the chance to try to provide emotional support to the camp. As men are not traditionally seen in the role of emotional nurturer, even though male Toolik staff provide an open-door policy, it is not utilized, as a majority of staff and researchers continue to go to the women in camp for their emotional needs. Women were also in charge of fostering relationships, which was not expected of the men (Cockburn, 2015; Glick & Fiske, 1997; Intelmann, 2010).

Due to the implementation and heavy stress placed on Title IX at TFS, an interesting subgroup of the masculine identity emerged. These men were hyper aware of the power

differences and creating an inclusive atmosphere for women. They felt as though they had to overextend themselves and question all of their own actions. In the wake of social movements like the #MeToo movement (Rodino-Colocino, 2018), the sudden changes of rules of engagement surrounding male and female interaction have led to some men, as suggested by the data in the study, to become afraid of the fallout from perceived miscommunications with women. With the rise in awareness of sexual assault and harassment (Rodino-Colocino, 2018), men fear the consequences of a miscommunication or unclear signals. In order to avoid the potential of being in a situation with a female staff member or scientist, men may avoid interactions with women (Golden, Chang & Kozlowski, 2017).

While standpoint theory suggests that men are not able to understand the impact of harassment from the female perspective, it can also be applied to the inability women have to understand the impacts that changing rules of engagement for interactions between men and women have had on men. This has led men who are hyper aware of power differentials to also become a marginalized group. The effects of constantly degrading all men, based on the actions of a few, is beginning to change the level of self-efficacy in men. Long term, this has the potential to lead to more conflict and isolation between genders (Keashly, 2012; Rospenda, Richman & Nawyn, 1998).

4.1.3 Perceived ACH

There has been a long history of men at the top, with women fighting to gain power (Kerbo, 2017; Weber, 1998). These origins of traditionally held power are rooted in history and geography. The backlash from white men in previous social movements, for example their resistance to affirmative action (Weber, 1998, p. 27), can be likened to the resistance suggested by the data in this study. Weber (1998), argues that the anger of men in power comes from their difference in expectations and their sense of privilege. White men set out to push back gains

made by women in order to maintain their position of power and control. This can be seen today through the reinforcement of traditional gender roles when women try to gain organizational power, particularly in the form backlash and anger for violating expected norms. As suggested in this study, women who try to assume masculine qualities, such as leadership roles or initiate change, are often met with resistance.

Since men have traditionally held the power and continue to maintain most of the power (Mohipp & Seann, 2008; Weber, 1947) in the field station's hierarchy, women who are brought into positions of power faced challenges from others, such as having their competence questioned and their actions dismissed through gossip. When a subordinate harasses a superior, it is contrapower harassment (Benson, 1984; Lampman, 2012; Lampman et. al., 2016; Lampman et. al., 2009). Although women are still considered marginalized groups, they have begun to hold positions of power in many fields, leading to the rise in contrapower harassment of women in positions of power (McLaughlin, Uggen & Blackstone, 2012). The data collected in this study suggests that the women at TFS perceive the experience of contrapower harassment. This was evident at TFS through the lived experiences of the women interviewed. Women who experienced contrapower harassment and had a perceived lack of support often left their jobs at the field camp. One perpetrator was even noted to have contrapower harassed a particular woman because he 'wanted her job'.

The evidence from the present study suggests that contrapower harassment of women in field stations, both on the side of the staff and researchers, was a problem impacting the TFS work environment. The evidence suggests that harassing women in power into quitting to steal their job or power exists among staff members. This harassment led to little or no repercussions for the men perpetrating the contrapower harassment, but had detrimental effects on women,

who felt so emotionally drained they had to both leave their job and a place they had learned to call home (Lampman, 2012; Lampman et. al., 2016; Lampman et. al., 2009).

The type of job did not affect the levels of perceived contrapower harassment. From women who worked in the kitchen, to some of the leaders within the management team, women shared their perceived experiences with contrapower harassment, whether it was by directly disobeying, spreading rumors about their incompetence or bullying to try to get their way (Benson, 1984; Lampman, 2012; Lampman et. al., 2016; Lampman et. al., 2009). Women who were contrapower harassed in camp described negative interactions with men who seemed uncomfortable with women in power and would use traditional female genders roles to regain some of their power (Benson, 1984; Glick & Fiske, 1997; Lampman, 2012; Lampman et. al., 2016; Lampman et. al., 2009; Weber, 1947). Men would blame women for being 'too sensitive' or 'bossy' when expressing concern for the well-being of their staff or attempting to plan ahead for future events (Glick & Fiske, 1997; Lampman, 2012; Lampman et. al., 2016; Lampman et. al., 2009). These incidents continued to marginalize women and minorities in camp, striping their voices and power.

The perceived lack of follow through from leadership with harassment claims lead women to further question the power and support they were receiving while in camp. Due to the complex legal and human resources rules and regulations surrounding action, women were quick to perceive a lack of immediate action as "nothing happening" to help them and often perceived it as claims not being taken seriously or met with consequences. As a result of confidentiality policies and the rights of the accused, women were not able to see the hard work of leadership trying to abide by red-tape, while still working as fast as possible to help victims. Participants described situations where harassment had to be escalated to the point of illegal actions or camp wide protest for the harasser to stop. For example, a female participant, recounted the story of the

old assistant manager who "was notorious for bending and breaking the rules and getting away with it. And we had a maintenance person who was an awful human being, and [name] was kind of oblivious to that. And he got away with all kinds of stuff until it finally came to a point where, um, he was stalking one of my employees and made some extremely inappropriate comments and that finally got him fired." Even though women held positions of power, their attempts to act were not always supported, potentially leading to increased levels of stress, anxiety and low self-efficacy (Lampman, 2012; Lampman et. al., 2016; Lampman et. al., 2009).

During an interview, the researcher perceived a participant to be exhibiting behaviors and actions consistent with that in the list of ACH within the collection of data. The subject was perceived as attempting to establish power and dominate the path of discussion. During the interview process, the researcher, a female, was continually interrupted and reprimanded for her questions (Glick & Fiske, 1997). Even though the female researcher held more organizational power (Benson, 1984), she lacked power in terms of gender. This inverse power relationship upset the interviewee as demonstrated by his behavior. The interview provided further context for the researcher when hearing of other women's experiences with negotiations of power at both the Fairbanks location and the remote field site.

Overtime, long-term exposure to contrapower harassment can have damaging effects on staff member's self-esteem, mental health and overall well-being (Keashly, 2012; Lampman et. al., 2016; McLaughlin, Uggen, & Blackstone, 2012). As previously explored by Lampman (2012), female staff members who described behaviors consistent with ACH are at risk of lack of sleep, fear of the harasser, increased feelings of anxiety or stress and even depression (Lampman, 2012; Lampman et. al., 2016). Contrapower harassment fosters an atmosphere of fear within the workspace, and negatively impacts work performance and, concentration (Lampman, 2012; Lampman et. al., 2016). Finally, as confirmed in this study, long-term effects of contrapower

harassment led women in positions of power to quit in order to avoid harassment (Lampman et. al., 2016). Contrapower harassment did not stop as soon as women were off the clock. At TFS, men still contrapower harassed women at community events and through gossip networks, undermining their authority. Men continued to exercise their social resources authority off the clock, contributing to the eventual burnout of female colleagues (Glick & Fiske, 1997; Weber, 1947).

4.1.4 Title IX

Field stations with heavily enforced rules were less likely to have sexual assault and harassment incidents (Nelson et. al, 2017). At field stations where the rules were ambiguous and not consistently enforced, people were more likely to report experiencing sexual harassment or assault (Nelson et. al, 2017). Field stations pose a unique situation where students, faculty or staff may not be aware of their university's Title IX policies or know that it applies to field station work (Gluckman, 2018).

The TFS Title IX training has become the top priority of the station's management team's (Gluckman, 2018). Title IX is frequently spoken about, mentioned and referred to at the camp, keeping it at the top of people's minds to provide community support and stop sexual harassment or bullying (Gluckman, 2018). Title IX training did raise awareness regarding sexual assault and harassment in camp. However, one of the female participants mentioned in her interview that one of the women who introduced the training received resistance and increased bullying after the training was implemented in the camp. Having the Title IX information so prevalent in camp also served as a good reminder for those that may need to be reminded of the line between friendliness and harassment. Having the Title IX training and policies in place showed both staff and scientists that TFS is striving for an inclusive environment.

Overall, Title IX training was regarded as beneficial for the field camp. However, many people did not believe the training taught them anything or would change the mind of a preparator. People across the board did agree that Title IX training must continue to evolve and adapt in order to remain relevant. Title IX training provides a strong stepping stone to reinforce the idea that TFS will not allow sexual assault or harassment to occur (Gluckman, 2018; Nelson et. al, 2017). An extremely crucial aspect of the training to consider is the follow through of staff and management after an incident. Without consequences being enforced after a breach of Title IX the camp will diminish the importance of Title IX. The camp needs to take immediate action to validate the training and the positive cultural atmosphere of the camp, as well as to create a safe space for victims to feel comfortable reporting.

Due to the nature of trainings, two extremes regarding the Title IX training where identified. People tended to either hate the trainings and see them as a pointless or felt that the Title IX trainings were a good starting place for starting conversations about Title IX and sexual harassment and assault at remote field stations. Both extremes noted that the Title IX training must continue to evolve and adapt to try to find better ways to communicate the issues at hand.

4.1.5 Impacts of ICE

The inability to have a normal life outside of TFS put added pressures on both genders and created complex gender communication dynamics. Consequently, the lack of overlap with people's lives in and outside of TFS, as well as the oversaturation of work when at TFS, meant that gender communication problems did not end at 5 pm. These personal struggles with work and isolation added to the complexity of gendered communication within the remote field station, leading to miscommunication and tense communication among genders. The inability to maintain a strong support network outside of TFS suggests an impact on the relationships that occur within the field station and the way men and women are treated in the camp. Women

became the emotional caretaker for everyone in camp due to the lack of outside support networks.

As a result of the distinct lives lived on and off TFS, as well as the social comparisons staff members unconsciously engaged in with friends of the same age who lived different lives off TFS, communication dynamics and relationships that would not have been cultivated in the outside world occurred (Festinger, 1954; Suls & Wheeler, 2013). As suggested by the data in this study, the effects of social comparison theory were felt among both genders. Participants in the study were constantly comparing themselves and evaluating themselves based on the status of their friends and peers outside of the field station (Festinger, 1954; Suls & Wheeler, 2013). The social comparison aspect did not just end with comparing themselves to friends and colleagues outside the TFS community. The gap in age and the overall lack of diversity led to social comparison among TFS peers. Participants mentioned that some people who were not around the same age or set of values as their peers tended to feel 'othered'. Overtime, using social comparison to evaluate abilities and self-worth can lead to both positive and negative effects (Suls, Martin & Wheeler, 2002), ranging from reconfirming positive life choices, to emotional burnout (Suls, Martin & Wheeler, 2002; Suls & Wheeler, 2013). Even in an ICE environment, the present study suggests that people still feel the need to compare and evaluate themselves against others.

Summation. Remote field camps will remain exclusive because of the specific criteria needed to go there and the lack of resource power available to women. The three resources that people may derive power from include class, prestige and power (Weber, 1947). Since men have a higher chance of receive grants and receiving higher paying grants (Bornmann et. al., 2007; Ledin et. al., 2007; McGuire, Primack & Losos, 2012), field stations remain a place of exclusivity. Women start out at a disadvantage in relation to these three social resources and

continue to lack representation within the sciences. As women continue to have low representation in remote field stations, both as researchers and staff, the possible effects of exclusivity could be detrimental to the well-being of staff members that do manage to gain access to remote field stations. The effects of the geographic remoteness compounds the added social isolation and lack of social support women in remote field stations may perceive that they receive from colleagues and leadership. More women need to be asked about their experiences at remote field stations in order to better understand current communication dynamics and change potential negative interactions that may occur. Continuing to allow women to remain the marginalized group will keep field stations "a boys club" limiting the potential for developing innovative knowledge.

4.2 Limitations

While this research is just a starting point to reach the surface of the power communication dynamics that occur at a remote field station, there were some limitations. The present study was only conducted at one remote arctic field station. The experiences at one remote field site cannot be generalized to fit all other remote field stations. The type of field station and the scientific disciplines using this particular remote field site could have also led to limitations in the data collected, plus the social climate of movements like the #MeToo movement.

Furthermore, the length of the researcher's stay could have influenced the results. Data was only collected at one point in time, which could have had an impact on participants' current frame of mind. The data was collected early in the season and as shown by the findings above, the time of increased conflict and miscommunications occur towards the end of the field season and during the transition from summer to winter camp season.

Additionally, the present study was also approved and paid for by the management team of the field station. Using TFS funds, the researcher was brought to the field camp and housed and fed for a week. The researcher was, however, treated like any other scientist. The researcher's picture was placed on the board of people currently at TFS, the researcher was given a coffee mug to name and use daily. Most importantly, the researcher had to abide by all the regular camp rules, i.e., meal times, quiet hours and following rules for venturing outside of camp.

While the researcher was living in the remote field camp, the director of the TFS was also in camp which could have impacted participants' willingness to disclose information. The researcher spent a week living and building relationships within the TFS community. These relationships could have impacted the data participants were willing to share with the researcher. Over the week living at the station, the researcher developed a rapport and interpersonal relationship with the staff to establish trust to increase participation and to deepen the level of disclosure. The interview protocol required participants to disclose intimate personal details regarding the employer and working conditions, and so the researcher felt a foundation of trust and positive relationships with participants would facilitate disclosure. This could have led to internal bias from the researcher. Most of these interviews were conducted at the beginning of the season which meaning participants may not have had a lot of negative interactions yet during the 2018 summer season or that they were worried about over disclosing information and having to be around co-workers for the rest of the season.

Overall, the sample size was limited to 20 participants and not all of the current TFS staff was interviewed. All of the participants were recruited through the management team and participation in the study was heavily encouraged for staff. Of the staff interviewed, only 5 out of 20 were women. This is relatively close to the world population of women scientists which is

28.8% (UNESCO, 2018). Some current staff did not want to partake in the study and since the sign-up sheet for interviews times was visible to all staff, people may have felt uncomfortable having their peers know they signed up for an interview. Since the study revolved around communication dynamics at TFS, some participants were hesitant to share conflicts or negative experiences with co-workers and about their employers which reinforces the complexities and suggest an understanding of "blurred lines". Participants in the study expressed enthusiasm for the research topic and multiple participants remarked that they were excited to see the results of the study. Many participants mentioned that they were afraid of talking about rumors when speaking of events, they had not seen first-hand. Conflicts not witnessed by the participant but that were retold could have led to response bias. Participants also expressed that a large station wide conflict had happened the previous field station season which could have led to bias and gossiping.

The data was only collected by one person. Due to only one person analyzing the data, the researcher's lens and previous biases could have impacted the results of the data. The lived experiences of the researcher as a woman in academia could have impacted the results of the data analysis. The researcher also expressed an interest in working for the field station or within the field station networks after the week of living at the field station. This could have impacted the lens in which some of the interactions were viewed and analyzed for the researcher.

The researcher acknowledges these limitations, and proactively attempted to minimize the impact. For example, the researcher ate meals with the staff members and stayed in an ATCO among the scientists but did not spend much time with anyone outside of interviewing and meal times. There was a presentation one night and a reading of the comment box another night, but the researcher did not attend either of these events. The researcher maintained the boundary of researcher and participant through the separation of personal space and personal time spent in the

ATCO, unpackaging the subsequent interviews and interactions throughout the day. Some of the other ways the researcher attempted to minimize the impact of limitations was through the recruitment of participants on site at the station and by recruiting participants from all jobs, disciplines and backgrounds.

4.3 Future Research

Future research and studies should move in the direction of conflict management theories to further analyze the conflicts that may emerge within remote field stations. More remote field stations and stories should be visited and collected to better understand the unique dynamics that may occur at other remote field stations. For remote field stations that are not considered arctic, some of the same questions could be asked as these stations may not have some of the same travel restrictions and seasonality. As mentioned in the limitations, research for the present study was only collected at one point in time. Future research should collect more data at different points in time during the field station season and year to monitor the levels of power struggle, conflict and overall perception of communication. Exploring communication during different seasons at the field could result in further discoveries for understanding the impact of ICE conditions on communication.

Moreover, many of the participants had worked at other remote field stations. It would be interesting to further research the motivations people feel for living at remote field stations, the social networks that they build and the communication dynamics that occur. Future research could include interviews with friends and family members to better understand how the effects of living two lives, at the remote station and off the remote station effect communication with their loved one. Moreover, future research should analyze the impact of other remote field stations with a headquarters in a different location. The impact of having management removed from the

camp while making decisions, creates an interesting communication dynamic that could be primed for conflict.

Comparing and contrasting different types of research stations and the levels of communication complexity that develop with remoteness would add value to this area of research. Interviewing scientists and staff, specifically women and minorities about their experiences with harassment and contrapower harassment would add tremendous knowledge to this area of research. Future research should focus on how communication can be improved for conflict resolution and among managers and staff living and working in the same location.

Analyzing the impact of different generations on work satisfaction for remote field stations would add greatly to this area of research. As the millennial generation reaches maturity and begins to fill more roles within the staff, management and client side of remote field station work, it would be interesting to see if and how their communication dynamics change. Overall, this is an area of research that should be explore in more depth as there is a dearth of research on the subject. Remote field stations are a crucial aspect of the research communities' ability to further the scientific body of knowledge, and without a comprehensive understanding of the communication dynamics that can occur at a remote field station, there could be a decline in job satisfaction and a rise in turnover.

CHAPTER 5: Recommendations

5.1 Recommendations

TFS is currently on the path to improving their communication dynamics. There are some ways for TFS to further improve some of their communication and power dynamics uncovered in the present study. The researcher highlights three main opportunities for the staff and management at TFS: group cohesion, reintegration coping strategies, overcoming gender barriers.

5.1.1 Group Cohesion

Group cohesion is key for long-term work happiness and individual productivity in remote field station environments (Clarke, 2002; Griffith & Vatikus, 1999; Madjer, Oldham & Pratt, 2002; Oliver et. al., 2002). To increase and cultivate a sense of ownership among staff and a sense of community (Nistor, Daxecker, Satnciu & Diekamp, 2015) management should try to review the purpose and mission of TFS at the beginning and end of the summer season with new seasonal summer staff. In this group meeting reviewing the values of the organization, history of TFS, funding structure, and long-term goals for the station are important to develop ownership among staff members (Nistor, Daxecker, Satnciu & Diekamp, 2015). Employees want to know what drives the company they are working for, what its long-term goals are and how they will be involved in achieving these objectives (Fotsch & Case, 2017). When pointing out areas for improvement include room for suggestions. Challenge your employees to think creatively about ways to change course to increase their level of engagement and ownership within the organization.

Communication and transparency across all levels of an organization, especially management, are what foster trust among employees and determine the degree of discretionary

effort that comes with a high level of engagement. Transparency builds engagement and individual buy-in (Fotsch & Case, 2017). TFS should make sure to improve its transparency both with staff and cliental, as well as communicated that transparency applies to employees. Transparency is a great way to entice the younger generations, like millennials who have been sharing things on social media for years to engage in an organization (Fotsch & Case, 2017).

Using the Myers-Briggs Type Indicator (MBTI), staff can use the introspective self-report questionnaire to attempt to understand their psychological preferences for perceiving the world, how they make decisions and how they communicate (Myers & Myers, 1980). This may help staff understand how they sense-make their experiences and how their colleagues communicate and perceive the world. It is important to understand your preference for communication styles, as well as your peers preferred communication styles to analyze the sources of miscommunications and attempt to stop them from occurring. This training may give staff a foundation for building conflict resolution skills. Being aware of their own communication skills and the communication preference of others is vital for identifying gaps in communication preferences and styles.

For future job postings, conflict management and interpersonal skills should be a required skill set. With the unique challenge of living in an ICE condition for long periods of time, future employees must have the interpersonal skills to handle 24/7 interaction and have the ability to resolve conflicts on their own. Management can also provide opportunities to improve individual conflict management styles and skills throughout the year through different trainings and access to development opportunities. Another vital aspect for future employees is strong leader behaviors (Caperchione, Mummery, & Duncan, 2011). Strong leadership qualities in employees is crucial for fostering independent staff members and maintaining camp efficiency.

Finally, the management team should continue to look for more diverse candidates to increase cultural awareness. Diversity has been suggested to be a strength for building team cohesion and cooperation (Ling, Shih, & Chiang, 2015). Through analyzing the language choices and identifying what currently attracts diverse candidates to work for TFS job announcements can be specifically tailored job to attract a larger pool of candidates. Make sure all voices have the opportunity to be heard.

5.1.2 Reintegration Coping Strategies

TFS management needs to be aware of the toll field station life takes on year-round staff's personal life. It is crucial for the well-being and morale of staff to consider the impact on year-round staff when making decisions in Fairbanks. These decisions also need to be clearly communicated with all the staff it effects and management should try to be as transparent as possible if they are questioned on any decisions made. Transparency with staff to make the transition back on duty easier.

Management in Fairbanks and at TFS need to understand the important role of outside networks such as family and friends while staff are on shift. It is extremely important to assure quality communication with support networks while in camp (Joellenbeck, Russell & Guze, 1999; O'Toole, 2010). Management could potentially make a specific area more secluded and sound proof to ensure positive and private communication with outside social networks. Social networks outside of TFS are key for maintaining camp morale and for in the reintegration process both on and off shift. Much like military personnel returning from deployment, reintegrating on and off shift is a stressful and emotion process that requires the support of family and friends (O'Toole, 2010).

Clear and efficient communication when going on and off shift (O'Toole, 2010). Maintaining clearly communicated tasks for going on and off shift will assist with the flow of communication between people switching shifts and help to avoid gaps in important information that the person taking over may need to know. Expectations for staff when on and off shift should be clearly articulated to avoid stress (O'Toole, 2010). If staff need to write reports while off shift or virtually meet with specific departments, these expectations need to be communicated with staff members. Develop job specific processing in and out checklists may reduce stress for people transitioning off and on shift. These checklists should be easy to locate and complete. Policies for putting equipment back in the same place when going off shift, would alleviate some of the territorialism and boundary management issues that occur within camp.

Providing more mental health resources for staff would greatly increase the potential for positive reintegration. (Joellenbeck, Russell & Guze, 1999; Marek & D'Aniello, 2014). While UAF does provide mental health resources, they are not easily accessible for staff and for seasonal staff they may not even qualify for the benefits. Mental health resources are vital for maintaining a positive sense of self and for developing health coping strategies for stressful situations.

Another important aspect of mental health is the resolution of conflicts and having a third-party person for mediating interpersonal conflicts. The current system is for staff to go directly to their superior, which may increase levels of anxiety and decrease the level of disclosure. Create clear and unbiased, non-retaliatory discrimination policies so that people have a proper way to comment or report inappropriate workplaces treatment. Some employees may never report a conflict or problem to a superior if they do not feel comfortable. Having a third-party person may alleviate some of the stigma and stress surrounding reporting a conflict or asking for help.

5.1.3 Overcoming Gender Barriers

Making the elimination of gender bias a priority is the first step towards overcoming gender barriers. Some easy ways to overcome gender barriers begin with educating employees about stereotypes (Correll, 2004; Rideway & Correll, 2004). Subconscious gender barriers create a shortcut of judgement for people (Rideway & Correll, 2004). Management should develop cultural initiatives to transform the overall organizational climate, perceptions and awareness of gender equity issues and institute new educational training programs (Bilimora, 2017). Educating staff on the unconscious gender bias and discrimination will help them to be able recognize when it happens and try to stop it.

TFS should encourage men to voice their concerns about the unclear rules of engagement. Some clear boundaries and rules specific to camp life for both men and women to follow when engaging with colleagues should be defined and clearly communicated. While it is important to teach people what sexual harassment is, it is just as important to outline what is not sexual harassment (Jeanetta, 2016). This will help to eliminate the atmosphere of uncertainty that has to potential to create tense situations and anxiety for employees (Jeanetta, 2016).

TFS can eliminate the stigma surrounding workplace romances and educate employees how to handle workplace romance situations to avoid harassment situations. A level of professionalism when on site at the field station should be required to try to define some currently unclear boundaries. Developing policies for bringing workplace romances or concerns to management without fear of retaliation or gossip spreading throughout the camp should be implemented.

Tailoring job openings and opportunities to entice more women to apply will increase the representation of women in the staff. Pipeline initiatives to increase the inflow of women into the academic career path should be put into action such as better equipping women to succeed in the

field station, and improving the institutional processes related to recruitment, and the advancement and retention of women (Bilimora, 2017; Rideway & Correll, 2004). Be transparent and vouch for the competence of women leaders. Encourage and support women in traditionally masculine roles. Make sure women adopting masculine qualities in leadership positions are promoted and incorporated into the organization.

Overall, management needs to be aware of the difficulties associated with field station life. Maintaining a personal life is basically impossible for some of the year-round staff. Initiate family-friendly flexibility policies will help to increase the number of women in leadership positions (Bilimora, 2017; Rideway & Correll, 2004). Social support networks are vital for individual and camp morale.

CHAPTER 6: References

6.1 References

Amano, T., & Sutherland, W. J. (2013). Four barriers to the global understanding of biodiversity conservation: Wealth, language, geographical location, and security. Proceedings of the Royal Society of London: Biological Sciences, 280(1756) :2022649.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Anderson, W. (2009). From subjugated knowledge to conjugated subjects: Science and globalization, or postcolonial studies of science? *Postcolonial Studies, 12*(4), 389–400.

Angus, R. G., Pearce, D. G., Buguet, A. G., & Olsen, L. (1979). Vigilance performance of men sleeping under arctic conditions. *Aviation, Space, and Environmental Medicine, 50*, 692 696.

Arendt, J. (2012). Biological rhythms during residence in polar regions. *Chronobiology International, 29*, 379–394.

Arvey, M.D., & Riemer, W. J. (1966). Inland biological field stations of the United States. *BioScience, 16*(4), 249-254.

Atlis, M. M., Leon, G. R., Sandal, G. M., & Infante, M. (2004). Decision processes and interactions during a two-woman traverse of Antarctica. *Environmental Behavior, 36*, 402–23.

Attia, M., & Edge, J. (2017). Be(com)ing a reflexive researcher: a developmental approach to research methodology. *Open Review of Educational Research, 4*(1), 33-45.

Baker, B. (2015) The way forward for biological field stations. *BioScience, 65*(2), 123-129.

Baldanza, S., & Peri, A. (2001). Evolution of the coping strategies in an isolated group in an Antarctic base. *Polar Record, 37*, 111–120.

Balser, A. W. (2007). *Toolik Field Station: Annual Report.* Retrieved from http://toolik.alaska.edu/gis/about/docs/TFS_GIS_Annual_Report_2007.pdf

Barabasz, A. F. (1980). EEG alpha, skin conductance and hyponotizability in Antarctica. *International Journal of Clinical and Experimental Hypnosis, 28,* 63–74.

Barbarito, M., Baldanza, S., & Peri, A. (2001). Evolution of the coping strategies in an isolated group in an Antarctic base. *Polar Record, 37*, 111–120.

Basham, K. (2008). Homecoming as safe haven or the new front: Attachment and detachment in military couples. *Clinical Social Work Journal, 36*, 83–96

Beilock, S. L. (2008). Math performance in stressful situations. Current Directions in *Psychological Science, 17*, 339-343.

Bem, S. L. (1981). Gender schema theory: A cognitive account of sex typing. *Psychological Review, 88*(4), 354-364.

Beninger, A. (2014). High potentials in tech-intensive industries: The gender divide in business roles. *Catalyst*. Retrieved from https://www.catalyst.org/knowledge/high-potentials-tech intensive-industries-gender-divide-business-roles

Benson, K. A. (1984). Comments on crocker's 'An analysis of university definitions of sexual harassment.' *Signs, 9*, 516-519.

Bhattacharyya, M., Pal, M. S., Sharma, Y. K., & Majumdar, D. (2008) Changes in sleep patterns during pro- longed stays in Antarctica. *International Journal of Biometeorology, 52*, 869 879.

Bilimoria, D. (2017, September 5). How to overcome unconscious gender bias? Make it a priority. *IndustryWeek.* Retrieved from https://www.industryweek.com/talent/how overcome-unconscious-gender-bias-make-it-priority

Billick, I., Babb, I., Kloeppel, B., Leong, J. C., Hodder, J., Sanders, J., & Swain, H. (2013). Field Stations and Marine Laboratories of the Future. *Organization of Biological Field Stations.* Retrieved from https://www.obfs.org/assets/docs/fsml_final_report.pdf

Birchler-Pedross, A., Schroder, C. M., Munch, M., Knoblauch, V., Blatter, K., Schnitzler-Sack, C., Wirz-Justice, A., & Cajochen, C. (2009). Subjective well-being is modulated by circadian phase, sleep pressure, age, and gender. *Journal of Biological Rhythms, 24*, 232 242.

Black T. G., Westwood M. J., & Sorsdahl M. N. (2007) From the front of the line to the front of the class: counselling students who are military veterans. In Lippincott, J. & Lippincott, R.B. (Eds.), *8-12 Special Populations in College Student Counselling: a Handbook for Mental Health Professionals*. Alexandria, VA: American Counselling Association.

Blackstone, A. M. (2003). Gender roles and society. In Miller, J. R., Lerner, R. M. & Schiamberg, L. B. (Eds.), *Human Ecology: An Encyclopedia of Children, Families, Communities, and Environments*, 335-338. Santa Barbara, CA: ABC-CLIO.

Blickenstaff, J. C. (2005). Women and science careers: Leaky pipeline or gender filter?. *Gender and Education, 17* (4), 369-386.

Bliss, L. C. (2000). Arctic tundra and polar desert biome. In Barbour, M. G. & Billings, W. D. (Eds.), *North American Terrestrial Vegetation, 1-40*. Cambridge, UK: Cambridge University Press.

Bodenhorn, B. (2012). Meeting minds; encountering worlds: Sciences and other expertises on the North Slope of Alaska. In Konrad, M. (Eds.) *Collaborators Collaborating: Counterparts in Anthropological Knowledge and International Research Relations*, 225 244. New York, NY: Berghahn Press.

Bornmann, L., Mutz, R., & Daniel, H. (2007). Gender differences in grant peer review: A meta analysis. *Journal of Informetrics, 1*(3), 226-238.

Borunda, A. (2018, June 27). Coldest place on Earth found- here's how. *National Geographic*. Retrieved from https://news.nationalgeographic.com/2018/06/coldest-place-earth measured-temperature-antarctica-science/

Bourdieu, P. (1984). *Distinction: A Social Critique of the Judgement of Taste*. London, UK: Routledge and Kagan Paul Ltd.

Bourdieu, P. (1986). The forms of capital. In J. G. Richardson (Eds.), *Handbook of theory and research for the sociology of education*, 241–58. New York, NY: Greenwood Press.

Bourdieu, P., & Wacquant, L. J. D. (1992). *An Invitation to Reflexive Sociology*. Chicago, IL: University of Chicago Press.

Brannon, R. (1976). Looking at the male role. *PsycCRITIQUES, 21*, 795-796.

Broadway, J., Arendt, J., & Folkard, S. (1987). Bright light phase shifts the human melatonin rhythm during the Antarctic winter. *Neuroscience Letters, 79*, 185–189.

Brock, A., Kvasny, L., & Hales, K. (2010). Cultural appropriations of technical capital: Black women, weblogs, and the digital divide. *Information, Communication & Society, 13*(7), 1040-1059.

Buchanan, N., & Bruce, T. A. (2005). Contrapower harassment and the professorial archetype: Gender, race, and authority in the classroom. *Engagement, Resistance and Student Learning, 34*(1-2).

Burk, L. R., Burkhart, B. R., & Sikorski, J. F. (2004). Construction and preliminary validation of the Auburn Differential Masculinity Index. *Psychology of Men & Masculinity, 5*, 4-17.

Burn, S. M., & Ward, Z. A. (2005). Men's conformity to traditional masculinity and relationship satisfaction. *Psychology of Men & Masculinity, 6*, 254–263.

Burns, R. (2001). *'Just Tell Them I Survived!': Women in Antarctica*. Crows Nest, AU: Allen & Unwin.

Caperchione, C. Mummery, W. K., & Duncan, M. (2011). Investigating the relationship between leader beahviours and group cohesion within women's walking groups. *Journal of Science and Medicine in Sport, 14*(4), 325-330.

Ceci, S. J., & Williams, W. M. (2011). Understanding current causes of women's underrepresentation in science. *Proceedings of the National Academy of Sciences, 108*, 3157–3162.

Cejka, M. A., & Eagly, A. H. (1999). Gender-stereotypic images of occupations correspond to the sex segregation of employment. *Personality and Social Psychology Bulletin, 25*, 413-423.

Charmaraman, L., Jones, A. E., Stein, N., & Espelage, D. L. (2012). Is it bullying or sexual harassment? Knowledge, attitudes, and professional development experiences of middle school staff. Journal of School Health, 83(6), 438-444.

Chiu, C., Balkundi, P., & Weinberg, F. J. (2017). When manage become leaders: The role of manager network centralities, social power, and followers' perception of leadership. *The Leadership Quarterly, 28*(2), 334-348.

Clancy, K. B. H., Nelson, R., Rutherford, J. N., & Hinde, K. (2014). Survey of academic field experiences (SAFE): Trainees report harassment and assault. *PLOS ONE, 9*(7): E102-172.

Clancy, K. B. H., Lee, K. M. N., Rodgers, E. M., & Richey, C. (2017). Double jeopardy in astronomy and planetary science: Women of color face greater risks of gendered and racial harassment. *Journal of Geophysical Research, 122*(7), 1610-1623.

Clarke, N. (2002). Job/work environment factors influencing training transfer within a human service agency: Some indicative support for Baldwin and Ford's transfer climate model. *International Journal of Training and Development, 6*, 146–162.

Cockburn, C. (2010). Gender relations as causal in militarization and war. *International Feminist Journal of Politics, 12*(2), 139-157.

Cockburn, C. (2015). Standpoint theory. In Shahrzad, M. (Eds.). *Marxism and Feminism*. London, UK: Zed Books, 331-346.

Collins, P. H. (1997). Comment on Hekman's 'Truth and method: feminist standpoint theory revisited': Where's the power?. *Signs, 22*(2), 375-381.

Corprew III, C. S., & Mitchell, A. D. (2014). Keeping it frat: Exploring the interaction among fraternity membership, disinhibition, and hypermasculinity on sexually aggressive attitudes in college-aged males. *Journal of College Student Development, 55*(6), 548-562.

Correll, S. J. (2004). Constraints into preferences: Gender, status, and emerging career aspirations. *American Sociological Review, 69*, 93-113.

Courtenay, W. H. (2000). Engendering health: A social constructionist examination of men's health beliefs and behaviors. *Psychology of Men & Masculinity, 1*, 4–15.

Crane, J. (2011). Scrambling for Africa? Universities and global health. *The Lancet, 377*(9775), 1388–1390.

Currie, S. L., Day, A., & Kelloway, E. K. (2011). Bringing the Troops Back Home: Modeling the Postdeployment Reintegration Experience. *Journal of Occupational Health Psychology, 16*(1), 38-47.

Delucchi, M., & Korgen, K. (2002). 'We're the Customer-We Pay the Tuition': Student Consumerism among Undergraduate Sociology Majors. *Teaching Sociology, 30*(1), 100–107.

Darwin, C. (1859). *The origin of species by means of natural selection*. London, UK: John Murray.

DeSouza, E. (2010). Frequency rates and correlates of contrapower harassment in higher education. *Journal of Interpersonal Violence, 26*(1), 158-188.

DeSouza, E., & Fansler, A. G. (2003). Contrapower sexual harassment: A survey of students and faculty members. *Sex Roles, 48*(11/12), 529-542.

Dodge, M., Valcore, L., & Gomez, F. (2010). Women on SWAT teams: separate but equal?. *Policing: An International Journal of Police Strategies & Management, 34*(4), 699-712.

Dolan, J. (2007). On Kofiod's trail: Marine biological laboratories in Europe and their lifetime histories. *Limnology and Oceanography Bulletin, 16*, 73-76.

Donovan, A., Bravo, M., & Oppenheimer, C. (2013). Co-production of an institution: Montserrat Volcano Observatory and the social dependence on science. *Science and Public Policy, 40,* 171–186.

Donovan, A., & Oppenheimer, C. (2015). At the mercy of the mountain? Field stations and the culture of volcanology. *Environment and Planning A, 47,* 156-171.

Drummond, C.N., & Markin, J. N. (2008). An Analysis of the bachelor of science in geology degree as offered in the United States. *Journal of Geoscience Education, 56*, 113-119.

Dugger, K. (1988). Social location and gender-role attitudes: A comparison of black and white women. *Gender and Society, 2*, 425-448.

Elias, S. (2008). Fifty years of influence in the workplace: The evolution of the French and Raven power taxonomy. *Journal of Management History, 14*, 267–283.

Elser, J. (2016). Message from the president: The future of field stations, the future of the aquatic sciences; some thanks to John Dolan. *Association for the Sciences of Limnology and Oceanography,* 19-20.

England, P. (2006). Toward gender equality: Progress and bottlenecks. In Blau, F. D., Brinton, M. B. & Grusky, D. B. (Eds.), *The declining significance of gender?*, 245–264. New York, NY: Russell Sage.

Epps, J. M. (2016). Individual characteristics as predictive variables of the level and impact of contrapower harassment of faculty teaching in schools of pharmacy. Dissertation.

Erdman, J. (2016, July 15). Deadhorse, Alaska, sets state record high for any Arctic ocean location. *Weather*. Retrieved from https://weather.com/news/climate/news/deadhorse alaska-record-high-arctic-ocean-july2016

Fassinger, R. E. (2008). Workplace diversity and public policy: Challenges and opportunities for psychology. *American Psychologist, 63*, 252-268.

Felson, S. (2017, October 24). Manage dry indoor air this winter. *WebMD*. Retrieved from https://www.webmd.com/women/dry-indoor-air#2

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*, 117-140.

Fields, J. (2016). *Social capital: Key ideas.* New York, NY: Routledge.

Fischer, J., & Anderson, V. N. (2012). Gender role attitudes and characteristics of stay-at-home and employed father. *Psychology of Men & Masculinity, 13*(1), 16-31.

Foley, D. (2003). Indigenous epistemology and indigenous standpoint theory. *Social Alternatives, 22*(1), 44-52.

Foley, D. (2010). The rise of class culture theory in educational anthropology. *Anthropology & Education Quarterly, 41*(3), 215-227.

Fotsch, B., & Case, J. (2017, January 24). Using transparency to build a better company. Forbes. Retrieved from https://www.forbes.com/sites/fotschcase/2017/01/24/using-transparency to-build-a-better-company/#4c21804772c6

Fouad, N. A., & Singh, R. (2011). *Stemming the tide: Why women leave engineering.* Milwaukee, WI: University of Wisconsin.

Fox, M. F., Fonseca, C., & Bao, J. (2011). Work and family conflict in academic science: Patterns and predictors among women and men in research universities. *Social Studies of Science, 41*, 715–735.

French, J. R. P., & Raven, B. H. (1965). The bases of social power. In J. M. Shafritz, J. S. Ott, Y. S. Jang. (Eds.), *Classics of Organizational Theory*, 251-260. Boston, MA: Cengage Learning.

Frisk, A. (2018, October 16). Piers Morgan shames 'emasculated' Daniel Craig for carrying daughter in 'papoose,' dads fire back. *Global News*. Retrieved from https://globalnews.ca/news/4556309/piers-morgan-dad-shames-daniel-craig/

Gass, H. (2014, July 14). Sexual Harassment and Assault Prove Common During Scientific Field Studies. *Scientific American*. Retrieved from https://www.scientificamerican.com/article/sexual-harassment-and-assault-prove-common-during-scientific-field-studies/

Geissler, P. W. (2015). What future remains? Remembering an African place of science. In: Geissler, P. W. (Eds.), *Para-States and Medical Science: Making Global Health in Africa*. Durham, NC: Duke University Press, 142–178.

Geissler, P. W., & Kelly, A. H. (2016). A home for science: The life and times of Tropical and Polar field stations. Social Studies of Science, 46(6), 797-808.

Geissler, P. W., Lachenal, G., Manton, J., & Tousignant, N. (2016). *Traces of the Future: An Archaeology of Medical Science in Twenty First Century Africa*. Bristol, UK: Intellect.

Germain, M., Herzog, M. J. R., & Hamilton, P. R. (2012). Women employed in male-dominated industries: lessons learned from female aircraft pilots, pilots-in-training and mixed gender flight instructors. *Human Resource Development International, 15*(4), 435-453.

Glick, P., & Fiske, S. T. (1996). The Ambivalent Sexism Inventory: Differentiating hostile and benevolent sexism. *Journal of Personality and Social Psychology, 70*, 491–512.

Gluckman, N. (2018, July 15). Field sites are harassment hell. Here's how to improve them. *The Chronicle of Higher Education.* Retrieved from https://www.chronicle.com/article/Field-Sites-Are-Harassment/243914

Golden, S. J., Chang, C., & Kozlowski, S. W. J. (2017). Teams in isolated, confined, and extreme (ICE) environments: Review and integration. *Journal of Organizational Behavior, 39*, 701-715.

Graboyes, M. (2015) *The Experiment Must Continue: Medical Research and Ethics in East Africa, 1940–2014*. Athens, GA: Ohio University Press.

Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review, 102*, 4–27.

Griffith, J., & Vaitkus, M. (1999) Relating cohesion to stress, strain, disintegration, and performance: An organizing framework. *Military Psychology, 11*, 27–55.

Grusky, D. (2011). *The inequality reader: Contemporary foundational readings in race, class, and gender.* New York, NY: Routledge.

Gushin, V. I., Pustynnikova, J. M., & Smirnova, T. M. (2001). Interrelations between the small isolated groups with homogeneous and heterogeneous composition. *Human Performance in Extreme Environments: The Journal of the Society for Human Performance in Extreme Environments, 6*, 26–33.

Gutek, B. A. (1985). *Sex and the workplace*. San Francisco, CA: Jossey Bass.

Guthridge, L. F. (2000). *Ghosts of Cape Sabine: the harrowing true story of the Greely Expedition.* New York, NY: Berkeley Books.

Haminen, V., & Aro, H. (1996). Sex differences in coping and depression among young adults. *Social Science & Medicine, 43*, 1453–1460.

Hankin, B. L. (2009). Development of sex differences in depressive and co-occurring anxious symptoms during adolescence: descriptive trajectories and potential explanations in a multiwave prospective study. *Journal Clinical Child and Adolescent Psychology, 38*, 460–472.

Harding, S. (1991). *Whose Science/ Whose Knowledge?*. Ithaca, NY: Cornell University Press.

Harding, S. (2004). *The feminist standpoint theory reader: Intellectual and political controversies.* New York, NY: Routledge.

Harnois, C. E. (2010). Race, gender, and the black women's standpoint. *Sociological Forum, 25*(1), 68-85.

Hartsock, N. (1983). *Money, sex and power: Toward a feminist historical materialism*. Harlow, UK: Longman.

Haynes, K. (2005). *Exploring the Communication of Risk During a Volcanic Crisis: A Case Study of Montserrat, West Indies* PhD thesis, School of Environmental Science, University of East Anglia, Norwich.

Hesse-Bieber, S. N. (Eds.). (2012). *Handbook of feminist research: Theory and praxis*. Thousand Oaks, CA: SAGE Publications, Inc.

Hill, C., & Kearl, H. (2011). *Crossing the line: Sexual harassment at school*. Washington, D.C.: AAUW.

Holland, K. J., & Cortina, L.M. (2016). Sexual harassment: Undermining the wellbeing of working women. In Connerley, M., & Wu, J. (Eds), *Handbook on Well-Being of Working Women*. Dordrecht, NL: Springer.

Holmes, M. A., O'Connell, S., Frey, C., & Ongley, L. (2008). Gender imbalance in US geoscience academia. *Nature Geoscience, 1*, 79–82.

Hunter, M. (2007). *Honor betrayed: Sexual abuse in America's military*. Fort Lee, NJ: Barricade Books.

IAVCEI. (2012). Conviction of scientists in Italy involved in the 2009 l'Aquila earthquake disaster, Italy—a response from IAVCEI. Retrieved from http://www.iavcei.org/documents/IAVCEI_Response_Aquila_Earthquake%20Convictios.pdf

In the field. (2018, September 25). *AdvanceGeo*. Retrieved from https://serc.carleton.edu/advancegeo/resources/field_work.html

Intelmann, K. (2010). 25 years of feminist empiricism and standpoint theory: Where are we now?. *Hypatia, 25*(4), 778-796.

Jacka, F., & Jacka, E. (1998). *Mawson's Antarctic diaries*. Sidney, AU: Allen & Unwin Australia.

Janovy, J. Jr., & Major, K. M. (2009). Why we have field stations: Reflections on the cultivation of biologists. *BioScience, 59*(3), 217-222.

Jeanetta, A. (2016, August 11). 7 ways to reduce gender discrimination in your workplace. The Olson Group. Retrieved from https://theolsongroup.com/knock-down-gender-barriers/

Joellenbeck, L. M., Russell, P. K., & Guze, S. B. (1999). *Strategies to protect the health for deployed U.S. forces: Medical surveillance, record keeping, and risk reduction*. Washington, DC: National Academy Press.

Johnson, W. B., Rosenstein, J. E., Buhrke, R. A., & Haldeman, D. C. (2015). After "Don't ask don't tell": Competent care of lesbian, gay and bisexual military personnel during the DoD policy transition. *Professional Psychology: Research and Practice, 46*(2), 107-115.

Kanas, N., Salnitskiy, V., Grund, E. M., Weiss, D. S., Gushin, V., Bostrom, A., & Marmar, C. R. (2007). Psychosocial issues in space: Results from Shuttle/Mir. *Gravitational and Space Research, 14*, 35–45.

Kanter, R. M. (1977). *Men and Women of the Corporation*. New York, NY: Basic Books.

Kauppi, T., & Pörhölä, M. (2012). School teachers bullied by their students: Teachers' attributions and how they share their experiences. *Teaching and Teacher Education, 28*(7), 1059–1068.

Keashly, L. (2012). Workplace bullying and gender: It's complicated. In Fox, S. & Lituchy, T. R. (Eds.). *Gender and the Dysfunctional Workplace*. Northhampton, MA: Edward Elgar Publishing, Inc. 78-89.

Kennaway, D. J., & Van Dorp, C. F. (1991). Free-running rhythms of melatonin, cortisol, electrolytes, and sleep in humans in Antarctica. *American Journal of Physiology, 260*, R1137–R1144.

Kerbo, H. R. (2017). Social stratification. In Turner, B. S., Kyung-Sup, C., Epstein, C. F., Kivisto, P., Outhwaite, W. & Ryan, M. (Eds). *The Wiley-Blackwell Encyclopedia of Social Theory*. Hoboken, NJ: John Wiley & Sons, Ltd.

Koeing, A. M. (2018). Comparing prescriptive and descriptive gender stereotypes about children, adults, and the elderly. *Frontiers in Psychology, 9*, 1-13.

Kofoid, C. A. (1910). *The Biological Stations of Europe*. [Bulletin]. Washington, DC: US Department of Education.

Kronsell, A. (2011). Gendered practices in institutions of hegemonic masculinity. *International Feminist Journal of Politics, 7*(2), 280-298.

Lampman, C. (2012). Women faculty at risk: U.S. professors report on their experiences with student incivility, bullying, aggression, and sexual attention. *NASPA Journal About Women in Higher Education, 5*(2), 184-208.

Lampman, C., Crew, E. C., Lowery, S., Tompkins, K. A., & Mulder, M. (2016). Women faculty distressed: Descriptions and consequences of academic contrapower harassment. *Journal Women High Education, 9*(2), 169-189.

Lampman, C., Phelps, A., Bancroft, S., & Beneke, M. (2009). Contrapower harassment in academia: A survey of faculty experience with student incivility, bullying, and sexual attention. *Sex Roles, 60*, 331-346.

Ledin, A., Bornmann, L., Gannon, F., & Wallon, G. (2007). A persistent problem. Traditional gender roles hold back female scientists. *Science and Society, 8*(11), 982-987.

Lindlof, T. R., & Taylor, B. C. (2017). *Qualitative Communication Research Methods*. 314-331.

Ling, H., Shih, H., & Chiang, Y. (2015). Team diversity and team helping behavior: The mediating roles of team cooperation and team cohesion. *European Management Journal, 33*(1), 48-59.

Madjar, N., Oldham, G., & Pratt, M. (2002). There's no place like home? The contributions of work and nonwork creativity support to employees' creative performance. *Academy of Management Journal, 45*, 757–767.

Magovcevic, M., & Addis, M. E. (2008). The masculine depression scale: Development and psychometric evaluation. Psychology of Men & Masculinity, 9, 117–132.

Malterud, K. (2001). Qualitative research: Standards, challenges and guidelines. *The Lancet*, 358, 483-488.

Mann, M. (1986). *The sources of social power: Volume I, a history of power from the beginning to A.D. 1760.* Cambridge, UK: Cambridge University Press.

Mann, M. (2012). *The sources of social power: Volume III, global empires and revolution, 1890 1945.* Cambridge, UK: Cambridge University Press

Maples, S. (2017, November 22). The inconvenience of being a women veteran. *The Atlantic*. Retrieved from https://www.theatlantic.com/politics/archive/2017/11/the-inconvenience-of-being-a-woman-veteran/545987/

Marek, L. I., & D'Aniello, C. (2014). Reintegration stress and family mental health: Implications for therapists working with reintegrating military families. *Contemporary Family Therapy, 36*(4), 443-451.

Martin, L., Blossey, B., & Ellis, E. (2012). Mapping where ecologists work: Biases in the global distribution of terrestrial ecological observations. *Frontiers in Ecology and the Environment, 10*, 195-201.

Marzocchi, W. (2012). Putting science on trial. *Physics World*, 25(12), 17–18.

May, A., & Tenzek, K. E. (2017). Bullying in the academy: understanding the student bully and the targeted 'stupid, fat, mother fucker' professor. Teaching in Higher Education, 23(3), 275-290.

McGrath, J. E. (1964). *Social psychology: A brief introduction*. New York, NY: Holt, Rinehart, and Winston.

McGuire, K. L., Primack, R. B., & Losos, E. C. (2012). Dramatic Improvements and Persistent Challenges for Women Ecologists. *BioScience, 62*(2), 189-196.

McKinney, K. (1990). Sexual harassment of university faculty by colleagues and students. *Sex Roles, 23*, 421-438.

McKinney, K., Olson, C., & Satterfield, A. (1988). Graduate students' experiences with and responses to sexual harassment. *Journal of Interpersonal Violence, 3*, 319-325.

McLaughlin, H., Uggen, C., & Blackstone, A. (2012). Sexual harassment, workplace authority, and the paradox of power. *American Sociological Review, 77*(4), 625-647.

McNulty, S. A., White, D., Huft, M., & Foster, P. (2017). The organization of biological field stations at fifty. *Bulletin of the Ecological Society of America, 98*(4), 359-373.

Mear, R., & Swan, R. (1987). *In the footsteps of Scott.* London, UK: Jonathan Cape.

Meyers, M., Boudreax, T., Carmody, S., Dekle, V., Horton, E., & Wright, A. (2015). Preliminary results of the SEAC sexual harassment survey. *Horizon and Tradition: The Newsletter of the Southeastern Archaeological Conference, 57*(1): 19–35.

Miller, C. C. (2018, September 14). Many ways to be a girl, but one way to be a boy: The new gender rules. *The New York Times*. Retrieved from https://www.nytimes.com/2018/09/14/upshot/gender-stereotypes-survey-girls-boys.html

Milne, T., Creedy, D. K., & West, R. (2016). Integrated systemic review on educational strategies that promote academic success and resilience in undergraduate indigenous students. *Nurse Education Today, 36*, 387-394.

Mocellin, J. S. P., & Suedfeld, P. (1991). Voices from the ice: diaries of polar explorers. *Environmental Behavior, 23,* 704–722.

Mohipp, C., & Seann, C. Y. (2008). Graduate students' perceptions of contrapower sexual harassment. *Journal of Interpersonal Violence, 23*(9), 1258-1276.

Moreton-Robinson, A. (2014). Towards an Australian indigenous women's standpoint theory. *Australian Feminist Studies, 28*(78), 331-347.

Mosher, D. L., & Sirkin, M. (1984). Measuring a macho personality constellation. *Journal of Research in Personality, 18*, 150 –163.

Moyi Okwaro, F., & Geissler, P. W. (2015). In/dependent collaborations: Perceptions and experiences of African scientists in transnational HIV research. *Medical Anthropology Quarterly, 29*(4), 492–511.

Moylan, C. A., & Wood, L. (2016). Sexual harassment in social work field placements, prevalence, and characteristics. *Journal of Women and Social Work, 31*(4): 405–417.

Mullin, C. S. (1960). Some psychological aspects of isolated Antarctic living. *Am J Psychiatry, 117,* 323–325.

Myers, I. B. & Myers, P. B. (1980). *Gifts differing: Understanding personality type.* Mountain View, CA: Davies-Black Publishing.

National Research Council. (2014). *Enhancing the Value and Sustainability of Field Stations and Marine Laboratories in the Twenty-First Century.* Washington, D.C.: National Academies Press

Nelson, R. G., Rutherford, J. N., Hinde, K., & Clancy, K. B. H. (2017). Signaling safety: Characterizing fieldwork experiences and their implications for career trajectories. *American Anthropologist, 119*(4), 710-722.

Nicholson, S., & Cleland, J. A. (2016). 'It's making contacts': notion of social capital and implications for widening access to medical education. *Advances in Health Sciences Education, 22*(2), 477-490.

Nistor, N., Daxecker, I., Stanciu, D., & Diekamp, O. (2015). Sense of community in academic communities of practice: predictors and effects. *Higher Education, 69*(2), 257-273.

Nosek, B. A., Banaji, M. R., & Greenwald, A. G. (2002). Math = male, me = female, therefore math ≠ me. *Journal of Personality and Social Psychology, 83*, 44–59.

O'Reilly, J. (2016). Sensing the ice: Field science, models, and expert intimacy with knowledge. *Journal of the Royal Anthropological Institute, 22*(1), 27–45.

O'Toole, W. C. (2010). Recommendations to facilitate military deployment and re-entry experiences for enforcement personnel. *CALEA*. Retrieved from http://www.calea.org/calea-update-magazine/issue-104/recommendations-facilitate military-deployment-and-re-entry-experien

OBFS. (2018). *What are field stations.* Retrieved from https://www.obfs.org/what-s-a-field station-

Oliver, D. C. (1991). Psychological effects of isolation and confinement of a winter-over group at McMurdo Station, Antarctica. In Harrison, A. A., Clearwater, Y. A. & McKay, C. P. (Eds.), *From Antarctica to outer space: life in isolation and confinement,* 217-225. New York, NY: Springer-Verlag.

Oliver, A., Cheyne, A., Tomas, J., & Cox, S. (2002). The effects of organizational and individual factors on occupational accidents. *Journal of Occupational and Organizational Psychology, 75*, 473–488.

Oswald, D. L. (2008). Gender stereotypes and women's reports of liking and ability in traditionally masculine and feminine occupations. *Psychology of Women Quarterly, 32*, 196-203.

Owen, W. F. (1984). Interpretive themes in relational communication. *The Quarterly Journal of Speech, 70*(3), 274-287.

Palaganas, E. C., Sanchez, M. C., Molintas, M. P., & Caricativo, R. D. (2017). Reflexivity in Qualitative Research: A Journey of Learning. *The Qualitative Report, 22*(2), 426-438.

Palmai, G. (1963). Psychological observations on an isolated group in Antarctica. *British Journal of Psychiatry, 109*, 364–370.

Palinkas, L. A. (1989). Sociocultural influences on psychosocial adjustment in Antarctica. *Medical Anthropology, 10,* 235–46.

Palinkas, L. A. (1992). Going to extremes: The cultural context of stress, illness and coping in Antarctica. *Social Science & Medicine, 35*, 651–664.

Palinkas, L. A., & Browner, D. (1995). Effects of prolonged isolation in extreme environments on stress, coping, and depression. *Journal of Applied Social Psychology, 25*, 557–576.

Palinkas, L. A., Houseal, M., & Miller, C. (2000). Sleep and mood during a winter in Antarctica. *International Journal of Circumpolar Health, 59*, 63–73.

Palinkas, L. A., Johnson, J. C., & Boster, J. S. (2004). Social support and depressed mood in isolated and confined environments. *Acta Astronautica, 54*, 639–647.

Palinkas, L. A., Johnson, J. C., Boster, J. S., Rakusa-Suszczewski, S., Klopov, V. P., Fu, X. Q., & Sachdeva, U. (2004). Cross-cultural differences in psychosocial adaptation to isolated and confined environments. *Aviation, Space, and Environmental Medicine, 75*, 973–980.

Palinkas, L. A., Mäkinen, T. M., Pääkkönen, T., Rintamäki, H., Leppäluoto, J., & Hassi, J. (2005). Influence of seasonally adjusted exposure to cold and darkness on cognitive performance in circumpolar residents. *Scandinavian Journal of Psychology, 46*, 239–246.

Palinkas, L. A., Reed, H. L., Reedy, K. R., Do, N. V., Case, H. S., & Finney, N. S. (2001). Circannual pattern of hypothalamic–pituitary–thyroid (HPT) function and mood during extended Antarctic residence. *Psychoneuroendocrinology, 26*, 421–431.

Palinkas, L. A., & Suedfeld, P. (2007). Psychological effects of polar expeditions. *Lancet, 379*, 153-163.

Paludi, M. A., & Barickman, R. B. (1991). Academic and workplace sexual harassment: a resource manual. Albany, New York: SUNY Press.

Pang, A. S. (1996). Gender, Culture, and Astrophysical Fieldwork: Elizabeth Campbell and the Lick Observatory–Crocker Eclipse Expeditions. *Osiris, 11*, 17-43.

Parkin, F. (1974). *The social analysis of class structure*. London, UK: Tavistock Press.

Parrott, D. J., & Zeichner, A. (2003). Effects of hypermasculinity on physical aggression against women. *Psychology of Men & Masculinity, 4*, 70 –78.

Pattullo, P. (2000) *Fire from the Mountain: The Tragedy of Montserrat and the Betrayal of its People.* London, UK: Constable.

Peri, A., Scarlata, C., & Barbarito, M. (2000). Preliminary studies on the psychological adjustment in the Italian Antarctic summer campaigns. *Environment and Behavior, 32*, 72–83.

Perrings, C., Duraiappah, A., Larigauderie, A., & Mooney, H. (2011). The biodiversity and ecosystem services science–policy interface. *Science, 331*(6021), 1139-1140.

Petress, K. (2003). Power: Definition, Typology, Description, Examples, and Implications. Retrieved from http://uthscsa.edu/gme/documents/powerdefinitionstypologyexamples.pdf

Pierro, A., Cicero, L., & Raven, B. (2008). Motivated compliance with bases of social power. *Journal of Applied Social Psychology, 38*, 1921-1944.

Pierro, A., Raven, B. H., Amato, C., & Belanger, J. J. (2012). Bases of social power, leadership styles, and organizational commitment. *Journal of Psychology, 48*(6), 1122-1134.

Prentice, D. A., & Carranza, E. (2002). What women and men should be, shouldn't be, are allowed to be and don't have to be: The contents of prescriptive gender stereotypes. *Psychology of Women Quarterly, 26*, 269-281.

Pyakuryal, K. N. (2001). Weberian model of social stratification: A viewpoint. *Occasional Paper*, 14-25.

Raby, M. (2017). The colonial origins of tropical field stations American scientist. *Research Triangle Park, 105*(4), 216-223.

Randolph, W. A., & Kemery, E. R. (2011). Managerial use of power bases in a model of managerial empowerment practices and employee psychological empowerment. *Journal of Leadership & Organizational Studies, 18*(1), 95–106.

Raven, B. H. (1965). Social influence and power. In I. D. Steiner & M. Fishbein (Eds.), *Current studies in social psychology*, 371–382. New York, NY: Holt, Rinehart, Winston.

Raven, B. H. (1992) A power interaction model on interpersonal influence: French and Raven thirty years later. *Journal of Social Behavior and Personality, 7*(2), 217-244.

Ray, S. L., & Heaslip, K. (2011). Canadian military transitioning to civilian life: A discussion paper. Journal of Psychiatric and Mental Health Nursing, 18(3), 198-204.

Real, T. (2000). *I don't want to talk about it: Over-coming the secret legacy of male depression*. New York, NY: Simon & Schuster.

Reed, H. L., Reedy, K. R., Palinkas, L. A., Van Do, N., Finney, N. S., Case, H. S., LeMar, H. J., Wright, J., & Thomas J. (2001). Impairment in cognitive and exercise performance during prolonged Antarctic residence: effect of thyroxine supplementation in the Polar triiodothyronine syndrome. *Journal of Clinical Endocrinology and Metabolism, 86,* 110-116.

Reidy, D. E., Shirk, S. D., Sloan, C. A., Zeichner, A. (2009). Men who aggress against women: Effects of feminine gender role violation on physical aggression in hypermasculine men. *Psychology of Men & Masculinity, 10*(1), 1-12.

Research software. (2018). *Qualtrics*. Retrieved from https://www.qualtrics.com/research-core/ https://weather.com/news/climate/news/deadhorse-alaska-record-high-arctic-ocean july2016

Reynolds, T. (2002). Re-thinking a black feminist standpoint. *Ethnic and Racial Studies, 25*(4), 591-606.

Ridgeway, C. L. (2006). Gender as an organizing force in social relations: Implications for the future of inequality. In Blau, F. D., Brinton, M. B. & Grusky, D. B. (Eds.), *The declining significance of gender*, 265–287. New York, NY: Russell Sage.

Ridgeway, C. L., & Correll, S. J. (2004). Unpacking the gender system: A theoretical perspective on gender beliefs and social relations. *Gender and society, 18*(4), 510-531.

Rodino-Colocino, M. (2018). Me too, #MeToo: Countering cruelty with empathy. *Communication and Critical/Cultural Studies, 15*(1), 96-100.

Rolin, K. (2009). Standpoint Theory as a Methodology for the Study of Power Relations. *Hypatia, 24*(4), 218-226.

Rospenda, K. M., Richman, J. A., & Nawyn, S. J. (1998). The confluence of gender, race, and class in contrapower sexual harassment. *Gender and Society, 12* (1), 40-60.

Rosser, S. V. (2004). *The Science Glass Ceiling: Academic Women Scientists and the Struggle to Succeed.* New York, NY: Routledge.

Rothblum, E., Weinstock, J.S., & Morris J.F. (1998). Introduction. In Rothblum, E., Weinstock, J.S. & Morris J.F (Eds.), *Women in the Antarctic* (1-14). Birmingham, NY: Haworth Press Inc.

Rudman, L. A., & Glick, P. (2001). Prescriptive gender stereotypes and backlash toward agentic women. *Journal of Social Issues, 57*(4), 743-762.

Rudman, L. A., & Goodwin, S. A. (2004). Gender differences in automatic ingroup bias: Why do women like women more than men like men? *Journal of Personality and Social Psychology, 87*, 494–509.

Rudman, L. A., & Kilianski, S. E. (2000). Implicit and explicit attitudes toward female authority. *Personality and Social Psychology Bulletin, 26*, 1315–1328.

Rudman, L. A., & Phelan, J. E. (2008). Backlash effects for disconfirming gender stereotypes in organizations. In Brief A. P., & Staw, B. M. (Eds.), *Research in organizational behavior*, 61–79. New York, NY: Elsevier.

Rudman, L. A., & Phelan, J. E. (2010). The effect of priming gender roles on women's implicit gender beliefs and career aspirations. *Social Psychology, 41*(3), 192-202.

Rushing, C., & Powell, L. (2015). Family dynamics of the stay-at-home father and working mother relationship. *American Journal of Men's Health, 9*(5), 410-420.

Ryan, M. K., & Branscombe, N. R. (2013). *The SAGE handbook of gender and psychology*. Los Angeles, CA: SAGE Publications, Inc.

Sandal, G. M., Bye, H. H., & van de Vijver, F. J. (2011). Personal values and crew compatibility: Results from a 105-day simulated space mission. *Acta Astronautica, 69*, 141–149.

Sandal, G. M., Lean, G. R., & Palinkas, L. A. (2006) Human challenges in polar and space environments. *Review of Environmental Science and Biotechnology, 5*, 281–296.

Schmidt, L. L., Wood, J., & Lugg, D. J. (2005a). Gender differences in leader and follower perceptions of social support in Antarctica. *Acta Astronnautica, 56*, 923-931.

Schmidt, L. L., Wood, J. & Lugg, D. J. (2005b). Team climate at Antarctic research stations 1996–2000: Leadership matters. *Aviation, Space, and Environmental Medicine, 75*, 681 687.

Schneider, A. (1998). Insubordination and intimidation signal the end of decorum in many classrooms. *The Chronicle of Higher Education*. Retrieved from

Schubel, J. R. (2015). Some thoughts on keeping field stations and marine labs afloat in turbulent times. *BioScience, 65*(5), 458-459.

Shih, M., Pittinski, T. L., & Ambady, N. (1999). Stereotypes susceptibility: Identity salience and shifts in quantitative performance. *Psychological Review, 115*, 336-356.

Smith, L. D., Best, L. A., Stubbs, D. A., Johnston, J., & Archibald, A. B. (2000). Scientific graphs and the Hierarchy of the Sciences: A Latourian Survey of Inscription Practices. *Social Studies of Science*, *30*(1) 73-94.

Steeger, W., & Schurke, P. (1987). *North to the Pole*. New York, NY: Times Books.

Steel, G. D., Callaway, M., Suedfeld, P., & Palinkas, L. A. (1995). Human sleep-wake cycles in the high Arctic: Effects of unusual photoperiodicity and time disentrainment. *Biological Rhythm Research, 26,* 582–92.

Steinach, M., Kohlberg, E., Maggioni, M. A., Mendt, S., Opatz, O., Stahn A., & Gunga, H. (2016). Sleep quality changes during overwintering at the German Antarctic stations Neumayer II and III: The gender factor. *PLoS ONE, 11*(2), e0150099.

Stephens, N. M., & Levine, C. (2011). Opting out or denying discrimination? How the framework of free choice in American society influences perceptions of gender inequality. *Psychological Science, 22*(10), 1231–1236.

Stevens, M. T., & Gilson, G. G. (2016). An exploration of field-station partnerships: University operated field stations located in US National Parks. *BioScience, 66*(8), 693-701.

Stocks, G., Seales, L., Paniagua, F., Maehr, E., & Bruna, E. M. (2008). The geographical and institutional distribution of ecological research in the tropics. *Biotropica, 40*, 397-404.

Stone, E. (2009, June 26). Life at Toolik. Polar Field. Retrieved from http://www.polarfield.com/blog/life-at-toolik

Strauss, A., & Corbin, J. M. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Thousand Oaks, CA, US: Sage Publications, Inc.

Suedfeld, P. (2002). Applying positive psychology in the study of extreme environments. Journal of *Human Performance in Extreme Environments,* 6, 21–5

Suedfeld, P. (2005). Invulnerability, coping, salutogenesis, integration: four phases of space psychology. *Aviation, Space, and Environment Medicine,* 76 (6), B61–B73.

Suedfeld, P., & Weiss, K. (2000). Antarctica: Natural laboratory and space analogue for psychological research. *Environment and Behavior, 32*, 7–17.

Suls, J., Martin, R., & Wheeler, L. (2002). Social comparison: Why, with whom and what effect? *Current Directions in Psychological Science, 11*(5), 159-163.

Suls, J., & Wheeler, L. (2013). *Handbook of Social Comparison: Theory and Research*. New York, NY: Springer Science+Business Media, LLC.

Taterka, B. (2014). Toolik Field station (TFS). In Hund, A. J. (Eds.), *Antarctica and the arctic circle: a geographic encyclopedia of the earth's polar regions*. Santa Barbara, CA: ABC CLIO. Retrieved from https://search.credoreference.com/content/entry/abcclioxiaq/toolik_field_station_tfs/0

Tatum, J. L., & Foubert, J. D. (2009). Rape myth acceptance, hypermasculinity, and SAT scores as correlates of moral development: Understanding sexually aggressive attitudes in first year college men. *Journal of College Student Development, 50*, 195-209.

Tedeschi, R. G., & Calhoun, L. G. (1995). *Trauma and transformation: growing in the aftermath of suffering.* Thousand Oaks, CA: Sage.

The Antarctic Treaty. (2011). *Secretariat of the Antarctic Treaty*. Retrieved from https://www.ats.aq/e/ats.htm

Tilley, H. (2011.) *Africa as a Living Laboratory: Empire, Development, and the Problem of Scientific Knowledge*. Chicago, IL: University of Chicago Press.

Tomasetto, C., Alparone, F. R., & Cadinu, M. (2011). Girls' math performance under stereotype threat: The moderating role of mothers' gender stereotypes. *Developmental Psychology 47*(4), 943-949.

Toolik Field Station Institute of Arctic Biology. (2017a). Administration. Retrieved from https://toolik.alaska.edu/about/index.php

Toolik Field Station Institute of Arctic Biology. (2017b). History of Toolik. Retrieved from https://toolik.alaska.edu/about/history.php

Toolik Field Station Institute of Arctic Biology. (2017c). Policies and guidelines. Retrieved from https://toolik.alaska.edu/user_guide/policies.php

Turchik, J. A., & Wilson, S. M. (2010). Sexual assault in the U.S. military: A review of the literature and recommendations for the future. *Aggression and Violent Behavior, 15*, 267-277.

Tydecks, L., Bremerich, V., Jentschke, I., Likens, G. E., & Tockner, K. (2016). Biological field stations: A global infrastructure for research, education, and public engagement. *BioScience, 66,* 164-171.

Undem, T., & Wang, A. (2018). *The state of gender equality for U.S. adolescents.* Washington, D.C.: Plan International USA.

UNESCO. (2017). Cracking the code: Girls' and women's dducation in science, technology, engineering and mathematics (STEM). Retrieved from https://en.unesco.org/unesco international-symposium-and-policy-forum-cracking-code-girls-education-stem

UNESCO. (2018). Women in science. Retrieved from http://uis.unesco.org/sites/default/files/documents/fs51-women-in-science-2018-en.pdf

U.S. Department of Labor. (2011). 20 leading occupations of employed women: 2010 annual averages. Retrieved from http://www.dol.gov/wb/factsheets/20lead2010.htm

Valian, V. (1998). *Why So Slow? The Advancement of Women*. Cambridge, MA: MIT Press.

Versey, H. S. (2014). Centering perspectives on Black women, hair politics, and physical activity. *American Journal of Public Health, 104*(5), 810-815.

Wadman, M. (2017, October 6). Disturbing allegations of sexual harassment in Antarctica leveled at noted scientist. *Science*. Retrieved from https://www.sciencemag.org/news/2017/10/disturbing-allegations-sexual-harassment-antarctica-leveled-noted-scientist

Weber, L. (1998). A conceptual framework for understanding race, class, gender, and sexuality. *Psychology of Women Quarterly, 22*, 13-32.

Weber, M. (1947). *The theory of social and economic organization*. New York, NY: Free Press.

Weber, M. (1958). *From Max Weber: Essays in sociology*. Gerth, M. M. & Wright Mills, C. New York, NY: Oxford Press.

Websdale, N., & Chesney-Lind, M. (1998). Doing violence to women: Research synthesis on the victimization of women. In Bowker, L. H. (Eds.) *Masculinities and violence*, 55– 81. Thousand Oaks, CA: Sage

Weinstock, J.S. (1998). The Psychology of Social and Personal Life on an Isolated Frontier: US Women in the Antarctic. In Rothblum, E., Weinstock, J.S. & Morris J.F (Eds.), *Women in the Antarctic* (221-236). Birmingham, NY: Haworth Press Inc.

Weitz, R. (2015). Vulnerable warriors: Military women, military culture and the fear of rape. *Gender Issues, 32*, 164-183.

Westwood M.J. (1999) Career transition program for Canadian peacekeeping veterans. Report prepared for Veterans Affairs Canada and the Royal Canadian Legion, Vancouver, B.C.

Westwood M.J., Black T.G. & McLean H.B. (2002) A re-entry program for peacekeeping soldiers: promoting personal and career transition. *Canadian Journal of Counselling* 36, 221–232.

Whitesell, S., Liliehom, R. J., & Sharik, T. L. (2002). A global survey of tropical field stations. *BioScience, 52*, 55-64.

Women in the sciences. (2016, December 22). *Catalyst: Workplaces that work for women.* Retrieved from http://www.catalyst.org/knowledge/women-sciences

Women in science, technology, engineering, and mathematics (STEM). (2016, December 9). *Catalyst: Workplaces that work for women.* Retrieved from http://www.catalyst.org/knowledge/women-science-technology-engineering-and-mathematics-stem

Women, minorities and people with disabilities in science and engineering. (2015). *National Science Foundation*. Retrieved from https://www.nsf.gov/statistics/2017/nsf17310/

Wood, J., Lugg, D. J., Hysong, S. J., & Harm, D. L. (1999). Psychological changes in hundred day remote Antarctic field groups. *Environment and Behavior, 31*, 299–337.

Wood, J., Schmidt, L., Lugg, D., Ayton, J., Phillips, T. & Shepanek, M. (2005). Life, survival, and behavioral health in small closed communities: 10 years of studying isolated Antarctic groups. *Aviation Space and Environmental Medicine, 76*(6), B89-B93.

Wylie, A. (2003). Why standpoint matters. In Figueroa, R. & Harding, S. (Eds.). *Science and Other Cultures: Issues in Philosophies of Science and Technology,* New York, NY: Routledge. 26-48.

Wylie, A. (2012). Feminist philosophy of sciences: Standpoint matters. *Proceedings and Addresses of the American Philosophical Association, 86*(2), 47-76.

Wyman, R. L., Wallensky, E., & Blaine, M. (2009). The activities and importance of international field stations. *BioScience, 59*(7), 584-592.

Xie, Y., & Shauman, K. A. (2003). *Women in Science: Career Processes and Outcomes*. Cambridge, MA: Harvard University Press.

Yan, G., Ye, Q., & Tang, C. (2011). Adaptation and coping strategies in Chinese Antarctic expeditioners' winter-over life. *Advances in Polar Science, 22*(2), 111-117.

Zigarmi, D., Roberts, T. P., & Randolph, W. A. (2015). Employees' perceived use of leader power and implications for affect and work intentions. *Human Resource Development Quarterly, 26*(4), 359-384.

Zinn, M. B., & Dill, B. T. (1996). Theorizing difference from multiracial feminism. *Feminist studies, 22*(2), 321-331.

CHAPTER 7: Appendices

Appendix A: Demographic Survey Questions

1. Age
    a. 18-34
    b. 34-53
    c. 54 to 69
    d. 70 or older
2. Gender identification
    a. Man
    b. Women
    c. Trans Male/Trans Man
    d. Trans Female/Trans Woman
    e. Genderqueer/Gender Non-Conforming
    f. Different Identity
    g. Choose not to disclose
3. Ethnicity origin (or Race): Please specify your ethnicity.
    a. White
    b. Hispanic or Latino
    c. Black or African American
    d. Native American or American Indian
    e. Asian / Pacific Islander
    f. Other
4. Relationship status
    a. Not in a committed relationship

    b. In a committed relationship

5. Children
    a. Yes
    b. No
6. How many months out of the year do you live at Toolik? _____
7. Religion - open ended
8. How religious
    a. Sliding scale of 1-7
9. Political Affiliation
    a. Republican
    b. Democrat
    c. Independent
    d. Apolitical

Appendix B: Open-Ended Interview Questions

Rapport Building Questions

1. How long have you worked at Toolik?
2. What is your role?
3. Have you worked at other remote field stations? If so, please name them?
    a. How did you feel your experience at other remote locations compare with your experience at Toolik?

Interpersonal Dynamics

4. How would you characterize your experience with peers on site working at Toolik?
    a. What have been your most successful experiences?
    b. What have been your most challenging experiences?
5. How would you characterize your experience with peers off site working at Toolik?
    a. What have been your most successful experiences?
    b. What have been your most challenging experiences?
6. How would you characterize your experience with leadership working at Toolik?
    a. What have been your most successful experiences?
    b. What have been your most challenging experiences?
7. How would you characterize your access to resources working at Toolik?
    a. What resources are easily accessible?
    b. What resources are limited and problematic/logistically challenging to obtain?
    c. What are the resources for mental health?
    d. What are the resources for dealing with workplace conflict?
        i. At Toolik?
        ii. Offsite peers

8. Reflecting on your workplace relationships (without using names), what are the factors that contribute positive interactions?
9. Reflecting on your workplace relationships (without using names), what are the factors that contribute negative interactions?

Cultural Norms

10. How would you characterize the overall culture of Toolik? What are the values? Cultural norms?
11. How does communication flow at Toolik?
    a. Between peers?
    b. Between seasonal staff and year-round staff?
    c. Been experienced researchers and new researchers?
    d. Between staff and researchers?
    e. Between Toolik and management located offsite?

Seasonality

12. What are the key differences between life in Toolik during the summer months vs winter months?
13. How does the fluctuation of people impact communication?
14. How are relationships impacted by the influx of people at Toolik during the height of the research season?
    a. Levels of conflict?
    b. Energy required to maintain positive working relationships?
    c. What are the factors contributing to these variations?

Physical Environment

15. What do you feel are the main challenges of living and working in a remote field location?
16. How does the remote location impact your communication with co-workers on site?
17. How does the remote location impact your communication with co-workers off site?
18. How does the remoteness of Toolik impact people's decision to work there ?

Boundary Management

19. How do you feel being in a remote location creates different work vs life boundaries?
    a. How is "on the clock" vs "off the clock" managed?
    b. How is personal space separated from work space?
    c. How do your colleagues differentiate work vs life boundaries?
    d. What happens when work/life boundaries are violated?
20. What strategies are used by people at Toolik to stake a claim on designated areas?
    a. Have claims ever been challenged/not respected?
    b. What is the outcome when a claim is challenged?
21. How are roles/responsibilities assigned?
    a. How are they maintained?
    b. How are overlaps managed?
    c. How do you deal with role conflict?

Power Dynamics

22. What are valued skill sets needed to thrive at Toolik?
23. What are the shared traits among the most influential and respected Toolik employees?
24. What are the shared traits among the employees who struggle the most at Toolik?
25. What is required to be a successful leader at Toolik?
    a. How has your authority been challenged?

i. By who? Someone above or below you?

ii. How did they challenge it?

b. Competency ever been challenged?

i. By who? Someone above or below you?

ii. How did they challenge it?

c. Subject matter expertise ever been challenged?

i. By who? Someone above or below you?

ii. How did they challenge it?

26. How do you feel that gender has an impact on communication at Toolik?

a. How do you feel that gender has an impact on communication at Toolik?

27. (Will be administered through online survey). On a scale of 1-5, 0 to 5+: please rate the frequency of these dynamics occurring in your work environment at Toolik: (gossiping, bullying, personality conflicts, boundary management, conflict management styles, cliques, withholding research information, not feeling comfortable talking with superiors)

28. (Will be administered through online survey). On a scale of 1-7 never to always: please indicate if these dynamics have impact(ed) your working environment (gossiping, bullying, personality conflicts, boundary management, conflict management styles, cliques, withholding research information, not feeling comfortable talking with superiors)

29. What factors contribute to your overall level of comfort at Toolik?

30. What factors contribute to your overall level of discomfort at Toolik?

a. What made you feel uncomfortable?

b. What strategies were used to address the issue(s)?

31. Do you feel remote field stations have an inclusive environment?

a. What are the factors that contribute to an inclusive environment?

b. What are the limiting factors that contribute to an inclusive environment?

Conflict Management/Leadership

32. How would you characterize your conflict management style at work?
33. What do you think are the main sources of conflict at Toolik among peers?
    a. What strategies are commonly used to overcome these conflicts?
    b. How successful are these strategies?
34. What do you think are the main sources of conflict at Toolik among people on site?
    a. What strategies are commonly used to overcome these conflicts?
    b. How successful are these strategies?
35. What do you think are the main sources of conflict at Toolik among people off site?
    a. What strategies are commonly used to overcome these conflicts?
    b. How successful are these strategies?
36. What do you think are the main sources of conflict at Toolik among seasonal workers?
    a. What strategies are commonly used to overcome these conflicts?
    b. How successful are these strategies?
37. Overall, how well do you feel conflicts are managed?
38. What are your recommendations for improving conflict management?

External Pressures

39. How do you feel the "culture" of academia or research impacts the work environment?
    a. How does having different scientific disciplines working at Toolik impact relationships?
    b. How do people from different disciplines communicate?
        i. Any negative interactions that you can remember?

ii. Have you noticed that one discipline or type of researcher has difficulty communicating more than the rest?

c. Funding and publishing?

d. Have you noticed that one discipline or type of researcher has difficulty communicating more than the rest?

e. What disciplines or types of researchers are the easiest to support and communicate with?

f. What disciplines or types of researchers are hardest to support?

40. What other factors may influence people's decisions to research/live/work at Toolik?

Training

41. What training did you receive prior to starting your position at Toolik?

a. How effective was this training?

42. Have you had any training relating to harassment in the workplace?

a. How effective was this training?

43. What are the most significant training needs at Toolik?

Appendix C: IRB Approval

(907) 474-7800
(907) 474-5444 fax
uaf-irb@alaska.edu
www.uaf.edu/irb

Institutional Review Board
909 N Koyukuk Dr. Suite 212, P.O. Box 757270, Fairbanks, Alaska 99775-7270

April 10, 2018

To: Amy May
Principal Investigator

From: University of Alaska Fairbanks IRB

Re: [1215986-2] The Impact of Communication in a Remote Field Location

Thank you for submitting the Response/Follow-Up referenced below. The submission was handled by Expedited Review under the requirements of 45 CFR 46.110, which identifies the categories of research eligible for expedited review.

Title:	The Impact of Communication in a Remote Field Location
Received:	April 5, 2018
Expedited Category:	7
Action:	APPROVED WITH CONDITIONS
Effective Date:	April 10, 2018
Expiration Date:	

Required Information:

The PI/graduate student have been fully responsive to required modifications, however they missed one editorial change on the flyer. See the section, lower left corner "for questions...." there is still the coastal university email.

Required modification: Change that to a UAF email.

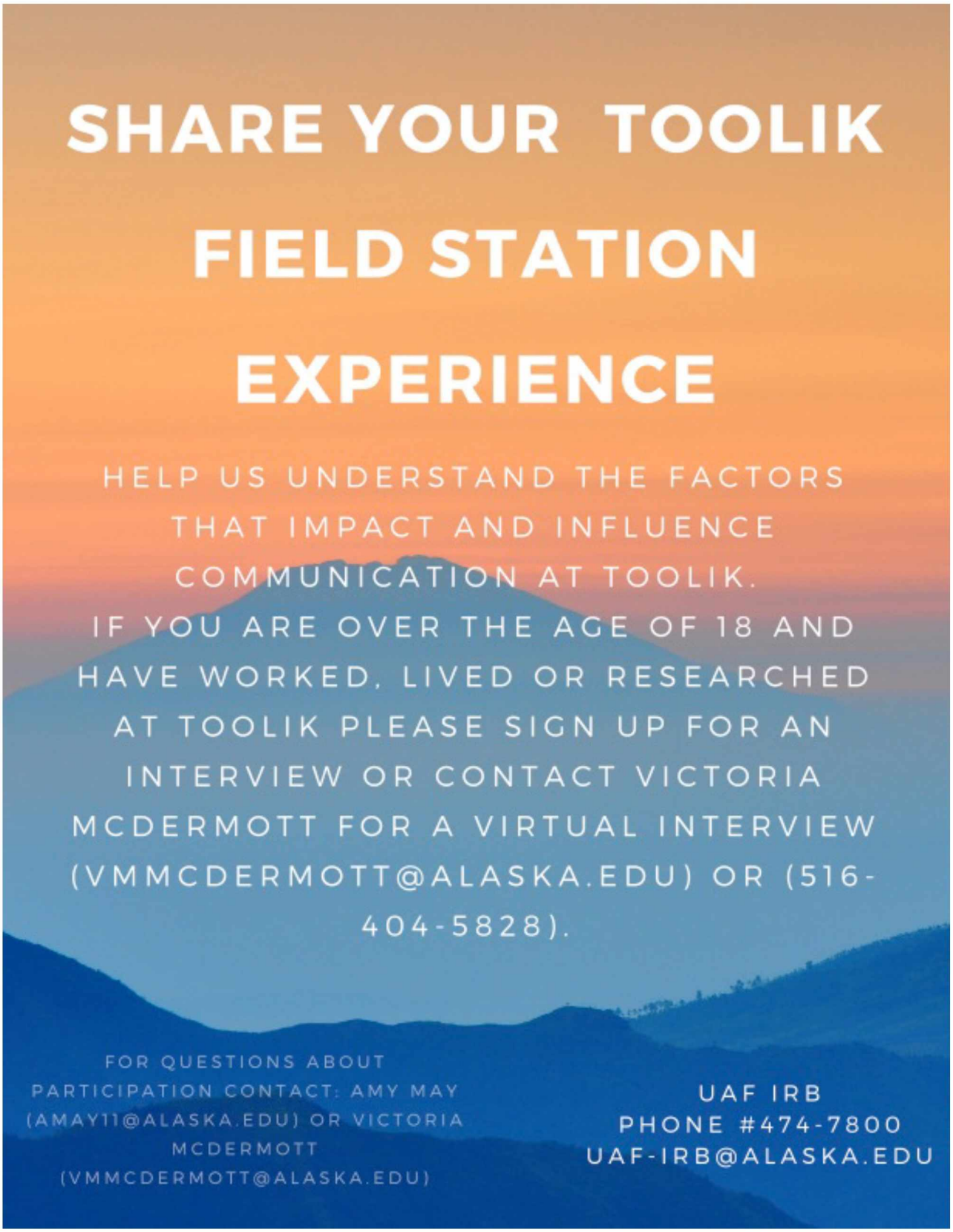
Project is approved with editorial condition.

We wish the student/faculty team well with their important work.

This action is included on the May 2, 2018 IRB Agenda.

No changes may be made to this project without the prior review and approval of the IRB. This includes, but is not limited to, changes in research scope, research tools, consent documents, personnel, or record storage location.

Appendix D: Interview Advertisement



Appendix E: Interview Sign-Up Sheet

June 26th

8:30-9:30	_____	_____
9:30-10:30	_____	_____
10:30-11:30	_____	_____
11:30-12:30	_____	_____
12:30-1:30	_____	_____
1:30-2:30	_____	_____
2:30-3:30	_____	_____
3:30-4:30	_____	_____
4:30-5:30	_____	_____

June 27th

8:30-9:30	_____	_____
9:30-10:30	_____	_____
10:30-11:30	_____	_____
11:30-12:30	_____	_____
12:30-1:30	_____	_____
1:30-3:30	Communication Workshop	
3:30-4:30	_____	_____
4:30-5:30	_____	_____

June 28th

8:30-9:30	_____	_____

9:30-10:30	_____	_____
10:30-11:30	_____	_____
11:30-12:30	_____	_____
12:30-1:30	_____	_____
1:30-3:30	Communication Workshop	
3:30-4:30	_____	_____
4:30-5:30	_____	_____

Appendix F: History of Toolik Field Station

Toolik Field Station

The Name, the Lake, the Organization: Toolik Field Station (TFS). TFS is a premier remote biological field camp located at mile 284.5 of the Dalton Highway which runs 414 miles from Livengood, Alaska to Prudhoe Bay, Alaska. TFS is nine hours north of the largest city Fairbanks, Alaska, two hours north of the small town of Coldfoot, Alaska, and three hours south of Deadhorse, Alaska. It is 158 miles north of the Arctic Circle and 117 miles south of the Arctic Ocean, at the base of the Brooks Range on Alaska's North Slope (Taterka, 2014).

TFS operates from two places, the remote field station along the Dalton highway and the headquarters in Fairbanks located on the UAF campus that assists with planning and logistics. At the field station many of the jobs are seasonal, as summer is the peak research season, with a few year-round staff. The staff at TFS live and work there, switching on and off shift frequently on a 2-4-week rotating schedule. The management team, the logistics team and a few other support service jobs are located in Fairbanks. While these people tend to coordinate the resources and make the decision for the field station located at Toolik Lake, their jobs keep them in Fairbanks for most of the year. A few positions make trips up to the field camp on an intermittent schedule.

History of Toolik Field Station Development. TFS was established in 1975 in the Brooks Range on Alaska's North Slope (Balser, 2007; Taterka, 2014). Developed as a support mechanism for obtaining baseline data on the North Slope and Inland coastal ponds, a number of projects were refunded and retained leading to the installation of "Research on Arctic Tundra Environments or RATE" (Toolik Field Station, 2017b, para. 1; Taterka, 2014). In June of 1975, Toolik Lake was selected to be the site for aquatic research and the first trailer as support infrastructure was placed on the north end of the lake (Toolik Field Station, 2017b; Taterka,

2014). This specific location offered a north and south transect between the Yukon river and the Beaufort Sea.

A modular unit containing a kitchen, dining area, laboratory and sleeping room was added in 1976. Up until 1978, researchers brought their own sleeping tents in order to stay and conduct research. In 1980 a new laboratory trailer was added to the camp, followed by another unit in 1982 which was originally added as a laboratory and then redesigned and as a hygiene/wash-up facility. There were a number of small temporary wooden structures built from 1976-1982 that were used for scientific work and storage (Toolik Field Station, 2017b). Excluding these temporary units, "there was 1,400 square feet for laboratory use and 500 square feet for food service in 1982" (Toolik Field Station, 2017b, para. 2).

TFS continued to expand until 1983 when the camp outgrew the space available (Toolik Field Station, 2017b). TFS was moved to the south shore of Toolik Lake, its current location, and officially named "Toolik Field Station" (Toolik Field Station, 2017b, para. 3). Once the relocation was complete, thirteen surplus trailers were purchased, upgrading the camp to 17 units and increasing square footage, as well as eight weatherport tents, which are high quality tents an alternative to metal or wood buildings (Toolik Field Station, 2017b). These tents provided 1,920 square feet of work or storage space.

In 1984, the Alaska State Legislature appropriated funds to upgrade the wastewater collection system and the kitchen. More money awarded by UAF was used to upgrade the kitchen trailer during 1985. In 1986, the National Science Foundation (NSF) and UAF awarded the station more money for upgrades, in which a dining facility was constructed connecting the dining trailer and kitchen trailer. This dining facility added 960 square feet of floor space

allowing for the building of a communication office to accommodate general-use computers and communications equipment (Toolik Field Station, 2017b).

Between the years of 1988 and 1995, vast improvements were made to the quality of the camp through funding from the NSF, UAF and various other state and federal government entities. In February of 1995, a workshop was attended by "35 arctic scientists, logistics experts, land managers and representatives of indigenous people of Alaska", (Toolik Field Station, 2017b, para. 8). This workshop resulted in fully fleshed out mission and goals for TFS over the next 20-years, as well as, the clearly defined needs for improvements of facilities, management and funding (Toolik Field Station, 2017b).

In 1998, NSF along with UAF contributed funding for the acquisition of an arctic winter residence facility for the TFS (Toolik Field Station, 2017b; Taterka, 2014). A modular structure with redundant heating and power sources were featured in the design. The winter quarters was positioned on-site in November 1998 (Toolik Field Station, 2017b; Taterka, 2014).

From 1999 to 2006 TFS continued to expand both in camp size, funding and research cliental. In 2006, the camp switched from being open in the summer to being open year-round (Toolik Field Station, 2017b). This change caused the need for year-round staff and funding. The camp continues to be open year-round today, increasing its accessibility to researchers and the availability to the arctic environment.

Toolik's Mission. Not only is Toolik the name of the remote field station, the station sits on Toolik Lake, and TFS is an organizational home to a myriad of staff, researchers and students. The field station is run by UAF under the Institute of Arctic Biology (IAB) (Taterka, 2014; Toolik Field Station, 2017a). The purpose of this research center covers the individual and

collaborative efforts for the United States and international institutions regarding arctic biology. TFS covers research topics ranging from, but not limited to, aquatic ecology, atmospheric science, physical sciences, physiology of artic breeding birds, mammals and insects, and includes a broad range of temporal and spatial scales (Balser, 2007; Taterka, 2014). TFS also provides pan-arctic research and assists in developing key relationships among international groups of arctic scientists. The current research themes of the field station and funding levels are very dynamic and responsive to national interests in the arctic.

TFS's exact mission statement is as follows, "The mission of Toolik Field Station is to support research and education that creates a greater understanding of the Arctic and its relationship to the global environment" (Toolik Field Station, 2017a, para. 1). In order to meet these specific mission goals, TFS provides housing, meals and laboratories in addition to other support services for arctic research and education to scientists, researchers and students from across the globe. Some of the extra research support includes "GIS, mapping services, technical and IT assistance, shared commonly used equipment, and collection of standardized environmental data" (Toolik Field Station, 2017a, para. 3). Scientists pay a user-day fee, averaging around $115 a day, that contributes to cost of operations and upkeep. The infrastructure and equipment within TFS is owned by either UAF or NSF.

Camp layout. Currently the camp is laid out into two different sections. One side of camp holds sleeping quarters with a strict quiet hour's policy starting at 10 pm on weeknights. Within the living quarters there are separate ATCOs for both staff and researchers. The staff tend to stay in the winter quarters or within a room in their own ATCO. The scientists and students are placed in weather ports or ATCOs based on the duration of their stay. Often visitors to the camp must share living quarters depending on the time of year and the number of other researchers in camp.

The other side of camp contains the laboratories, as well as, communal areas such as the sauna. There is no quiet hour policy on this side of camp, allowing researchers and their research teams to work late into the night. The camp layout has been specially modified over time to accommodate the unique problem of having to live and work in the same location for an extended period of time. While there is limited running water at TFS, people are able to take a shower and wash their hands. Due to the expense of having to ship out wastewater, outhouses are the main form of bathrooms (Stone, 2009).

Alaskan arctic tundra. From "November 27 to January 14, the sun never rises, and from May 26 to July 17, the sun never sets" (Taterka, 2014, para. 1). Much like the weather in Antarctica, it is located in the polar regions with an arctic climate including long, cold winters, cool summers and the possibility of snow year-round (Bliss, 2000; Taterka, 2014). TFS is located the arctic tundra. In the tundra, temperatures remain low year-round, stunting the growing season for plants and only one month out of the year tends to allow for the melting of snow. There are no trees, only dwarf shrubs, grasses, mosses and lichens (Bliss, 2000). The temperature can range from -90 degrees Fahrenheit to 20 degrees Fahrenheit and tends to average out at -34 degrees Fahrenheit during the winter months. In the summer, temperatures can range from 10-70 degrees Fahrenheit (Bliss, 2000; Erdman, 2016). Alaskan winters are known to be brutal requiring extensive preparation to survive outside for long periods of time with snow, cold winds, negative temperatures and thousands of miles of open wilderness (Bliss, 2000).

Seasonality. In order for scientists to stay and research at the TFS, projects must be preapproved and registered. Once the project is approved, the housing arrangements can be made. The average researcher spends about 3-5 months at TFS with reservations for housing January-March, April, May- September and October-December. There are limited spaces for reservations during the winter months.

TFS is heavily impacted by seasonality. In the summer months from May-September, the population of camp can reach 150 researchers plus staff at the peak point in the season (Gluckman, 2018). During these summer hours, trucks bringing supplies, food and even Amazon packages stop through TFS 2-3 times a week.

The flow of camp life drastically changes at the start of October as the numbers of people and supply trucks drop off through the winter until April. All the temporary or seasonal staff leave throughout the end of September, early October. During this time, the few year-round staff alternate shifts at TFS accommodating the few researchers who make the trek up to the arctic tundra in the winter and maintaining the camp throughout the harsh Alaskan winter. At some points throughout the winter, there may only be staff members living there with a maximum population hovering between 3-10 people (Gluckman, 2018).

Everyday life. Everyday life at TFS can range from extremely routine to vast and varied. Meal times remain the same for breakfast, lunch and dinner every day except for Sundays in which the kitchen only cooks one meal. Meal times are seen as the time for socialization and bridging the gap between staff and researchers. While extremely remote, TFS has the capabilities for WIFI on the UAF WIFI network, meaning that both staff and scientists have access to communication technologies around the clock to reach the outside world.

Policies at TFS. Since TFS is operated by UAF, institutional UAF policies are followed. Specifically, policies like Title IX and workplace bullying, as well as, for drug and alcohol use are strictly enforced (Toolik Field Station, 2017c). All residences are required to participate in Sexual Misconduct and Title IX Trainings and a short quiz before their housing request may be accepted.

Summation. TFS is a unique remote field station positioned for researching topics related to the arctic and arctic tundra. TFS has developed over the years from a small six tent

camp to a premier arctic biological research facility serving a multitude of students, scientists and scientific endeavors. Due to the seasonality and harsh Alaskan winters, the field station is more popular in the summer, but still hosts some scientists in the winter. Overall, the role of women in the field camp is unknown; however, there have been attempts made at developing inclusivity through policy implementations such as Title IX.

Appendix G: Information about Interview Process

At question 27, the participants were handed the iPad back to finish the online survey portion. The audio recording continued through the section of iPad survey. Two Likert scale questions asked participants to rank on a scale of 1-5 from never to always, how frequently dynamics such as gossiping, bullying and personality conflicts impacted TFS as a whole[4]. The second Likert scale question asked participants to rank on a scale of 1-5 from never to always, how frequently the same dynamics impacted their personal work environment. After finishing the Likert scale questions, participants would hand the iPad back to the researcher and the open-ended question portion of the interview continued.

The next variable questioned was conflict management and leadership styles. These questions, 32-38, asked the participants to reflect on their own conflict management styles and how effective they were for conflict resolution, some of the main sources of conflict at TFS and how conflicts were managed by leadership. The final question in this section asked participants to provide any recommendations for improvement in conflict management and resolution at the field station.

The second to last variable examined was external pressures. This section of questions, 39 and 40, inquired about the impact of the culture of academia and the pressures to publish on the culture on TFS. This section also asked participants to describe what other factors may influence people's decision to work, live or research at TFS.

[4] This is an example of one of the questions that did not produce results relevant to the research question presented in this paper.

Appendix H: Informed Consent Form

Impact of Communication in a Remote Field Location

IRB # 1215986-2
Date Approved 4/10/18

Description of the Study:
You are being asked to take part in a research study about how communication is impacted at a remote field location. The goal of this study is to learn what factors impact and influence communication dynamics at a remote field station. You are being asked to take part in this study because you have spent over 3 months living as staff or a researcher at the Toolik field station. Please read this form carefully. We encourage you to ask questions and take the opportunity to discuss the study before making a decision on whether or not to participate.

If you decide to take part, you will be asked to answer questions regarding the communication flow and dynamics that occur in a remote field station. This interview will take between 45 minutes to 60 minutes to complete.

Risks and Benefits of Being in the Study:
The risks to you if you take part in this study are potentially being exposed to subjects, which may trigger a response to past trauma. You have the right to terminate the interview at any time and your data immediately destroyed and not used in the research.

Example Benefit Statements:

- The benefit to you for taking part in this study is/are to help us better understand the communication dynamics that occur at a remote field station to improve overall communication.
- The benefit to you for taking part in this study is/are having the opportunity to let your voice be heard on an important and relevant issue.

Confidentiality:

- Any information obtained about you from the research will be kept confidential.
- Any information with your name attached will not be shared with anyone outside the research team.
- We will code your information with a number so no one can trace your answers to your name.
- We will properly dispose paperwork and securely store all research records.
- Your name will not be used in reports, presentations, and publications.

Voluntary Nature of the Study:
Your decision to take part in the study is voluntary. You are free to choose whether or not to take part in the study. If you decide to take part in the study you can stop at any time or change your mind and ask to be removed from the study. Whether or not you choose to participate, will not affect your relationship with the research team or your work.

Contacts and Questions:

If you have questions now, feel free to ask me now. If you have questions later, you may contact Victoria McDermott, co-researcher, at vmmcdermott@alaska.edu, or Amy May, the primary investigator, at amay11@alaska.edu. Both can be reached by telephone at (907)-474-6591.

The UAF Institutional Review Board (IRB) is a group that examines research projects involving people. This review is done to protect the rights and welfare of people involved the research. If you have questions or concerns about your rights as a research participant, you can contact the UAF Office of Research Integrity at 474-7800 (Fairbanks area) or 1-866-876-7800 (toll-free outside the Fairbanks area) or uaf-irb@alaska.edu.

Statement of Consent:
I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study. I am 18 years old or older. I have been provided a copy of this form.

Appendix I: Appendices References

Balser, A. W. (2007). *Toolik Field Station: Annual Report.* Retrieved from http://toolik.alaska.edu/gis/about/docs/TFS_GIS_Annual_Report_2007.pdf

Bliss, L. C. (2000). Arctic tundra and polar desert biome. In Barbour, M. G. & Billings, W. D. (Eds.), *North American Terrestrial Vegetation, 1-40*. Cambridge, UK: Cambridge University Press.

Erdman, J. (2016, July 15). Deadhorse, Alaska, sets state record high for any Arctic ocean location. *Weather*. Retrieved from https://weather.com/news/climate/news/deadhorse alaska-record-high-arctic-ocean-july2016

Gluckman, N. (2018, July 15). Field sites are harassment hell. Here's how to improve them. *The Chronicle of Higher Education.* Retrieved from https://www.chronicle.com/article/Field-Sites-Are-Harassment/243914

Stone, E. (2009, June 26). Life at Toolik. Polar Field. Retrieved from http://www.polarfield.com/blog/life-at-toolik

Taterka, B. (2014). Toolik Field station (TFS). In Hund, A. J. (Eds.), *Antarctica and the arctic circle: a geographic encyclopedia of the earth's polar regions*. Santa Barbara, CA: ABC CLIO. Retrieved from https://search.credoreference.com/content/entry/abcclioxiaq/toolik_field_station_tfs/0

Toolik Field Station Institute of Arctic Biology. (2017a). Administration. Retrieved from https://toolik.alaska.edu/about/index.php

Toolik Field Station Institute of Arctic Biology. (2017b). History of Toolik. Retrieved from https://toolik.alaska.edu/about/history.php

Toolik Field Station Institute of Arctic Biology. (2017c). Policies and guidelines. Retrieved from https://toolik.alaska.edu/user_guide/policies.php