Concord McNair Scholars Research Journal

Volume 19 (2016)

2016 Cohort of McNair Scholars Program and Research Mentors

Preston (Love) Bennett	Lonnie Bowe, M.S.
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Ronni L. Wood	Ambryl Malkovich, Ph.D.

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The Effects of Socioeconomic Status on Grit in Individuals With vs. Without a College Education

Victoria Bright

Mentor: Dr. Karen Griffee

Concord University

Abstract

An individual's "grit" is an important predictor for determining their success in both educational and professional endeavors. "Grit" is a term for the tendency to sustain interest in and effort towards long term-goals, or the tenacious pursuit of a dominant superordinate goal despite setbacks. This characteristic has been able to predict success outcomes over and above intelligence. It has also been shown that Princeton college students with lower socioeconomic status had higher grit than their peers. The current study considered the relationship between socioeconomic status and grit in college students vs. individuals without college. It was expected that college participants with lower SES will show significantly higher grit scores than their peers with higher SES; furthermore, it was predicted that participants with low SES and without college education would produce significantly lower grit scores than the non-college participants who have higher SES.

Keywords: grit, socioeconomic status, college

The Effects of Socioeconomic Status on Grit in Individuals With vs. Without a College Education

Important predictors for determining an individual's success in their education and professional endeavors are the amount of self-control and grit the person possesses. These two characteristics were both able to predict success outcomes over and above intelligence (Duckworth et al., 2007; Duckworth & Seligman 2005; Moffitt et al., 2011). One understudied variable that may affect the development of one's "grittiness" is his/her socioeconomic background. Generally defined, "SES describes an individual's or a family's ranking on a hierarchy according to access to or control over some combination of valued commodities such as wealth, power, and social status" (Mueller & Parcel, 1981).

Grit is known as, "the tendency to sustain interest in and effort towards long term-goals" (Duckworth et al., 2017) or "the tenacious pursuit of a dominant superordinate goal despite setbacks" (Duckworth & Gross, 2014). Secondly, self-control, otherwise understood as "the capacity to regulate attention, emotion, and behavior in the presence of temptation" is strongly correlated with grit (Duckworth & Gross, 2014). Grit involves a long-term perseverance towards goals while self-control focuses on aligning one's actions without allowing interruptions or derailing from more tempting options. "Although both self-control and grit entail aligning actions with intentions, they operate in different ways and over different timescales" (Duckworth & Gross, 2014). In order for an individual to have high levels of self-control they must have the willpower to give their attention and efforts to the valued short-term goal, while refraining from other enticing impulses. One example would be a college student's ability to choose studying for a test over going to a social gathering or watching television. An example of a high level of grit would be an accumulation of years' worth of self-control that ultimately leads to the achievement of a long-term goal. For the purpose of this study, self-control will be understood as a component of grit, functioning together to ultimately achieve long-term goals.

Research has shown that higher self-control predicts positive professional life outcomes. Specifically, Duckworth and Gross (2014) reported in a summary of literature on this topic that, "Prospective longitudinal studies have confirmed that higher levels of self-control earlier in life predict

later academic achievement and attainment (Duckworth & Carlson, 2013; Mischel, 2014), prosocial behavior (Eisenberg et al., 2009), employment, earnings, savings, and physical health (Moffitt et al., 2011). In fact, self-control predicts many consequential outcomes at least as well as either general intelligence or socioeconomic status (Duckworth & Seligman, 2005; Moffitt et al., 2011)."

Grit is a more recent area of research focus that is associated with lifelong pursuit of educational and professional accomplishments. "Prospective longitudinal studies have shown that grit predicts the completion of challenging goals despite obstacles and set-backs" (Duckworth & Gross, 2014). One study found that "grittier" cadets are more likely than their less gritty peers to make it through the first arduous summer at West Point and another found grit was an accurate predictor for ranking in the national spelling bee (Duckworth et al., 2007; Duckworth & Quinn, 2009). The grit scale was also able to accurately predict retention rates in the military, school, and marriage (Winkler et al. 2014). Despite these advancements in our understanding of grit, research on grit is only at its infancy.

The effect that socioeconomic status has on grit is an under-studied area that may play a significant role in the development of one's grit. Aside from the obvious constraints such as limited resources, limited funding, and limited opportunities that most lower-socioeconomic status individuals face, it has been shown that low socioeconomic students were less likely to pursue a college education and even more less likely to graduate from college (Sewell & Shah, 2002). Low SES parents are more likely to define success as a secure full-time job after graduating from high school; that is, college attendance is not an expectation. In contrast, the definition of success for their children of high SES parents include four years of college attendance, particularly at a more prestigious college (Walpole, 2003).

A college education is a large determinant for how well an individual thrives in society. According to Markus and Conner (2013), "College-educated individuals now bring home $56,665 per year on average, compared to $30,627 for high school graduates" (p. 90).

Although low socioeconomic status has been found to inhibit the success outcomes of individuals and greatly decrease the likelihood of pursing a post-secondary education, recent research by Orozco,

(2014) concluded that Princeton college students with lower socioeconomic status had higher grit than their peers. It is essential to understand what differentiates low SES individuals that pursue a college education vs. low SES individuals who do not. Gaining a clear understanding of how grit is shaped within socioeconomic categories can assist future research in developing methods to increase grit scores and achievement outcomes. Being able to instill grit into lower SES populations and ultimately increase the rate of college degrees in this category could overall decrease the currently growing gap between social classes.

The current study considered the impact of socioeconomic status on grit in college students vs. individuals without college. Because individuals from lower socioeconomic backgrounds generally face more obstacles obtaining a post-secondary education than individuals of higher socioeconomic background, it was expected that college participants with lower SES would show significantly higher grit scores than their peers with higher SES. It also seems likely that the lower SES individuals who did not pursue a postsecondary education lacked the perseverance to overcome the obstacles associated with furthering their education. Therefore, it was further predicted that participants with low SES and without college education would produce significantly lower grit scores than the non-college participants who have higher SES.

Method

Participants

The participants in the study fell within the age range of 18-22 years. The 19 college student participants were currently enrolled at Concord University in Athens, West Virginia. The 15 non-college participants were individuals currently residing in southern West Virginia.

Measures

The 12-Item Grit Scale tests subjects using 12 multiple-choice statements to which participants responded. A participant answered each question based on how the statement applied to them and how they compared to others around them. Response options were placed on a continuum ranging from (very much like me) to (not like me at all). After totaling the points received per question, the score was then

divided by 12. The maximum score on this scale is 5 (extremely gritty), and the lowest score on the scale is 1 (not at all gritty), (Duckworth et al. 2007).

To measure the socioeconomic status of individuals the Four Factor Index of Social Status questionnaire by Hollingshead, (1975) was used to compute and differentiate between low and high SES backgrounds. When completing this questionnaire, participants provided information based on their primary guardianship/household before the age of 18. The Four Factor index is a composition of education, occupation, sex, and marital status. In households where both spouses were gainfully employed, the education and occupation scores were summed and divided by two. When a separated or divorced individual was unemployed and receiving support the status score was calculated from the education and occupation of the supporting spouse. Widow and widowers that were unemployed and retired persons provided the previous education and occupation. The level of school completed was scored on a scale from 1 to 7 with 1 corresponding to less than 7th grade and 7 corresponding to graduate professional training (graduate degree). Occupation was scored similarly where a score of 1 to 9 was given based on the occupation title. The status score of the parental household was calculated by multiplying the scale value for occupation by a weight of five (5) and the scale value for education by a weight of three (3). Computed scores ranged from a high of 66 to a low of 8. To ensure participants were correctly categorized into the college or non-college group, an additional question was added to the SES questionnaire to confirm their highest level of educational attainment.

Procedure

Participants were selected through convenience sampling, including students attending Concord University and individuals residing within Mercer County as well as neighboring counties. Data was collected from 19 Concord University students of which 8 displayed low socioeconomic status backgrounds and 11 displayed high socioeconomic status backgrounds. The remaining 16 participants did not have any post-secondary education. Of these participants, 13 displayed low socioeconomic status backgrounds and 3 displayed high socioeconomic status backgrounds.

The statement of informed consent, the grit assessment, and the Four Factor Index was provided to participants concurrently. These questionnaires took approximately 10 minutes, however there was no time limit for completion. Research participant's responses made on the questionnaire and throughout the testing process remained confidential and were not associated with their name. Participants were given their grit scores upon request for their participation.

Results

The data was analyzed to determine if there was a relationship between grit scores and SES background. Based on the data sample collected the correlation between the variables grit and SES are not significant, r=.202, p=.244 (see Figure 1).

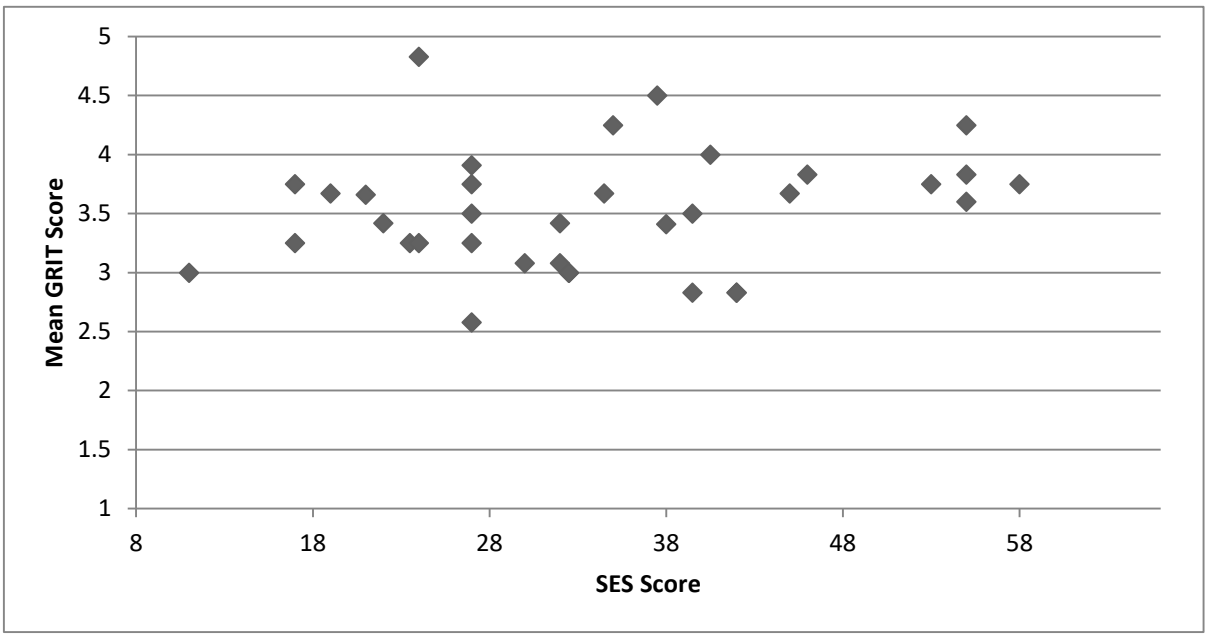
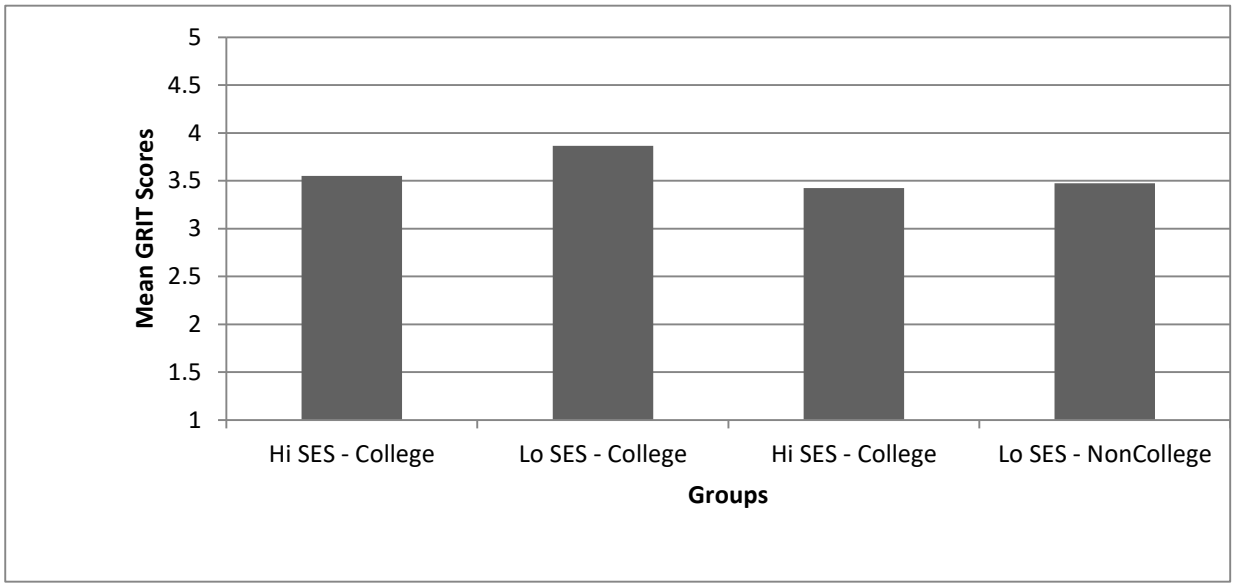


Figure 1.

Participants were then assigned to groups based on their enrollment or the absence of enrollment in post-secondary education programs (college) and based on whether their parental SES score was above or below the midpoint of 37 with a range of possible scores between 8-66 points. Therefore, participants with a score of 38 and higher were placed within the high SES group and participants with a score of 36 and below were placed into the low SES group. The mean grit score for participants in college with high SES background was 3.5518 and the mean grit score for participants for participants in college with low

SES background was 3.867. The mean grit scores for non-college participants with high SES background was 3.4262 and the mean grit score for non-college participants with low SES background was 3.4738



(See Figure 2).

Figure 2.

A univariate analysis of variance was conducted and found the results for the SES main effect were not significant, F (1,31) =1.467, p=.235. The results for the college main effect were not significant, F (1,31) = .680, p=.416. Finally, the results of the SES and college interaction was not significant, F (1,31) = .346, p=.560.

Discussion

The hypothesis was not supported by the data. The expectation that college participants with lower SES would show significantly higher grit scores than their peers with higher SES was not supported. The prediction that participants with low SES and without college education would produce significantly lower grit scores than the non-college participants who have higher SES was also not supported. There was no difference or significance seen between those groups.

One reason that the current study may not have shown a positive relationship between grit scores and SES background may be due to the sample size of 35 participants. Previous grit studies conducted have measured samples of 138 in assessing Ivy League undergraduate's grit scores and grade point

averages, (Duckworth et. al. 2007) and 178 when measuring the relationship between grit, achievement, and socioeconomic status in Princeton University students, (Orozco 2014).

Similarly, the ranges of grit scores collected were clustered between scores of 3 and 4 on the graph. On scale of possible score ranging from 1 to 5, the lowest grit score for college participants was 2.83 and the highest grit score was 4.25. For the non-college participants, the lowest grit score was 2.58 and the highest grit score was 4.83. Due to average grit scores for all groups being higher than the average scale score it is also possible that participants were reporting themselves in a highly favorable fashion. A larger sample could provide additional scores on the higher and lower ends of the scale. Participants were selected through convenience sampling. Due to the sample size and sampling technique, the data is not representative of the southern West Virginia population.

Future studies should take these sampling methods into consideration. Replicating the current study with a larger sample population and using a more representative sampling method could produce results that support of the hypothesis of this study.

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"…The Weather Outside is Frightful:" Defining and Measuring "Snow Anxiety" as a Psychological Stressor

Joshua P. Means

West Virginia State University

Psychology 490H-01

Honors Capstone Research

Dr. James Spencer

December 1, 2016

Abstract

Due to climate change, severe weather events may become more frequent occurrences. Despite previous research on the psychological effects of hurricanes and similar weather events, there is little research regarding severe snowstorms on emotional well-being. The purpose of this investigation was to define and measure snow anxiety as a psychological stressor. The Means-Spencer Snow Anxiety Questionnaire (MSSAQ), consisting of 32 (five-point Likert scale) items, 10 demographic questions, and three open-ended questions requesting participant's concerns about extreme snow-related weather was administered to 179 participants, of whom 158 completed the instrument. The questionnaire was available to anyone with internet access. The Likert scale questions were evaluated by finding the mean of each question. Demographic questions were assigned values and compared to total MSSAQ scores using the Pearson Correlation; none were significant ($p. > .05$). Open-ended questions were assigned to categorization schemes. There was a significant effect found for age and driving experience when using the Anxiety subscale as a dependent variable. The findings suggest that snow anxiety mirrors general severe weather phobias in many respects, but future research on the topic is warranted.

Keywords: weather anxiety, storm anxiety, weather psychology, storm phobia

Weather-related anxieties and phobias are the fear of extreme weather events, including thunderstorms, tornadoes, hurricanes, heat waves, etc. Storm anxiety is recognized by the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders: Fifth Edition (DSM-V) (2013) in the Specific Phobia section, under the Natural Environment Type (as cited in Coleman, 2014). Among all specific phobias recognized within this category, storm phobia is prevalent in 2%-3% of the general population (Coleman, 2014). While this stands as a small number of those actually afflicted, it is important to investigate these types of anxieties and phobias. Depla and colleagues (2008) indicate that more than 80% of those suffering from a specific phobia also suffer from a comorbid mental disorder, and that more than 30% report their specific phobia interferes with their daily tasks. In Essau (2000), 1,035 adolescents from the ages of 12 – 17 were examined for specific phobia subtypes and comorbidity. The results in the study found that natural environment and animal phobias were the most commonly reported. It was also found that over 33% of the adolescents suffering from a specific phobia also suffered from somatoform and depressive disorders. To additionally support the previous claims for the natural environment subtype, in a study of 62 youth with animal and natural environment specific phobias, it is indicated that youth with a natural environment specific phobia are more difficult to treat than youth with an animal specific phobia (Ollendick, 2010). These findings suggest the importance of researching specific phobias (namely snow storms in the natural environment subtype) and their detrimental effects. The research in regards to storm, and other weather-related phobias, is scarce, with few studies addressing the symptoms, reasons for anxiety or phobia, and ways to prevent the development of these anxieties.

Previous studies that address storm phobia narrow the concept to thunderstorms and tornadoes, which does not encompass less severe weather events (such as snowstorms) that can

also cause anxiety (Coleman, 2014). Historically, snowstorms have received little attention in research, despite the anecdotal evidence provided by news outlets and social media that populations can be adversely affected by them. Snowstorms have shut down entire cities for various periods of time, due to the unsafe conditions they pose to drivers. Also, runoff after heavy snowfall melt has led to alarming floods in areas of the western United States. This information has sparked states such as California to take action to build preventative measures against the potential impact of heavy snowfall, and explaining why such measures are important (Dettinger, 2014). Terms such as 'storms,' 'weather events,' and 'weather-related events,' will be used interchangeably in the manuscript to communicate weather events described in the DSM-5. The terms 'snow' and 'snowstorms' will be used to convey weather-events that are exclusively snow events, excluding all other winter weather events, such as ice storms.

Despite the impact that recent, record-breaking snowfall has had on major cities throughout the United States, scant research is available to analyze or understand the problems that arise due to heavy snowfall. The present study will seek to understand the number of people who experience snow-related anxiety, potential reasons why anxiety is present, basic knowledge of snowstorm preparation (knowing what items are needed and how to prepare for snowstorms), preparedness measures for snowstorms (obtaining items that are useful and having plans in place for power outages and other consequences of snowstorms), and the perception of various community agencies and their relationship to snow-related weather events.

Snowstorms are an area of severe weather with little empirical research to directly address and explain the psychological and physical effects they have on people. However, there is existing research related to other weather events that can be synthesized to better understand snow anxiety. Weather patterns that bring more severe and immediate physical effects (such as

hurricanes, tornadoes, wind storms, droughts, etc.), receive the most attention, for good reason. In years past, Hurricane Katrina sparked the largest push for weather-related research in the aforementioned areas; however, recent yet historic flooding in areas of West Virginia and Louisiana in 2016 may stand as areas with great potential for severe-weather research. The available data include information pertaining to storm anxiety and phobias, preparedness and response to weather related events, decision-making in the wake of these occurrences, building resiliency to weather events and extreme weather events, and ways that the news and media can affect public perception in the wake of weather related phenomena. All of these concepts are important in severe snowstorms that include heavy snowfall, because of the physical dangers that are present before, during, and after these storms. Snowstorms have caused blackouts on both small and large scales, motorists to become stranded on the highway or rural roadways, anxious responses from the population, and roofing to collapse due to the heavy collection of snow on housetops. Given these physical threats, it is important to assess the potential anxiety that they could elicit.

Storm Anxiety and Phobia

The DSM-V characterizes storm phobia as the persistent and excessive fears of severe weather systems, and is frequently associated with significant emotional distress, anxious anticipation of severe weather, and avoidance behaviors (American Psychiatric Association, 2013). According to the DSM-V, this phenomenon is something that will be experienced by at least 2% of the population at any stage of life (American Psychiatric Association, 2013). The first critical inquiry into storm related fear and anxiety was completed by John Westefeld in 1996 (as cited in Westefeld, 2006). Westefeld defined severe weather phobia as, “an intense, debilitating, unreasonable fear of severe weather,” and defined severe weather as, “severe

thunderstorms or tornadoes" (Westefeld, 2006, p. 747). The study by Westefeld included interviews with 81 participants who reported themselves as suffering from severe weather phobia. 80% of the participants in the study by Westefeld disclosed that encounters with previous severe weather storms facilitated the onset of their phobic responses. These responses included fear of death or injury, severe anxiety of the forecasted storms (even if they were five days away), and excessively monitoring radios for weather related news (Westefeld, 2006). Many of the participants in Westefeld's study felt ashamed of their phobia, and only a reported 10% had sought treatment for their condition (Westefeld, 2006).

Since this initial investigation into storm related research, other researchers have developed instruments to assess quantitative data regarding storm phobia. The Storm Fear Questionnaire was developed by Andrea Nelson and colleagues (2013), and has been evaluated for validation by them since its creation. The Storm Fear Questionnaire is a 15-item, Likert scale inventory that was developed due to the lack of empirical research related to severe weather phobia, and was an attempt to expand the knowledge thereof. With a lack of sufferers seeking treatment for their phobia, and being ashamed to report it, Nelson hoped to gain more insight into how symptoms could be avoided or prevented. Since its development, the Storm Fear Questionnaire has been evaluated as a valid questionnaire to measure storm fear and anxiety (Nelson, 2016).

In a more recent study by Coleman and colleagues (2014), snowstorms were included in the initial definition of snow anxiety. Coleman adopted a broad definition, defining severe weather as "any meteorological event that poses a significant threat to life and property and/or encompasses the purview of the National Weather Service watch/warning system" (Coleman, 2014, p. 1180). With this definition, 99% of participants reported having encountered a severe

weather storm at some point in their life. Within the participant set, 80% of the reported encounters were with heavy snowstorms. Although the majority of participants reported encounters with severe weather, 80.5% of the participants reported that they did not suffer from severe weather phobia, but 11.7% reported knowing someone that does suffer from this condition (Coleman, 2014). These findings suggest that severe weather phobia is a real phenomenon, but due to social desirability or embarrassment, it could potentially be underreported. Some of the reported symptoms in this study include excessive monitoring of news outlets for weather-related reports, increased heart rate (heart pounding), schedule changes or adjustments, and feelings of helplessness (Coleman, 2014). Coleman also evaluated the individual weather knowledge of each participant, and a correlation was found between higher anxiety and more knowledge. With this research as a basis of the storm anxiety phenomenon, it is important to explore snow anxiety as an exclusive field of this larger phenomenon, due to recent, record breaking snowfall, and the impact climate change might have on the frequency of such events.

Preparedness for weather events

When evaluating weather related events, it is important to assess the measures in place to prepare for severe weather, as they can prevent conditions from reaching the scale of a disaster. As reported by Dettinger (2014), heavy snowfall can lead to a threat of flooding when the snow melts and runoff fills local water sources. Due to these potential threats and the assessment of this risk, California has developed measures to counter these issues before they arise, potentially saving the population from disaster and poor response once the weather occurs. Severe storms in the past 30 years in California have pushed local flood-control systems to their limits, and due to a lack of empirical research documenting the aftermath of these uncommon events, these storms

are not viewed as realistic possibilities, but are still important to research in the event that there is a recurrence (Dettinger, 2014). Within the exercises in California, local emergency response teams were interviewed to evaluate how well the organizations are prepared and would respond to severe weather events that involved heavy snowfall, followed by flooding. The scenario presented to the organizations includes erosion, property loss, bridge scour, road closures, levee and dam failure, landslides, water-supply disruption, power-supply disruption, and long-term recovery conditions (Dettinger, 2014). This scenario sparked the development of local workshops in various locations in California to better prepare the population and local emergency response teams for events such as these. It is suggested through Dettinger's (2014) research that these workshops will better prepare the populace to respond to these weather events that could become more frequent in a warming world due to climate change, and could lead to resiliency in its face.

An earlier study by Mark Keim (2008) explains the importance of preparedness in the face of human vulnerability and disaster. Keim claims that global climate change might lead to more frequent severe weather events that could include high precipitation, which could in turn lead to increased flooding. These types of weather events can exhaust local community's defenses against devastating weather events (flooding) and require the need for assistance; this mismatch in available resources and the need for outside help leads to disaster, and less resiliency in the face of harsh weather (Keim, 2008). Keim states that the shift in human vulnerability now aims to prepare as opposed to responding after the weather event; these preventions include policies for reduced greenhouse gas emissions, and public health education on extreme weather events (Keim, 2008). Keim (2008) defines human vulnerability as having two sides: susceptibility – the degree of exposure to extreme weather, and resiliency – the ability

to cope with extreme weather. As it pertains to preparation for severe flooding, Keim (2008) states that flash-flood warnings have reduced mortality by up to 50%. Ways that public health officials can prepare communities for flood events include publicizing evacuation routes, early communication of flash floods, and community response plans. It is suggested by Keim (2008) that all of these measures will build the resiliency of communities, and the way in which they prepare, cope, and respond to severe weather related events. It is important to note that heavy snowfall can lead to not only flood-related weather events, but other problems of similar severity, such as unsafe driving conditions, and roofing collapse. This information is necessary to understand the severity of extreme weather conditions, and why it is important to research and understand the impact of preparation for snow-related weather events.

Response to weather events and building resiliency

Although preventive measures can be in place, climate change poses the risk of storms of severity unlike any ever faced throughout history, and when these extreme weather events occur, it is important to review history to evaluate how community and public health responses have shaped population response and resiliency in the past. Hurricanes are the leading extreme weather events that have caused the most extensive loss, in regards to financial and economic repairs, and the length of time it takes for affected communities to rebuild and return to normalcy. Due to a possible increase in hurricanes in the past 30-years, research has focused on how public health agencies and communities can aid in this response, and how their response affects the population on an immediate and long-term scale.

Pamela Watson and colleagues (2011) developed the Students' Hurricane Needs Survey to assess extreme weather response, and its effect on the student victims. The survey includes 26

structured response questions and three open-ended questions that allowed students to explain their experience with the communication and evacuation process during Hurricane Ike (Watson, 2011). Within the responses, students reported symptoms such as loss of appetite, lower academic performance, physical distress, increased alcohol and caffeine consumption, and headaches (Watson, 2011). Within the open-ended responses, three general themes emerged: being prepared, needing to be connected, and returning to normalcy. These were broken down by student responses. For being prepared, students were overall satisfied with the response by the University of Texas Medical Branch, but felt communication could have gone more smoothly and students could have been better informed (Watson, 2011). In terms of needing to be connected, students reported greater problems with the inclusiveness of information after Hurricane Ike. Students felt that they were "left in the dark" about what steps the University of Texas would take next, and that they were being excluded from information that could give them more peace of mind during and after the event (Watson, 2011). For returning to normalcy, students felt that it was extremely challenging to return to normalcy due to the widespread effects of the storm. One student mentioned that three women had to sleep on the floor of her apartment for over a month because they had lost everything in the hurricane. This made it difficult for the students to adapt, because they felt the university was not relaying information to the students about rebuilding efforts, relief efforts, or the current state of the university in terms of damages and assessment (Watson, 2011).

All of these problems with the response could have been averted and led to better resiliency for the students as they began to cope with the issues at hand. Given this information concerning hurricanes and similar disasters, snowstorms with the potential to leave communities, towns, or cities without electricity and other needs could pose similar problems if the response to

them is poor. Once the snow melts, if it leads to flooding, inadequate response to this outcome could lead to poor resiliency in the community, as well as generating more negative responses and the development of anxious responses to future weather events that are similar in nature. Keim (2008) states that the way flood disaster responses are handled can lead to positive or negative mental health outcomes, which significantly affect physical health outcomes. Strategies that lead to reduced population displacement and faster return to daily routine are known to lessen the health impact of floods (Keim, 2008). Dettinger (2014) sets in place the scenario of increased heavy snowfall due to climate change, and how it can lead to flooding risks, which in turn leads to the need for response. Snowfall is more than an event that can shut down roadways and cities until it melts; the after effects are just as harmful, and require comparable action.

News and media

News outlets and communication during any severe weather event are important in the community preparation and response to these occurrences. Miles and Morse (2007) evaluated the effects and constructs set in place by the media during Hurricane Katrina. Miles (2007) found that the media plays a large role in the perception of severe weather events in terms of the social utility of mass communication, positive feedback loops within the media, and the "echo chamber effect," of which a discussion follows. The social utility of mass communication through news outlets and social media is that they can disseminate large amounts of important information to various areas of the population easily. It serves as a means of informing the public of potential weather dangers (Miles, 2007). One problem that Miles (2007) found with the media is the positive feedback loops that are created during severe weather events. As severe weather stories develop, reporters begin to seek new information to report, and this causes media "hype." During media "hypes," journalists dig for new information and report it, which produces a significant

amount of information in a short amount of time that drowns out other information that does not fit into the "hype coverage." These media hypes frame the severe weather event, and when things such as public polls are issued, it merely reflects what the participants have been following on the major media outlets, camouflaging potentially real responses within the media hype (Miles, 2007). For example, if a public opinion poll is issued to gather information on the public perception of a local emergency response agency, the responses by survey participants could reflect the agency in the way the media framed it (helpful, non-helpful, slow response, etc.), instead of how the participants objectively feel, and that is one issue with media "hype." In a sense, the "echo chamber effect" is a media hype in action. These media hypes can pose a problem for those who are taking polls on recent weather events, including snowstorms. If the media sensationalizes severe weather events, and creates an echo chamber effect, viewers may be more likely to frame the event in the way it was portrayed through the media, which can cause distress for future storms.

Furthermore, the elaboration likelihood model (ELM), founded by Cacioppo (1986), in relation to the news and media, can affect the perceptions of risk across weather related news (as cited in Miles, 2007). The ELM predicts that communication can lead to rapid changes in risk assessment, but they can be short-lived, depending on how the information is communicated. This occurs due to social information processing, which means if the information outlet makes the viewers feel as if the weather event is out of their control, they are more likely to perceive risk (Miles, 2007). If the viewer feels the motivation, can process the information, is engaged with the information and how it affects them, and an impression is made, it is more likely that the viewer will have a permanent attitude change towards the weather event. This can consequentially affect the preparedness, risk-assessment, and response to the weather event on a

long-term scale. The way these stories are reported can also influence the way in which victims trust the information outlet. Altogether, the media plays a substantial role in the way communities respond to severe weather events, and sensationalizing the news through echo chamber effects can lead to more distress. This could potentially cause viewers to negatively frame snowstorms, and increase distress for future such storms.

Conclusion

Given previous research on storm anxiety, preparedness, response and resiliency, and news and media, it becomes more evident why it is important to study snow related anxiety. With climate change affecting weather patterns, the risk of extreme weather events has increased, which includes heavy, long-lasting snowfall. Research has shown the presence of the storm anxiety phenomenon, yet little empirical data exist to assess this anxiety in terms of snow. Furthermore, the preparedness aspect of any weather related event is important in lessening the anxiety and negative response to a severe weather event, which is important if extreme weather is projected to appear more frequently due to climate change. The response and building of resiliency is extremely important in regards to severe weather, due to lessening anxiety, and protecting communities and the public from negative mental health outcomes after a severe weather event. Building resiliency will help the populace to cope with the ever-increasing severe weather events stemming from climate change. Finally, it is important to understand the role that news outlets and the media play in the public perception of risk and information dissemination. As snowstorms become more severe and pose deeper consequences such as flooding, the information and knowledge on how to respond becomes more and more important to the public.

Method

Participants

The participants of the current study consisted of 37 men, 137 women, and 3 people of undisclosed gender ranging from the ages 18 – 46>, all of whom had driven in snowy conditions in their lifetime, using any motor vehicle. A sample size of 158 respondents completed the survey sufficiently enough that their responses could be tabulated. The study was open to participants of any race, socioeconomic background, sex, gender, and sexuality. There was no restriction on the participants' location.

Materials

A survey titled the Means-Spencer Snow Anxiety Questionnaire (MSSAQ) was developed consisting of ten (10) demographic questions, thirty-two (32) 5-point Likert scale questions, and three (3) open-ended questions constructed to gain important demographic information, participant feedback to snow anxiety and related topics, and participant thoughts on snow phenomena. The 5-point Likert scale questions were sorted into 3 subscales: Anxiety, Preparedness, and Media. The Anxiety subscale consisted of questions 1, 2, 3, 4, 5, 7, 8, 9, 10, 16, 21, and 22; the Preparedness subscale consisted of questions 11, 12, 13, 14, 15, 17, 18, 19, 20; and the Media subscale, questions 6, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32. With the help of the research advisor, this instrument was constructed exclusively to measure snow anxiety and preparedness, due to the lack of existing questionnaires available to evaluate this topic.

Software. SurveyMonkey.com software was used to produce an electronic copy of the MSSAQ for ease and efficiency of administration.

Procedure

Participants opened the electronic questionnaire on a device of their choice, and voluntarily completed the survey. Once finished, the participant exited the web-based survey and the data were collected confidentially. At the start of the survey, participants were shown a script that explained all collected data were confidential and remains anonymous after submitted. The data would only be viewed and analyzed by the researcher and advisor. Participants voluntarily consented to the survey by completing it to any degree, which was stated in the survey instructions. Participants were informed that they could withhold participation at any point in time, without consequence, and could skip any question that they did not want to answer. Participants were informed that if they would like to view the survey results, they would be made public after the research project was completed in its entirety.

Results

The results were automatically generated inside of the Surveymonkey.com software, which also included simple data analysis of the results. The Likert-scale questions were analyzed by calculating the mean of each question. There were only 4 questions with a mean above 4: Questions 15, “I remove snow from my vehicle’s windshields and lights before venturing out in traffic,” (4.36); 19, “I allot more time for travel when driving in snowy conditions,” (4.26); 2 “I question the ability of other drivers to navigate snow covered roads,” (4.24); and 12, “During winter seasons with snow, I wear clothing that is appropriate for the weather,” (4.18). The theoretical mean of any given question in the Likert-scale section is 3.00. Only question 22 (“I feel that traffic accidents in the snow are caused by bad luck”), was below a mean of 2, scoring

1.78. Higher average scores reflect greater agreement with the statement (see Table 1 to view all MSSAQ questions and means).

The open-ended response questions were assigned a categorization scheme and then sorted by the number of relevant responses. Question 33, "What is it, specifically, about snow that causes you anxiety," was categorized as follows: Concerns related to travel, Power outage, Being stranded, Liking snow, Other, and None/unanswered. The number of responses sorted into each category can be found in Figure 1 in the Appendix. Question 34, "What are the top three items you buy from the grocery store before a snowstorm," was analyzed by identifying the 3 most frequent responses: bread, milk, and water. Question 35, "Final comments regarding snow anxiety," was categorized as: Like snow, Dislike snow, Neither, Other, and Unanswered. Due to the excessive number (109) of responses in the unanswered category, Question 35 was not evaluated further. For Question 33, the "Other" category included responses that noted situations such as "the structural soundness of buildings when there is a lot of snow on the roof," the "unknown element, i.e. bad [weather] predictions…," and "having supplies and necessities for my family." For Question 35 the "Other" category included responses that reiterated the importance of preparation and safety during snow-related weather. Question 35 included a few notable responses such as, "I do wish that upon obtaining a driver's license, the DMV would require a weather related simulation so people would have an idea of how to get out of certain situations. You always think you're prepared until it's actually happening to you. I think something of that nature would ease my anxiety. Until then, I'll just be afraid of the snow," and "Although I have never heard the term I do believe people can have some anxiety about bad weather and more to worry about. On the other hand I also think there should be some kind of class for managing this and learning to better prepare to drive in this. Especially for states that

get snow every year," and "Media sensationalism is the #1 contributor to public panic as well as individual anxiety." Along with these responses, there were a number of responses that noted certain participants did not mind snow as long as travel is not involved.

The Likert-scale questions were categorized into the 3 subscales established in the MSSAQ and were analyzed using a One-way ANOVA. There appeared to be no significant difference between subscales 1 (Anxiety) and 3 (Media), but subscale 2 (Preparedness) reported a mean that was significantly higher than both subscales 1 & 3. Furthermore, subscales 1 & 3 reported similar standard deviations, while subscale 2's standard deviation was considerably smaller. This could be a result of the difference in the number of questions allotted to each subscale, with subscale 2 having the fewest questions (9 questions).

There was a fairly normal distribution found within the MSSAQ scores. The range of the evaluation was 71 – 136. The median of the score was 103.5, while the mean for responses was 108.38 in the present study, suggesting a slight positive skew. Demographic questions were assigned values in order to complete a correlational analysis and examine a link between demographics and snow anxiety, if one existed. Demographics for age, gender, possession of a valid driver's license, length of time operating a motor vehicle, type of motor vehicle, occupation, and proximity to workplace were evaluated in the correlational analysis. Demographics regarding location of origin and current residency were excluded due to the significant sample size difference: question 3 (151 native, 23 non-native) and question 4 (156 native, 17 non-native). Demographics for occupation (see Figure 2) were excluded due to the excessive number of categories, as well as variability in responses. However, none of the Pearson correlation values of total MSSAQ score by each demographic were significant ($p. > .05$), which suggests there is no link between demographics and snow anxiety.

Furthermore, the MSSAQ in its entirety was analyzed using the Cronbach's Alpha to evaluate the internal reliability of the scale. For the 32-item scale, which includes all 3 subscales, the Cronbach's Alpha = .764, which is an "acceptable" reliability; there is some inconsistency found among the items, but overall it is justifiable to take an overall sum of the items to obtain an overall score for the instrument. Questions 22, 23, 27, 29, and 31 did not appear to be consistent with the other items on the scale, and eliminating these questions raised the reliability of the scale, Cronbach's Alpha = .802 ("good" reliability). Each individual subscale within the 32-item scale was analyzed for reliability using the Cronbach's Alpha. For the Anxiety subscale, Cronbach's Alpha = .78 (acceptable), and the average correlation among items is r = .20. This suggests a reasonable internal consistency for the Anxiety subscale. For the Preparedness subscale, Cronbach's Alpha = .34 (unacceptable), and the average correlation among items is r = .08. This suggests poor internal consistency for the Preparedness subscale. For the Media/other subscale, Cronbach's Alpha = .47 (unacceptable), and the average correlation among items is r = .06. This suggests poor internal consistency for the Media/other subscale. Additionally, using the Anxiety subscale as a dependent variable, an ANOVA suggested significant effects in both age and driving experience. The significant effect for age was $F(3, 154) = 3.052$, $p < .03$, with the post hoc test (Fisher's Least Significant Difference (LSD)) indicating a significantly higher level of anxiety from the youngest age group, as opposed to the two oldest age groups. The significant effect for time driving was $F(5, 151) = 2.652$, $p < .025$, with the post hoc test (Fisher's LSD) indicating that those within the 21+ years driving category for time driving reported significantly less anxiety than the three groups that had driven for the least amount of time.

Discussion

The purpose of this study was to create an instrument measuring and defining "snow anxiety," and the severity to which this condition affects the general population. The instrument, the Means-Spencer Snow Anxiety Questionnaire (MSSAQ), measured three areas that could cause snow to become a psychological stressor: anxiety, preparedness, and media/practical issues related to snow. Given the nature of results, snow anxiety can be generally measured using this instrument. With this, we can suggest that snow anxiety is a phenomenon that can be experienced, in general, and may depend on individual differences and how individual people perceive and respond to snow. Regarding the age of participants in the MSSAQ, the majority were 18 – 25 (58.43%), and female (78.98%). Nelson's (2013) participants responded to a questionnaire that encompassed all types of severe weather, as previously defined in the DSM-V. Nelson (2013) did not find a significant difference in general severe weather phobia either as it relates to gender, confirmed by this study. Additionally noted in Nelson (2013), was a lack of effect due to participant age, likewise affirmed by the current investigation. Young adults constituted the majority of those sampled in both studies, but still, it is difficult to suggest a link between age and snow anxiety.

Future researchers could develop an instrument targeting specific age groups from both younger and older samples in order to evaluate potential relationships. Interesting to note, when using the Anxiety subscale as the dependent variable, there was a significant effect for age and anxiety. As mentioned previously, the youngest age group was significantly more anxious than the older age groups in the present study. Another significant effect found when using the Anxiety subscale as the dependent variable was driving experience. As noted in the results, those with 21 or more years of experience driving reported less anxiety. Furthermore, in Westefeld

(2006), respondents were measured on their anxiety to tornadoes and/or severe thunderstorms. At least 20% of the respondents in Westefeld (2006) had experienced at least moderate fear of severe storms, while 76% has experienced at least minimal fear of these events. Additionally, a significant number of respondents reported that their fears were death or damage to their homes, which can loosely tie to the findings in the present study, as the majority of respondents reported fear of traveling in snow due to potential harm to self or loved ones (Westefeld, 2016). The nature of these certain responses could be shared to better inform weather-forecasters and other weather-related media of the general perception of the population sampled in this study. This could help shape the way in which severe snow-related weather is reported, and how to better inform the population in order to reduce psychological distress.

Limitations

The present study was one of the first of its kind, to directly measure severe snow-related, weather as a psychological stressor. The MSSAQ was an instrument developed to measure this phenomenon, but in future studies, test-retest reliability and similar tests could be investigated to further validate the MSSAQ. Additionally, the MSSAQ contained 3 subscales that were designed to measure separate areas that could correlate snow anxiety to stress. Future instruments could try to standardize these subscales in order to increase the validity within the instrument, as well as the number of questions assigned to each subscale. Additionally, given the results for the Cronbach's Alpha for the instrument as a whole, and for each individual subscale, there is much to be improved. The instrument as a whole has a Cronbach's Alpha of .764, which is a generally acceptable score, in that the items are correlated close enough to justify evaluating an overall score for the scale. To refine the scale for future use, questions 22, 23, 27, 29, and 31 should be eliminated, due to their lack of consistency to the other questions on the scale. This would raise

the Cronbach's Alpha score to .802 which is a good internal reliability for the scale as a whole. The scale as a whole is reliable enough as a general scale to measure snow anxiety.

For each individual subscale, a Cronbach's Alpha was computed in order to evaluate the internal reliability. The Anxiety subscale has a Cronbach's Alpha of .78 (acceptable) and has internal consistency among the questions: each question is evaluating something similar. However, question 22 did not prove to be consistent with the other questions in this subscale, and could be removed in the future, to further refine the subscale and increase the internal reliability. The Preparedness subscale has a Cronbach's Alpha of .34 (unacceptable) and has poor internal consistency among the questions. Questions 11 and 20 did not have a significant correlation to the overall score of the Preparedness subscale, and eliminating them in order to refine the subscale in the future is warranted. The Media/other subscale has a Cronbach's Alpha of .47 (unacceptable) and, like the Preparation scale, has poor internal consistency among its questions. Questions 23, 29, and 30 did not correlate significantly to the overall score for the subscale, and eliminating them or adding them to a group of their own in order to refine the subscale in the future seems appropriate. The Anxiety subscale was the only subscale found to have internal reliability sufficient enough to justify obtaining an overall score for this specific subscale. The Cronbach's Alpha evaluated the reliability of the scale as a whole, and each of its subscales, but evaluating the internal validity (that the scales are measuring what they should be) would take further analyses.

Demographically, the majority of respondents (87%) grew up in West Virginia and currently reside (90%) there. These demographics can limit the external validity to other regions of the United States, or to the rest of the world. In Westefeld (2006), respondents were also measured by behaviors present pending and during the storm. In the current study, questions as

such could have provided more in-depth details to behaviors present during a snowstorms, and whether they were normative for the respondent. Also, the most frequently reported age group for the present study was 18-25, which leaves further, future investigation into older, or younger populations. For elderly age groups, Grenier and colleagues (2011) found that the natural environment subtype of specific phobias was one of the most frequently reported subtypes. This study was only preliminary to the exploration of snow-related weather anxiety, and as global warming and climate change continue to influence severe weather patterns, there are significant areas of research that lack empirical data. Future researchers can investigate the behaviors present during severe snow-related weather, how different climate zones affect responses, how weather anxiety can best be screened, how educational or intervention programs can decrease the psychological distress caused by snowstorms, and to further validate and standardize an instrument to measure snow anxiety.

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Appendix A

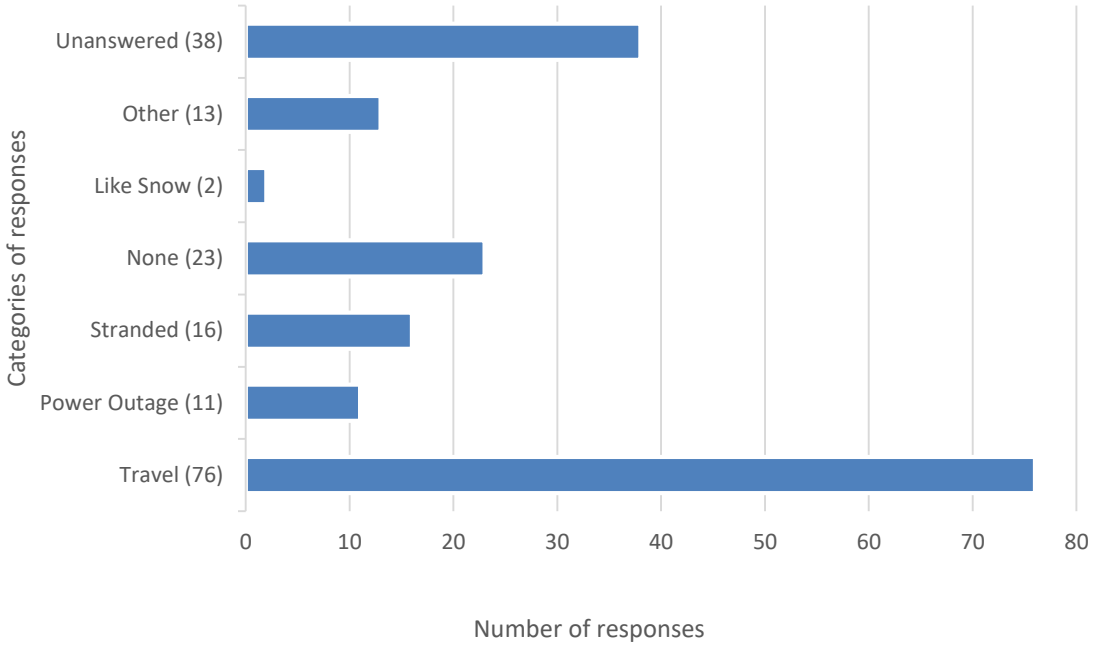

Figure 1. What is it, specifically, about snow that causes you anxiety? N = 179

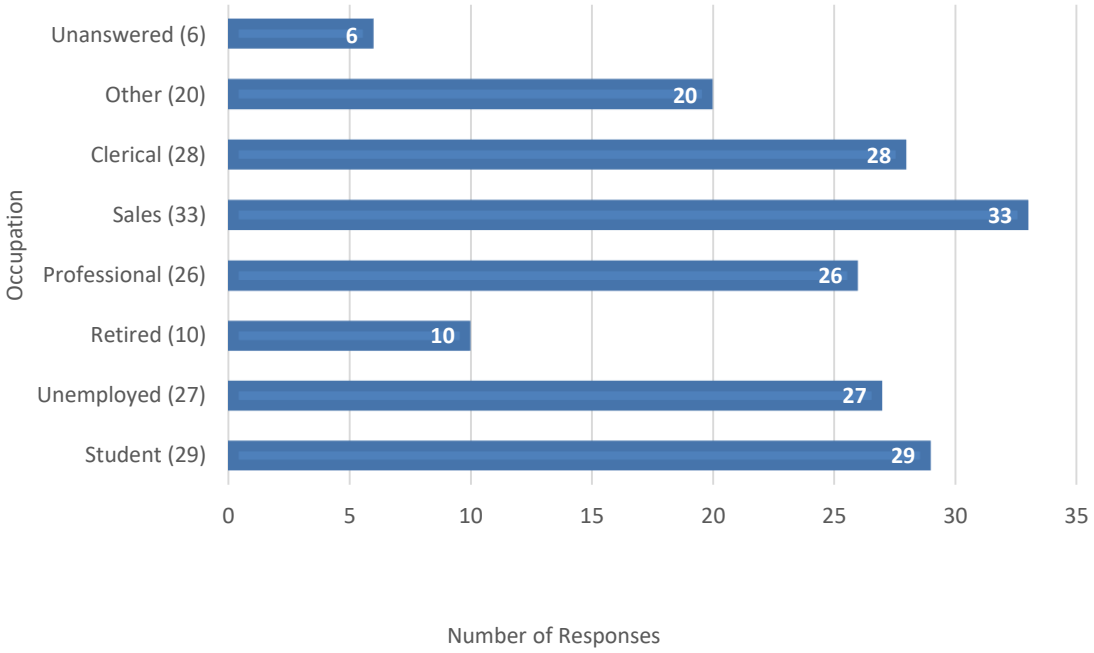

Figure 2. What is your Occupation? N = 179

Appendix B

Table 1. *MSSAQ Likert scale questions and scores by means.*

1) I feel confident in my ability to drive in snowy conditions.	3.40
2) I question the ability of other drivers to navigate snow covered roads.	4.24
3) When it snows, I worry that I could become stranded at work or on the road.	3.21
4) When it snows, I worry that my children or a family member may become stranded.	3.71
5) It annoys me when a vehicle in front of me trails snow in traffic.	3.31
6) The media sensationalizes or dramatizes snow related news.	3.64
7) Snow, as a substance, causes me anxiety.	2.50
8) Weighing the consequences of snow causes me anxiety.	2.84
9) When it snows, the potential loss of electricity causes me concern.	3.49
10) When it snows, I feel more concerned than during other weather events.	2.82
11) I have considerable experience driving in snowy conditions.	3.30
12) During winter seasons with snow, I wear clothing that is appropriate for the weather.	4.18
13) I believe carrying a snow emergency kit in my vehicle is important.	3.98
14) I prepare my automobile for winter months (i.e snow tires, washer fluid, etc.).	3.63
15) I remove snow from my vehicle's	4.36

windshields and lights before venturing out in traffic.	
16) People in general are ill prepared for dealing with the problems that impending snow creates.	3.85
17) I own snow gear that is beneficial during snowy weather, (i.e. shovels, rock salt, etc.).	3.88
18) I have measures in place to sustain food and other necessities in the event of a power outage due to snow.	3.53
19) I allot more time for travel when driving in snowy conditions.	4.26
20) If I were stranded in a snow related emergency, I feel confident about what I should do to obtain assistance.	3.72
21) I pay more attention to weather related media when a snowstorm is imminent.	3.90
22) I feel that traffic accidents in the snow are caused by bad luck.	1.78
23) I am satisfied with my local Department of Transportation for quality snow removal.	2.74
24) Winter cannot end early enough for me.	3.43
25) I go to the grocery store when the news mentions a snowstorm.	3.01
26) There should be a separate driver's license for snow driving.	2.54
27) I feel that my local Board of Education delays or closes school too soon and/or too often	2.63
28) If it never snowed again, it wouldn't cause me concern.	2.81
29) I have confidence in my local weather station to accurately report the weather.	3.42

30) I like snowy weather.	3.27
31) I feel that traffic accidents in the snow are caused by the mistakes of the driver.	3.73
32) I enjoy snow related activities (e.g., skiing, making snowmen).	3.60

Appendix C

Means-Spencer Snow Anxiety Questionnaire (MSSAQ)

The following questionnaire was constructed to evaluate snow anxiety and panic. There is also a demographic section to gather necessary information related to the questions. The questions used in this questionnaire refer exclusively to snow, and exclude ice. By completing this survey to any degree implies that you (the participant) consent to the survey in its entirety. If you feel uncomfortable answering any question, skip the question and move to the next question possible. You can exit this survey early for any reason, with no consequences. All responses are strictly confidential and will only be analyzed by the researcher and research advisor. If you would like to know the outcomes of this study you may email me at jmeans8@wvstateu.edu, after September 30, 2016.

Instructions: This questionnaire involves demographic, Likert scale, and open-ended questions. Please answer the demographic questions accurately and accordingly. The Likert Scale questions involve a 5-point scale that ranges from Strongly Disagree to Strongly Agree; please respond with the most appropriate choice. The open-ended questions are free-response and there are no limitations except relevance to the question.

Demographics:

1. What is your age? (Circle the best answer): 18 – 25 26 – 35 36 – 45 46>
2. With what gender do you identify? Male Female
3. Where did you grow up? (City, State, Country): _____
4. Where do you reside? (City, State, Country): _____
5. Do you have a valid driver's license? (Circle the answer): Yes No
6. How long have you been operating a motor vehicle? (Circle the best answer):

   <1 year 1 – 5 years 6 – 10 years 11 – 15 years 16 – 20 years 20> years
7. What type of motor vehicle do you drive? (Circle the best answer):

   Front-Wheel Rear-Wheel All-Wheel
8. Do you have children under the age of 18 in your care? (Please circle): Yes No
9. What is your occupation?: _____
10. What is your proximity to your workplace? (Circle the best answer):

    0 – 10 miles 11 – 20 miles 21 – 30 miles 31 – 40 miles 40> miles

Likert Scale: Please mark the best choice to accurately answer the question. If you feel uncomfortable answering a question, please skip the question and move on to the next question. Answer according to the scale: 1 = Strongly disagree; 2 = Disagree; 3 = Neither Agree nor Disagree; 4 = Agree; 5 = Strongly Agree.

		SD	**D**	**N**	**A**	**SA**
1)	I feel confident in my ability to drive in snowy conditions.	(1)	(2)	(3)	(4)	(5)
2)	I question the ability of other drivers to navigate snow covered roads.	(1)	(2)	(3)	(4)	(5)
3)	When it snows, I worry that I could become stranded at work or on the road.	(1)	(2)	(3)	(4)	(5)
4)	When it snows, I worry that my children or a family member may become stranded.	(1)	(2)	(3)	(4)	(5)
5)	It annoys me when a vehicle in front of me trails snow in traffic.	(1)	(2)	(3)	(4)	(5)
6)	The media sensationalizes or dramatizes snow related news.	(1)	(2)	(3)	(4)	(5)
7)	Snow, as a substance, causes me anxiety.	(1)	(2)	(3)	(4)	(5)
8)	Weighing the consequences of snow causes me anxiety.	(1)	(2)	(3)	(4)	(5)
9)	When it snows, the potential loss of electricity causes me concern.	(1)	(2)	(3)	(4)	(5)
10)	When it snows, I feel more concerned than during other weather events.	(1)	(2)	(3)	(4)	(5)
11)	I have considerable experience driving in snowy conditions.	(1)	(2)	(3)	(4)	(5)
12)	During winter seasons with snow, I wear clothing that is appropriate for the weather.	(1)	(2)	(3)	(4)	(5)

	SD	D	N	A	SA
13) I believe carrying a snow emergency kit in my vehicle is important.	(1)	(2)	(3)	(4)	(5)
14) I prepare my automobile for winter months (i.e snow tires, washer fluid, etc.).	(1)	(2)	(3)	(4)	(5)
15) I remove snow from my vehicle's windshields and lights before venturing out in traffic.	(1)	(2)	(3)	(4)	(5)
16) People in general are ill prepared for dealing with the problems that impending snow creates.	(1)	(2)	(3)	(4)	(5)
17) I own snow gear that is beneficial during snowy weather, (i.e. shovels, rock salt, etc.).	(1)	(2)	(3)	(4)	(5)
18) I have measures in place to sustain food and other necessities in the event of a power outage due to snow.	(1)	(2)	(3)	(4)	(5)
19) I allot more time for travel when driving in snowy conditions.	(1)	(2)	(3)	(4)	(5)
20) If I were stranded in a snow related emergency, I feel confident about what I should do to obtain assistance.	(1)	(2)	(3)	(4)	(5)
21) I pay more attention to weather related media when a snow storm is imminent.	(1)	(2)	(3)	(4)	(5)
22) I feel that traffic accidents in the snow are caused by bad luck.	(1)	(2)	(3)	(4)	(5)
23) I am satisfied with my local Department of Transportation for quality snow removal.	(1)	(2)	(3)	(4)	(5)
24) Winter cannot end early enough for me.	(1)	(2)	(3)	(4)	(5)
25) I go to the grocery store when the news mentions a snowstorm.	(1)	(2)	(3)	(4)	(5)
26) There should be a separate driver's license for snow driving.	(1)	(2)	(3)	(4)	(5)

	SD	D	N	A	SA
27) I feel that my local Board of Education delays or closes school too soon and/or too often	(1)	(2)	(3)	(4)	(5)
28) If it never snowed again, it wouldn't cause me concern.	(1)	(2)	(3)	(4)	(5)
29) I have confidence in my local weather station to accurately report the weather.	(1)	(2)	(3)	(4)	(5)
30) I like snowy weather.	(1)	(2)	(3)	(4)	(5)
31) I feel that traffic accidents in the snow are caused by the mistakes of the driver.	(1)	(2)	(3)	(4)	(5)
32) I enjoy snow related activities (e.g., skiing, making snowmen).	(1)	(2)	(3)	(4)	(5)

33) What is it, specifically, about snow that causes you anxiety?

_____

_____

_____

_____

34) What are the top three items you buy from the grocery store before a snowstorm?

a. _____

b. _____

c. _____

35) Final comments regarding snow anxiety:

_____

_____

_____

_____

Appalachian Representation in the Media and its Effects on Appalachian Culture

Brittany Strother

Research Mentor: Dr. Cory Williams

INTRODUCTION:

"How do you know that the toothbrush was invented in West Virginia?"

Most people know the punch line to that joke by heart: "Because if it had been invented anywhere else, it would be called a teethbrush." It's an easy laugh for any crowd, because it plays on an easy stereotype of Appalachian people having poor dental hygiene. The list of jokes playing on Appalachia's rampant poverty, lack of education, and lack of adequate and affordable healthcare is nearly endless; just when it seems the list of cruel jokes at the region's expense has finally been exhausted, some 'clever' outsider finds another stereotype to play on and the cycle begins again.

Someone from the Appalachian region, which technically extends from Maryland and West Virginia and all the way down to Alabama and Georgia, can't admit to their heritage without being bombarded by jokes or ridicule at the region's expense. Popular topics include poor hygiene, 'dumb hillbillies,' promiscuous women, and perhaps the most exploited of the stereotypes, incest. In fact, even doing a simple Google search to find out which states actually have the most reported cases of incest, with no keywords to implicate a specific area, brings up "West Virginia" and "Appalachian mountain region" in the related results section.

Prejudice at Appalachia's expense does not come only in the form of jokes by people ignorant to the realities of the region. Mass media has just as much of a role in perpetuating negative perceptions of the region and its people as well. Programs like *the Beverly Hillbillies*, *Moonshiners*, and *Buckwild* make millions of dollars on the stereotypical representation of the region. It has been suggested both within the region and outside, that 'hillbillies' are the only group left that it is not only socially acceptable to ridicule, but encouraged. A quick glance into comic strip history shows many racist and sexist cartoons that existed in the early to mid-1950s that have since been pulled from production and live only as an infamous reminder of how tolerant the United States has become. Yet, *Snuffy Smith*, a sweetly stupid hillbilly with the vernacular of a child, still runs in dozens of newspapers in multiple countries almost 100 years after its inception. The comic has even been nominated for awards of excellence and has been placed on commemorative postage stamps.

These representations of Appalachia are easily accessible by millions of people across the nation and even across the globe. As a result, how have these representations impacted the external view of Appalachia and the culture of the region itself? This goes further than just mocking a group of people good-naturedly. The way Appalachia is represented in the media has the potential to cause very tangible negative consequences for a region that already struggles compared to the rest of the United States. This isn't just jokes and comics and sit-coms mocking the stereotypical hillbilly. Those things are simply a side effect of a much more sinister institution that has been created and sustained by the dominate forces in society. Appalachia has fallen into the seemingly inescapable loop of self-fulfilling prophecies created by a cultural hegemony at the region's expense. That much is fairly undisputed, but to what extent has the region suffered damages by this institution and how it could continue to be affected and held back as society progresses while leaving Appalachia stuck forlornly in its tracks is another matter.

To discover the answers to these questions, this study examines not only the internal population, but also the effects these representations have on outsider's interpretations. In doing so, this study explores how Appalachian institutions and media representations have effected on the region's economy, social situation, and self-esteem as a culture.

THEORY:

The Problem of First Impressions

An attributive bias is a shortcut people use when assessing a situation to draw preemptive conclusions without necessarily being true. These biases are based only on a person's personal experiences and does not consider external factors or private factors of the other party involved. When regarding Appalachia and its largely negative perception by the outside world as a result of stereotyping in the media, the problem of an in-group versus out-group bias is useful in understanding why these negative perceptions occur. In Hunter O'Hara's 2007 examination of student reactions to the idea of regionalism, one subject said "I am beginning to suspect that first impressions of people are based solely on judgments about dialect and stereotypes about these dialectics." This relates to the

aforementioned notion that first impressions are created very early and on limited information. Another student in the study notes that "An important related concept is that of how people will cling to these stereotypes, but in turn have little or no realistic information to confirm or support their arguments," (O'Hara 2007).

Another issue is the problem of casting responsibility for perceived negative behaviors internally without considering potential external factors leading to the behaviors. For example, Appalachians are often perceived as uneducated and lazy from an outsider's standpoint, and those problems are attributed to the poor work ethic and lower IQ of the people rather than considering the region's rampant poverty epidemic and poor educational system due to a lack of funding. In a 2003 *Globe & Mail* article about recruiting Appalachian families for a new television show reminiscent of *the Beverly Hillbillies*, it is noted that many times entertainment corporations make their money by ridiculing people "for being poor or being from the country," (Houpt 2003). This phenomenon is an example of casting the blame internally on the Appalachian's themselves rather than addressing the actual causal sequence that leads to problems like unemployment and poor education.

Framing Appalachia in the Media

By using a frame analysis, this study will examine the way perceptions of Appalachia are manipulated through the media and the entertainment industry. Framing refers to the way a message is strategically created to have the intended effect on the audience. This is especially true in the news media and the way they present stories so that the audience is focusing on the points that they wish to convey rather than having the interpretations of their stories running rampant and subjective. For example, when Appalachians are showcased on large-scale news networks, it always seems that the person who fits the most unfortunate Appalachian stereotypes is chosen to be interviewed. Panoramic shots usually showcase trailer parks, dirty children, and old disheveled cars parked in overgrown lawns.

Appalachian Stereotypes in Media Framing

The same accusations can be turned to the entertainment industry any time Appalachians are the chosen vehicle of entertainment. Even 'educational' channels like the *History Channel* and the *Discovery Channel* are guilty of showcasing obtuse stereotypes, as is seen in television shows like *Moonshiners*, which plays on the old Appalachian 'tradition' of running illegal alcoholic beverages made in homemade stills. The characters in these reality shows are always portrayed via a similar template; the good-ole-boy in overalls and heavy steel-toed boots, running from the law and speaking with such an exaggerated drawl that they have to use subtitles just so the viewer can follow along.

Another show guilty of the same cultural grievances was the short-lived sensation *Buckwild*. Again, this show played on the caricature of Appalachians but this time focused on the younger generation. The teenagers hailing from Sissonville, West Virginia, were depicted as rowdy hellions. Each episode of the show featured the minors consuming alcohol illegally, getting in violent brawls with one another, and engaging in promiscuous sexual activity. A 2014 article in the *New York Times* said that many people considered the show to be guilty of "the exploitation of broad cultural stereotypes," (Gabriel 2013) to make a profit. Even just the trailer for the program, before it even officially aired, had set the stage for negatively framing West Virginia and by extension, the rest of Appalachia as well, depicts the stars of the show in questionable positions, including "a young woman throwing a drink can at another's face, a young man running nude, and a fiery explosion," (Gabriel 2013). This display of behavior from Appalachians plays on the stereotypes that the people are out of control hillbillies that are incapable of rational thought and foresight.

West Virginians protested the program, most notably former governor of the state and current United States Senator Joe Manchin III. In the 2013 *New York Times* article, he was quoted as saying "This show plays to ugly, inaccurate stereotypes about the people of West Virginia," (Gabriel 2013). The USA Today joined in on the matter in 2013 in an article entitled "Buckwild Gets a Bit Crazy, but MTV Says it has Heart," and said that the show "looks like a train wreck of bad behavior among stereotypical hillbillies," (Memmott 2013).

Negatively framing Appalachia also extends into the cinematic world. In a 2008 article in the Pittsburgh Tribune-Review entitled "Film's casting call wants that 'inbred' look," a new film being recorded in the Pittsburgh area about the mountain people of West Virginia called for those who possessed a very niche set of physical characteristics, including "extraordinarily tall or short. Unusual body shapes, even physical abnormalities as long as there is normal mobility. Unusual facial features, especially eyes," (Brown 2008). Although the filmmakers had denied that they were striving to caricature the people of West Virginia, they defended the claim that "Some of these 'holler' people – because they are insular and clannish, and they don't leave their area – there is literally inbreeding, and the people there often have a different kind of look," (Brown 2008).

Yet another example goes back even further than the previous and can be found in a 2003 article by the Globe & Mail about a proposed new television program entitled "the Real Beverly Hillbillies." The article cites that the show would have been about a "family of contemporary noble savages: uncultured, uneducated, untraveled, uncivilized, with a hankering for a modern kind of adventure," (Houpt 2003). The show would choose this family of lovable hicks from Appalachia and relocate them to Beverly Hills, California. From there, they would essentially just let hilarity ensue as the backwoods folks tried to acclimate to urban life. This is an outright example of mocking Appalachians by placing them in situations that would cause them discomfort and most likely embarrassment as they struggled to assimilate. This is but one of many examples of those in the entertainment industry using popular stereotypes about West Virginia and the rest of Appalachia to frame their desired message about the people.

All of the aforementioned examples are examples of how large media corporations have used frame analysis to shape the world's perception of Appalachia and the perpetuation of the negative stereotypes that have plagued the region for decades. They choose to frame Appalachia negatively in the eyes of the viewers in order to garner more interest in their programming and for the purpose of entertaining the masses that are uneducated or unexposed to Appalachian culture.

The Othering of Appalachia

To what extent do those negative representations have a tangible effect on the way outsiders view Appalachia? Does it normalize the idea that Appalachians are separate and distinct from other people in other regions? "Maybe because it is so prevalent in all forms of media, many have come to accept stereotypes that emerge," (O'Hara 2007). According to Althea Webb's article "Color Me Appalachian from a 2011 edition of *The Chronicle of Higher Education*, "I was taught what most outsiders assume: that mountain people are poor, ignorant, and backward," (Webb 2011) when chronicling her assimilation into Appalachian culture. She also states that "the negative images and stereotypes I grew up persisted into my adulthood," (Webb 2011) which contradicts the popular notion that the unfavorable views of Appalachians are harmless and "just for fun." The way Appalachia is represented in the media has an effect on community and cultural perspectives.

In a book review of David Hsiung's historical analysis of Appalachia entitled "Two Worlds in the Tennessee Mountains: Exploring the Origins of Appalachian Stereotypes," Anita Waller summarizes some of Hsiung's findings. One topic in particular that Hsiung explored was the idea of exceptionalism of Appalachia, exceptional in this case referring to distinct and different. There is a question of if "the white people who inhabited this southern mountain region culturally distinct from other rural Americans, even as late as the 20th century?" (Waller 1999). According to Hsiung, this idea of the otherness of Appalachia was pervasive in "the way they were portrayed in newspapers and fiction" (Waller 1999) which were largely negative in nature, showing that negative Appalachian stereotypes have been rampant for more than one hundred years. Unfortunately, even once the region became more positively perceived, the "assumption of exceptionalism remained," (Waller 1999) meaning that the idea that Appalachians were a distinctly different breed of people from other Americans, even in other incredibly rural areas of the United States, pervaded in the modern ideology. At the end of her review of Hsiung's work, Waller concludes that his research has shown that Appalachian people are not in fact different from the majority of the country in terms of violence, isolation, and population persistence, which refers to a people's tendency to grow and spread out. Still, the idea of Appalachia being an 'other' follows the region into the 21st century.

This sense of othering is prominent within Appalachian subcultures as well. A 2003 article in the *Gay and Lesbian Review* by Jeff Mann examining the treatment of LGBT Appalachians in the gay community states that there is definitely a sense of 'other' between Appalachia and the rest of the world. As Mann explains, people outside Appalachian culture have "emphasized the exoticism, the otherness of the Appalachian people, as if the region were almost a foreign country or some remnant of frontier society frozen in time," (Mann 2003). He goes on to state that in order to combat this regionalism and prejudice against Appalachians, natives to the region must be willing and able to "operate in both mainstream American culture and their own mountain subculture," (Mann 2003) in order to assimilate with the rest of the world and be seen without the negative stereotyping.

Regionalism in Appalachia

Another theory that ties into the deprecation of the Appalachian way of life is the idea of regionalism. O'Hara, the author responsible for coining the term in her 2007 article entitled "Regionalism in the Classroom" explains that regionalism is "a belief that one's region of origin is a primary determinant of the quality of one's standards of living, social forms, customary beliefs, levels of sophistication, and intellect and aesthetic development," (O'Hara 2007). In this article, she also states that, like many other forms of bigotry like racism and sexism, regionalism lends itself to the beliefs that people from certain regions are superior to those from others. Her study asks the question, "Should the region a person is from indicate what type of person they are?" (O'Hara 2007). Most typically at the mercy of this concept is the Appalachian region; as O'Hara explains, "expressions of prejudice in public and private forums, against African Americans, certain religions, the disabled, for example, have become less acceptable," (O'Hara 2007). On that same note, she adds that people are still unapologetically bigoted against people of certain ages, sizes, and from different regions like Appalachia.

Examples of regionalism can be seen in the way Appalachian jokes are still prevalent in modern society, long after making jokes at the expense of a particular race, sexuality or religion have been deemed unacceptable by society because there are "usually no consequences for making regional slurs," (Webb 2011) whereas one could be harshly punished for racial insensitivity. This idea of it

being “okay” to mock Appalachians is prevalent in many discussions about Appalachian stereotypes. In a *Phi Delta Kappan* article by Bobby Ann Starnes entitled “Jokes on Us” about her and her family’s experience with prejudice toward the mountain region, she states that “insults are okay unless they hit close to our homes,” (Starnes 2007) meaning that because Appalachia is considered to be a fairly isolated region, it is okay to mock and belittle the people.

In O’Hara’s study concerning student reactions to the concept of regionalism, one subject rationalized that they “never considered how the jokes got started or how the people in West Virginia felt about the jokes, mainly because I did not know anyone from there,” (O’Hara 2007). This matches the previously mentioned idea of insensitive jokes being okay as long as they aren’t close to home because the student rationalized that since she didn’t personally know anyone from the region, the jokes weren’t hurting anyone, when in fact, “reinforcing biases, makes them more acceptable to society,” (O’Hara 2007) which just perpetuates the vicious cycle of poor representation and the continuation of false perceptions of the region as a whole.

It is clear at this point that the prejudice against Appalachians is a very real problem for the mountain region that needs to be further examined and culturally addressed. It appears to come from a lack of education about the realities of Appalachian life and the exploitation of extreme stereotyping for the purpose of entertainment. The next step in this process will be analyzing how this reality impacts the culture of Appalachia within itself and its people.

Cultural Hegemony and Appalachia

The media’s insistence on publishing information that reflects negatively on Appalachia represents a case of cultural hegemony. This phrase, most often associated with Antonio Gramsci, refers to cultural norms that oppress certain groups while benefitting the dominant groups. For an example, consider previously mentioned and popularly referenced cases of coal companies taking advantage of Appalachian and their resources. These companies would provide just enough benefit to the locals that they didn’t realize they were being taken advantage of and being treated unfairly. By the time they did finally realize that they were being oppressed by the coal companies, they were

tightly bound to them and dependent on them for survival, or they'd already had their lands and rights stripped from them.

Hegemony isn't dictators and kings taking tyrannical control of the people against their will and ruling with an iron fist as the connotation of oppression would suggest. According to Lee Artz and Bren Ortega Murphy in their 2000 book *Cultural Hegemony in the United States*, "hegemony appears as a consensual culture and politics that meet the minimal needs of the majority while simultaneously advancing the interests of the dominant groups," (Artz 2000). Another explanation, this time from Steve Jones in his examination of the ideologies of Antonio Gramsci, explains what the dominant ideologies are, saying "Marx and Engels claim that the ruling ideas 'are nothing more than the ideal expression of the dominant material relationships, the dominant material relationships grasped as ideas'," (Jones 2006). In the example of coal camps, by providing a wage and a place to live by way of coal camps, the dominant group (wealthy elites) are providing a means to meet the very minimum needs of the majority (Appalachians in this instance), the dominate group are able to manipulate the situation however they wish because the majority isn't in a position to oppose them and risk losing the benefits that their oppression provides.

This notion isn't only applicable to Appalachia through outdated coal company examples. The media plays a major role in creating culturally hegemonic institutions. In modern society, the prevalence of the media has become a critical tool in creating and sustaining hegemonic ideologies: "Dominant social forces use mass media, education, propaganda, and political agitation in an unending public discourse to maintain consent within the agenda set by the dominant social groups," (Artz 2000).

Stereotyping of Appalachia and the media's acceptance and dissemination of it contributes to this cycle by perpetuating the excuses the dominate group uses as justification for oppressing the majority: "Marx's thoughts on ideology built towards the argument that not only are modes of thought determined by economic relations, but various institutions have developed to disseminate these ideas and to maintain an unequal class society," (Jones 2006). By portraying stereotypes of the simple,

uneducated hillbilly as the accepted norm, the dominant group can disguise their oppression as the only option to help the poor primitive mountain people. Artz described the medias role by saying, "The mass media, including movies, television, magazines, and books, tend to use accepted representations and standard professional practices drawn from cultural values, stereotypes, and social rituals that predominate in the United States today," (Artz 2000).

Another writer, Sally Maggard, wrote an essay for the Appalachian Journal in 1983 detailing the relationship between the media and Appalachia in regards to Antonio Gramsci's writings on cultural hegemony. Maggard described Gramsci's definition and purpose of hegemony: "Much of Gramsci's Prison Notebooks demonstrates historically specific ways hegemony operates to (1) mystify events; (2) create a sense of fatalism and passivity; and (3) justify sacrifice and deprivation," (Maggard 1984). This supports the assertion that hegemonic systems justify the oppression of the subordinate groups. In the example of Appalachia, portraying natives as ignorant, uneducated hillbillies with no prospects and an embarrassingly primitive way of life, the dominate group is able to control the world's perception of Appalachia and justify the way they are portrayed and treated as a result. By regarding them as almost subhuman in nature, it is easy to mock them and profit from their exploitation, whether of their resources or of their dignity and reputation.

The media doesn't only aid in the creation of cultural hegemony, it also facilitates the dangerous stereotypes created therein and defends the hegemonic oppression of the selected people and the power imbalances of the dominant group. Maggard elaborates on this, saying "The focus of current efforts to elaborate a theory of cultural power is on the intricate internal structure of the process of creating, renewing, and defending cultural hegemony," (Maggard 1984). Without the media's contribution, spreading and perpetuating hegemonic ideas would be much more difficult and would therefore make the practice less sustainable. The partnership of the media and the economically elite is a significant contributor to modern cultural hegemony.

This correlates with the earlier discussion of the regionalism of Appalachia. Maggard discusses similar ideas and explains that different regions occupy different ideologies that don't

always coexist peacefully and can lead to tension between different regions: “Douglass Kellner, building on Gramsci and Williams, has suggested a ‘theory of ideological regions.’ In contemporary capitalist society, instead of a single unifying ideology, he suggests relatively autonomous ideological regions coexisting ‘in an often uneasy harmony, full of contradictions and reciprocal interactions’,” (Maggard 1984). In the case of Appalachia, the media’s representation of the region as religiously zealous and intellectually inferior causes a strain in relations between it and other regions by perpetuating the notion of Appalachian inferiority. Historically, this inferiority has led to examples of oppression and domination of the Appalachian people and the exploitation of its resources and people. In this way, the media is shaping and altering perceptions of the region. According to Maggard, “Central is the recognition that domination may occur through the shaping of social and political and cultural assumptions, saturating to everyday notions of reality,” (Maggard 1984). She continues to say, “The task of producing and disseminating the content of the dominant culture falls, to a large degree, to distinct strata: the media, educators, clergy, advertisers, bureaucrats, entertainers, artists. It is here, within the cultural apparatus, that the details of shaping a dominant world view are unfolded,” (Maggard 1984).

Aside from significant damage to the overall cultural self-esteem and perception of Appalachia, the media’s unpleasant marketing of the region removes empathy or a desire to help the people. While they were being more or less enslaved in coal camps, the media’s narrative of the coal companies ‘helping’ the people by providing them jobs and income prevented anyone from looking into the matter of scores of people dying monthly in coal-related accidents, people living in insurmountable debt to the companies, and the general malaise of the Appalachian natives. Even today, the region’s economy and parts of the terrain remain in shambles as ghosts of past oppression: “People in the region live, daily, on the edge of disaster because of the industrial pillage of the environment and because coal mining dominates the employment options,” (Maggard 1984).

On the rare occasion of a news expose on the plight of the Appalachian people, whether it be talking about economic struggles, education deficits, or any other number of third-party caused problems, they are quick to dismiss the issue as a fault of the people themselves. If only they were

more educated, less poor, more technologically advanced, less backward, they wouldn't be in the situations they are in. It's easy to justify doing nothing to help an impoverished people when the rest of the general population believes that their problems are all self-inflicted. As Maggard simply explains, "The underlying message of this unhappy marriage between the media and Appalachia is victim-blaming," (Maggard 1984). The dominant groups maintain their reputation and distance from the problems so that they don't have to waste time and resources fixing problems incurred by their hegemonic practices.

As previously mentioned, this creates a clear divide between Appalachia and other regions. With no contradicting information being passed along by the media, all people have to go on are the stereotypical and harmful images they have immediate access to, "One result of this treatment of Appalachia is that neither the people who live in the region, nor the general public elsewhere, has access to the sorts of information that would allow a realistic and informed assessment of persistent problems in Appalachia," (Maggard 1984). This means that instead of being informed on legitimate problems like poverty and healthcare, the rest of the population just stereotypes the region as uneducated hillbillies with substance abuse problems. There is seldom an investigation as to why these images are there. Another factor is that the decrepit state of Appalachia as seen on television is interesting to watch; frightening caricatures of hillbillies and 'holler people' will ensure that people tune in and that ratings go up. Solemn documentaries about poverty and exploitation won't garner the same effect. Of this idea, Maggard says, "In addition, editors want a news product that sells—like stories of floods or of strikers in confrontation with police or of feud outbursts—not in-depth analysis of structural problems, what the public needs to know," (Maggard 1984). Stereotypes make things even more unnecessarily difficult: "Defined as moonshiners or miserable people, residents of Central Appalachia face great odds in trying to use the national media to interpret their needs and problems to the general public," (Maggard 1984).

An example cited by Maggard of the media's abuse of Appalachia's image comes from a protest in 1974 regarding parents' dissatisfaction with the education their children were receiving. Instead of focusing on why parents were protesting the schools, the media honed in on the protestors

themselves and demonized their efforts: “Or, protesters were said to be gun-happy, violence-prone, aroused fundamentalists, bomb-slinging religious nuts—an isolated subculture of hill people,” (Maggard 1984).

Unfortunately, these beliefs on the nature of Appalachian people have become deeply entrenched in the collective unconscious of the United States. People know and accept this picture of Appalachia with no question, not realizing that it is false and therefore not realizing that they’re perpetuating harmful and hegemonic ideologies: “National reporters usually have had little contact with it and have absorbed the stereotypical definition of Appalachia as ethnically separate and inferior which is rampant in the dominant culture,” (Maggard 1984). This again coincides closely with the O’Hara’s discussion of regionalism and even more with the previous discussion of the “othering” of Appalachia. This is explained by Maggard as, “Deeply embedded stereotypes affect the way the news media perceive, and define for the general public, protest from the mountains,” (Maggard 1984) in reference to the book protest of 1974. This makes the plight of the Appalachians even more difficult to navigate, because the medium most guilty of perpetuating the damaging information is ignorant to the fact that they are doing anything wrong.

To simplify the entirety of Maggard’s piece and to succinctly illustrate the way media contributes to cultural hegemony in Appalachia, “Their reinforcement of ethnic stereotypes which belie regional activism is hegemonic,” (Maggard 1984).

Method:

To what extent are people inside and outside Appalachia identifying, reinforcing, and combating this hegemony? In order to discover what implications the media’s hegemonic representation of Appalachia has on the region’s culture and development, this study will be done by conducting interviews with a wide sampling of people. Included will be people of all ages, so long as they are above the age of eighteen, and both male and female participants will be included. Interview participants will be chosen from a variety of different races and ethnicities to ensure that the study is as inclusive and considers as many differing perspectives as possible, and to find out how the

aforementioned demographical differences have any kind of impact on the answers noted during the interview process. People from all varying levels of education, from high school diploma or equivalent to doctoral degrees, will also be interviewed and considered.

In an effort to reach the greatest possible expanse of people, the interview questions will be conducted through email, via the online survey website Survey Monkey, and in person. Although it takes the selectiveness out of the interview process, opening the interviews up to the entirety of the internet-using community will allow the questions to be considered and answered by the largest number of people from all different kinds of varying backgrounds and paths. It will also allow for simple and precise transcriptions and data parsing.

The most important demographical distinction between interview subjects will be choosing both subjects that are native to the Appalachian region or that consider themselves to be a part of the Appalachian region and culture, and also participants that will be from outside the region. The non-native participants can be from anywhere outside the region, whether it be from a neighboring area, across the United States, or from a completely different country. Choosing participants this way ensures obtaining both the perspectives of people inside Appalachia that are familiar with the area and its culture as well as those who are new to the area and have not been so freely exposed to the realities of the region and thus are basing their perspectives on Appalachia and its people almost singularly on what they've experienced through television and other mass media like movies, radio, and newspapers.

To ensure that the data acquired from the interview process is consistent in its nature, every interview participant will be asked the same set of four questions. Rendering the interview down to only four questions ensures that the interviews will not be excessively long. Asking each participant the same questions, regardless of any of the aforementioned demographical conditions, ensures that the study will yield comparable data to analyze rather than completely different data sets that would ultimately prove to be useless in trying to find correlative relationships.

The questions be open ended to get the same answers to the questions over and over again by different participants, but rather to see what direction societal factors take their minds when they hear phrases like “Appalachia” and “representation.” This is a more organic way of finding out how people view the region and opening them up to discuss it as broadly or as vaguely as they would like.

The first question that interview participants will be asked is “How would you describe Appalachia’s representation in the media?” This question is broad enough to net a variety of different answers, but is also narrow enough to ensure that no matter how the interviewee chooses to answer the question, it will be comparable in each of the interviews I choose to conduct.

The second question they will be asked is “How accurate do you feel those descriptions of Appalachia culture are?” This is where one can expect that a lot of differences between natives and non-natives will show. This question gives them the opportunity to either defend or dispute the images of Appalachia that are most prevalent in mass media. For example, if a participant answered the first question and said that they have seen Appalachian’s largely portrayed as hillbillies, he or she would then have the opportunity to explain why the felt that portrayal was accurate or why it was inaccurate.

The third question is “How do you feel those representations affect perspectives of Appalachia?” This is a fairly cut-and-dry kind of question. The answers it will net will be important in understanding how observing the media representation of Appalachia impacts the way the region is perceived by people. It will help the study to understand exactly how much, if any, of the attitudes toward Appalachia are affected.

The final question that will be asked of the interviewees is “What kind of affects do those stereotypes have on Appalachia and its culture?” This question will take the information that has already been drawn upon by the previous three questions and ask the participant to draw their own conclusions about the effect of negative media on Appalachia.

After the interviews are finished, they will be transcribed and cross-compared with one another for similarities and differences. They will be sorted into different files based on the answers

that were received, and then they will be critically examined to see what the common denominators were between the different participants and how the answers compare to one another.

Afterwards, using the data collected through the interview process and tying it into the preliminary research discovered prior to conducting the independent study, conclusions will be drawn about the research and have a complete hypothesis of potential implications of the relationship between Appalachia and the media.

RESULTS:

To what extent are people inside and outside Appalachia identifying, reinforcing, and combating this hegemony? After completing 43 interviews with subjects of varying age, gender, and exposure to Appalachia, their responses can be broken down to fit different criteria of that question. Each of the three criteria will be discussed separately, with subheadings of each question containing relevant information under each criterion.

IDENTIFYING:

For this portion of the results, questions one and two will be the most heavily examined, because they mostly inquired about the image of Appalachia and perceived accuracy of that image.

Question 1: How would you describe Appalachia's representation in the media?

This question's responses will largely fall under the identifying category, as it asks each participant to describe how they personally have seen the region showcased in the media, whether it be news, television, movies, or any other form of mass media.

Out of 43 participants, 90.6% described the representation of Appalachia in the media as overall negative. Some participants left it at that, but others chose to go more in depth with their assertions and list particular negativities that they have witnessed prevailing in the media. An interviewee stated simply that the media's coverage of Appalachia was "negative and absent from time to time."

37.2% of participants specifically mentioned the stereotype of Appalachians being ignorant or uneducated. One participant stated "the media portrays the Appalachian region as dumb, uneducated redneck hillbillies; that we are stupid and barefoot and can't read."

11.6% of interviewees specifically pointed out the stereotype playing on the economic struggles of the region by using phrases like "poor" and "impoverished."

Playing specifically on movies usually set in the Appalachian mountain region, like *Wrong Turn* or *Deliverance*, 9.3% of interviewees offered up the stereotype of Appalachians being incestuous and interbreeding within their own bloodlines. One participant stated that the media seems to think that Appalachians, "are all a bunch of inbreds."

Perhaps related to the previously mentioned economic stereotypes was the idea of Appalachians being unhealthy or unhygienic. 11.6% of participants specifically mentioned the notion of the Appalachian region being rampant with "dirty" or "obese" people, and one interviewee specifically mentioned the often exploited stereotype of "toothless hillbillies."

Interestingly, two participants denied that the media's representation of Appalachia was negative and instead gave a more positive spin on it, saying that the region was known for picturesque nature and hardworking people. "I believe it varies depending on the media outlet you're observing. But, for the most part, I see Appalachia represented as a rural, country-like region. You would think there would be more negative stereotypes portrayed, like uneducated and poor, but I don't see it," said one interviewee. That makes up 4.6% of subjects that believed Appalachia was not being negatively portrayed by the media.

Question 2: How accurate do you feel those descriptions of Appalachia culture are?

This question is also very important in the identification step because being able to see the negativity is the first step in combating hegemony.

13.9% of participants stated that they believed the representations in the media were negative, but accurate. One participant stated that the representations of Appalachia were "fairly accurate."

Another said that “In some ways they are accurate. Generally, stereotypes come to life because there is a grain of truth in them.” Yet another said, “The poor stereotypes that Appalachians get is really reflected in how we act.” This was surprising, considering the same people also pointed out several instances of stereotyping and negative portrayal of the region. This is a potential side effect of the culturally hegemonic systems in place. The media’s role in these representations was cited by one participant who said that the representation was accurate, who claimed, “I think nowadays it’s pretty accurate because of the fact that there’s so much real time access to what really goes on there, due to social media and the like.” What is seen here is an inherent trust in the media, which would support a claim that the media’s representation of the region plays a major role in perpetuating culturally hegemonic practices at the expense of Appalachia.

48.8% of participants said that the representations were in no way accurate and fueled purely by a lack of exposure to the region and stereotyping. An interviewee stated that “In most cases, actual Appalachian culture is totally ignored. The media only perpetuates the idea that Appalachia is incestual monsters rather than real depictions of our culture.” Another said that Appalachia’s representation in the media was “Not accurate. More offensive than anything.” Another said that it was “very irresponsible to portray us in this manner,” referring to negative stereotyping.

Perhaps most interestingly, 34.8% of people stated that the image perpetuated by the media was at least partially true. Some interviewees even offered specific percentages of their personal ratio of information they perceive as accurate and inaccurate. One participant said that they believed at least 40% of the media’s representation was accurate, and another said that it was a 50% split between being completely accurate and being completely inaccurate. Other interviewees said that the stereotypes were conditionally accurate: “Accurate, the further South you head into the state,” said one participant. Another said, “I find more uneducated around me in Southern West Virginia than educated, but I imagine that it’s like this in every state.”

Question 3: How do you feel those representations affect perspectives of Appalachia?

This question was intended to get at the results of media representation on those outside Appalachia, but in reality mostly served as an overarching claim about what those representations do in general. In the end, there did not end up being a lot of data yielded by this question.

86% of those interviewed said that the media's representation of Appalachia had an overall negative affect on outside perspectives of Appalachia. "I feel that we are misrepresented so strongly that we are often overlooked for business opportunities and diminishes the ambition of many," said one interviewee. Another agreed, saying "No one wants to come here." This indication that stereotyping prevents business and economic growth presents a tangible harm done by culturally hegemony in the media.

20.9% of those people specified that it made outsiders believe that Appalachians were ignorant and uneducated. Most interviewees, however, only gave a brief indication that it was, in fact, negative.

REINFORCING:

Without prompt, many participants suggested that Appalachians were reinforcing hegemonic ideals set by the dominant group, often without realizing it.

Question 2: How accurate do you feel those descriptions of Appalachia culture are?

When asked how accurate the representations of Appalachia in the media were, 13.9% of people said they believed the way the region is portrayed is accurate. 34.8% of people said that the representations were at least semi-accurate. That equates to 48.7% of interviewees that are attesting that at least some part of the stereotyping of Appalachia holds true, which would be considered reinforcing the hegemonic ideals that lead to the justification of the exploitation of Appalachia should it be assumed that one exists.

Question 4: What kind of affects do those stereotypes have on Appalachia and its culture?

This question yielded surprisingly useful information about how Appalachians and those outside the region believe the region exacerbates its own stereotypes by behaving in a way that at best doesn't address the problem or at worse provides evidence to support the unflattering perceptions of the region.

37.2% of interview participants used specific words like "embrace" or "accept" when discussing stereotypes. One interviewee agreed, saying Appalachian culture, "embraces these stereotypes as their cultural identity." Another said, "People would begin to behave that way. This, of course, only exacerbates the issue and reinforces the negative stereotypes."

16% of interviewees suggested that a "why bother?" mentality was present in Appalachians, citing that they felt there was little hope of changing the way they are perceived by the rest of the world so there was no reason to bother combating the stereotypes or trying to prove them wrong. "Appalachian Americans certainly see how the media creates a false narrative about them and unfortunately some are told lies so many times that they believe them. If you continue to tell children that they are least educated, most miserable, most unhealthy children in the United States, what can their responses be other than to perpetuate that image," said one interviewee. Another said, "A lot of people believe that if we are looked at as "dumb" then there's no reason to achieve success through higher education because they fall in line with this stereotype."

Most interestingly, 18.6% of participants indicated that they felt the media's representation of Appalachia created a self-fulfilling prophecy. This coincides with the above "why bother?" mentality indicated by other interviewees, suggesting that the prevalence of media stereotyping has entrapped the Appalachian region in a seemingly inescapable cycle of perpetuating their own stereotypes, which means that people will keep believing them and the status quo will never change on that front.

COMBATING:

In this study, there was minimal evidence of combating the hegemonic systems. Whether this is because the questions did not immediately guide the participants mind to that area of thought or because there is legitimately little to no combating of the hegemony is unclear.

Question 2: How accurate do you feel those descriptions of Appalachia culture are?

On this question, the majority of interviewees, 48.8%, said that the media's representation of Appalachia was completely or at least mostly inaccurate. By responding in this way, they are rejecting the media's role in creating and sustaining hegemony. By not accepting the media's portrayal as fact, they are, in a small way, resisting and combating the hegemonic ideologies used to oppress and contain Appalachians.

Question 4: What kind of affects do those stereotypes have on Appalachia and its culture?

11.6% of interviewees said that they believed Appalachians were not bothered by the media's representation, which could indicate a resistance to the hegemonic practices that seem to be operating in the region. Conversely, it could indicate an obliviousness to the negative repercussions of the stereotypes they admitted to observing, thus supporting the theory that dangerous culturally hegemonic forces are at play against Appalachia.

IMPLICATIONS:

This study has found that there are definite concerns among the Appalachian people about the way their image is mishandled by the media. It has also shown how many people outside the Appalachian region rely on the media for their information about a region that has been historically less accessible than other parts of the country and the perceptions that they have cultivated as a result. Archaic and outdated ideas about what life in Appalachia is like have pervaded into the 21st century and still plague the people of the region. A region formed by humble farming folk, who were typically described as simple people with little regard for material wealth and excess, legitimately had less access to education and weren't economically elite. However, in 2016, when education is mandatory

at least partially through high school for every child and where students are free to pursue higher education, those stereotypes cannot be applied to every citizen of Appalachia.

Every area has its stereotypes. For example, that people from Boston are small and angry or that Pennsylvanians can't drive. However, Appalachian stereotyping goes much deeper than just mocking people for asinine little quirks. Stereotypes in Appalachia have tangible negative effects on the region, such as "devastating the cultural self-esteem" of the people, as said by one interviewee or preventing economic growth as was indicated by other participants.

Culturally hegemonic practices are being performed at the expense of Appalachia. As mentioned before, Appalachia has suffered a long history of exploitation at the hands of the dominant group, and just because the effects aren't as obvious today as they were when the region was being mined or timbered to oblivion, the self-esteem of the people is a commodity that is still being taken advantage of. Nearly every interviewee stated that they had seen or experienced stereotyping of Appalachia.

A cultural hegemony was developed in Appalachia's inception days and has only grown and maintained itself since then. It has expanded beyond physically keeping Appalachians under the proverbial thumb of the dominant class through the physical oppression of the coal camp days and has created generation-spanning negative perceptions about the region that will take decades to undo. Unfortunately, the lack of combatting evidence in the interviews conducted in this study does little to indicate that the hegemony is being challenged by the oppressed. Until the oppressed can recognize the dangerous cycle of hegemony they've been enduring for generations, the dominant group will keep cycling their oppression to benefit themselves. No one else can or will fight the hegemony, so it will be up to Appalachians themselves to recognize their own oppression and begin the long process of combating and undoing the damages done to them.

FUTURE WORKS:

Future works on this subject would need to be far more in depth than this study. A weakness in this study was that it started as a very generalized conversation about stereotyping and transformed

into a much deeper analysis of hegemonic practices oppressing the Appalachian people. This was a quite gradual evolution, and as such, the questions that were originally very satisfactory to this study's original goals came to only scratch the surface of a much deeper societal issue.

Potential approaches in future works could be to provide a short summary on the basic concepts of cultural hegemony and ask participants if they felt Appalachia qualified as an area being exploited by hegemony. This would effectively accomplish two goals at once: one, to figure out if people were even aware of what hegemony is; and two, to see if they felt Appalachia was in fact experiencing a hegemony.

Future interviews would be much more in-depth, and more attention would be paid to participants not within the region itself. Many of the most interesting comments that supported the idea of a hidden hegemony came from people who referenced themselves outside the region, who were innocently claiming that they didn't see any inaccuracies or issues with the media's representation of the region, while almost every person from within the region that identified themselves as "we" or "us" when referring to Appalachia said that they found the imagery offensive or inaccurate.

More interviews would be done to test a larger sampling of the population. More in-depth questions and a deeper discussion should be conducted to find out if the results generated from this brief study are indicative of a broader social thought or if they are isolated by regional bias.

CONCLUSION:

Using the data collected and examined through this study, it becomes a justifiable concern that a culturally hegemonic system is in place in Appalachian. This study has found that people both inside the region are, for the most part, able to easily identify stereotypes and inaccuracies that are oppressive to the Appalachian people, but that are largely lost on those outside the region who have had little exposure to it and the people within. This study has also found examples of people reinforcing those concepts or at least believing that others reinforce them through the embracing or acceptance of the media's image of Appalachia. There was strong evidence to support that the

media's representation of Appalachia in accordance with the cultural hegemony of the region has led to self-fulfilling prophecies that perpetuate the hegemony without much effort on the part of the dominant group. This indicates that the hegemony is so long-lasting that it has evolved to a level that allows it to maintain itself without constant maintenance from those who first put the hegemony in place, meaning that they are free to reap the benefits indefinitely while Appalachia continues to suffer economically, socially, and culturally.

What this study did not find what a large example of people fighting against the practices that they felt are a detriment to the region. As several interviewees stated, this could imply that the region is suffering from the previously mentioned self-fulfilling prophecy that was started by culturally hegemonic institutions established since the early 1800s and has only grown and evolved instead of dissipating. Appalachia as a region suffers from unique challenges that aren't faced by other regions in the United States. The cause for those challenges is proving to be something much more sinister and purposeful than a simple "luck of the draw." There is strong evidence to support the claim that the cause for this are culturally hegemonic practices put in place by a dominant group to benefit from the oppression of the Appalachians.

Until a hegemony is confirmed, acknowledged, and battled, the plight of Appalachia will remain stagnant at best or further deteriorate at worst. Appalachia cannot afford to fall further behind or be categorized as "other" any more than they already have been. The time to begin working toward positive change is now, and the first step is identifying and accepting that a hegemony is in place. From there, the long and arduous process of deconstructing hegemonic ideologies must begin. There is no other option, and Appalachians have a responsibility to themselves and to future generations to start the deconstruction as early as possible to prevent worsening conditions for the region.

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Invasive Species of Ants in the Southern Region of West Virginia

Summer Sword

Mentor- Dr. Sean Collins

McNair Research 2016-2017

Introduction:

What are invasive species? Simply stated, invasive species are organisms that become established in areas where they do not naturally occur. Specifically, invasive species are organisms that are non-native to an ecosystem, and whose introduction causes or is likely to cause economic or environmental harm, or even to human health (1). Successful invaders have distinctive characteristics such as being able to: tolerate a variety of habitat conditions, to grow and reproduce rapidly, and to compete aggressively for resources (like food, water, and nesting sites) (2a). Because of these, and other, characteristics, these invaders are able to move from one area to another and adapt readily. Some people may consider invasive species to be highly destructive "bullies". Technically, this could be true. Invasive species not only invade upon native species physical space, but they also take native species' resources such as food and shelter. The pressure exerted by invasives can be so significant on native species that they can be driven to extinction. Also, since invasive species are new to an area, they may not have any natural enemies; therefore, they can become established faster and more efficiently.

Invasive species have become ubiquitous as humans have made the world smaller and more accessible. One significant invasive species is the common carp (*Cyprinus carpio*). *Cyprinus carpio* is native to Eastern Russia and China and was introduced to North America and Europe. It was originally brought over as food and for sport fishing in the early 19th century. Unusual for most invasive animals, common carp are large. Common carp are voracious eaters and take food resources away from native fish in the areas they inhabit. Also, *C. carpio* tend to eat other fishes' eggs. Because they stir up sediment when they eat, they can turn clear water turbid relatively quickly. Also, these fish are highly fecund. In time, these fish can overwhelm a lake (2b). Its worth noting that carp have been established for so long and are so widespread that most people are unaware that these animals are not native to

North America, and in fact, are destructive to natural waterways and have displaced native species.

The Asian long-horned beetle (*Anoplophora glabripennis*) is native to China, Japan, and Korea. This species was introduced North America and Europe in the 1980s (2b). These insects were bought over in shipments of untreated wood. There are a number of reasons why these rather large insects have become successful, albeit problematic, invasives. *A. glabripennis* are not particularly host specific; feeding on a wide variety of tree species (). The larvae of these insects bore into the center of tree trunks, thereby weakening it. When they mature, adult beetles emerge from the tree, leaving a 1/2" opening. Many trees die because of the damage caused by these insects. These insects have destroyed tree stands throughout North America including urban parks in New York City and Chicago (3a).

In addition to the above mentioned examples, other significant invasive animals include the black rat (*Rattus rattus*) (native to tropical Asia, has invaded Europe), the Asian Tiger Mosquito (*Aedes albopictus*) (native to Southeast Asia, has invaded at least 28 countries), the Burmese Python (*Python bivittatus*) (native to Southern Asia, has invaded North America), the Cane Toad (*Rhinella marina*) (native to South and Central America, has invaded Australia, Hawaii, and Caribbean), and the European/Common Rabbit (*Oryetolagus cuniculus*) (native to southern Europe and north Africa, this animal has invaded almost every continent) (2b).

While charismatic large vertebrates garner much attention, perhaps the most successful taxon of invasive animals are insects. Their small size and adaptability make many species ideal for becoming invasive. Some well-known examples of invasive insects in North America are *Harmonia axyridids* (Asian lady beetle), *Popillia japonica* (Japanese beetle), and *Solenopsis invivta* (red imported fire ant). Ants, in particular, are very successful invasives (2b).

My research involves identifying the invasive ants found in our state of West Virginia. Unlike many states, WV is severely lacking accurate species surveys. This, combined with a large percentage of suitable natural areas presents an excellent opportunity to learn about the potential impact of invasives.

Invasive species in West Virginia

A number of invasive species are known to occur in West Virginia. One example of an invasive species in West Virginia is the zebra mussel (*Dreissena polymorphia*). Zebra mussels are native to the Caspian Sea region of Asia, but it now can be found in the Ohio, Monongahela, and Kanawha Rivers in West Virginia. Zebra mussels are filter feeders that outcompete native bivalve mollusks including the endangered snuffbox and rayed bean mussels (). They also can clog pipes and foul boats when they aggregate. Another well-known invasive species in West Virginia is garlic mustard (*Alliara petiolata).* This weed came from Europe and was introduced to North America when settlers bought it over for food and medicinal purposes. This plant is an effective invasive species because it grows earlier in the spring than other plants; therefore, it outcompetes native plants for space and nutrient resources before they have the opportunity to gain a foothold (3b).

Ants as invasive species

Ants are perhaps the most successful invasive insects (4). Ants possess many characteristics that make them adaptable to new environments. The two main reasons for their invasiveness may be their high reproductive potential and small size, though the ability of queens to store sperm and their haplodiploid genetic inheritance system may also play a significant role in their potential for invasiveness. In ant colonies, the queen is the sole reproductive individual. The soldier and worker ants neither mate nor reproduce. Queens lay hundreds of eggs a day; it takes a few weeks for an egg to mature (4). This allows for the population of the colony to grow very quickly.

Ants often affect other species when they invade new areas. Ants can monopolize food resources, and they also move a vast amount of soil for nest building. This, in turn, affects a wide range of species. These activities affect the nutrients in the soil, while also affecting the populations of other organisms (5). Finally, ants can be very defensive and can physically exclude other ants (and other animals) from the vicinity of their colony.

Invasive ants in North America

There are many ants that are not native to North America. Most of these ants were introduced through trade. They invaded North America by being brought over on ships. A significant invasive ant in North America is *Tetramorium tsushimae. T.tsushimae* is native to East Asia; however, this ant now is found in Missouri and Illinois. It first invaded North America in 1925. (6) Another widespread invasive ant in North America is known as *Nylanderia fulva* (Rasberry crazy ant). This ant is native to Argentina and Brazil. The fire ant or crazy ant now can be found in many southern states in North America, such as, Mississippi and Texas. These ants are very effective invasives, and they are considered very detrimental to non-native areas. These ants take the food supply of other species, and also, they attack and kill other species (7a). In addition to these two species, there are more invasive ant species in North America including *Monomorium* and the Argentine ant (*Linepithema humile*)(7b).

Invasive ants in Southern WV

Methods:

My methodology for this project was to find, collect, and identify field collected ants and determine if they are native or invasive. My project is part of an ongoing survey of the ants of WV and I worked as a member of a team of student researchers. My team found both native and non-native ant species; however, my research individually focuses on the invasive ants.

First, all types of ants were captured in the field from many different areas. Most specimens were captured using “soft” insect forceps. We also collected specimens using pit fall traps and Berlese funnels. All ants found at each location were put in a bottle filled with alcohol and brought back to the lab for identification. Identification included: examining ants under microscope and identification to subfamily using dichotomous keys. Our collecting ranged throughout Southern West Virginia and included: Wine Cellar Park (Dunbar, WV), Ridenour Park (Nitro, WV), Kanawha State Forest (South Charleston, WV), West Virginia State Capitol (Charleston, WV), Coonskin Park (Charleston, WV), and Buffalo Creek (Man, WV). These sites varied widely in habitat type, vegetation, as well as degree of disturbance and urbanization. Interestingly, in every location, at least one invasive ant species was found. Our sites were selected based on their physical characteristics and potential for being an introduction point for invasives. For example, Ridenour Park is at least sixty miles away from Buffalo Creek. Although the distance played a role in what typed of ant species were found, the difference in environment was what really affected the findings. In a place like Charleston, WV, there are many different ways that ants can be brought in from non-native areas. For example, ants could be bought from state to state on boats being carried in the Kanawha River. However, in Man, WV, ants would be more likely to be carried in on coal trains because of the rurality of the location.

Results

Invasive Ants Found in Southern West Virginia					
Subfamily	Scientific name	Native range	Where collected	Description	Image
Dol.	*Tapinoma sessile*	Mexico, Canada, South America	Ridenour Park, Wine cellar Park, Charleston Capitol, and Kanawha State Forest	Odorous house ant. Lives in exposed soil, garbage cans, and potted plants. Feeds on dead insects and sugary liquids (8).	 (9)
Myr.	*Monomorium minimum*	Mid-Western States of North America	Ridenour Park, Charleston Capitol, and Kanawha State Forest	Little black ants that live under rocks, in forests, and urban areas. Often is found in homes. Eats sugary liquid and other dead insects. Very small and very many (10).	 (11)
Myr.	*Monomorium pharaonis*	Africa	Ridenour Park, Wine cellar Park, Charleston Capitol, and Kanawha State Forest	Little reddish brown ant. Distributed widely across the world. Most common household ant. Common name is pharaoh ant. Does not nest outdoors except in southern latitudes (12).	 (12)

Myr.	*Tetramorium caespitum*	Europe	Ridenour Park, Wine cellar Park, Charleston Capitol, and Kanawha State Forest	Pavement ants that often nest under bricks or pavement. Eat other dead insects and sugary food. Relatively large and very common (13).	 (14)
Myr.	*Leptothorax nylanderi*	Europe	Kanawha State Forest	Small ants. Known for social parasitism. Depend on workers of other ant species (15).	 (16)
Myr.	*Pheidole pilifera*	South America, Mexico, Midwestern States	Ridenour Park and Charleston Capitol	Nests in exposed soil and harvest leaves. host of the social parasite *Pheidole inquilina* (17).	 (18)

Table 1: Species of Invasive Ants Found (Subfamilies are Dolichonderinae or Myrmicinae)

Discussion:

We were able to identify several six invasive ant species from southern West Virginia in our survey. Among these invasive ant species are: *Tapinoma sessile, Monomorium minimum, Monomorium pharaonis, Leptothorax nylanderi, Pheidole pilifera.* These species are from the families of either Dolichonderinae or Myrmicinae. This is significant because it shows that other subfamilies of ants are either native to this area or are not able to survive in this altitude. *Tapinoma sessile* is an odorous house ant that lives in exposed soil, garbage

cans, and potted plants. This ant actively forages for sugary food, and also eats dead insects. *Monomorium minimum* and *Monomorium pharaonis* are both very small ants and are significant household pests. *M. minimum* is black, nests outdoors, and eats sugary foods. On the other hand, *M. pharaonis* is a reddish brown and nests indoors. *Tetramorium caespitum* are commonly referred to as pavement ants, and are often found living in urban areas. *T. caespitum* eat sugary foods and other dead insects. *Leptothorax nylanderi* that were found. *Leptothorax* nylanderi are small ants which are known for their social parasitism. *Phiedole pilifera* nest in exposed soil or harvest leaves. *P. pilifera* are hosts of ants which depend on social parasitism to survive. An invasive ant species that we were specifically searching for was *Lipithium humile*. This ant is a very widely spread ant across the world, throughout studies, it has not been found to be invasive to this area. This is very odd due to the vast widespread of this species. Unfortunately, *L. humile* was not found in this study. These ants were more than likely bought over by boats due to the river being so close to these locations. However, they could have also been bought by trains or cars carrying things such as timber **(Table 1).**

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