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Mapping Wilderness Character in Adams County, Pennsylvania

Alyssa Kaewwilai

Gettysburg College

Alyssa Kaewwilai is an environmental science major and computer science minor with a concentration in geographical information systems and earth systems. Kaewwilai enjoys incorporating drone work, photogrammetry, and computer-aided design into projects for modeling and data analysis. A sincere thank you is addressed to Professor Rutherford Platt for advising the research and mapping process of the project. Gratitude is also expressed to the Gettysburg College Department of Environmental Studies for its continuous support and funding of students' academic endeavors.

Abstract: The spatial trends in wilderness character in Adams County, Pennsylvania were examined to evaluate how influenced specific areas are impacted by human activity and development. Indicators of wilderness character were selected as natural, untrammeled, undeveloped, along with solitude and unconfined recreation by the Death Valley National Park staff in which a 0-4 ranking system was based upon to portray a range of most degraded to optimal land. This was executed through examination of factors such as abundance of biodiversity and human development within the given area before a Monte Carlo simulation was run to show sensitivity of change. It was found that overall wilderness quality is most optimal along the Michaux Forest boundary and small sections of land on the southwestern and eastern edge of Adams County. Areas that are most sensitive to a change in the weights of wilderness character factors are small sections of land throughout the middle areas of Adams County along the roads while areas of land that are least sensitive to change are mainly the areas associated with the Michaux Forest boundary along the northwestern parts of Adams County. It was concluded that an increase in human interaction tends to lead to land that is more degraded and misused for infrastructure purposes.

Keywords: GIS, geographical information systems, infrastructure development, Monte Carlo Simulation, humanities

Introduction

Wilderness character refers to how natural and untouched a given area is by human activity with the ideology that areas with the least anthropological contact are best. It is important to map wilderness character in order to see which areas need to be given special attention in regard to preservation and conservation due to unusually high human degradation as well as to track the severity and frequency of anthropological effects of climate change. A former study inspected and identified the state of wilderness character in natural areas in the United States as a case study.

Indicators of wilderness character were selected as natural, untrammeled, undeveloped, along with solitude and unconfined recreation by the Death Valley National Park staff (Figure 1). Natural quality was defined in terms of plant and animal species, physical resources, and biophysical processes while untrammeled quality was defined by federal authorization and biophysical state of the land. Undeveloped quality was based on indicators such as the loss of cultural sites, developments, inholdings, and use of mechanical transport. Solitude quality was based on the remoteness of an area from sounds and modified areas outside of the natural land. Other indicators of solitude include facilities that decrease self-reliance and management restrictions on visitor behavior (Carver, Tricker, and Landres 2012). The four indicators were based on a ranking system from 0-155 with 0 representing optimal

wilderness character and 155 representing most degraded wilderness character (Carver et al. 2012).

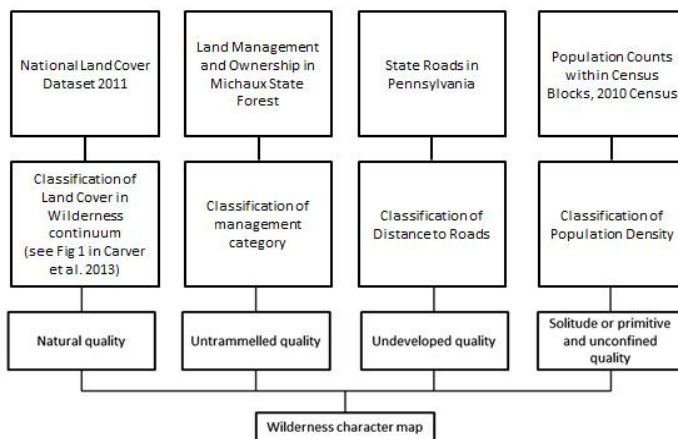


Figure 1. Wilderness qualities derived from single data input that were ranked 0-4 with 0 as optimal wilderness quality and 4 as most degraded wilderness character.

In this case study, the objective was to map the wilderness character of Adams County, Pennsylvania using a scale of 0-4 with 0 representing most optimal wilderness quality and 4 representing most degraded wilderness quality. The research question was to explore what the spatial trends in wilderness character are in Adams County. It was hypothesized that the area of the county near Gettysburg College would have a less optimal wilderness quality in comparison to areas such as the Michaux State Forest boundary which experiences significantly less human interaction. The study area was 1,352 km² in size and located along the southern, center

edge of the Pennsylvania state border (United States Census Bureau 2017).

Methods

The Adams_Countyborder.shp shapefile was used as the extent for all four rasters (natural, untrammeled, solitude, and undeveloped quality) and a cell size of 328 feet. In order to create the natural quality raster (Table 1), the land cover raster was reclassified in accordance to wilderness quality with 0 representing optimal wilderness character and 4 as most degraded wilderness character in accordance with the National Land Cover 2011 Database Product Legend (United States Geological Survey 2011). The old values were ranked in accordance to biodiversity, abundance of vegetation, and amount of human population. Natural quality was based on the idea that optimal quality consists of high biodiversity and abundant, green terrain like forests and woods (Table 2; Figure 2).

The undeveloped quality raster was created by using the Euclidean distance tool on the PaStateRoad2018_07.shp shapefile. A manual classification method was used along with the reclassify tool to give the following wilderness quality ranks to the given break values: 0-2,000 = 4, 2,001- 3,800 = 3, 3,801-5,700=2, 5,701-7,600=1, and 7,601-9,500 = 0. Higher numbers were given a lower rank closer to 0 since they represent areas with better wilderness quality meaning that they are farther away from the developed roads (Figure 2).

The solitude raster (Table 1) was created by calculating the population density of Adams County residents to each census block in square kilometers. A manual classification system was used, and the break values were changed to 5, 50, 100, 500, and 20,712 before the reclassify tool was used to assign the break values with the ranks 0, 1, 2, 3, 4 respectfully. The ranks were given in regard to the fact that lower population densities correlate to less human interaction and thus better wilderness quality closer to 0 (Figure 2; Sherbinin et al. 2007).

The untrammeled quality raster (Table 1) was created by assigning the land_conservancy, SH_boundary, PGCStateGameland2018, Michaux_Boundary, and GNMP_boundary a wilderness rank from 0-4 in accordance to the amount of undisturbed land from human interaction and infrastructure before merging the shapefiles (Table 3; Figure 2).

The final wilderness raster (Table 1) was created by using the raster calculator on the FinalWilderness raster. An analytic hierarchy process (AHP) was then executed: the average class weights as percent for the natural, land management, distance from state roads, and population qualities were used in the raster calculator equation (“untrammeled” * 0.172) + (“undeveloped” * .243) + (“solitude” * .19) + (“natural” * .395) (Figure 3). The new raster was then used in a Monte Carlo simulation using the solitude, untrammeled, natural, and undeveloped raster inputs for 100 iterations for the creation of the Monte Carlo simulation raster

(Figure 4). This was done to see how sensitive different areas of land in Adams County are to the change of the weights of the four wilderness character qualities.

Results

Natural quality is most optimal along the western parts of the Adams County border where the Michaux Forest boundary is located with minimal “bad” degradation that lies near middle sections of the county. Untrammelled quality is most optimal along the Michaux Forest boundary and most degraded in most other parts of Adams County due to frequent human interactions with the natural landscape. Undeveloped quality is most optimal along the Michaux Forest boundary on the western part of Adams county and most degraded throughout the county in linear, outward formations. Solitude quality is most optimal in fragmented sections throughout the middle of Adams County and most degraded in the privately-owned areas of Michaux Forest as well as dispersed areas throughout Adams County (Figure 2). Overall wilderness quality is most optimal along the Michaux Forest boundary and small sections of land on the south western and eastern edge of Adams County. The majority of the middle section of Adams County has a neutral, good natural quality while areas with roads like highways that lead to major cities consist of the most degraded areas in respect to wilderness quality (Figure 3). The Monte Carlo Simulation reveals that the areas that are most sensitive to a change in the weights of wilderness character factors are small slivers of land throughout the middle sections of

Adams County along the roads. Areas of land that are least sensitive to change are mainly the areas associated with the Michaux Forest boundary along the north western parts of Adams County (Figure 4).

Discussion

The three indicators of wilderness (natural, untrammeled, and undeveloped) showed that the Michaux Forest boundary has optimal wilderness quality other than the areas that are privately-owned because it has the least amount of human interaction as well as the most biodiversity as shown with its abundant land cover of vegetation (United States Geological Survey 2011). The area of Michaux Forest with most degraded wilderness quality from the untrammeled classification (Figure 2) is due to logging that occurs in the privately-owned areas (Pennsylvania Department of Conservation and Natural Resources 2018). Michaux Forest is ranked as being not very sensitive to being moderately sensitive to change because the only areas that could possibly be noticeably affected by any change are the logged, privately-owned areas. Otherwise, Michaux Forest is fairly uninhabited and affected by anthropogenic factors. An increase in human interaction tends to lead to land that is more degraded and misused for infrastructure purposes — resources like wood tend to also be logged excessively if the population grows to a be a plentiful, surplus amount (Sherbinin, Carr, and Cassels 2007). The landscape of Michaux Forest is also mainly composed of

trees and plantation that make up most of the land cover which was the primary logic I used when ranking various values from 0-4 (Figure 2). More trees can oftentimes mean that the area has better biodiversity which leads to a healthier forest with a more positively ranked natural and overall wilderness quality and wilderness ranking. This characteristic makes the area more durable from change occurring (Sherbinin et al. 2007). This is also a reason why the overall wilderness character map displayed the Michaux Forest boundary as having mainly optimal wilderness character (Figure 3).

The weights assigned to each wilderness quality had a great effect on the sensitivity of each wilderness quality to any possible change and random occurrences as determined by the Monte Carlo simulator. Areas like Michaux Forest where there were land cover types like deciduous, evergreen, and mixed forests that were all assigned optimal wilderness ranks of 0 were shown as having a low standard deviation and variability. These areas are not as susceptible to change as other areas where there were mixed value rankings that differed and ranged from 0-4 evenly and dispersedly. Areas with plentiful rank variability also had high standard deviation because these areas are most susceptible to change from the slightest of factors (Figure 4).

The solitude quality shows that there are more degraded and bad areas as opposed to neutral, good, and optimal areas for solitude because Adams County, although not heavily populated, still has a growing population from its previous years

(Gettysburg History 2018) which thus promotes more frequent occurrences of environmental degradation. Every year the population of the town increases, especially the population at Gettysburg College. Populations in major areas like those near Gettysburg College where there is a significant amount of student population contribute to the most degraded solitude. Since there is a larger amount of people living in the condensed area, there is more possibility of change affecting and changing the area (Sherbinin et al. 2007) (Figure 2).

Other than the college, Adams County is mainly agricultural land with a small to moderate population (Gettysburg History 2018). The overall wilderness character map shows most areas in Adams County as having normal, good wilderness quality. The majority of the area consists of open fields from the Battlefields that have a history tied to environmental degradation from the Civil War. During this period, weapons like rifles and bombs were used and polluted the air with chemicals and damaged wildlife. However, the land is now preserved as a national landmark which is a factor of its wilderness quality (Gettysburg History 2018).

The most degraded areas overall are those associated with major highways and roads (Figure 3). Because the Michaux Forest boundary has high biodiversity and is more secluded from human populations than other areas in Adams County, it is less sensitive to change than areas that are neutral to change, including agricultural land with regular human interaction that can affect the

overall wilderness quality on a regular basis (Sherbinin et al. 2007). Limitations to the study include the lack of data input of other possible natural factors such as flooding and wildfires that may affect the wilderness quality indicators. Limitations can be solved by creating and assigning values from 0-4 for the land cover raster specifically for natural disasters and their assigned rankings. This way natural disasters can be accounted for in the natural quality raster and thus the Monte Carlo Simulation as well.

Appendix

Table 1. Data sources

| Name | Who Created | Time Valid For | Description |
|------------------------|--|----------------|--|
| Adams_Countyborder.shp | U.S Census Bureau | 2010 | Geography for Census Blocks with housing unit count and population of Adams County, PA; each Census Block in layer is a statistical area surrounded on every side by visible features like streets, railroad tracks, and roads |
| Michaux_Boundary.shp | Pennsylvania Department of Conservation and Natural Resources | 2012 | Outline and boundary of Michaux State Woods in Fayetteville, PA |
| GNMP_boundary.shp | National Park Service | - | Outline and boundary of the Gettysburg National Military Park |
| land_conservancy.shp | Land Conservancy of Adams County | - | Land preserved by the Land Conservancy of Adams County, PA |

| | | | |
|---------------------------|----------------------------------|------|---|
| PGC_StateGameland2018.shp | Pennsylvania Game Commission | - | Defined individual boundaries of the Pennsylvania State Game Lands for the Management of public resources |
| SH_boundary.shp | Strawberry Hill Nature Preserve | - | Boundary of Strawberry Hill Nature Preserve in Adams County, PA |
| PaStateRoad2018_07.shp | Pennsylvania Spatial Data Access | 2018 | Geography, directionality, and length of roads in Pennsylvania |
| tabblock2010_42_pophu.shp | U.S. Census Bureau | 2010 | Population and housing unit counts in blocks in Pennsylvania accounted for during 2010 U.S. Census |
| NLCD2011_LC.tif | United States Geological Survey | 2011 | National land cover dataset in 2011 |

Table 2. Reasoning for Natural Quality Rankings

| Value (Land Cover) | Rank | Reasoning |
|-----------------------------|-------------|--|
| Open Water | 2 | Less than 25% of vegetation and soil (United States Geological Survey 2011) but high biodiversity if ocean/lake with diverse marine life; amount land cover may not be directly correlated to natural quality of biodiversity. |
| Developed, Open Space | 3 | High possibility of fertilizer overuse and other harmful chemicals like sulfur dioxide and nitrogen oxides that pollute soil/air; leads to acid rain and plant death (United States Environmental Protection Agency 2018). |
| Developed, Low Intensity | 3 | Combined range of 20-79% impervious surfaces and single-family housing units (United States Geological Survey 2011) direct correlation between increase in population and env. degradation (Sherbinin et al. 2007). |
| Developed, Medium Intensity | 3 | High populations which lead to environmental degradation through pollution and increased land use (United States Geological Survey 2011)(Sherbinin et al. 2007). |
| Developed, High Intensity | 4 | Highest populations (United States Geological Survey 2011) and env. degradation (Sherbinin et al. 2007); least amount natural areas like woods/forests |

| | | |
|------------------|---|---|
| Barren Land | 1 | Less than 15% of vegetation cover (United States Geological Survey 2011) correlates to low biodiversity but is still natural with minimal manipulation by development/infrastructure. |
| Deciduous Forest | 0 | Rich biodiversity and a high percentage of plantation land cover (United States Geological Survey 2011) |
| Evergreen Forest | 0 | High diversity of plant and animal species; abundant land cover (United States Geological Survey 2011) |
| Mixed Forest | 0 | Plentiful biodiversity and a high percentage plantation land cover (United States Geological Survey 2011) |
| Shrub/Scrub | 2 | Slightly more than 20% vegetation cover (United States Geological Survey 2011) |
| Herbaceous | 1 | 80% of total vegetation (United States Geological Survey 2011) |
| Hay/Pasture | 3 | Clearing of natural forest and woods for agricultural practices and overuse of chemicals like pesticides (United States Environmental Protection Agency 2018) |
| Cultivated Crops | 3 | Clearing of natural forest and woods for agricultural practices and overuse of chemicals like pesticides (United States Environmental Protection Agency 2018) |
| Woody Wetlands | 2 | Slightly more than 20% of vegetative cover (United States Geological Survey 2011) |

| | | |
|------------------------------|---|---|
| Emergent Herbaceous Wetlands | 1 | More than 80% of vegetative cover (United States Geological Survey 2011); saturation may not allow for tall plantations to thrive |
|------------------------------|---|---|

Table 3. Reasoning for Untrammelled Quality Rankings

| Value (Land owner) | Rank | Reasoning |
|-----------------------------------|------|--|
| Gettysburg National Military Park | 3 | Formerly part of Civil War where many rifles and bombs used but now is preserved land for education of history (Gettysburg History 2018) |
| Land Conservancy | 2 | Land conserved and not preserved; human interaction and use still allowed which can lead to misuse and overuse of resources if not monitored (Gettysburg History 2018) |
| Michaux "Natural Area" | 0 | High biodiversity and forest land cover; limited human interaction (Pennsylvania Department of Conservation and Natural Resources 2018) |
| Michaux "State Forest" | 0 | Diverse plant and animal species with limited human engagement (Pennsylvania Department of Conservation and Natural Resources 2018) |
| Michaux "In Holding" | 2 | Privately owned land that is sometimes used for logging (Pennsylvania Department of Conservation and Natural Resources 2018) |

| | | |
|-------------------------------|---|---|
| Pennsylvania State Game Lands | 3 | Hunting grounds and rifle use; possible misuse of land (Pennsylvania Department of Conservation and Natural Resources 2018) |
| Strawberry Hill | 1 | European settlers in 1700s use to use forest for logging, hunting, mining and farming; currently used as preserved land for environmental education (Strawberry Hill Preserve 2018) |
| Private/Unspecified | 4 | Gettysburg County boundary with no efforts to maintain wilderness since more concerned with human population (Gettysburg History 2018) |

Figure 2. Indicators of Wilderness Character Index, Adams County

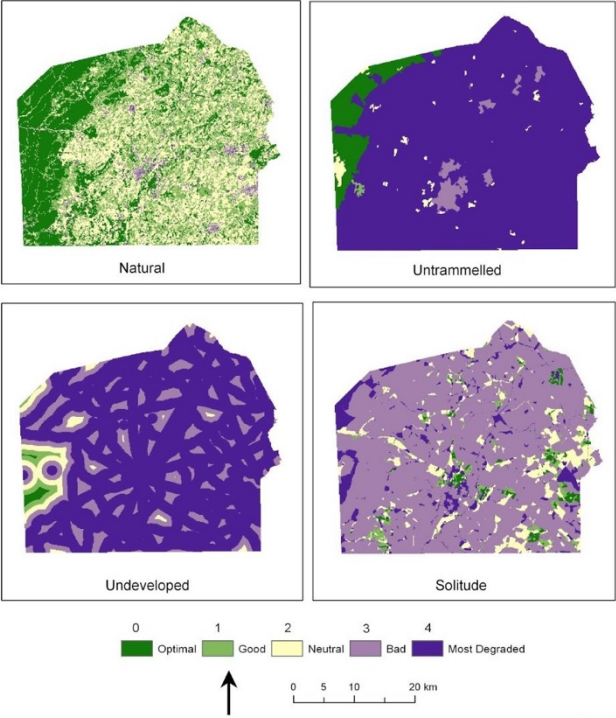


Figure 3. Wilderness Character Map, Adams County

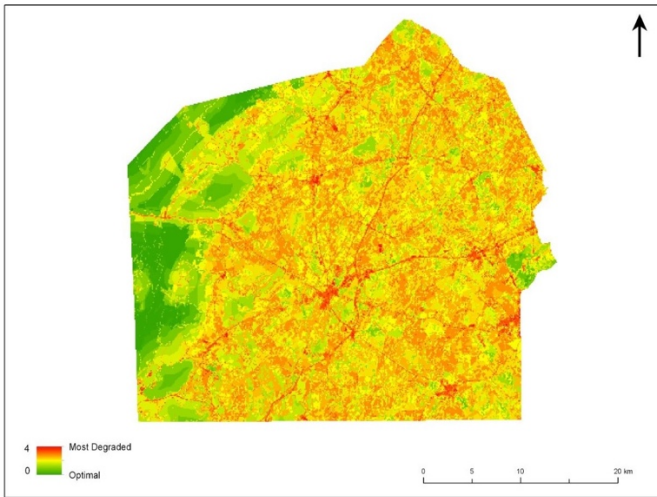
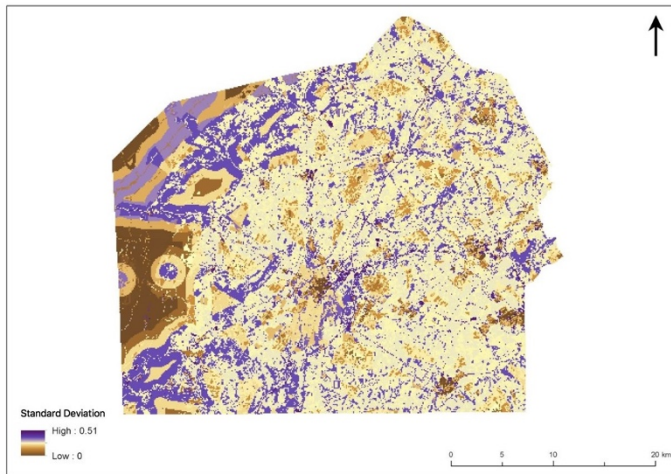


Figure 4. Monte Carlo Simulation for Sensitivity Analysis, Adams County



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**Zero Waste on Instagram Through the Lens of Precautionary
Consumption**

Michelle Murphy

University of California, Los Angeles

Michelle Murphy is a student of the University of California, Los Angeles majoring in Psychobiology with a minor in Society and Genetics. This paper was inspired by her own experience attempting to live a waste-free lifestyle after finding the zero waste movement on Instagram.

Abstract: The zero waste community (ZW) community on Instagram is a group of individuals who intend to lessen their environmental impact by utilizing precautionary consumption (PC) to avoid generating waste. Public figures in the ZW community advertise ZW as a simple and efficient method to take action against the ever growing plastic waste in our society. In this paper, I perform a virtual ethnographic analysis of posts shared on Instagram within the ZW community to illustrate the way in which ZW places responsibility at the individual level in order to reduce plastic waste. Next, I compare levels of industrial waste to municipal solid waste to highlight how ZW's fascination with food plastic packaging is an inadequate approach to their environmental goals. Next, I apply a lens of precautionary consumption (PC) to examine why women may identify with the ZW community, what kinds of women are most prominently represented, and what this representation says about ZW as a method for eliminating plastic waste from our environments. In this way, I ultimately conclude that the PC utilized by the ZW community is an ineffective method to eliminate plastic waste from our environment.

Keywords: zero waste, precautionary consumption, environmentalism

Introduction

In light of the ever-growing threat of plastic pollution, environmental movements such as the zero waste (ZW) movement have gained increased popularity. However, the zero waste community is not a particularly well-defined movement. In a literal sense, the zero waste concept is supposed to refer to a circular flow of materials, “the same materials are used again and again until the optimum level of consumption” so that no materials are wasted or underused (Song, Li, and Zeng 2015: 200). Nonetheless, when I discovered zero waste through the photo-sharing social media platform Instagram, zero waste was portrayed as a lifestyle change with the ultimate goal of eliminating waste from individuals lives in order to save the planet’s environment. It is often also referred to by other terms such as “low waste,” “low impact,” “non-toxic living,” and “intentional living.”

I was first exposed to the ZW community when a viral video of a woman fitting numerous years of trash that she produced into a single mason jar popped up on my Facebook feed. This woman was Lauren Singer, a public figure within the ZW community. I became more familiar with her through Instagram, where her username is @trashisfortossers. A couple of years later, I found myself inspired by the ease and beauty portrayed by members of the ZW community on Instagram, particularly individuals with large follower counts such as Singer, and set out to achieve a plastic free life style as well. Unfortunately, the experience was not as achievable as it was

portrayed, and I struggled daily to find options that were truly plastic free, leading to strong feelings of guilt. The challenges I faced forced me to evaluate the effectiveness of ZW as an environmental movement.

Public figures in the ZW community often advertise ZW as a simple and efficient option that empowers the individual to take action against the threat of plastic waste in our society. In this paper, I will perform a virtual ethnographic analysis of posts shared on Instagram within the ZW community to illustrate the way in which ZW puts responsibility on the individual to reduce plastic waste. I will then compare levels of industrial waste to municipal solid waste to highlight how ZW's fascination with food plastic packaging is an inadequate approach to their environmental goals. Municipal waste will be used in this paper to refer to waste produced by the standard, individual consumer. Next, I apply a lens of precautionary consumption (PC) to examine why women in particular identify with the ZW community, from what backgrounds women are most prominently represented, and what this representation says about ZW as a method for eliminating plastic waste from our environments. Traditionally, PC refers to the act of adopting lifestyle changes, such as adhering to particular diets or purchasing only products labelled as "certified organic" or "non-toxic" to protect one's body and health from toxic contaminants (MacKendrick 2015). I argue that the ZW community's adoption of PC to encourage reducing plastic consumption, particularly plastic food packaging, overlooks the larger threat of industrial solid wastes while appealing to and placing

unequal responsibility on women. In this way, PC is thus an ineffective method to eliminate plastic waste from our environment.

Zero Waste on Instagram

In this section, I will be analyzing photos shared on Instagram along with their captions and comments to examine what messages the ZW community are representing and what implications these messages have in regard to consumer behavior patterns. For the purposes of this paper, I define the ZW community on Instagram as a group of individuals who intend to lessen their environmental impact by utilizing precautionary consumption to avoid generating waste. These accounts can be found by searching for hashtags such as “zero waste,” “sustainable living,” and “life without plastic.” Individuals who associate themselves with the ZW community tend to be concerned with waste for two main reasons: the current health of our planet and the potential health benefits of avoiding plastic products.

Though the ultimate focus is on reducing waste to protect the health of the environment, the bodily health is mentioned as well. This is illustrated by some of the alternate names for ZW, such as “low impact,” “non-toxic living,” and “intentional living,” which hint at the active choice to avoid negative impacts of plastic consumption with the use of terms like “intentional” and “non-toxic.” By using these terms, the movements essentially equate plastic consumption to toxicity and encourage purposeful behavior to avoid these toxins.

If one searches Instagram for the topic of zero waste, the most common photos that appear are pictures of food. This might include pictures of pantries filled with aesthetically organized jars of bulk foods or “hauls” of fresh produce laid out to show just how much food can be purchased without plastic. These kinds of pictures, as exemplified in Figure 1B, are what initially inspired me to live plastic free, and they are often the main mode of spreading ZW information



Figure 1. (A) Two captions from @trashisfortossers Instagram photos. (B) This photograph from Instagram shows a typical “haul.”

throughout the platform. The overall simplicity of the photo shown in Figure 1B along with the variety of foods represented not only attracts viewers with its aesthetics but also adds to the sense that ZW is an easy lifestyle change to implement.

Together with these aesthetic photos are captions with compelling messages that emphasize the simplicity of ZW and the power of the individual. Two examples of these captions by @trashisfortossers are exemplified in Figure 1A. In one of her

captions, Singer states that “living a zero-waste lifestyle involves little forethought,” implying that a ZW lifestyle is something that can be achieved with minimal effort. In the next caption, Singer presents statistics to illustrate just how much trash she has supposedly avoided by living ZW then uses this number to back up her claim that one person can “make a difference” on our environment. She further states that “we are powerful,” emphasizing that individual level PC can make a significant impact on reducing plastic waste levels. Singer is not alone in sharing these kinds of messages of personal responsibility throughout the ZW community as they are the most pervasive and common theme seen throughout the ZW Instagram platform. By highlighting individual responsibility for waste production, the ZW community sends a strong message that the individual has the power to “save the earth.”

Additionally, the message of personal responsibility that the ZW community and particularly public figures spread on Instagram, affects consumer behavior patterns. For example, @trashisfortossers has 278 thousand followers as of March 2019 with her most recent posts averaging about 8,000 likes. Though that may not seem like an influential number compared to celebrities that boast millions of followers, one study found that lesser known public figures can actually influence consumer behavior more effectively because Instagram users find them more relatable and more trustworthy (Djafarova and Rushworth 2016). From this study and from my firsthand experience, it can be inferred that information shared on Instagram does influence its users’ consumer behavior.

Zero Waste Offline

Looking at the amount of solid waste produced by the United States annually, a huge percentage of that waste is due to industrial waste (MacBride 2012). Despite this, the ZW movement on Instagram places a huge emphasis on personal consumption choices. In this section, I discuss how ZW's emphasis on avoiding food plastic packaging at the individual level is an ineffective method to reducing harm to our environments due to the difference between industrial and municipal levels of waste, and their respective effects on the environment. Industrial waste refers to waste produced by large corporations such as industrial, mining, extractive, and agricultural operations. (MacBride 2012). In addition, I argue that the use of Instagram as the ZW community's main platform also contributes to the movement's ineffectiveness by simplifying and glamorizing ZW practices.

My attempt at living a plastic-free lifestyle was much harder than how it was implied in the messages spread on Instagram. As discussed previously, I was overwhelmed by the fact that evading plastic waste was virtually impossible. I struggled to understand why I could not achieve what others seemed to be implementing so simply into their lives. This experience of overwhelming guilt is openly talked about within the ZW community on Instagram. However, in general, the main message of encouragement offered to combat these feelings of failure is that small actions taken by large numbers of people can achieve large results. This mantra reflects ZW's overall view that the individual has the power (if not the responsibility) to

reduce plastic waste.

The ZW community's emphasis on plastic food packaging is a logical place to start when attempting to reduce the amount of plastic waste society is creating. The Environmental Protection Agency (EPA) reported that the United States generated a total of 262.4 million tons of municipal solid waste in 2015 alone, with plastics making up about 13% of this total (Facts and Figures about Materials, Waste and Recycling 2018). In the U.S., the food and beverage industry is one of the largest consuming industries for plastic products (Gourmelon 2015). On top of this, packaging accounts for 42% of the demand for plastic in the U.S. (Gourmelon 2015). This data suggest that plastic food packaging is an ideal candidate to focus on when attempting to reduce plastic consumption and waste. Additionally, plastic food packaging waste is a very palpable target because people interact with plastic food packaging nearly every day and its harm is easily visualized. Videos of sea turtles with straws stuck up their noses or dead whales floating to shore with stomachs full of plastic bags circle all sorts of media platforms. These types of photos and videos appeal to the audience emotionally and further make plastic food waste a compelling target of environmental movements.

Despite the potential threat of food plastic packaging, avoiding using it may not be the most effective method to prevent harm to our environments. This is not to discredit the fact that plastic waste truly is a threat to our environment. However, if the goal of ZW is to protect our planet's environments, it seems obvious from the numbers that industrial solid waste poses a larger threat than

municipal solid waste. As previously mentioned, the US generated 262.4 million tons of municipal solid waste in 2015 (Facts and Figures about Materials, Waste and Recycling 2018), but the EPA also more quietly reported that manufacturing industries are generating approximately 7.6 billion tons of industrial solid waste per year (MacBride 2012), nearly 30 times more than the municipal waste produced in a year. This striking difference in the amount of waste produced by the average consumer in contrast to corporations helps illustrate why targeting consumer level choices may not be as impactful as attempting to reduce corporations solid waste production.

Others may argue that the impact made via individual PC should not be considered insignificant just because it is smaller than the potential impact of reducing corporations' waste. This is true, but I am arguing not that ZW's precautionary consumption is insignificant, but that it is ineffective. ZW's PC can be seen as a form of what MacBride (2012) calls "busy-ness." In her book, *Recycling Reconsidered*, MacBride (2012: 8) defines busy-ness as a "fulfilling sense of work and achievement that often brings positive side effects but fails to reach the central effect." ZW's emphasis on reducing food plastic packaging waste through modes of PC embodies busy-ness by failing to achieve their central goal of significant environmental impact. Posting photos on Instagram of one's plastic-free grocery trips and receiving likes for this effort may feel fulfilling and even seems to produce minimal benefits to the environment, but it fails to address the bigger, systematic threat that industrial waste poses.

The utilization of Instagram in particular adds to this busy-ness by glamorizing and simplifying the practice of ZW. Social media is marketed as a way to share our lives with our friends, with Instagram in particular focusing on pictures and short videos as a way to stay connected. Instagram is an exceptionally powerful platform because of its widespread reach. One study found that over half of the internet using young adults they surveyed are Instagram users, with approximately half of these users using the platform every day. (Lee, Lee, Moon, and Sung 2015) Most Instagram users carefully curate their posts in order to present their lives in a more favorable light, often omitting aspects that would not be taken as positively (Goldsmith 2018). These tendencies apply even to those who share their ZW lifestyles through their Instagram posts which creates unrealistic expectations of the ease of ZW, as previously discussed. The overall illusion that Instagram promotes thus further advances the ZW lifestyle as a form of busy-ness.

Precautionary Consumption, Gender, and Access

The ZW community on Instagram is undoubtedly dominated by women. The most well-known public figures of the ZW community are regularly women with large followings, as seen with @trashisfortossers. Not only are the public figures within the community women, but the majority of their followers are women as well. Upon examining a post by @greenifyme, another public figure in the ZW community, I found that of the 288 likes on one of her food haul photos, only 19 of the likes were from accounts that appeared to be run by men, as determined by their profile photo, name, and profile

content. The remaining accounts were run by women or were accounts representing companies, blogs, or couples. Though this represents only a small portion of the ZW presence on Instagram, it illustrates that the ZW community is represented most significantly by women.

In this section, I examine why women may identify with the ZW community on Instagram through a lens of PC. I then discuss which groups of women specifically are most prominently represented in the ZW community and what this representation says about ZW as a method for eliminating plastic waste from our environment.

In the body of literature, women are usually considered to be the primary caretaker in the average American household (MacKendrick 2015). As the primary caretaker, women are often in charge of consumption choices, especially when it comes to food preparation. One study found that women spent twice as much time cooking and cleaning than their male partners (Beagan et al. 2008). Hence, PC is an inherently gendered practice as women are the one's making a majority of the consumption decisions (MacKendrick 2015). I suggest that this exposure to food preparation and its resulting waste is one reason why the ZW community is comprised of mainly women. On top of the fact that women have first-hand experience of how much waste they can produce through food, they also express involving themselves in food work out of concern for their family's health (Beagan et al. 2008). ZW's method of PC addresses this concern because ZW is often equated to being natural and being

“natural” is usually perceived with a positive connotation. This mindset was illustrated in a study where participants were asked about their views on organic and natural products, in which one participant expressed that “All-natural means it has less bad stuff” (Abrams et al. 2009: 369). Many people equate eliminating plastic food packaging to choosing only “natural” options because they are avoiding most processed foods. Thus, this idea of ZW as a healthy alternative could be another reason why women who are concerned for the health of their family members would be so drawn to ZW and its implementation of PC.

Among the women within the ZW community, the most followed women are of exceptional socioeconomic status (SES) with unique access to ZW resources. For example, @trashisfortossers is an entrepreneur with no children living in New York City who runs multiple successful small businesses. Her SES status, day to day schedule, and other demographic aspects of her life would not be congruent with a majority of the women living in rural, smaller cities.

Let us consider the fact that she lives in New York City, a fairly progressive city. New York county alone has 50 registered farmers markets compared to a state like Nevada, which produces the most landfill waste in America and has only 28 registered farmers markets throughout the entire state. (Land of Waste: American Landfills and Waste Production n.d.; Find a Farmers' Market, Farm Stand or Mobile Market 2019; Farmers Markets n.d.). Farmers markets are just one example of a resource that makes ZW living

achievable, and without these resources people attempting to live the ZW lifestyles they see on Instagram will face challenges to avoiding plastic food packaging waste.

The fact that PC is a gendered practice in addition to this overall unequal accessibility demonstrates the ineffectiveness of PC as a mode of eliminating plastic waste. The gendered nature of PC places unequal responsibility on women to be the driving force of plastic waste reduction. Furthermore, access to resources that make ZW living convenient and achievable, such as farmers markets, is necessary for someone to successfully lead a ZW lifestyle. Nonetheless, in a capitalist society like America, the options that consumers have are limited due to one's SES, geographic location, or even one's daily lifestyle (Scott, Haw, and Lee 2017).

Consequently, even when one attempts to utilize ZW's mode of PC, if their consumption choices are limited to food that only comes with plastic packaging, they will be unable to avoid it. ZW's encouragement of PC is thus an inadequate method to reducing plastic waste because it does not account for these factors.

Conclusion

The PC of plastic food packaging that the ZW community promotes on Instagram is ineffective in achieving their ultimate goal of reducing the threat of plastic waste on our planet not only because it is a form of busy-ness but also it lacks of focus on industrial waste. The utilization of Instagram adds to this sense of busy-ness by glamorizing and simplifying the practice of ZW. PC may particularly

attract women to the ZW community due to its relevancy to food work and focus on health, but it remains an ineffective method to eliminate plastic waste due to its gendered nature and the unequal access to resources necessary for a ZW lifestyle.

The work that ZW is trying to achieve is admirable and one that many people sympathize. However, it will require more than individual level PC to attempt to fix the astronomical levels plastic waste we are seeing at the global scale. Considering its powerful, relevant message and recent appearances in mainstream media, adherents to ZW practices should consider relocating their efforts from messages of PC to messages of communal action against systems that make plastic so prevalent (Kurutz 2019). Analyzing the ZW community on Instagram is specifically important because of Instagram's influence in the modern world. Instagram has become one of the fastest growing social media sites and reported having 500 million daily users on the platform as of 2017 (Balakrishnan and Boorstin 2017). With this kind of following, encouraging communal action against plastic waste rather than individual responsibility could lead to more effective environmental benefits. One potential opportunity would be rallying the community to target local government, and eventually larger political figures, to put pressure on corporations and hold them responsible for their solid waste amounts.

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Contentious Politics in China: Authoritarian Resilience

Chang-Dae David Hyun

University of Toronto

Chang-dae David Hyun received his H.B.A from the University of Toronto specializing in political science. His core interests during undergraduate were Chinese politics and developmental politics which led him spend one summer with a full scholarship in Tsinghua University of China and publish a policy proposal on how to improve Haitian economy. Currently, he is taking a year off before starting a law school this September.

Abstract: Contentious politics have led to regime downfall or democratization of many countries. Today, China is faced with increasing numbers of contentious politics. However, contentious politics in China does not result in regime change because the Chinese Communist Party (CCP) manages protests by keeping them fragmented and small in scale. It achieves this primarily through structural and institutional means, but is willing to resort to violent repression if a protest movement becomes too widespread. This paper is divided into four parts. First part is a background, giving stats to show that protests are frequent but small in scale. Second, I will argue that China's weak institutions – labour union, media, and internet – preclude small-scale protests from becoming large, cohesive movements. Third, I will argue that the government in China is structured in such a way that grievances are pursued at the local level; therefore, regional protests are unlikely to become national movements. Finally, even if protests become large and target the central government, the CCP is capable of suppressing protests using military, and police, as a last resort.

Keywords: China, Contentious Politics, Authoritarian Resilience, the Chinese Communist Party

Introduction

Throughout history, contentious politics have led to regime downfall or democratization of many countries. In the early 1900s, devastations of WWI caused many protests that targeted the government. Eventually, popular demonstrations led to the regime collapse, and it created Fascists States – Germany and Italy – and the Communist Soviet. In a more recent event, protests led many authoritarian regimes to democratize during the Arab Spring of 2011.

Contentious politics bring political change because concerted resistance can force a government to change (Friedman and Taylor 2012). However, Chinese government shows this is not always the case. Although the number of contentious politics has been steadily increasing in China, the government preserves its status quo by keeping protests small. Researchers suggest that even though the absolute number of protests has been increasing, the proportion of cases with 100 or more participants has been declining (Cai 2010). In 1993, 16.1% out of 8,700 protests had 100 or more participants; however, in 2003, 12% out of 58,500 protests had more than 100 participants (Cai 2010). In addition, only 5% of petitions from industrial sectors in 1999 had more than 100 participants and none of it had more than 500 people (Cai 2010).

Unlike the democratic movements that transformed many states of Europe and the Middle East, contentious politics in China does not force its government to change. The Chinese Communist Party (CCP) controls institutions to keep protests independent from each other, the central government dodges protestor's rage by

blaming the provincial government, and the CCP uses physical force to suppress movements if necessary. These points will be elaborated on using three subsequent parts. In the first part, I will argue that China's weak institutions – labour union, media, and internet – preclude small-scale protests from becoming large, cohesive movements. Second, I will argue that the government in China is structured in such a way that grievances are pursued at the local level; therefore, regional protests are unlikely to become national movements. Finally, even if protests become large and target the central government, the CCP is capable of suppressing protests using military and police as a last resort.

Weak Institutions that Represent Protestors

China's small-scaled protests can be explained by weak institutions – labour union, media, and internet – that otherwise might turn small, regional movements into national ones. The Chinese labour union has not been successfully leading large-scale workers' protests because they are largely controlled by the government. China's sole labour union, All-China Federations of Trade Unions (ACFTU) represents 280 million workers, but its leadership appointment is based on his/her connection with the party rather than his/her relationship with labourers. Consequently, unlike other countries – the U.S, Canada, and the Western Europe –, who elect its union leaders from pool of working class, the ACFTU leaders have been appointed from bureaucrats. For example, Wang Zhaoguo who served as the ACFTU Chair in 2002, had a career in Taiwan Affairs Department for seven years (Friedman 2014). Li Jianguo, who was

the Chair between 2013 to 2018, served ten years as a provincial party secretary of Shaanxi before coming to the office (“Li Jianguo” n.d.). The current leader of the ACFTU, Wang Dongming, was the party secretary of Sichuan province between 2012 and 2018. (“Wang Dongming” n.d). More importantly, these leaders jointly held the ACFTU Chair position while serving as the Vice-Chairman of the National People’s Congress (NPC). Due to union leaders’ bureaucratic background, lack of experiences with labourers, and political interest, the labour union ensures that protests are isolated from the society and do not pose a threat to the regime.

Moreover, the media is unwilling to spread information, which restrains protests to become larger in scale. According to Esarey (2005:54), the Chinese media is described as the “party’s mouthpiece as well as an industry.” The party retained firm control over media industries through appointments of top-level managers. The Propaganda Department and the CCP Organization Department have been appointing top-level managers whose career prospects were based on the loyalty to the party. Although managers needed to produce media contents that are attractive to consumers, they had to censor politically sensitive topics (Esarey 2005). For example, Xinhua and many other state media did not cover large protests in Wukan village until a couple of months later, when they started to praise how the provisional government handled the incident effectively (“China’s State-Run Newspapers Praise Government Handling of Wukan Protest” 2011). Knowing the media-state connections, citizens are reluctant to approach media for criticizing

the state. According to a survey conducted by Cai (2008:97), “only less than 5% of citizens chose to approach media when they had conflicts with state authorities.” Therefore, media is used as a tool by the government to control the flow of information and is viewed as untrustworthy by the public. This censored media makes protests regional, isolated, and small in scale.

Furthermore, the CCP is capable of controlling the internet that could disseminate information widely and precipitate regional protests. Therefore, the CCP has been maintaining stringent control over the internet, which is sometimes called as the Great Firewall of China (Barne and Ye 1997). Li Yonggang, a Chinese scholar, compares hydroelectric water-management system to China’s internet control that includes censorship, surveillance, and manipulation of information (Mackinnon 2011). For example, the central government ordered China’s largest websites, Sina.com and Baidu, to censor information by deleting, blocking, or banning certain topics or keywords (Mackinnon 2011). During the Chinese pro-democracy protests in 2011, also known as the Jasmin Revolution, the central government ordered to block the word “jasmin” and prevented further spread of information that could facilitate larger movements (Jacobs and Ansfield 2011). Moreover, during the Xinjiang ethnic riots in July 2009, the CCP cut off the internet in the entire province for six months to prevent protests from becoming widespread (Mackinnon 2011).

State-Local Separation of Responsibility

The CCP legitimizes its leadership through state-local separation of responsibility. Most protestors target local governments instead of the central government because of this split in their duties. Due to decentralization of power and cadre evaluation system, local governments are primarily responsible for handling disputes. Meanwhile, the central government moderates conflicts between local officials and protestors with the petition and the court system. This directs dissident's anger toward local governments while the central government arbitrates disputes to gain favour over distressed citizens.

Since the early 1990s, China's institutional decentralization started to put much more responsibility on local governments in handling daily issues, which directly put them in conflict with local citizens. Especially after the fiscal decentralization, local governments started to take a primary role in expanding their budget, but many ended up having major disputes with citizens. For local governments, land expropriation has been the fastest way to generate revenue because governments can stimulate the local economy with real estate developments. Chinese constitutions make land expropriation much easier for local officials because village cadres have the deciding vote regarding land use within a village (Cai 2010). However, these processes often result in creating direct conflict between local governments and its citizens. For example, in Shantou city in Guangdong province, large numbers of peasants attacked homes of village cadres in more than ten villages because

demonstrators were suspicious of cadre's corruption in land sales (Cai 2010).

In addition, demonstrators target local officials because local governments are primarily responsible for resolving disputes under the cadre evaluation system. The CCP established three performance targets for the political promotion: the veto targets, which prioritize social stability; hard targets, which focus on economic growth; and soft targets, which include long term issues such as health care and education (Ong and Gobel 2014). Even an outstanding performance that meets hard targets and soft targets can be discredited if local officials fail to meet the veto target that is largely concerned with protests. Therefore, local cadres prioritize dealing with protestors, which include concessions and repression. Their strategies vary depending on forcefulness of action (scale of resistance) and cost of concession (financially). Yongshun Cai (2010) argues that when there is a forceful resistance group that demands a low financial cost, most local governments make financial concessions; however, when there is a weak resistance group that demands a high financial cost, most local governments use the physical force to repress. In cases where a weak resistance group that demands for a low concession, usually local governments does not respond (Cai 2010). In all of these cases, local governments are the primary contacts in resolving disputes. As a result, protestors target local governments for the grievances that governments created while demanding for the compensation.

In the midst of disputes between local cadres and citizens, central government legitimizes its leadership by opening up

alternative channels – the petition and the court system – for citizens to appeal their demands. Petitioning the central government has been recognized as a constitutional right since the late 1970s in China (Li, Liu, and O’Brien 2012). After Hu Jintao announced improvement of the petition system to accommodate more citizens, the number of petitioners increased dramatically between 2003 to 2007 (Li et al. 2012). During this period, the petition office handled 10 million cases annually (“Complaint Bureau busiest office in Beijing” 2007). The effectiveness of the petition system in resolving disputes still remain minimal because the central petition office sends most cases back to the local level. However, the petition system has been successful in legitimizing the central government by appearing to take the initiative to resolve citizens’ concerns. Furthermore, the CCP recently made improvements in the court system in order to legitimize its leadership. The legal system has been more effective in resolving disputes than petitioning. According to the China General Social Survey, 27% of total disputes were channeled through legal actions in 2005 (Cai 2010). Many cases, such as mediation and arbitration of labour, have been resolved through the court system (Cai 2010). There are still limitations to the court system because the court is not independent from the CCP and therefore hard to criminally punish party officials. However, the court system is increasingly becoming more effective in resolving civil litigations (Cai 2010).

Consequently, data shows that most Chinese citizens favour the central government much more than local governments. According to the World Values Survey China in 2012, the satisfaction

scored for the central government was 76 out of 100, while village level governments were at 54 (Tang 2016). Furthermore, in terms of level of trust, central government officials scored 83 points while village level officials and county officials scored 54 and 60 respectively (Tang 2016). Both results show that citizens favour the central government and its officials far better than local government and its associates. Other research that measures the government dissatisfaction after imposing unpopular policy provides a similar result. When the policy dissatisfaction increases from minimum (0) to maximum (1), the dissatisfaction with village level governments increases by 51.7%, county/city level governments by 48.5% but it is much smaller in the central government by 29.1% (Tang 2016). It shows that dissatisfaction with policies affect the credibility of local governments much more than the central government. Due to the split in the state and local responsibilities, protestors target local governments instead of the central government, thereby protecting the legitimacy of the state.

State's Capacity

Overall, China's weak institutions and its localized governing structures prevent small, regional protests from becoming large national ones. When these mechanisms fail, however, and national protest movements arise, the government uses force as a last resort. The state is capable of suppressing large scaled demonstrations using military and police. In the early years of the CCP, the party used the People's Liberation Army (PLA) to suppress movements that could pose a threat to the regime's stability. After winning the civil

war against the Kuomintang, who fled to Taiwan after the defeat, the PLA's primary goal shifted to restoring order in the newly created People's Republic of China. In 1959, massive demonstrations occurred in Lhasa, Tibet that demanded Tibetan autonomy, and this has posed a significant threat to the CCP. Tibetan Uprising was ethnic in nature with the goals of protecting Tibet's culture and religion (Norbu 2001). The movement had a strong leader, Dalai Lama, and the protest was large-scaled with more than 300,000 participants (Norbu 2001). The CCP ordered over 30,000 PLA troops to enter Tibet and suppressed demonstrators by killing 87,000 Tibetans (Norbu 2001). Similarly, in 1989, Tiananmen protest in Beijing posed a significant threat to the regime's stability. The protest was large with nearly a million Beijing residents (Zhao 2001). It criticized the dictatorial regime while demanding for a democracy, and demonstrators were from various sectors of the society ranging from police officers, lower party officials, youth league, working-class, and professionals (Zhao 2001). The protest again was suppressed by the PLA after the CCP declared Martial Law. Nearly 300,000 troops began severe suppression of demonstrators, which resulted in thousands of casualties (Thomas 2006). For the CCP, the PLA saved the regime from collapsing during these massive protests. It was possible because the first-generation leader, Mao Zedong, and the second-generation leader, Deng Xiaoping, had stringent control over the military while on their duty as the General Secretary (Kiselycznyk and Saunders 2010).

Since the early 1990s, the People's Armed Police (PAP) replaced the role of the PLA in controlling mass demonstrations. The Tiananmen incident marked the turning point for the PAP when the CCP started to acknowledge the necessity for the strong public security force that could focus on social instability. Consequently, between 1989 to 1992, the PAP budget expanded by 45% from 1.1 billion USD to 1.6 billion USD (Sun and Wu 2008). Within ten years after the Tiananmen incident, the PAP developed into a nation-wide armed force with more than 1.1 million members (Sun and Wu 2008). Meanwhile, the CCP maintained strict control over the PAP through an institutional structure of the CCP that authorizes the State Council and the Central Military Commission to directly oversee PAP's operations (Sun and Wu 2008). When there were large scaled demonstrations that local governments could not handle, the central government ordered the PAP to effectively suppress such movements. For example, when 100,000 protestors were mobilized against the Sichuan Dam project in 2004, 10,000 PAP troops were deployed and put an end to the movement (Haggart 2004). Similarly, during the 2011 pro-democracy protests, upsurge of cross-regional demonstrations between twelve to thirteen cities were stopped by 180,000 PAP troops and 560,000 security volunteers ("China arrests more activists for urging protests" 2011).

Conclusion

Contentious politics, in and of themselves, do not necessarily threaten the stability of an authoritarian regime, so long as they are kept fragmented and small. Furthermore, even large scaled

demonstrations do not naturally mean the collapse of regime, as long as the state is capable of controlling the military and public security forces to suppress such movements. The CCP has been effectively controlling the labour union, media, and internet to prevent the spread of protests, and kept them isolated from the general public. Although there were few incidents that mass demonstrations became widespread, the CCP was capable of using the PLA and the PAP to suppress such movements. Despite the significant control over the society, most Chinese view the CCP as positive. It is largely because of the split in responsibility between the state and local government where local officials take primary role in creating and resolving disputes. Consequently, most protests target local governments while the central government dodge criticisms by presenting itself as a neutral arbitrator. Therefore, despite the rising numbers of contentious politics, China still remains as one of the most durable authoritarian regimes today.

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**The Implication of Cultural Revolution and Economic Reform
on Rural Women's Political Participation in Post-Mao China**

Ouwen Jiang

New York University

Ouwen Jiang is a student of New York University majoring in Political Science and Social Work. This article discusses the implication of Cultural Revolution and Economic Reform on rural women's political participation in post-Mao China. The paper was inspired by a Political Economy class the author took in junior year.

Abstract: Since the passage of the Organic Law of Village Committees in 1987, direct election of village leaders has been conducted in China, and eventually reached a national scale after ten years' experiment. However, rural women's political participation is discouraged by the social and economic reality in the countryside. Taking a historical retrospect, this research project attempts to analyze the impact of Cultural Revolution and Economic Reform on rural women's voting rates and representation in local governments in post-Mao China. The results show that these two landmark political and social transformation in the 20th century have reinforced traditional gender roles, excluded rural women from power, and posed additional barriers to their political involvement by introducing new problems such as landlessness.

Keywords: China, Politics, Cultural Revolution, Economic Reform, Women, Election

Introduction

Although widely criticized for its social and political chaos, the Cultural Revolution is believed to have enhanced women's autonomy and socio-economic status through a party-led feminist agenda. Guided by Mao's famous proclamation that "women [can] hold up half the sky" women were massively mobilized into the labor force and politics, with the largest number of women being promoted to cadres status in 1962 and 11% of rural party branches having women as either party or deputy party secretaries in 1975 (Rosen 1995: 334). Yet, after Mao's death and the reformers' rise to power, the average number of women recruited into rural party branches dropped from 13.5% between 1966-1976 to 8.6% in the next five years, and currently, only 1% of all village committee chairs are women despite the gender affirmative action enforced in the local elections (Howell 2006).

Such rapid removal of women from power presents an intriguing question that requires a deeper analysis of history that goes beyond the discourse of cultural norms (e.g. strict gender roles, women's "inferiority" to men and lack of self-confidence) and education levels. My hypothesis is that the state-oriented nature of the Cultural Revolution, which only sees the utilitarian value in women and ignores the deeply-embedded gender problem, has not only determined the failure of securing any gendered breakthrough achieved for this period but also created huge barriers to women's future political involvement. The economic reform with its market and money-driven ideology further weakens rural women's incentive

to engage in politics, and the subsequent introduction of household responsibility system and rural land policies, combined with other social factors (e.g media emphasis on a return to “femininity” and recruitment of inexperienced women into local political bureaus), all served to restrict women’s political participation and reinforce gender stereotype of only men being capable of doing politics.

Literature Review

Most papers examining rural women’s low political participation in China analyzed the problem through the lens of cultural norms and institutional inequality. The patriarchal system (Altindal 2009), low incomes and education level (Zhang, Wang, and Liu 2009), Confucian values (Zhou and Gong 2014), as well as the lack of systemic support (Li 2015) are all factors that confine women’s role in politics and their level of involvement. For example, Pang (2014) concludes community norms, level of poverty and the perceived low quality of women in terms of education levels and ability as main reasons for the low voting rates of village women in Ningxia Autonomous Region. Similarly, Sargeson and Jacka (2017) demonstrate that low democratic quality combined with weak financial resources and institutions impede women’s substantive representation in village elections. Insightful as they are, few of those articles have considered this issue from a historical perspective, or linked the ideological and structural barriers to the effect of Cultural Revolution and Economic Reform. What’s missing in their analysis is a more nuanced view on the hidden danger built into the system

during this period that has become more transparent and detrimental as time proceeds.

Among the articles that did provide a historical context, the emphasis is on the effect of Cultural Revolution and Economic Reform on gender inequality that significantly limited rural women's earning ability and educational opportunities. Only a few of them establish a direct relationship between these two historical incidents and women's political participation, with Zhou's (1993) research on the conditions regarding women cadres in Xiantao Municipality in Hubei Province most relevant to this research. In her survey, Zhou provides detailed year-by-year data on the promotion of women cadres from 1949-1985 and separates her analysis into three parts, covering the period before, during, and after the Cultural Revolution. The implementation of household responsibility system, the weakening of mass organizations, and the party's reduced incentive to recruit women are shown as reasons for the decline of women's party membership. In this paper, a similar time framework will be adopted. With a close examination of these two historical incidents and their impact on rural women's lives, a more comprehensive understanding of the social and political reality faced by those women can be obtained, as well as their ability and willingness to engage in politics.

Cultural Revolution

1) State Feminism

Since its inception, the Chinese Communist Party (CCP) has at least outwardly championed a feminist agenda, propagating slogans

that advance women's liberation and gender equality. However, the party's strategy to mobilize women into heavy industry was a clear response to the radical policy of rapid industrialization that required massive labor force. Women, who were in Mao's vision a wasted reservoir of labor, were indoctrinated to "hold up half the sky" and work side by side with their male counterpart in nation-building. As Deng Yingchao, Vice President of the All-China Women's Federation during the 1950s and 1960s, emphasized in 1953, "women increasingly participated in heavy industry as a result of answering the state's call" (Jin, Manning, and Chu 2006: 614). The transformation of gender division and women's increasing visibility in politics were the consequence of such mobilization, rather than the aim.

Ironically, women's participation in labor did not translate into adequate protection of their rights, or the eradication of Confucian-patriarchal ideology. The slogan that "men and women are the same, and women comrades can achieve whatever men comrades can achieve" simply dismissed the cultural and political obstacles that were unique to Chinese women. The so-called "gender equality" was achieved through the muscularization of women, who were encouraged to take men as the norm and suppress their feminine characters to make themselves more competitive.

2) Iron Girl Movement

Perhaps no example can demonstrate the previous point better than the Iron Girl Movement during the Cultural Revolution (1966-76). Rural women, in particular, were recruited into single-sex

brigades to work in oil fields and transportation. Although they received widespread party recognition, the assigned work exceeded most women's physical capacity, and resulted in serious illness that eventually led to the disband of many specialized teams (Jin, Manning, and Chu 2006). Even the party-led All-China Women's Federation (ACWF) expressed its criticism in a report, where the movement was said to "harm the protection of women and their labor enthusiasm for long periods" (Jin, Manning, and Chu 2006: 622).

Even when performing as well as if not better than men, women received less work points for the same hours, and women faced with the double burden of work and family responsibility. Married women in the countryside were excluded from brigades because they were denigrated as backward and non-revolutionary for doing housework and providing childcare. Many sent-down youth were shocked by rural women's subordination and the persistence of gender inequality in the village (Entwisle and Henderson 2000). Since entrenched patriarchal ideas and customs were so entrenched, rural women's political participation faced stronger male resistance as they refused to recruit and train women in the party due to the alleged lack of political consciousness and experience (Keshena 2012). Many women cadres that were promoted to higher level party position were sent-down youth instead of local women because of the former group's higher education level and degree of freedom.

3) All-China Women's Federation (ACWF)

As the first nationwide women's organization, ACWF was established in 1949 to promote women's social and economic status

in China under the party's supervision. In the early years of formation, the ACWF remained relatively independent and was able to challenge the party's narrative, although not without limit. For example, when CCP leaders asserted that women's continued role in doing domestic work contradicted the Marxist–Leninist ideology, ACWF contested that under the current economic condition, not all women could be offered a job, and by carrying out family responsibility, they nevertheless contributed to the development of socialism (Tsui 1998). The Five Good Family Campaign was subsequently introduced in 1956 to acknowledge women's effort in taking care of families and the importance of their work to the state.

With the creation of ACWF, women cadres were recruited into the organization at all levels, and responsible for “women's work” such as family planning and education. In fact, the position held by women cadres in the countryside before 1966 was mostly in this area, and promotion to the rank of commissioner or director in the local Women's Federation seems to be the only possibility for female party members, which created a huge limitation to rural women's political participation that still exists today (Zhou 1993). During the Cultural Revolution, ACWF was shut down and completely absorbed into the party framework. Women's problems were no longer recognized as separate issues, but a part of the class struggle that would be simultaneously resolved with the success of the revolution.

4) Implication For Rural Women's Political Participation

Women's participation in labor force and politics before and during the Cultural Revolution demonstrates the process through

which the party successfully overrides traditional patriarchal authority with its own authority. For rural women, the socialist revolution had left the patriarchal system intact and condoned such exploitation of labor within the family. Those women remained heavily dependent on their husbands and burdened by the traditional gender roles. After Mao's death, the "iron girl" was ridiculed in popular literature for being repulsively muscularized and anti-human nature. Retrieving one's own femininity became a progressive attitude, and gender differentiation was actually favored by women in clothing, occupation and social roles. Although many of them joined the party, their political power was restrained in the Women's Federation, and thus unable to reach other male-dominated fields such as economic planning.

The transformation of ACWF into a party organ that is completely under the state's control also hinders rural women's involvement in politics as sometimes the project conceived by the federation focuses more on maintaining social stability and promoting local economic growth, rather than encouraging women's education and enhancing their political awareness (Zhou 1993). Rural women are shown to have distant relationships with the local Women's Federation because of "its weak political functions and their emotional detachment from it" (Huang 2018: 259). Acting as the state's agent, the Women's Federation's role in promoting rural women's political participation proved to be very limited (Huang 2018).

The Economic Reform

1) Overview

The Economic Reform, introduced since 1978, has brought new prosperity to China. Divided into two stages, the reform decollectivized agriculture and opened up the country to foreign investment in the late 1970s and early 1980s, and privatized the state-owned industry in the next decade. The era is characterized by rapid change in socioeconomic and political structure, rural migration to major cities, and a slight shift in the collectivistic ideology. For rural women, the reform is a double-edged sword as they enjoyed more freedom in production, but were further bound by their family responsibility and the entire household.

2) Household Responsibility System

Launched in the 1980s, the Household Responsibility System contracted land owned by the People's Communes to private hands, and peasants were able to exercise control over their own land under certain requirements. After the improved productivity generated by the system created labor surplus in agriculture, many women voluntarily engaged in sideline work at home, activities that were banned by the government before the reform. They raised pigs, grow vegetables, and gather chicken eggs, and doing whatever work they deemed as manageable. According to research conducted in Daqiuizhuang, a rural village that is approximately 50 kilometers from the city of Tianjin, 95% of the local women participated in the collective agriculture labor force prior to 1980. But by 1988, 84% of married women left the workforce to become housewives (Zhang and

Ma 1988). The physical hardship rural women endured during the years in heavy industry also hastened such retreat and reinforced the notion that women are naturally unsuitable for certain jobs, an ideological barrier that still discourages rural women's political participation today. Compared to the pre-reform period, rural women enjoyed more freedom as they no longer faced the double burden of commune work and housework. Sideline production proved to be extremely profitable in the early reform years, and more and more women chose to stay at home instead of attending school, which resulted in a decline in overall school attendance rates and a corresponding increase in the inequality between male and female education level in the countryside (Luo 1997).

The party propaganda also changed its narrative from encouraging rural women to participate in the labor force to emphasizing a honorable return to the family, and the success of women who engaged in sideline works. For example, an article titled "Mrs. Xie Fu and her long haired rabbits" was published by the Women's Federation in 1979, in which Mrs. Xie's story of raising rabbits and selling their furs for 530 yuan, a huge amount of money based on the standard of that time, was praised as a model for emulation (Watson 1992). However, the diversification of income-generating activities have deprived those women of their time to engage in public affairs. It becomes more difficult for the ACWF and other party organizations to recruit women who are bound entirely within their household (Luo 1997). Interest in politics and voting

declines as women become more concerned with making money to improve the welfare of their own families in a new economic order.

In general, the decollectivization of agriculture directly led to the resurfacing of strict gender roles and an old patriarchal belief of “*nanzhuwai, nuzhunei*” (man managing the affairs outside home and woman inside) in the village. Rural women were ascribed with the new role of being virtuous housewives that result in lower educational level and decreased interest in public affairs. The shrinking value of crops and livestock in later years when the agriculture market becomes more mature and competitive makes those women even more dependent on their employed husbands. All-China Women’s Federation and the National Bureau of Statistics have shown that the average gender income gap in rural areas increased to more than 40% between 1990 and 2000, partly because women had become the main labor force in agriculture, the least profitable sector of the economy (Sargeson 2006). A vicious cycle is thus created, with limited initiatives from local Women’s Federation to mobilize any change.

3) *Free Labor Market*

The creation of a free labor market has two major implications on rural women’s political participation. First, women faced severe discrimination in employment as managers acted with their own discretion and favored men in the selection process, who were considered as more stable, reliable and hard-working. When labor surplus became a huge concern in the early 1980s, some sociologists and economists openly proposed that “the high rate of

women's employment was 'unsuitable' for the Chinese economy at that stage and suggested that women should return home to make room for men" (Zheng 1997: 130). The communist party, following the same logic, reduced the number of women cadres recruited from the countryside. The new era, it is said, demanded "warlike" and "entrepreneurial" spirits, qualities that rural women lacked, and the majority of women cadres were thus swept away in the countryside (Rosen 1995). In a study of Xiantao Municipality (formerly Mianyang county) in Hubei Province, the exclusion of women from local party branch is cited as one major reason for the decline in the number of female brigade head from ninety-three in the late 1979 to only twelve in 1990 (Rosen 1995).

In addition, with the rapid economic development in urban areas, men and unmarried young women in the countryside migrated to the cities in search of better job opportunities. The intensification of women's work due to male migrant labor further reduced their incentives to participate in politics, and develop their career in this field. Most sent-down youth had also left the village to pursue a more promising future, and the reservoir of young, educated women in the rural areas had disappeared completely since the early years of the reform (Rosen 1995). One unintended consequence of such depletion of human resources is that when the party policy once again favored the promotion of women cadres, it's hard to find anyone eligible within the local party branches. As a result, "some teachers were turned overnight into county or bureau heads," but many of them were simply unprepared for the new responsibility (Zhou 1993: 60). It was

exactly at this time that the criticism of the poor quality of women cadres began to appear.

4) *The Land Management Law of 1998*

Introduced in 1998 in response to farmers' reluctance to invest in land over which they didn't have secure control, the Land Management Law established a thirty-year land use right for all farmers, and strongly discouraged land readjustment. Although the law successfully increased agriculture production, it caused many rural women to be landless when they get married as there would be no increase in the family's total land allocation with the arrival of a daughter-in-law (Song and Dong 2010). Divorced and widowed women had even more limited access to farmland because of their separation from husbands, and exclusion from the natal families by local tradition. It is concluded by many studies on rural women's land ownership that those who lack a claim to land are more dependent on their partners and at significantly higher risk of domestic violence (Song and Dong 2010). Such reliance only serves to reinforce the patriarchal structure already entrenched in the village, and rural women are reported to lose autonomy in village election when they are forced to vote for the predominantly male candidates favored by their husbands and father-in-law (Pang, Zeng, and Rozelles 2013). As a result, there has been no incentive for those women to cast a ballot, and no opportunity for women cadres to rise to any leadership position in the village.

Conclusion

The low political participation of rural women presents a huge challenge to gender equality and women's welfare in the countryside. The historical roots of the ideological and socioeconomic barriers to a higher level of involvement are explored in this paper as being the Cultural Revolution and the Economic Reform that did not aim for women's emancipation or increase their say in domestic politics. Rural women were further trapped in their household, and unable to express their opinions through voting. More specific policies should be enacted to protect women's safety in family and their access to political power.

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A Study of Chinese Language Acquisition: Chinese L2 of

(Morpho)-Syntax and Lexemes

Brianna O'Boyle

Gettysburg College

Brianna O'Boyle graduated from Gettysburg College in 2018. She majored in East Asian Studies with a concentration in Chinese and a double minor in Spanish and History. This article was her senior capstone and it gives attention to an area of comparative linguistics between Chinese and English that had not been previously examined. This paper was inspired by the desire to help promote better understanding of the ways to teach Chinese to native English speakers. This paper would not have been possible without the guidance of Professor Jennifer Dumont and the encouragement of Professor Jennifer Bloomquist.

Abstract: This study analyzes two groups of young adult native English speakers of L2 Chinese. One group consisted of beginner level students and the second group was comprised of intermediate/advanced level students. Both groups were administered acceptability tasks in three linguistic areas: syntax, morphosyntax, and semantics. It was hypothesized that students at the beginning level would have good mastery of measure words and semantic differences of lexemes (ren shi 认识 and zhi dao 知道 and ke yi 可以, hui 会, neng 能), some mastery of syntax, and little to no mastery of aspectual markers le 了 and guo 过. It was hypothesized that students at the intermediate/advanced level would have strong mastery of measure words, lexemes, and syntax, and partial mastery of le and guo. Both groups' answers were compared to those of a native speaker control group. It was found that English speakers in both the beginner and intermediate/advanced groups comparatively had greater mastery of syntax and measure words (morphosyntax) while they both struggled with le and guo aspectual marker structures. Additionally, in this study lexemes had the greatest amount of variation in all groups. It is hoped that this kind of research will help shed light on what linguistic areas are more difficult for native English speakers to learn, therefore helping scholars devise more effect teaching methods for these topics.

Keywords: Linguistics, Second Language Acquisition, Mandarin, Chinese, English, Native English Speakers, Syntax, Morphosyntax, Semantics

Introduction

This study presents findings on the acquisition of linguistic features by native English speakers learning Chinese. The word “Chinese” in this work refers to Mandarin, also known as *putonghua*, the national language of China. Three categories syntax, morphosyntax, and semantics were investigated with each category having two subcategories. For syntax, also known as word order, two variables were tested: time and locative. Morphosyntax is the study of morphemes, the smallest parts of words that have significant meaning, and how they function syntactically in a sentence. This subject was investigated in two areas: noun classifiers (measure words) and aspectual markers (*le* 了 and *guo* 过). Semantics are the meanings of words in a language and this was investigated in two examples *ren shi* 认识 vs *zhi dao* 知道 and *ke yi* 可以 vs *hui* 会 vs *neng* 能. *Ren shi* 认识 is used to talk about things a person is familiar to while *zhi dao* 知道 is usually used to express knowledge someone has. This linguistic feature of Chinese is somewhat similar to the lexemes in Spanish *saber* and *conocer*. *Ke yi* 可以/ *hui* 会/ *neng* 能 which in English all mean “can” or “to be able to.” However, there are slight variations between the words, for example *ke yi* 可以 is generally used to signify permission while *hui* 会 is having the learned ability, and *neng* 能 is generally used to mean to have the capability to do.

English and Chinese are two of the most spoken languages throughout the world, but are quite different linguistically. For

example, the two languages have some linguistic features that are completely different such as Chinese is a tonal language, while English is not. Since the languages are so distinct, many English speakers have difficulty learning Chinese and vice versa. This research hopes to help identify which areas are most problematic for L2 learners, so future teachers may identify what areas to target more time for teaching on and/or help develop more effective pedagogy for teaching these areas. L2 learners refer to individuals who are learning a second language. In this paper, the participants studied were L1 English speakers, L2 Chinese speakers since Chinese is their second language, and this paper is investigating how they are learning Chinese as a second language.

This paper introduces the linguistic concepts explored in this paper. Following the introduction is the background and contextual section, which aim to explain why this research is important as well as define linguistic terms for readers who may not be linguists. Following the background and contextual section is the literature review, which summarizes prior research done in the field concerning these topics. The methods section addresses how the design of the task was formulated and applied. The results and analysis go over the findings of the research and its implications. The conclusion summarizes the purpose and findings of this study.

Background:

As mentioned before, Chinese and English are two of the most spoken languages around the world. English has 1.12 billion native and non-native speakers around the world whereas Chinese has

1.1 billion speakers around the world, while the next closest language is Hindi with 534 million speakers in the world (Simons and Fennig 2018). China is known as one of the world’s emerging economic superpowers, and because of this economic position there are many business and job opportunities in China (Barboza 2010). Due to these economic factors it is no surprise that within the U.S. more and more people are learning Chinese (see Table 1). However, since linguistically the two languages are very different as they are members of two completely different language families that use different orthographic systems, it can be challenging to teach Chinese to native English speakers. This study hopes to discern at what points L2 learners acquire certain linguistic features by testing both beginner and intermediate/advanced-level L2 learners. With this distinction, perhaps teachers of Chinese as a second language can better understand how to teach these concepts if it is apparent that L2 learners do not fully acquire certain linguistic features even at the intermediate/advanced levels.

Table 1: Language Enrollment in Chinese (MLA: 2016)

| | 2016 | 2002 | 1990 | 1980 | 1970 | 1958 |
|----------------------------------|--------|--------|--------|--------|-------|------|
| | Fall | Fall | Fall | Fall | Fall | Fall |
| Enrollment in Chinese in the USA | 53,069 | 34,153 | 19,427 | 11,366 | 6,115 | 615 |

Contextual Section:

Linguistics is defined as the study of language as a series of interrelated systems governed by rules (Millward 2012:1-6). All languages include the systems of phonology, morphology, syntax, lexicon, semantics, and graphics (when there is a written form of the language) (Millward 2012:1-6). This article focuses on syntax, morphosyntax, and semantics. Syntax is defined as the arrangement of words into sentences (and/or clauses and phrases). English is defined as a subject verb order (SVO) language: word order is subject verb object. An example of this is in the sentence “I love cats,” *I* is the subject, *love* is the verb, and *cats* are the direct object. This is very different than Chinese, which is often also classified as a SVO, but with the caveat that “topic” is a highly influential grammatical factor. For example, oftentimes the “topic” needs to be in the beginning of the sentence while other SVO languages like English may have more flexibility. This is demonstrated in the sense that “time” and “locative” or the “topic” must be placed in the beginning of the sentence in Chinese while in English they can be placed in the beginning or end interchangeably. This makes Chinese stand out from other SVO languages, even though it generally follows the structure of subject, verb, and then object. Scholars have attempted to categorize this phenomena. Li and Thompson (1981) mention that Chinese does not neatly fall into SVO, VSO, or SOV languages, and “topic” is a strong component in this categorization. However, there has been some discussion within the field as to whether or not this accurately defines Chinese, like in LaPolla’s (2009) article in which

he argues Chinese is a topic-comment language rather than simply SVO or topic prominent. Additionally, in Lu and Wu's (2009:41) article they argue that while LaPolla (2009) made an insightful assertion that Chinese is a topic-comment language, this is an oversimplification. And this does not account for the fact that in Chinese the placement of adverbials is different compared to other VO languages. In Chinese, these adverbials are in a preverbal position between the topical material and the verb (Lu and Wu 2009:41-43). Though despite the lack of agreement on this subject, it is clear that "topic" is very important in the word order in Chinese. Even though Chinese and English are SVO languages the word order may be different because Chinese tends to put more importance on the topic rather than the subject as seen in English.

Syntax is not the only linguistic area in which Chinese varies from English, there are also a number of morphological phenomena that are hallmark to Chinese such as measure words and aspectual markers. Measure words are an obligatory category in Chinese that indicate a quantity of a noun. The noun must be preceded by a number and measure word creating the structure NUMBER + MEASURE WORD + NOUN. In example (1) we can observe how measure words (bolded) function.

(1) Classifier Measure Word
 一 + 个 + 苹果
*Yi + **ge** + ping guo*
 one + **MW (CL)** + apple
 "One apple"

There are a number of measure words in the Chinese language, and while *ge* 个 is the universal one, most measure words are more specialized and speak to the nature of the noun. For example, there are specific measure words for discussing animals relative to the size of the animals. Yet despite the fact there is no true equivalent to this morphosyntactic feature in English, this is a very structured linguistic feature. Once L2 learners have learned all the appropriate measure words, they should be able to recognize how to use and apply them with some consistency. It is also important to note that it has been reported that some native speakers use *ge*, the universal measure word, to replace some of the more specialized ones. For example in Li and Thompson's reference grammar they state that the "proper" classifier for *cai* 菜, a course of food, is *dao* 道 but nowadays it is completely acceptable to use the universal measure word *ge* 个 instead of the highly specialized one (Li 1981:112).

However, there are a number of other morphological features of Chinese that are not as easily acquired for L2 learners. One of the most difficult concepts for L2 learners is the acquisition of *le* 了 and *guo* 过, which are aspectual markers. One of the reasons why this is such a difficult concept for many L2 learners to learn is because Chinese is a language that lacks tenses, which is very different than English and other Indo-European languages. In order to convey this concept of "time" Chinese usually relies on context. For example, the following sentence is ambiguous because it could be in present tense or past tense:

(2) Lack of tense

我吃面包

Wo chi mian bao

“I eat bread”

“I ate bread”

In order to clarify the time at which the action occurs, a time word is needed such as “today” or “yesterday.” This usage of time words to indicate the tense of the sentence is different than aspectual markers, which are used to indicate the relationship between the actions of the subject/s of the phrase and the status of the action. The two aspects examined in this paper are *le* and *guo*. *Le* is used to denote a change in the current state of action or the completion of an action while *guo* is used to reflect something that was experienced by the speaker/subject. However, these concepts have no real equivalents in English hence it is difficult to teach them. Another factor that makes these concepts difficult to learn is while the two words have very different meanings, sometimes they can both be used in the same place in a sentence. Though consequently the two sentences would have different meanings.

Another linguistic system that all languages have is semantics, or the meanings of words in a language. All languages have words that are particular to that language, but sometimes these concepts can be difficult to learn because there is no direct equivalent of these words. A couple examples of this in Chinese are *ren shi* 认识 and *zhi dao* 知道 which both mean “to know” in English, but have slightly different usages and meanings. For example, *ren shi* is

generally used to talk about people/things a person is familiar with, while *zhi dao* usually describes knowledge.

Literature Review:

Due to China's growing presence in the world economy and political sphere, more and more people are seeking to learn Chinese as demonstrated from increased enrollment in Chinese language courses (Barboza 2010). As seen in Table 1, enrollment in Chinese in the USA has increased by over 50,000 since the beginning of recorded data on these figures until now. As a result, there has been considerable research done in the field of Chinese L2 Acquisition. However, despite the fact that there are many sources on this subject, it is still a relatively new field of research and there are still a number of areas to investigate.

With respect to prior studies done in the field, most only examine one linguistic feature of Chinese at a time, and few compare the different areas to determine which is overall easier or more difficult for L2 learners to acquire. There has been prior research done in most of the linguistic categories examined here. One of the linguistic areas of Chinese that has been investigated is word order acquisition, syntax. Jiang (2009) wrote a book about the acquisition of word order in Chinese by L1 English/L2 Chinese learners. The author mentioned the different types of word order errors there are and a prior taxonomy to categorize these word order errors by L2 learners (Jiang 2009).

In addition to the fact that there are not many studies done on this subject of syntax, Jiang (2009:70) also mentioned that there is

a paucity of studies that specifically investigate how L2 learners learn Chinese. While Jiang's (2009) study was about the importance of word order in Chinese, it investigated all aspects of word order in Chinese. By investigating all of these aspects she devised and proposed a new taxonomy to classify errors of word order created by L2 Chinese learners. In her study, there were 116 L2 learners of Chinese from three proficiency levels with about equal parts men and women (Jiang 2009:135-136). The participants were asked to complete three tasks, all a self-production of writings with different prompts and length requirements for the different proficiency levels (Jiang 2009:136-138). These writings were then examined and analyzed based on grammaticality and appropriateness in respect to word order (Jiang 2009:139-140). One of her findings was that the majority of errors were in the category of "The Principle of Temporal Sequence," since in this study 62% of errors examined fell under this category (Jiang 2009:200). Within this category are the concepts of time and locative expressions, which this study examines.

There has not only been research done in regards to the syntactical idiosyncrasies of Chinese, but there has also been research done on the morphosyntactic phenomena in Chinese. Some very common and well-known concepts are measure words (classifiers) and aspectual markers. There have been many studies done on this subject of measure words, perhaps the most famous study is that by Erbaugh (1986). This seminal article studied the acquisition of these measure words in children establishing at what point which measure words are acquired. However, this study was limited in the fact that it was

examining Chinese L1 learners, not English L1/Chinese L2. Zhang and Jiang (2016) did a more recent study on measure words, but while their research focused on English L1/Chinese L2 learners, they only looked at people with advanced levels of Chinese, 300 level and 400 level students at the university level (Zhang and Jiang 2016:468-469). Additionally, this study was also limited in the fact it only examined one measure word *dao* 道, which is more commonly recognized for its other meanings rather than its function as a measure word (Zhang and Jiang 2016:469-472).

While measure words are considered unique to Chinese, perhaps the most challenging linguistic phenomena for L2 learners to acquire are the aspectual markers. Chinese has a total of four aspectual markers *le* 了, *guo* 过, *zhe* 着, and *zai* 在. The present study only examined the first two *le* and *guo*. Concerning research of aspectual markers in Chinese, Zhang lamented that even within the few studies done on these aspectual markers, the majority of them were only focused on *le* because it is considered to be the most utilized (Zhang 2016:8-11). Although there has been some research done on *le* and *guo* as exemplified by her research, as well as Ming's (2008) dissertation, but both of their studies focused on all four of the aspectual markers. Zhang's (2016) research focused more on the methods of teaching these concepts. She addressed two types: the grammar-translation approach and the communicative approach (Zhang 2016:11-12). In her findings, the teaching method seemed to have an impact on acquisition, but more research needs to be done on this subject before it can be definitely concluded that the grammar

translation approach is less effective than the communicative one (Zhang 2016:27).

On the other hand, Ming's (2008:130-148) dissertation focused on the acquisition of temporal markers in English and Chinese from the L1 Chinese/L2 English perspective as well as the L1 English/L2 Chinese perspective. The author discussed the differences between *le* and *guo* and mentions prior research done on the topic, such as the order of acquisition of these aspect markers. Ming (2008:160-172) also highlighted that while there has been research on the aspectual markers most of them examine L1 acquisition, and the studies that examine L2 acquisition mostly focus on one aspect: *le*. For Ming's (2008:174-177) task there were three tests given to participants. The first test asked participants to select the appropriate aspectual marker in a fill in the blank fashion, and participants had the option to leave the space blank if they believed no aspectual marker was needed. The second test was similar to the first but was given in an essay format, rather than distinct sentences. In the third test, participants were asked to write an essay based on a famous story "Frog, Where Are You" that was developed by a group of psycholinguists. He explained his results from the acquisition of *le* as a marker that is mastered over time, but advanced learners still do not demonstrate complete acquisition (~30% error rate). His results also showed that beginning learners are more likely to underuse *le* versus advanced speakers, who are more likely to overuse it (Ming 2008:198-213). Ming (2008) also emphasized that Chinese foreign language learners (CFL) do not arbitrarily overuse *le* as many people

assume because a great deal of past research claims CFL learners use *le* as the past tense marker in English *-ed*, but since in Ming's (2008:209-212) study it was showed that beginner level participants underused *le*, this can not be the case. Then the author discussed his results relating to *guo*, and how the error rates had a great deal more disparity between the different levels of students (72% beginner to 36% intermediate to 9% advanced) and that advanced speakers had much better mastery of *guo* than *le* (Ming 2008:213-217). In the results of this study, Ming (2008:217-219) found that even though in the past most studies agreed that *le* is acquired before *guo* in reality, *guo* is learned before *le*. While this source extensively researched *le* and *guo* it does not compare their acquisition to other linguistic features of Chinese, which is one of the gaps in the literature that this present study helps to fulfill.

However, while there are many sources on the acquisition of syntactic and morphosyntactic phenomena in Chinese, there appears to be a dearth of research done on the acquisition of specific lexemes, which this study addresses. Most research that has been done in regards to lexicon and semantics has been with regards to question words, as demonstrated by Yuan's (2007) research on this topic. Question words are very important in Chinese because unlike English, where there is a shift in intonation to denote questions, Chinese relies on specific word structures, question particles, and question words. However, there is not much information on lexemes, but my findings may suggest why there is this lack of information on the subject.

Hypothesis:

I hypothesized that the beginner level L2 learners and the intermediate/advanced L2 learners would have different levels of mastery of the linguistic features of Chinese.

Table 2: Predicted Levels of Mastery: X-No Mastery, ?-Partial Mastery, ✓-Mastery

| | Synt ax Tim e | Synta x Locati ve | Meas ure Word s | Aspect ual Marker <i>Le</i> | Aspect ual Marker <i>Guo</i> | Lex emes |
|-----------------------------------|------------------------|----------------------------|--------------------------|--------------------------------------|---------------------------------------|-------------|
| Beginner s | ? | ? | ✓ | X | X | ✓ |
| Intermedi ate/ Advance d | ✓ | ✓ | ✓ | ? | ? | ✓ |
| Native Speakers | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

As seen in Table 2, there were three groups of participants. The first group of participants was beginner level Chinese students, with no more than two semesters of college level Chinese (100 level). I predicted that these students would have partial mastery of syntax, no difference between time and locative, complete mastery of measure words and lexemes, and no mastery of aspectual markers.

This was the predicted hypothesis because according to prior research in the field in syntax the greatest number of errors came from the section that covers time and locative phrases. Also, in prior research of aspectual markers it was found that beginner speakers did not have complete mastery of *guo*, and struggled with mastery of *le* with a tendency to underuse it.

The second group of participants was intermediate/advanced level Chinese students, who had more than two semesters of college level Chinese (200 level) or the equivalent or above. I predicted that these students would have very high mastery of syntax, measure words and lexemes and only partial mastery of aspectual markers. This was the predicted hypothesis because according to prior research in the field of aspectual markers it was found that advanced speakers had greater mastery of *guo* than beginner speakers, but still struggled with mastery of *le* with a tendency to overuse it.

The third group of participants was native speakers, I predicted they would have complete mastery of all of these elements.

Methodology:

In order to conduct this research, native English speakers who were learning Chinese at either a beginner level or an intermediate/advanced level were needed. The research pool was recruited from college students who are currently enrolled in Chinese courses or had taken Chinese courses in the past at the college. The students were asked to complete the task in order to identify problematic language areas for each group and determine at what level these language areas were acquired. There was a total of 18

participants in the beginner group (mean age 19.3) and 15 participants (mean age 19.9) in the intermediate/advanced group. A demographic section was included with the task to assist in identifying any potential trends in the data.

As a control group there were 10 native Chinese speakers (mean age 21.1) whose results were hypothesized to reflect complete mastery. Their results were used to compare with the L2 participants' results in order to determine if the students were approaching native or near native uses of the variable. They were recruited from the International student population, specifically those who were from China.

This task was designed as an acceptability test because, as Carden (1990) mentions, in the past there has been difficulty in replicating experiments and results because different linguists had different ways of designing their experiments and coding their data. By using an acceptability test, it will be easier to compare the results of this study to other studies of a similar nature in addition to attempts to replicate it. This design was created similarly to one that Howe (2010) used in his study of perfect features in Spanish. Unlike Howe's task, instead of only having two options, (word 1/word 2) both sentences were presented in full to the participants with three options: the first sentence is correct, the second sentence is correct, and both sentences are correct. It was decided to not have a fourth option "neither sentence is correct" to avoid excessive variation since this study had such a small sample size.

I designed an acceptability test for my task, which I presented two sentences in Chinese with both characters and *pinyin*, the Romanization of Chinese characters, with the proper tones noted. Participants were asked to indicate if they thought the first question was grammatically acceptable, if the second question was grammatically acceptable, or if both were grammatically acceptable. I selected this type of task rather than one of spontaneous or natural production in order to control/manipulate the same variables.

For the syntax section there were two types of sentences, one based on the concept of “time” and the other based on the locative. Each section had three questions. This section was created in order to see if L2 learners would be able to recognize the typical Chinese word order in sentences. For example, Chinese has a much more structured and strict word order than English. In Chinese, the time is generally placed at the beginning of the sentence (Li and Thompson 1981; Jiang 2009). Jiang’s book mentions the idea of time words that indicate a specific point in time; some examples of time words are January, today, yesterday, tomorrow, three days ago, etc (Jiang 2009:72-76). All the examples in this section had a “time word” and the two structures to Native English speakers were: “TIME WORD” + SUBJECT + VERB OR SUBJECT + VERB + “TIME WORD” (See Example 3). In English, both structures are acceptable since English has relatively flexible syntax regarding placement of adverbs. However, in Chinese, only the first structure would be acceptable. As mentioned in the hypothesis, it was predicted that beginner level L2 learners would not

be able to distinguish between these two structures and select both sentences as correct as they are in English.

(3) Placement of time

明天我要好好睡觉。

Ming tian wo yao hao hao shui jiao

Tomorrow I want to well sleep

“Tomorrow I want to sleep well”

我要好好睡觉明天。

Wo yao hao hao shui jiao ming tian

I want to well sleep tomorrow

“I want to sleep well tomorrow”

In addition to the time sentences, there are also differences with respect to locative phrases. As Jiang (2009) mentions, locative expressions are phrases that are used to indicate a place or space and are usually formed with a preposition. For all of the examples in this study, the same preposition *zai* 在 was used with two structures to be selected from: SUBJECT + *ZAI* + LOCATION + VERB and SUBJECT + VERB + *ZAI* + LOCATION (See example 4). The first structure is reflective of the typical locative word order in Chinese, while the second is reflective of the typical word order in English. As mentioned in the hypothesis, it was predicted that beginner-level L2 learners would not be able to identify the first structure as the correct one and would select the latter because that is more similar to the structure in English.

(4) Placement of locative

我在上海工作。

Wo zai shang hai gong zuo

“I in Shanghai work”

我工作在上海。

Wo gong zuo zai shang hai

“I work in Shanghai”

For the morphosyntax section there were also two types of questions. The first variable was measure words and the second one was aspectual markers. Both types had six questions. This section was created to see what morphosyntactic elements were acquired first by L2 learners. The questions regarding measure words had two sentences one with the correct measure word and another with a randomly assigned measure word. They were structured like NUMBER + MW (CL) + NOUN. It was predicted that even though this linguistic feature has no translatable equivalent in English, it would be acquired relatively well by L2 learners because this is a highly salient and easily identifiable phenomena.

(5) Measure Word

一条裤子

Yi tiao ku zi

One + specialized MW (CL) + pant

“One pair of pants”

一个裤子

Yi ge ku zi

One + Universal MW (CL) + pant

“One pair of pants”

On the other hand, this study also included questions with aspectual markers, which are notorious for being difficult for L2 learners to acquire. This section featured phrases that were identical

other than the aspectual marker (*le/guo*). One example of this structure was:

(6) *Le vs. guo*

我已经吃了早饭了。

Wo yi jing chi le zao fan le

I already ate breakfast

我已经吃过早饭了。

Wo yi jing chi guo zao fan le

I have already eaten breakfast

The only difference between these structures is the aspectual marker, which is *le* in the first structure and *guo* in the second. There were three types of questions in this section, questions that only *le* was acceptable, questions that only *guo* was acceptable, and questions that both were acceptable but had different meanings. It was predicted that L2 learners in both levels would have difficulty acquiring this concept because it is very abstract and has many subtleties. Furthermore, as Ming (2008) found for *le*, even among advanced speakers, is very difficult to attain native-like usage.

The final section covered specific lexical items, which consisted of two subsections of *ren shi/zhi dao* and *ke yi/hui/neng*. These sections were created in order to test the ability of L2 learners to distinguish between some of the vocabulary specific to Chinese that English does not have. For example, both *ren shi* and *zhi dao* mean in English “to know,” but they have some slightly different meanings. *Zhi dao* is usually used to express knowledge someone has, while *ren shi* is used to talk about things a person is familiar with. This linguistic

feature of Chinese is somewhat similar to the lexemes in Spanish *saber* and *conocer*. There were two questions that were designed with *ren shi* and *zhi dao* that were structured in identical ways with the only variation being the lexeme such as:

(7) Lexicon “to know” *ren shi* v *zhi dao*

她认识我。

Ta ren shi wo

She knows me

她知道我。

Ta zhi dao wo

She knows of me

In addition to the *ren shi/zhi dao* questions, there was also a section that examined *ke yi/hui/neng* which in English all mean “can” or “to be able to.” However, there are slight variations between the words, for example *ke yi* is generally used to signify permission while *hui* refers to the learned ability, and *neng* is generally used to mean to have the capability to do. Since often times all three words are grammatically acceptable in sentences, this section was designed a little bit differently to see if L2 learners recognized the differences between the three. This section of the task prompted participants to select the best translation, presenting two phrases with the only difference being the lexeme with the options: the first sentence is better, the second sentence is better, and both sentences are equal. The entire task can be found in Appendix 1.

Analysis:

This section is divided into three main sections with two sub sections each. The first section with the questions related to syntax, and the subcategories will be locative and time. The second section will cover morpho-syntax, and this section will have two subcategories of measure words and aspectual markers *le* and *guo*. And the final section would be on the aforementioned lexemes, with two subcategories of *ren shi/zhi dao* and *ke yi/hui/neng*.

With regards to syntax, the hypothesis predicted that native English speakers at the beginner-level would not be able to distinguish between Chinese word order and English word order with respect to preverbal time expressions and prepositional locative expressions. When examining the results from the syntax section looking at time words, the results presented in Tables 3 and 4 are interesting because for Questions 8 and 11, 94% (31/33) of participants in both questions selected the only acceptable option with “time” at the beginning of the statement. However, for Question 18, shown in Table 5 there was some variation in the beginner level students, only 50% of them selected “time” at the beginning of the sentence. This could be because in the first two questions very common markers of time were used (today/yesterday), but in Question 18 the time marker was “Three days ago,” which perhaps many beginner level students do not recognize as a time word that should go at the beginning of the clause. It is especially interesting because native speakers had the same answer to the same question. While there was a little bit of variation in the native speakers in the first two questions, this could possibly be explained by the fact that

colloquially both are acceptable. Since it is clear that there is still a high level of mastery among beginner level students in regards to the syntax structure of recognizing in Chinese time needs to be preverbal, this would suggest it is acquired fairly early. Though it would be important to note that perhaps beginner level students may not recognize all time words, and this could be emphasized when teaching this concept.

Table 3: Distribution of Results Syntax Time Question 8

| | Time at the beginning (Standard) | Time at the end (Nonstandard) | Both | Total |
|-----------------------|----------------------------------|-------------------------------|------|-------|
| Beginner | 16 | 2 | | 18 |
| Intermediate/Advanced | 15 | | | 15 |
| Native Speakers | 8 | | 1 | 9 |
| Total | 39 | 2 | 1 | 42 |

Table 4: Distribution of Results Syntax Time Question 11

| | Time at the beginning | Time at the end (Nonstandard) | Both | Total |
|--|-----------------------|-------------------------------|------|-------|
| | | | | |

| | (Standard) | | | |
|-----------------------|-------------|---|---|----|
| Beginner | 16 | 1 | 1 | 18 |
| Intermediate/Advanced | 15 | | | 15 |
| Native Speakers | 8 | | 2 | 10 |
| Total | 39 | 1 | 3 | 43 |

Table 5: Distribution of Results Syntax Time Question 18

| | Time at the beginning (Standard) | Time at the end (Nonstandard) | Both | Total |
|-----------------------|-----------------------------------|--------------------------------|------|-------|
| Beginner | 9 | 6 | 2 | 17 |
| Intermediate/Advanced | 13 | 1 | 1 | 15 |
| Native Speakers | 10 | | | 10 |
| Total | 32 | 7 | 3 | 42 |

The next section analyzed consisted of the questions that were related to locative sentence orders. These results are interesting because, as seen in Tables 6, 7, and 8 there was variation in the participants in all levels, though once again there was the greatest variation amidst the beginner level students. This could possibly be

because the English structure of these phrases is significantly different than the Chinese ones, and native English speakers have more difficulty in distinguishing the acceptable word order in Chinese. This would suggest it is not mastered as early because there was more variation among the beginner group in this section compared to the previous syntax section on time. These findings support the hypothesis since it was predicted that beginner level students would have more difficulty acquiring this syntactic feature since it is more obviously different than its English counterpart.

Table 6: Distribution of Results Syntax Locative Question 1

| | Locative preverbal (Standard) | Locative post-verbal (Nonstandard) | Both | Total |
|-----------------------|-------------------------------|------------------------------------|------|-------|
| Beginner | 14 | 3 | 1 | 18 |
| Intermediate/Advanced | 11 | 4 | | 15 |
| Native Speakers | 9 | | 1 | 10 |
| Total | 34 | 7 | 2 | 43 |

Table 7: Distribution of Results Syntax Locative Question 3

| | Locative preverbal | Locative post-verbal | | |
|--|--------------------|----------------------|--|--|
| | | | | |

| | (Standard) | (Nonstandard) | Bot h | Tota l |
|-----------------------|-------------|----------------|-------|--------|
| Beginner | 10 | 5 | 3 | 18 |
| Intermediate/Advanced | 12 | 3 | | 15 |
| Native Speakers | 10 | | | 10 |
| Total | 32 | 8 | 3 | 43 |

Table 8: Distribution of Results Syntax Locative Question 15

| | Locative preverbal (Standard) | Locative post-verbal (Nonstandard) | Bot h | Tota l |
|-----------------------|--------------------------------|-------------------------------------|-------|--------|
| Beginner | 8 | 6 | 4 | 18 |
| Intermediate/Advanced | 13 | 1 | 1 | 15 |
| Native Speakers | 9 | | 1 | 10 |
| Total | 30 | 7 | 6 | 43 |

Overall, there was mastery of these syntactic variables by both beginner level and intermediate/advanced level students. This was differed from the hypothesis that predicted that only intermediate/advanced students would have good mastery of these syntactic variables because in reality, beginner level students also had good mastery of syntax in the context of time and partial mastery of syntax in the context of locative expressions. From these findings it

would appear that syntax is acquired fairly early since beginner level students have good and partial mastery, though not complete mastery, as seen in Table 5 since there was a great deal of variation among the beginner level students with respect to this time word. Also, there was more variation among the locative expressions as seen in Tables 6, 7, 8.

It would appear that beginner and intermediate/advanced level students have good to partial mastery of measure words.

Table 9: Distribution of Results Morphosyntax Measure Words Question 2

| | Specialized Measure Word (Standard) | Other Measure Word (Nonstandard) | Both | Total |
|-----------------------|-------------------------------------|----------------------------------|------|-------|
| Beginner | 14 | 3 | 1 | 18 |
| Intermediate/Advanced | 11 | 2 | 2 | 15 |
| Native Speakers | 10 | | | 10 |
| Total | 35 | 5 | 3 | 43 |

Table 10: Distribution of Results Morphosyntax Measure Words Question 4

| | Specialized Measure Word (Standard) | Other Measure Word (Nonstandard) | Both | Total |
|-----------------------|-------------------------------------|----------------------------------|------|-------|
| Beginner | 15 | | 2 | 17 |
| Intermediate/Advanced | 14 | 1 | | 15 |
| Native Speakers | 10 | | | 10 |
| Total | 39 | 1 | 2 | 42 |

Table 11: Distribution of Results Morphosyntax Measure Words Question 5

| | Specialized Measure Word (Standard) | Other Measure Word (Nonstandard) | Both | Total |
|-----------------------|-------------------------------------|----------------------------------|------|-------|
| Beginner | 12 | 2 | 4 | 18 |
| Intermediate/Advanced | 13 | | 2 | 15 |
| Native Speakers | 10 | | | 10 |
| Total | 35 | 2 | 6 | 43 |

Table 12: Distribution of Results Morphosyntax Measure Words Question 16

| | Specialized Measure Word (Standard) | Other Measure Word (Nonstandard) | Both | Total |
|-----------------------|-------------------------------------|----------------------------------|------|-------|
| Beginner | 15 | 1 | 2 | 18 |
| Intermediate/Advanced | 15 | | | 15 |
| Native Speakers | 10 | | | 10 |
| Total | 40 | 1 | 2 | 43 |

It is interesting to note that there was a fair amount of variation in Question 10 and 20 (Table 13 and 14). This can probably be explained from the fact that in Question 10 (Table 13) both measure words are used for animals, and are reflective of size, so if statement was referring to a particularly small cow it would be reasonable to use the other measure word. However, this is more than likely caused by a lack of recognition of the standard measure word since the majority of L2 learners selected that option. Though native speakers did not select that option. Also, in Question 20 even though the noun used is a very common word colloquially, most textbooks do not teach the term, so it is possible that many students did not recognize it and consequently were unable to select the proper measure word.

These findings disagree with the hypothesis since it was thought that beginner level students would have mastery of measure words, but in reality, they only have partial mastery. However, this is probably due to the fact that they might not have complete recognition of all nouns in Chinese and therefore do not recognize how to properly categorize them. One area of future research could be examining the mastery of beginner level students using terms they have been explicitly taught and investigating whether their mastery is more complete with concepts they have learned.

Table 13: Distribution of Results Morphosyntax Measure Words Question 10

| | Specialized Measure Word (Standard) | Other Measure Word (Nonstandard) | Both | Total |
|-----------------------|-------------------------------------|----------------------------------|------|-------|
| Beginner | 4 | 12 | 1 | 17 |
| Intermediate/Advanced | 2 | 11 | 2 | 15 |
| Native Speakers | 8 | 1 | 1 | 10 |
| Total | 14 | 24 | 4 | 42 |

Table 14: Distribution of Results Morphosyntax Measure Words Question 20

| | Specialized Measure Word (Standard) | Other Measure Word (Nonstandard) | Both | Total |
|-----------------------|-------------------------------------|----------------------------------|------|-------|
| Beginner | 6 | 8 | 3 | 17 |
| Intermediate/Advanced | 9 | 5 | 1 | 15 |
| Native Speakers | 10 | | | 10 |
| Total | 25 | 13 | 4 | 42 |

However, measure words were not the only morphosyntactic variables of Chinese examined, the aspectual markers *le* and *guo* were also tested. As shown in Tables 15, 16, 17, 18, 19 and 20, it can be seen that there was quite a bit of variation among the groups, even the native speakers, although the latter group showed less variation. It is interesting to note that there were times when the L2 groups selected the option that none of the native speakers selected. This would indicate that there is not complete mastery or understanding of these concepts. It would also appear that these findings contradict Ming's (2008) findings.

Table 15: Distribution of Results Morphosyntax Aspectual Markers Question 6

| | <i>Le</i> (Standar d) | <i>Guo</i> (Nonstanda rd) | Both (Nonstanda rd) | Tot al |
|---------------------------|-----------------------------|---------------------------------|---------------------------|-----------|
| Beginner | 10 | 4 | 4 | 18 |
| Intermediate/Adva nced | 9 | 3 | 3 | 15 |
| Native Speakers | 10 | | | 10 |
| Total | 29 | 7 | 7 | 43 |

Table 16: Distribution of Results Morphosyntax Aspectual Markers Question 12

| | <i>Le</i> (Standar d) | <i>Guo</i> (Nonstanda rd) | Both (Nonstanda rd) | Tot al |
|---------------------------|-----------------------------|---------------------------------|---------------------------|-----------|
| Beginner | 11 | 4 | 3 | 18 |
| Intermediate/Adva nced | 9 | 1 | 5 | 15 |
| Native Speakers | 8 | | 2 | 10 |
| Total | 28 | 5 | 10 | 43 |

The discrepancy is seen in Ming's (2008) results, which showed that intermediate/advanced learners have better mastery of *guo* compared to beginner learners. However, in this study we can see that in Table 17 more beginner level students correctly selected *guo* than intermediate/advanced level students.

Table 17: Distribution of Results Morphosyntax Aspectual Markers Question 17

| | <i>Le</i> (Nonstandard) | <i>Guo</i> (Standard) | Both (Nonstandard) | Total |
|-----------------------|----------------------------|--------------------------|-----------------------|-------|
| Beginner | 11 | 5 | 2 | 18 |
| Intermediate/Advanced | 10 | | 5 | 15 |
| Native Speakers | | 9 | 1 | 10 |
| Total | 21 | 8 | 8 | 43 |

Table 18: Distribution of Results Morphosyntax Aspectual Markers Question 19

| | <i>Le</i> (Nonstandard) | <i>Guo</i> (Standard) | Both (Nonstandard) | Total |
|-----------------------|----------------------------|--------------------------|-----------------------|-------|
| Beginner | 4 | 13 | 1 | 18 |
| Intermediate/Advanced | 3 | 8 | 4 | 15 |
| Native Speakers | | 8 | 1 | 9 |
| Total | 7 | 29 | 6 | 42 |

Additionally, Ming's (2008) study also found that beginner learners were more likely to underuse *le* while intermediate/advanced students were more likely to overuse it. However, both groups had similar levels of *le* usage and actually in Question 14 (Table 20) beginner level students were more likely to overuse it compared to

intermediate/advanced students. For this reason, further studies should seek to shed light on the variable acquisition of these aspectual markers. These findings disprove the hypothesis since both beginner level and intermediate/advanced levels had no mastery of these concepts.

Table 19: Distribution of Results Morphosyntax Aspectual Markers Question 7

| | <i>Le</i> (Nonstanda rd) | <i>Guo</i> (Nonstanda rd) | Both (Standar d) | Tot al |
|---------------------------|--------------------------------|---------------------------------|------------------------|-----------|
| Beginner | 7 | 8 | 3 | 18 |
| Intermediate/Adva nced | 6 | 6 | 3 | 15 |
| Native Speakers | | 3 | 7 | 10 |
| Total | 13 | 17 | 13 | 43 |

Table 20: Distribution of Results Morphosyntax Aspectual Markers Question 14

| | <i>Le</i> (Nonstanda rd) | <i>Guo</i> (Nonstanda rd) | Both (Standar d) | Tot al |
|---------------------------|--------------------------------|---------------------------------|------------------------|-----------|
| Beginner | 8 | 8 | 2 | 18 |
| Intermediate/Adva nced | 3 | 4 | 8 | 15 |

| | | | | |
|-----------------|----|----|----|----|
| Native Speakers | | 2 | 8 | 10 |
| Total | 11 | 14 | 18 | 43 |

One point of interest in the analysis of the section on semantics is there is little consistency among all of the participant groups. This is especially true in the questions that covered *ke yi/hui/neng*. There was some discrepancy in the *zhi dao* and *ren shi* questions which can be seen in Tables 21 and 22. In Question 9 (Table 21), there was variation in all groups, though it is interesting to note that even though no native speakers selected only *zhi dao* as the correct answer some beginner level and intermediate/advanced students did. It is extremely interesting that in this question more beginner level students selected the standard answer than the intermediate/advanced. This could possibly be due to the fact that they do not understand the differences between the two lexemes and assumed both functioned. However it is more likely that even though intermediate/advanced students recognize *ren shi* as “knowing” with regards to familiarity, they did not realize that *zhi dao* is also grammatically acceptable, albeit less common, just with a different meaning (“I know her” vs “I know of her”). Although in Question 13 (Table 22) there was a lot less variation which indicates that both beginner and intermediate/advanced students recognize the lexemes and are aware that they are different. These lexemes should be investigated more in depth to truly understand the L2 acquisition of these variables.

Table 21: Distribution of Results Semantics *Ren shi* vs *Zhi dao* Question 9

| | <i>Ren shi</i> (Nonstandard) | <i>Zhi dao</i> (Nonstandard) | Both (Standard) | Total |
|-----------------------|---------------------------------|---------------------------------|--------------------|-------|
| Beginner | 4 | 4 | 9 | 17 |
| Intermediate/Advanced | 8 | 1 | 6 | 15 |
| Native Speakers | 3 | | 7 | 10 |
| Total | 15 | 5 | 22 | 42 |

Table 22: Distribution of Results Semantics *Ren shi* vs *Zhi dao* Question 13

| | <i>Ren shi</i> (Nonstandard) | <i>Zhi dao</i> (Standard) | Both (Nonstandard) | Total |
|-----------------------|---------------------------------|------------------------------|-----------------------|-------|
| Beginner | 1 | 13 | 4 | 18 |
| Intermediate/Advanced | | 13 | 2 | 15 |
| Native Speakers | | 10 | | 10 |
| Total | 1 | 36 | 6 | 43 |

While the lexemes *ren shi* and *zhi dao* bore some interesting results, the lexemes *ke yi*, *hui*, and *neng* were even more interesting because in these questions, there was the greatest amount of variation within all groups as seen in Tables 23, 24, 25, and 26. It is quite interesting to note that in all of the questions there were times that the

L2 learners selected the answer that none of the native speakers selected. It is also interesting to note that there was more variation among the intermediate/advanced group than the beginner group. These results could possibly indicate that since the intermediate/advanced students were more likely to select similar answers to the native speaker group they are more likely to have similar methods of thinking in regards to Chinese and are closer to acquiring lexemes than the beginner group. It is also possible that the Chinese native speakers did not have a full understanding of the English language and misinterpreted which option was the best translation since their levels of English were not tested.

Table 23: Distribution of Results Semantics *Ke yi* vs *Hui* vs *Neng* Question 21

| | <i>Ke yi</i> (Standard) | <i>Hui</i> (Nonstandard) | Both (Nonstandard) | Total |
|-----------------------|----------------------------|-----------------------------|-----------------------|-------|
| Beginner | 10 | 8 | | 18 |
| Intermediate/Advanced | 10 | 3 | 2 | 15 |
| Native Speakers | 8 | | 2 | 10 |
| Total | 28 | 11 | 4 | 43 |

Table 24: Distribution of Results Semantics *Ke yi* vs *Hui* vs *Neng* Question 22

| | <i>Hui</i> (Standar d) | <i>Ke yi</i> (Nonstanda rd) | Both (Nonstanda rd) | Tot al |
|---------------------------|------------------------------|-----------------------------------|---------------------------|-----------|
| Beginner | 10 | 8 | | 18 |
| Intermediate/Adva nced | 7 | 6 | 2 | 15 |
| Native Speakers | 6 | | 4 | 10 |
| Total | 23 | 14 | 6 | 43 |

Table 25: Distribution of Results Semantics *Ke yi* vs *Hui* vs *Neng* Question 23

| | <i>Neng</i> (Standar d) | <i>Hui</i> (Nonstanda rd) | Both (Nonstanda rd) | Tot al |
|---------------------------|-------------------------------|---------------------------------|---------------------------|-----------|
| Beginner | 13 | 4 | 1 | 18 |
| Intermediate/Adva nced | 8 | 4 | 3 | 15 |
| Native Speakers | 7 | | 3 | 10 |
| Total | 28 | 8 | 7 | 43 |

Table 26: Distribution of Results Semantics *Ke yi* vs *Hui* vs *Neng* Question 24

| | <i>Ke yi</i> (Standar d) | <i>Neng</i> (Nonstanda rd) | Both (Nonstanda rd) | Tot al |
|---------------------------|--------------------------------|----------------------------------|---------------------------|-----------|
| Beginner | 9 | 6 | 3 | 18 |
| Intermediate/Adva nced | 4 | 8 | 3 | 15 |
| Native Speakers | 4 | | 6 | 10 |
| Total | 17 | 14 | 12 | 43 |

These findings disprove the hypothesis since it was concluded that there was only partial mastery of these lexemes among beginner level students. Despite the fact that the results for the lexical variables are interesting to examine, there is not enough consistency to make any definitive claims, so the results of this section are tentative at best.

Additionally, with a cursory look at the demographic information, there did not appear to be any correlation between students that studied abroad or their grades in their Chinese courses and their mastery of the linguistic features.

Limitations:

Some of the limitations of this study were time and participants. Since this research was conducted during a one semester

capstone experience, the research period was limited to four weeks. Additionally, this study only had 43 participants, only 10 of which were native speakers. Ideally, it would have been preferred to have equal numbers of participants in the Beginner, Intermediate, and Advanced levels. However, the participant pool was limited to students at a small liberal arts college for accessibility reasons, and the total student body population is only about 2,600 students from which only a small percentage have any experience in Chinese as a second language. Because of the dearth in Intermediate and Advanced level students, it was methodologically important to collapse the two groups into one group. While it appears that the groups had similar trends, because of the small sample size, it would not have been possible to compare all three of the groups equally. Though fortunately the intermediate and advanced groups seemed to follow similar trends, this would be interesting to investigate further if appropriate participant pools could be used.

Conclusion:

This research study looked at three different linguistic features of Chinese: syntax, morphosyntax, and semantics. As can be seen in Table 27 it was originally hypothesized that beginner level students would have good mastery of measure words and lexicon, partial mastery of syntax and no mastery in aspectual markers. However, in reality beginner level students only have mastery of syntax relating to time with partial mastery of syntax relating to locatives, and lexemes and no mastery of aspectual markers. It was

also originally hypothesized that advanced level students would have good mastery of measure words, lexicon, and syntax, with partial mastery of aspectual markers. In the findings of this study intermediate/advanced students had good mastery of syntax, measure words, and lexemes with no mastery of aspectual markers.

As Chinese language is learned by more second language speakers, this study contributes to the conversation of linguistics by providing a new way to approach the study of second language acquisition of Chinese by native English speakers. This study does so by testing different linguistic areas and attempting to reveal when different linguistic categories are acquired by comparing them to different categories, which has not been done before. Unfortunately, from these findings it is not possible to conclusively say at what points L2 learners learn exactly which linguistic features and further research is needed to properly investigate each of these specific linguistic phenomena before they can be accurately compared.

Table 27: Findings of Study, H-Hypothesized F-Findings

| | Syntax Time | | Syntax Locative | | Measure Words | | Aspectual Marker Le | | Aspectual Marker Guo | | Lexemes | |
|-----------------------|-------------|---|-----------------|---|---------------|---|---------------------|---|----------------------|---|---------|---|
| | H | F | H | F | H | F | H | F | H | F | H | F |
| Beginner | ? | ✓ | ? | ? | ✓ | ? | X | X | X | X | ✓ | ? |
| Intermediate/Advanced | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ? | X | ? | X | ✓ | ✓ |

| | | | | | | | | | | | | |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Native Speaker | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|

X-No Mastery, ?-Partial Mastery 60-70% Correct Overall, ✓-Mastery <70%

These percentages were obtained by categorizing what the native speakers selected as standard and then categorizing options that were not selected by native speakers as nonstandard and adding up all of the answers for each participant group for each linguistic section and calculating overall percentage correct.

Appendix 1:

Acceptability Test

Instructions: Please read the following sentences and select the answer that you believe to be correct with the mindset of a native Chinese speaker.

*The task given to participants had the questions randomized, the original order is indicated by the numbers on each question.

Syntax:

Placement of time

- 8) Wo3 chi1 mian4 bao1 jin1 tian1 zao3 shang
我吃面包今天早上。
Jin1 tian1 zao3 shang wo3 chi1 mian4 bao1
今天早上我吃面包。
A) The first sentence is correct
B) The second sentence is correct
C) Both sentences are correct
- 11) Ming2 tian1 wo3 yao4 hao3 hao3 shui4 jiao4
明天我要好好睡觉。
Wo3 yao4 hao3 hao3 shui4 jiao4 ming2 tian1
我要好好睡觉明天。
A) The first sentence is correct
B) The second sentence is correct
C) Both sentences are correct
- 18) Ta1 qu4 mai3 dong1 xi san1 tian1 qian2
她去买东西三天前。
San1 tian1 qian2 ta1 qu4 mai3 dong1 xi
三天前她去买东西。
A) The first sentence is correct
B) The second sentence is correct

C) Both sentences are correct

Placement of location

- 1) Wo3 zai4 shang4 hai3 gong1 zuo4
我在上海工作。
Wo3 gong1 zuo4 zai4 shang4 hai3
我工作在上海。
A) The first sentence is correct
B) The second sentence is correct
C) Both sentences are correct
- 3) Ta1 xue2 zhong1 wen2 zai4 da4 xue2
他学中文在大学。
Ta1 zai4 da4 xue2 xue2 zhong1 wen2
他在大学学中文。
A) The first sentence is correct
B) The second sentence is correct
C) Both sentences are correct
- 15) Ta1 zai4 chu2 fang2 zuo4 fan4
她在厨房做饭。
Ta1 zuo4 fan4 zai4 chu2 fang2
她做饭在厨房。
A) The first sentence is correct
B) The second sentence is correct
C) Both sentences are correct

Morpho-Syntax:

Only *le* is acceptable

- 6) Ni3 dao4 le su4 she4, qing3 gei3 wo3 da3 dian4 hua4
你到了宿舍，请给我打电话。
Ni3 dao4 guo su4 she4, qing3 gei3 wo3 da3 dian4 hua4
你到过宿舍，请给我打电话。
A) The first sentence is correct
B) The second sentence is correct
C) Both sentences are correct
- 12) Zuo2 tian1 wan3 shang ta1 zuo4 le ta1 de zuo4 ye4

昨天晚上他做了他的作业。

Zuo2 tian1 wan3 shang ta1 zuo4 guo ta1 de zuo4 ye4

昨天晚上他做过他的作业。

- A) The first sentence is correct
- B) The second sentence is correct
- C) Both sentences are correct

Only *guo* is acceptable

- 17) Ta1 men liang3 nian4 qian4 zai4 Gettysburg da4 xue2 xue2
xi2 le

他们两年前在 Gettysburg 大学学习了。

Ta1 men liang3 nian4 qian4 zai4 Gettysburg da4 xue2 xue2
xi2 guo

他们两年前在 Gettysburg 大学学习过。

- A) The first sentence is correct
- B) The second sentence is correct
- C) Both sentences are correct

- 19) Wo3 you3 qu4 le zhong1 guo2

我有去了中国。

Wo3 you3 qu4 guo zhong1 guo2

我有去过中国。

- A) The first sentence is correct
- B) The second sentence is correct
- C) Both sentences are correct

Both are acceptable (different meanings)

- 7) Wo3 yi3 jing1 chi1 le zao3 fan4 le

- 8) 我已经吃了早饭了。

Wo3 yi3 jing1 chi1 guo zao3 fan4 le

我已经吃过早饭了。

- A) The first sentence is correct
- B) The second sentence is correct
- C) Both sentences are correct

- 14) Ni3 chi1 guo dou4 fu ma
你吃过豆腐吗?
Ni3 chi1 le dou4 fu ma
你吃了豆腐吗?
A) The first sentence is correct
B) The second sentence is correct
C) Both sentences are correct

Measure Words

- 2) Yi1 tiao2 ku4 zi 一条裤子
Yi1 ge4 ku4 zi 一个裤子
A) The first sentence is correct
B) The second sentence is correct
C) Both sentences are correct
- 4) Yi1 ben3 mao1 一本猫
Yi1 zhi1 mao1 一只猫
A) The first sentence is correct
B) The second sentence is correct
C) Both sentences are correct
- 5) Yi1 ge4 shu1 一个书
Yi1 ben3 shu1 一本书
A) The first sentence is correct
B) The second sentence is correct
C) Both sentences are correct
- 16) Yi1 tou2 qian2 一头钱
Yi1 kuai4 qian2 一块钱
A) The first sentence is correct
B) The second sentence is correct
C) Both sentences are correct
- 10) Yi1 tou2 niu2 一头牛
Yi1 zhi1 niu2 一只牛
A) The first sentence is correct
B) The second sentence is correct
C) Both sentences are correct

- 20) Yi1 shuang1 kuai4 zi 一双筷子
Yi1 tiao2 kuai4 zi 一条筷子
A) The first sentence is correct
B) The second sentence is correct
C) Both sentences are correct

Semantics:

Ren shi vs. zhi dao

- 9) 她认识我。
Ta1 ren4 shi wo3
她知道我。
Ta1 zhi1 dao wo3
A) The first sentence is correct
B) The second sentence is correct
C) Both sentences are correct
- 13) Wo3 ren4 shi ming2 tian1 yao4 kao3 shi4
我认识明天要考试。
Wo3 zhi1 dao ming2 tian1 yao4 kao3 shi4
我知道明天要考试。
A) The first sentence is correct
B) The second sentence is correct
Both sentences are correct

Ke yi vs. hui vs. neng

Which of the following sentences is the best translation of the sentence.

- 21) You cannot use your phone.
你不可以用你的手机。
你不会用你的手机。
A) The first sentence is better
B) The second sentence is better
C) Both sentences are equal
- 22) I know how to make food.
我可以做饭。
我会做饭。

- A) The first sentence is better
- B) The second sentence is better
- C) Both sentences are equal

23) Can you help me?

你能帮我吗?

你会帮我吗?

- A) The first sentence is better
- B) The second sentence is better
- C) Both sentences are equal

24) He is not allowed to read.

他不能看书。

他不可以看书。

- A) The first sentence is better
- B) The second sentence is better
- C) Both sentences are equal

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