Examining Cultural Drifts in Landscape Artwork Throughout History and Development

by

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A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Arts

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Abstract

Research on cultural products suggest that there are substantial cultural variations between East Asian and Western landscape masterpieces from the 15th to 19th centuries and contemporary members' landscape artwork (Masuda, Gonzalez, Kwan, & Nisbett, 2008), and that these cultural differences in drawing styles emerge around the age of 8 (Senzaki, Masuda, & Nand, 2014). However, culture is not static. To explore the dynamics of cultural change, research should be conducted from both historical and ontogenetic perspectives (Tomasello, 1999; Vygotsky, 1978). In this thesis, I examined (1) 17th to 20th century Japanese and Western landscape masterpieces, and (2) adolescent data in landscape artworks alongside findings from Senzaki et al.'s (2014) research on elementary school-aged children. The results demonstrated cultural variations in artworks and masterpieces, and "cultural drifts" (Herskovits, 1941; 1948) where at certain time periods cultural tendencies deviated from default cultural patterns but occasionally returned to its previous state. The bidirectional influence of culture and implications for furthering the discipline of cultural psychology will be discussed. *(165 words)*

Preface

This thesis is an original work by Kristina Nand. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, Project Name "File 2063 Child Development in Scene Perception", ID No. Pro00010309, March 2, 2010.

Some of the research conducted for this thesis forms part of an international research collaboration, led by Dr. Takahiko Masuda at the University of Alberta, with Sawa Senzaki at the University of Wisconsin-Green Bay. The drawing stimuli referred to on page 26 was designed by Dr. T. Masuda while the collage stimuli on page 32 was designed by Dr. S. Senzaki. The elementary school data used on pages 29-30, 34-39, 41-43, and University data on pages 34-39 and 41-43 were collected by Dr. S. Senzaki and was published as S. Senzaki, T. Masuda, and K. Nand, "Holistic vs. analytic expressions in artworks: Cross-cultural differences and similarities in drawings and collages by Canadian and Japanese school-age children." *Journal of Cross-Cultural Psychology, 1-20.* DOI: 10.1177/0022022114537704.

The data analysis on pages 20-23, and 24-43 are my original work, alongside the literature review, data collection, historical (Study 1) and adolescent (Studies 2a and 2b), and university (Study 2a) data, discussion and limitations.

Acknowledgements

Thank you to everyone who helped me so much with this project: the wonderful research assistants who put in their time and energy, Miki Kodama, Nicole Dyck, Ruby Prinsen, Holly Espedido, Kacy Doucet, and Insung Peak. To the cooperative schools, staff and students in St. Albert and Iwakuni, Japan, this project would not be possible without you. Anneli Jooste and Emily Pucel, thank you both for assisting with data collection in Japan. Dr. Keiko Ishii, I am grateful for your help in collecting data at Kobe University. Thank you to my husband for his unfaltering support and giving a hand when he could. To my family, especially Nana and Nani, your consistent belief in me propels me to keep going.

My labmates, Sawa, Liman, and Matt –all the knowledge you have impresses me every day and I can only hope to gain the same level someday. Thank you to my committee members, Dr. Nicoladis, Dr. Wiebe and Dr. Davis, for their guidance. Most of all, thank you to my supervisor, Dr. Takahiko Masuda, for providing me this opportunity, supporting me and helping me grow.

Table of Contents

List of Figures

The Cyclical Nature of Culture and Psyche

Since cultural psychology has launched under the assumption that culture and psyche mutually construct one another in that our cultural meanings and practices bring rise to culturally specific ways of thinking and behaving, which in turn maintain culture (Bruner, 1990; Markus & Kitayama, 1991; Shweder, 1991), numerous studies have demonstrated that there are systematic cultural variations in cognition and perception. Specifically, members of East Asian cultures tend to be holistic in their thinking patterns, attending to and interpreting a given event contextually and as a whole, whereas members of North American cultures tend to be analytic thinkers, selectively attending to focal objects and events independent from context and interpreting a given event by focusing on salient information (Nisbett, 2003; Nisbett & Masuda, 2003; Nisbett & Miyamoto, 2005; Nisbett, Peng, Choi, & Norenzayan, 2001). For example, Masuda and Nisbett (2001) found that when watching underwater scenes, East Asians were more likely to describe contextual information and remember objects in relation to the context, such as "a frog [climbing] on seaweed" (p.927) while North Americans attended to the salient fish in the foreground. The study also showed that East Asians demonstrate a "binding effect" when viewing scenes, consolidating to memory both background and foreground information and finding it more difficult to decontextualize the two if there was a novel foreground or background. This heightened awareness to context results in East Asians, in comparison to North Americans, being less likely to perform well on tasks that require attention to only focal objects and disregarding contextual information (Ji, Peng, & Nisbett, 2000;

Kitayama, Duffy, Kawamura & Larsen, 2003; Masuda & Nisbett, 2006; Masuda, Akase, Radford, & Wang, 2008). Eye tracking studies have further demonstrated these holistic patterns of attention in East Asians. When perceiving visual information, East Asians were more balanced in their fixations to focal and background information than North Americans and as a result, had difficulty remembering objects embedded in a new background, further illustrating holistic patterns of attention in East Asians and how it influences cultural patterns of memory (Chua, Boland, & Nisbett, 2005; Goh, Tan, & Park, 2009; Masuda, Ellsworth, Mesquita, Leu, Tanida, & van de Veerdonk, 2008; Masuda, Wang, Ishii, & Ito, 2012; Senzaki, Masuda, & Ishii, in press).

Cultural Products

Although various research has demonstrated that culture influences basic psychological processes, notably attention, it is recently that researchers have begun to investigate the other path in how culture is influenced and maintained by our culturally-formed psyche. Researchers have been addressing this gap in our understanding regarding the relationship between culture and psyche by examining cultural products (Morling & Lamoreaux, 2008). Cultural products are public, shared and tangible representations of culture that are produced by members of a given culture. These cultural products are reflective of culturally specific ways of thinking and through our consumption and reproduction, also reinforce and maintain culture (p. 200). Various studies have demonstrated that culturally shaped psychological tendencies are present in cultural products. For

example, interdependent and independent values that are endorsed by East Asian and Western cultural members, respectively, were demonstrated in products such as magazines (Tsai & Wong, 2007), children's storybooks (Tsai, Louie, Chen, & Uchida, 2007) and children's drawings (Gernhardt, Rübeling & Keller, 2013; Rübeling, Schwarzer, Keller & Lenk, 2011). Holistic and analytic cultural tendencies were also found in websites (Wang, Masuda, Ito, & Rashid, 2012) and landscape drawings (Masuda, Gonzalez, Kwan, & Nisbett, 2008; Senzaki, Masuda, & Nand, 2014), East Asian cultural products containing more information than that of North Americans. These studies illustrate that culture and psyche, much like Shweder (1990) suggests, mutually construct one another. Morling and Lamoreaux (2008) state that cultural products are created in a culturally specific manner because it is being tailored for an audience. Thus, it could be assumed that a piece of art that would be popular with members of a culture will resonate with their cultural values, such as in terms of context-inclusiveness or conceptions of the self, and therefore be maintained through cultural transmission and reproduction.

In particular, Masuda and colleagues (2008) conducted a series of studies on the relationship between culture and art. They analyzed East Asian and European 15th to 19th century landscape masterpieces and landscape drawings of contemporary undergraduate students. To determine perspective styles and contextual-sensitivity, they targeted the ratio of the horizon drawn to the frame and the number of objects used. These two variables are useful indicators to

indirectly measure attention and its cultural variations. Historically speaking, East Asian and European cultures utilized different artistic methods in order to portray information from a three-dimensional world onto a two-dimensional canvas.

According to Vogt (2013), East Asians see space as more flexible and all-encompassing while Europeans think of space as contained, distinguished by the separation between the ground and the sky. Therefore, East Asian landscape art has historically applied a bird's-eye perspective in order to illustrate an all-encompassing scene. This perspective resulted in the horizon line being located high in the frame and the viewer essentially looking down onto a scene that could be appreciated from any point of view (albeit at times being unrealistic). Furthermore, this perspective provided abundant space to allow artists to draw not only focal events, but also contextual events. In contrast, the technique of linear perspective was invented by Europeans during the Renaissance or 15th century. Linear perspective allowed the artists to create an illusory three-dimensional view, where depth of field was actualized through converging information in the frame into a single point (Kubovy, 1986). However, because of the technique, horizon lines tended to be placed in the lower part of the frame, and one's perspective was fixed at the viewer's eye-level. As a result, contextual information was restricted to what was realistically seen by the illustrator.

Based on the literature of art history and psychology, Masuda et al. (2008) reasoned that East Asians' context sensitivity influenced holistic, context-oriented attention through depicting higher horizons and a larger number of contextual

information, and Westerners' selective focus on focal objects influenced analytic, object-oriented attention through lower horizons and a selected number of objects in a scene. In fact, Masuda and colleagues (2008) demonstrated that East Asian masterpieces in museums were more holistic and encompassing of context than their European counterparts. These cultural patterns were replicated in their second study wherein contemporary undergraduate students drew a landscape. Artwork created by East Asians had higher horizons and more objects in the frame while European-Americans had lower horizons and a scarce number of objects.

Furthermore, Masuda and colleagues (2008) found that once such perspectives in drawing styles were established, the resultant cultural product conveyed a culture's dominant cultural message, which subsequently influenced people's aesthetic preferences (Masuda et al, 2008; Wang, Masuda, Ito, & Rashid, 2012). For example, East Asians were less likely than North Americans to prefer portrait images where the model was extremely large and the context information was extremely narrow (Masuda et al., 2008). Similarly, East Asians aesthetically and functionally preferred a mock university portal page that contained complex information to a simple portal page, whereas North Americans preferred a simple portal page more than a complex page, especially when judging the quality from an aesthetic point of view (Wang et al., 2012). Moreover, Wang and colleagues (2012) provided evidence that East Asians developed a skill for dealing with complex information effectively, perhaps from the exposure and necessity to

survive an information-rich cultural environment (Miyamoto, Nisbett, & Masuda, 2006).

In sum, these findings suggest that one's aesthetic expression and its cultural products, such as drawings, can be a useful tool to size up dominant messages of a given culture, and depict the cyclic relationship between culture and the human psyche. A cultural meaning system influences people's psychological processes, and once people internalize the meaning system, they create cultural products which reflect the culture's main message. When such cultural products become dominant in a given culture and are frequently exposed to societal members, they further influence not only people's aesthetics and skills but also their way of thinking. As Bruner (1990), Shweder (1991), and Miller (1999) emphasized, one of the most important theoretical assumptions of cultural psychology is to treat culture and the human psyche as a mutually constitutive dynamism. Recent findings by Masuda and his colleagues (2008) provide evidence that such assumptions are empirically testable, and that cultural variations in aesthetics are substantial.

The Dynamic Nature of Culture

Findings in cultural psychology have demonstrated that there are robust psychological variations among cultures. However, it is also important to address that culture in itself is not static and instead dynamic, changing in accordance to technological, institutional and environmental factors. As a result, our psychological processes may differ across generations (Flynn, 1987; 1994; 1999;

Hamamura, 2013; Norasakkunkit, Uchida & Toivonen, 2013; Twenge, 2000; Twenge & Campbell, 2001; Twenge, Campbell, & Gentile, 2012).

In order to further advance cultural psychology, incorporating the dynamic nature of culture into the theoretical and methodological framework of research in cross-cultural psychology is necessary. In this section, I will introduce a research perspective to investigate the dynamic nature of culture advocated by Russian historical-cultural schools (e.g. Vygotsky, 1978) and developmental psychologists (e.g. Tomasello, 1999). I will especially focus on Tomasello's argument. Referring to theoretical frameworks of Vygotskian traditions (Vygotsky, 1978), Tomasello maintained that to understand the cultural origin of human cognition, comprehensively understanding three time frameworks is necessary: phylogenetic, ontogenetic and historical.

First, phylogenetic processes should be understood in the widest time framework. Throughout the evolution of human species, culture has constantly influenced human biology and psychology such as conformity to the group, self-other distinction, and theory of mind. Second, historical processes focus on how cultural learning provides humans with skills for both accumulating and building on knowledge over generations through creating major and minor improvements to our cultural artifacts and behavior. This way of sustaining cultural knowledge specific to the human species is termed as the Ratchet Effect (Tomasello, Kruger, & Ratner, 1993, p.508). Finally, ontogenetic processes should be understood in the narrowest time framework. Children develop in the midst of cultural products

and through interaction with mature members of a given culture. Throughout their entire developmental trajectory, they acquire and internalize specific skills necessary for survival in their culture. Here, determining how children interact with their caregivers, how culture is transmitted and how it is internalized is needed in order to comprehensively depict cultural transmission processes (Richerson & Boyd, 2006).

Investigating cultural phenomenon from these time frameworks has the potential to overcome a weaknesses in cultural psychology —the lack of methodology to capture culture as a dynamic processes (Chiu & Hong, 2006; Heine, 2011). Indeed, cultures persist in the face of change but it is also important to acknowledge that cultures also are constantly changing over time (Heine, 2011). In this thesis, I will report two exploratory studies on culture and aesthetic expression, while taking into account cultural change. To do so, I collected data from two time frameworks: historical and ontogenetic. . Although the importance of phylogeny is addressed by Tomasello (1999), I will not examine this framework as the selected experimental paradigms in this thesis do not examine the biological bases of human nature. Because of the nature of exploratory investigation, I will treat potential changes in aesthetic expression as a result of *cultural drift*.

Cultural drift has been used in other disciplines as a form of cultural change similar to evolution (Eggan, 1963; Herskovits, 1941; 1948), a result of institutional, political and social change. In this thesis, cultural drift will refer to

the gradual shifts in culturally-specific psychological tendencies throughout history based on modifications and improvements in artifacts and tools made by each generation. Specifically, cultural drift refers to the result of cultural exchange, finding meaning within another culture's aesthetic products and integrating the new knowledge into existing cultural frameworks. One culture may change towards another on a certain factor and either continue in that direction or revert back based on social and institutional circumstances. Furthermore, unexpected historical events reduces being able to predict the ongoing direction of cultural drifts. One example of a historical change that may contribute to cultural drift and has differentiated the current generation from the previous is the invention of the internet. Today's youth have been dubbed the "digital generation" (Buckingham, 2006) and can be exposed to a plethora of information from around the world with the touch of a button. As a result, their knowledge may be a modified version of what was transmitted to them by their parents. Cultural tendencies may still remain as it is likely that they would access online information created by their cultural members (Wang et al., 2008); however, there is a possibility that cultural drifts may occur during development.

Provided this, in the next two sections I would like to briefly review previous historical and ontogenetic research which are bases of the current investigation.

Historical Artwork and Cultural Drifts

Culture and human development cannot be isolated from history as over time, each generation modifies the product of the previous as a function of their evolving psychological processes (Tomasello, 1999; Vygotsky, 1978). Furthermore, important historical events that influence our environmental and change cultural contact also impacts our psyche and may cause cultural drifts. In order to investigate the influence of history on the development of our cultural practices and culturally-mediated cognition, it is important to acknowledge that cultures do not exist in isolation of one another. Through exposure to and interaction with members of another culture, one generation of a culture may appropriate aspects of the other culture's behavior and then transmit it to future generations (LeVine, 2011).

To answer the necessity of historical research, as aforementioned, Masuda et al. (2008) initiated a cross-cultural comparison of landscape masterpieces through focusing on the linear perspective, which was invented during the Renaissance in Europe around the 15th century. Compared to the more holistic bird's eye perspective in East Asian paintings, linear perspective lent itself to the cultural variations in aesthetic expression. I maintain, however, that this research has a serious limitation. Masuda et al.'s (2008) historical study examined landscape masterpieces spanning 500 years; however, the data were grouped together and therefore did not consider whether cultural patterns of perception remained consistent throughout all time periods and historical circumstances.

Furthermore, although cultural differences in perspective were found empirically in Masuda et al.'s study, they failed to include masterpieces in a very important historical period. Japan did not engage in the importation or exportation of goods with different countries and was essentially closed from the 1600s until the Meiji Restoration in the late 19th century, 1868 (Pollack, 2008; Rimer, 2012). During this isolation, there was a lack of European cultural products within Japan. As a result, Japanese did not incorporate artistic techniques from Western countries until much later and thus maintained their own culturally defined way of demonstrating perspective while continuing to incorporate techniques from Chinese art (Japanese art has been influenced by China beginning from the sixth century, suggesting receptiveness to adopting artistic styles apart from their own). When Japan intended on becoming more modernized (which entailed emphasizing Westernization) during the Meiji Restoration, Western art became influential for Japanese artists. Schools for Western art were opened in Japan in which established artists had enrolled, having mastered traditional Japanese artistic techniques (Conant, 2012). However, Japanese artists also maintained a balance between painting in modern Western style and that of traditional Japan. Learning Western artistic forms was never to replace Japanese style but instead to modify and improve it in a form of artistic evolution. By the First World War, Japan was no longer insistent on Westernizing and although Western cultural products were still influential, Japanese modified these products to suit their own cultural framework (Weisenfeld, 2012).

In the same time period, this change created a ricochet in the West in terms of aesthetic expression. The Meiji Restoration allowed Europeans to import Japanese artwork into their culture, initially in the form of wrapping paper but soon in exhibitions. This influenced Impressionist artists such as Van Gogh and Monet to initiate *Japonisme* in which the French artists tried to replicate the more flat and two-dimensional artistic styles of the Japanese (Ives, 1974). During this time, Impressionists were looking for something new to advance their artistic style and not having gone to Japan, they found woodblock prints of Japan to be dream-like and pre-dating modernization (Walker, 2008). Furthermore, techniques used by Japanese artists in their paintings, such as flatness and a lack of visual realism, were supported by artists who had revolted against the teachings of 19th century French art schools (Sullivan, 1989). When considering the bidirectional influence Japanese and European art had on each respective culture, there is a possibility that cultural differences found in Masuda et al.'s (2008) study may not be as strong following the Meiji Restoration in comparison to previous time periods. In other words, cultural tendencies in aesthetics may drift from the norm.

In this thesis, I maintain that it is important to examine data from an extensive time period, such as centuries, in order to account for economic, politic and sociodemographic changes and its impact on psychological tendencies (Rice & Steele, 2004). As I will discuss in detail in the section of objectives and hypotheses, the first aim of my thesis is to determine whether culturally unique

patterns of perception in artwork remain consistent throughout history or are subject to change through cultural exchange during the late 19th century.

Culture and Development

As Tomasello (1999) referred to in his book, Vygotsky (1978) and the Russian Historical-Cultural School in general assert that as children move through their developmental stages, they modify their behavior and reconstruct their psychological processes. They maintain that without understanding the development of children in relation to sociohistorical contexts, it is difficult to determine how psychological tendencies within cultures emerge, are sustained and evolve.

Along the lines of Vygotsky's theoretical reasoning, recent cultural psychologists have begun to explore developmental processes which lead children to acquire culturally dominant knowledge, and answer the questions of how and when these differences emerge in their developmental trajectory. Members of a culture develop culturally-specific psychological tendencies from birth through socialization, in which parents play an active role in directing their children to behave in a manner consistent with their culture (Fernald & Morikawa, 1993; Senzaki & Masuda, 2014). As a result, depending on the task, cultural differences may emerge from infancy (LeVine & Norman, 2001; Malatesta & Haviland, 1982). In terms of cognition and attention, , findings have demonstrated that cognitive differences between cultures emerge from the age of 4 for easier tasks(Imada, Carlson & Itakura, 2012; Kuwabara, Son & Smith, 2011) and the age of 8

for more complex (Duffy, Toriyama, Itakura & Kitayama, 2009). Furthermore, several researchers recently reported findings of studies that investigate developmental trajectory of aesthetic expressions. For example, Ishii, Miyamoto, Rule, & Toriyama (2013) reported that, when asking Japanese and Canadian children from ages 4 to 6 to color geometric patterns, Japanese children were more likely to use soft colors expressing harmony whereas Canadian children chose to use bold, unique colors (Ishii, Miyamoto, Rule, & Toriyama, 2013). Gernhardt and colleagues (2013) further demonstrated that cultural differences in autonomy and relatedness lend itself to variations in the depiction of family for Nso, German and Turkish children around the age of 5, Nso children drawing more family and nonrelatives and depicting everyone relatively the same size, indicative of their values of relatedness. This was in contrast to autonomous German and Turkish children who drew themselves next to their parents and differentiated themselves from others in their drawing. These findings support a previous study done by Rübeling, Keller and colleagues (2011) in which 4 year old children's drawings were different depending on culture –Nso children demonstrating interdependence through their smaller figure sizes while German children's figures were larger and indicative of their independence. In sum, these studies show that the universal task of creating an aesthetic product can be solved by children in various ways depending on culture, including that of East Asian and North American cultural groups.

In line with these findings, I have also engaged in a series of research in culture and development. For example, in a follow-up study to Masuda et al. (2008), Senzaki, Masuda, and Nand (2014) examined developmental data through cultural variations in aesthetic products produced by children. We had primary school students in Japan and Canada engage in creating artwork in one of two conditions: a drawing condition and a collage condition. Our findings demonstrated similar cultural patterns as adult members once children understood the concept of a horizon (age 8 for both cultures), Japanese children drawing the horizon higher in both studies and integrating more objects in their collages than did Canadian. Senzaki and colleagues' (2014) results present further support that cultural differences emerge in early childhood; however, very few studies in the area of cross-cultural psychology have focused on adolescence and furthermore provide the full trajectory in *how* cultural patterns proceed from childhood to adulthood. It may be assumed that cultural patterns remain relatively stable throughout development if children are demonstrating similar behavior to their adult counterparts (Duffy et al., 2009); however, without supporting data, this may be a bold conclusion.

Furthermore, research in culture and development has not acknowledged how children modify cultural artifacts and traditions that were transmitted to them by adult members. Provided culture's dynamic and evolving nature (Tomasello, 1999), the cultural products of one generation may differ from the next. When examining Senzaki et al.'s (2014) elementary data with adult counterparts in

Masuda et al.'s (2008) study, there are differences in the average values. Specifically, in the landscape drawing task, average horizon height ratio and number of objects for East Asian undergraduates were 67.17% and 10.72, respectively, and North Americans an average of 56.37% and 6.19, respectively. In contrast, Senzaki et al.'s (2014) research reported that the average horizon height ratio in the drawing task for Japanese elementary school children was 48%, almost 20% lower than East Asian undergraduates, while Canadian elementary school children had horizon heights at 28%, almost 30% lower than North American undergraduate students. In the collage task, horizon height for Japanese elementary school children was more similar to that of East Asian undergraduates (M=68%) although the number of objects was much higher (M=20.77). Canadian elementary school children also had higher horizons in the collage task (M=46%) and more objects (M=15.75) in comparison to their adult counterparts.

Why these differences exist and how trends continue throughout development is, however, unknown and has yet to be explored in cross-cultural psychology research. Adolescence in particular is a time in which ontogenetically, members of all cultures transition from being a child to an adult and cognitive processes reach full maturity (Piaget & Inhelder, 1969), providing them with resources to form their identity and establish themselves as independent from caregivers (Kroger, 2007). Societal advances have also contributed to adolescents worldwide being in a state of change (Larson, Wilson, & Rickman, 2009) as "postmodern hybrids of local and global, traditional and modern, combined in

different and changing ways" (p.590). Furthermore, according to Schegel (2000), modern adolescents are more oriented toward one another than to adults. In fact, Kerswill (1996) speculated that peer acceptance may contribute to adolescents being primary forces of language change. Thus, how they internalize and subsequently modify cultural products may lead to cultural drifts from normative cultural tendencies within this particular developmental stage as they engage in certain behaviors in the hopes of peer acceptance. Adolescents may also instigate change simply through differing education from their parents and exposure to other cultures. For example, when Kenya gained independence from Britain, school enrollment increased and children learned about how to interact with other cultural groups. After twenty years, an act that was once considered taboo between certain people, shaking hands, was freely done as a result of the influence of educated adolescents (LeVine, 2011). Furthermore, Crystal and colleagues (1998) found that adolescent Japanese are more similar to their American counterparts than Chinese in their conceptualization of human differences. Although this study did not look at change, it does hint that perhaps in some aspects, adolescent Japanese and North Americans are becoming increasingly more similar than previous generations due to the strength of political and economic forces in shaping their psychological tendencies.

In sum, the second aim for this thesis is to determine how cultural patterns continue throughout development and whether there are cultural drifts during adolescence.

Objectives and Hypotheses

As each generation of culture modifies products based on their sociohistorical contexts, in order to understand human development in the midst of culture, historical and ontogenetic factors should be examined.

The Meiji Restoration was an important marker in history as both Japan and Europe were reciprocally influenced by the perspective utilized in the artistic products of the other culture. Therefore, I was interested to see the whether cultural patterns in perception remained strong throughout historical time periods or if, depending on social circumstances and increased intercultural exchange, there would be a bidirectional influence of culture that caused cultural drifts in perspective in art production. Therefore, along the line of Masuda et al.'s (2008) work, I conducted a historical analysis on Japanese and Western landscape art from the 17th to 20th century, paying specific attention to the late 19th century (Study 1).[1]

Furthermore, from a young age, children are also influenced by visual aspects of their sociocultural environment, such as picture books (Golomb, 2011; Tsai et al., 2007) and possibly even the architecture surrounding them (Miyamoto et al., 2008), which are products that are constantly evolving. In developing and refining cognitive skills, adolescents may utilize and modify these products in the extension of their creativity apart from educational contexts. Their generation,

[1] As Europe is categorized as the 'West' when distinguishing cultural meaning systems (Nisbett, 2003) and research findings have demonstrated similar psychological tendencies between Americans and Europeans (Rice & Steele, 2004), I collected landscape data from both European and American art museums and categorized it as 'Western' rather than 'European'.

environment, and circumstances thus differ from that of their caregivers. Thus, in order to examine ontogenetic patterns and cultural drifts in the creation of cultural products, I conducted an extension of Masuda and colleagues' (2008) and Senzaki and colleagues' (2014) studies. Specifically, I examined perceptual styles in how adolescents and undergraduate students in Japan and Canada created landscapes using both drawing (Study 2a) and collage (Study 2b) mediums. Within these artworks I focused on horizon height, the number of objects and the area covered by the objects in order to determine context-inclusivity.[2] Through my results, I aimed to comprehensively determine whether or not these cultural variations continued throughout development, how it progressed and whether cultural drifts would occur during adolescence.

In sum, my thesis would examine both historical and ontogenetic data in order to explore the persistence of cultural variations and possible cultural drifts in perception and context-sensitivity. As cultural drifts are unpredictable in regards to whether or not one culture will influence another, I had two competing hypotheses:

Hypothesis 1: Cultural drifts would be found during the late 19th century (Study 1) and adolescence (Study 2)

[2] In Masuda et al. (2008), landscape drawing data were collected from undergraduate students; however, the East Asian participants consisted of international students. Furthermore, the data were collected in 2001 and conditions in the method differed, such as having to draw a river (which was excluded in Senzaki et al.'s study) and the usage of a smaller paper size. Therefore, to maintain consistency and to be able to determine developmental patterns through this cross-sectional design, I re-collected drawing data from undergraduate students.

Hypothesis 2: Cultural drifts would not be present during the late 19th century (Study 1) and adolescence (Study 2)

Study 1: Historical Landscape Artwork

In order to investigate the process of cultural drift, I examined Japanese and Western historical landscape masterpieces from the 17th to 20th centuries using similar methodology as Masuda et al. (2008) while taking into account the influence of the Meiji Restoration from the late 19th century to the early 20th century.

Method

Materials: 17th to 20th century Japanese landscape art pieces (n=619) from Japanese and Western art museum online databases and art books and Western landscape art pieces (n=761) from Western art museum online databases and art books were compiled and examined (see Appendices A and B). Given that our target of analysis was to determine whether cultural drifts occurred following the Meiji Restoration in the late 19th century, and the limitability of Japanese landscape art in the 17th century, I grouped 17th and 18th century data by every one-hundred years (1600-1699, *n*=242; 1700-1799, *n*=232) and the 19th and 20th century data by every fifty years (1800-1849, *n*=190; 1850-1899, *n*=233; 1900-1949, *n*=297; 1950-1999, *n*=186).[3]

[3] Japanese landscape paintings from the 17th century usually lacked a specific date the painting was made or a distinguishable horizon.

Results

Two research assistants blind to the hypotheses (Coders 1 and 2) and the primary investigator (Coder 3) measured the location of the horizon using a guideline developed by the primary investigator (Appendix C). Coder 1 coded 2/3 the Western art and Coder 2 coded all of the Japanese masterpieces and 1/3 of the Western masterpieces. To ensure that the developed coding scheme for Study 1 would also apply to historical landscape art created by established artists, the primary investigator (Coder 3) coded all of the art pieces for both cultures. Interrater agreement for the horizon height was 85% for the Japanese masterpieces (Coders 1 and 3). For Western masterpieces, it was 97% for Coders 1 and 3, and 98% for Coders 2 and 3.[4]

A 2 (Culture: Japanese Arts vs. Western Arts) x 6 (Time Period: 1600-1699, 1700-1799, 1800-1849, 1850-1899, 1900-1949, and 1950-1999) ANOVA was applied to the horizon height ratio of the historical landscape art. There was a significant main effect of culture, $F(1, 1368)=179.05$, $p<.001$, $\eta_p^2=.116$ as Japanese historical landscape artwork had higher horizons ($M=62.93$, $SD=19.78$) than that of Western landscapes ($M=48.57$, $SD=17.77$). There was also a main effect of time period, $F(5, 1368)=26.57$, $p<.001$, $\eta_p^2=.089$, which was qualified by an interaction between culture and time period, $F(5, 1368)=15.88$, $p<.001$, $\eta_p^2=.055$. In order to explore the main effect of time period and the interaction

[4] Interrater agreement was also checked by running a bivariate correlation. The results indicated that for Japanese artwork, the agreement was $r=.93$ for Coders 1 and 3. For Western art, the agreement was $r=.99$ for Coders 1 and 3 and $r=.99$ for Coders 2 and 3.

between culture and time period further, I examined cultural variations within the time period data. The simple effect analyses found that there were significant cultural variations between 1600-1699, $t(1368)=7.66$, $p<.001$, between 1700-1799, $t(1368)=10.89$, $p<.001$, between 1800-1849, $t(1368)=6.11$, $p<.001$, between 1850-1899, $t(1368)=3.04$, $p<.01$, all indicating that Japanese artwork had higher horizons than Western. During 1900-1949, in contrast, there were no cultural differences, $F < 1$, ns. Cultural variations, however, emerged again between 1950-1999, $F(1, 1368)=3.29$, $p<.001$, $\eta_p^2=.045$. In addition, the location of horizon in Japanese arts during 1850-1899 was marginally lower compared to the period of 1600-1699, $t(1368)=1.74$, $.05<p<.10$, and significantly lower compared to the period of 1700-1799, $t(1368)=4.88$, $p<.001$, the period of 1800-1849, $t(1368)=2.71$, $p<.01$, the period of 1900-1949, $t(1368)=3.36$, $p<.001$, and the period of 1950-1999, $t(1368)=6.35$, $p<.001$, showing significant drop in the location of horizon during the Meiji Restorations. In contrast, the location of horizon in Western artwork historically continued to show gradual increase as evident that the horizon height of the period of 1700-1799 was higher than that of the period of 1600-1699, $t(1368)=2.00$, $p<.05$, and that of the period of 1900-1949 was higher than that of the period of 1850-1899, $t(1368)=5.82$, $p<.001$ (Figure 1).

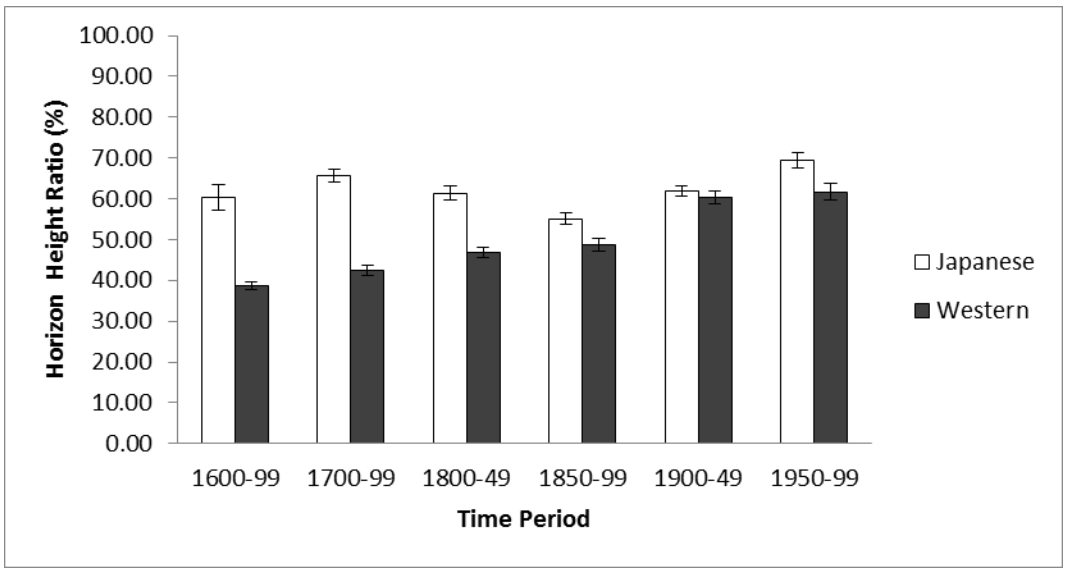

Figure 1: Average horizon height ratio in percentage by time period for Japanese and Western historical landscape artwork (1600-1999)

Discussion

These findings suggest that overall, cultural variations were present as horizon height in Japanese artwork was higher than that of Western artwork. However, bidirectional exchange in cultural products did have an effect on the drawing and perceptual styles of Japanese and Western artists, supporting Hypothesis 1 through the presence of cultural drifts during the Meiji Restoration. Specifically, horizons in Japanese artwork decreased from the 1850s but increased again following the 1900s and horizons in Western artwork increasing continually from the 1700s but significantly jumped in horizon height in the early 19th century and continued to increase, demonstrating differing trends in cultural drift between cultures.

Study 2a: Contemporary School-Age Landscape Drawings

Similar to methods used by Masuda et al. (2008) and Senzaki et al. (2014) to assess culturally specific modes of perception, I had adolescent and undergraduate students in Japan and Canada create landscape drawings. Furthermore, I planned to contrast these data with that of Senzaki et al.'s (2014) work with elementary school children and undergraduate students in order to comprehensively interpret the developmental trends of psychological tendencies in cultural products and determine whether there are cultural drifts in adolescence in comparison with their elementary and undergraduate counterparts.

Method

Participants: Students were recruited from suburban secondary schools in Japan (Iwakuni, Yamaguchi) and in Canada (Sherwood Park, Alberta) and Universities in Japan (Kobe University) and Canada (University of Alberta).

In the Japanese secondary school sample, there were 196 participants (85 male, 107 female, 4 unspecified) who were a mean age of 14.84 (*SD*=1.55, Range: 11 to 18) and was comprised of 22 seventh graders, 28 eighth graders, 42 ninth graders, 48 tenth graders, 36 eleventh graders, and 20 twelfth graders. Regarding ethnic background, all of the Japanese secondary school sample identified as Japanese and spoke Japanese as their first language. Two had lived abroad, one in China for 9 years and one in America for an unspecified number of years.

For Canadians, there was a total of 168 secondary school students participants (51 male, 117 female) who were a mean age of 14.79 (*SD*=14.79, Range: 12 to 19). These Canadian participants were comprised of 31 seventh graders, 36 eighth graders, 24 ninth graders, 31 tenth graders, 23 eleventh graders, and 23 twelfth graders. A majority (82.74%) identified as European Canadian, 7.14% identified as biracial, 1.8% identified as East Asian, 3.57% identified as Aboriginal/Metis, 0.6% as Hispanic, 2% as East Indian. Two students did not provide their ethnicity. Fifteen students had lived abroad, five in America, five in Europe, one in the Philippines, one in China, one in Egypt and two in South Africa. Most of the Canadian students (99%) spoke English as their first language –two spoke other languages that were unspecified.

In the undergraduate sample, there were 75 Japanese students (38 male, 36 female, 1 unspecified) who were an average age of 19.71 (*SD*=1.12, Range: 18 to 24). All of the students identified as Japanese and spoke Japanese as their first language. Five had lived abroad for 1 to 2 years (two in China, one in Italy, one in Australia and one in the United States). A total of 60 Canadian undergraduate students participated (12 male, 48 female). They were, on average, 19.6 years old (*SD*=2.32, Range: 17 to 30) and 93% identified with being European Canadian. One participant identified with being African, two as Aboriginal/Metis and one as Portuguese. All of the participants spoke English as their first language. Five had lived abroad, one in America, two in Europe, one in the Philippines and one in Brazil.

Students from both cultural groups who did not follow instructions, such as missing a required item (n=19) or not taking the task seriously (e.g. Drawing inappropriate material, n=14) were excluded from these numbers and the subsequent analysis. Furthermore, given that children generally learn about the concept of a horizon from Grade 2 (Senzaki et al., 2014), any drawings that did not demonstrate an understanding of a horizon (such as having floating objects or two horizon lines) were also not included in the analysis (n=9).

Procedure: In a classroom setting, secondary school and undergraduate students in Japan and Canada engaged in a drawing task in which they were instructed to create a landscape using a pencil on a 392 mm × 271 mm sheet of standard-sized drawing paper (*Drawing paper* or *Gayoushi* by Maruai). Consistent with the methodology of Senzaki and colleagues (2014), participants were instructed that they had to include at least one of the following: a tree, a house, a person, a horizon, and any objects they desired to draw to create their landscape artwork (see Appendix D). They were given 10 minutes to complete the task. In order to ensure that the participants understood the concept of a horizon, the experimenter defined a horizon using the following: "When you go outside, you see the sky comes down and meets the ground, and makes one line. That line is called a horizon." Participants were also reminded that they had to complete the artwork without talking or looking at other participants' landscapes. After the completion of their artwork, they were asked to fill out a simple demographic questionnaire

about their gender, date of birth, ethnicity, years lived abroad (if any), and languages spoken at home.

Results

Similar to previous studies (Masuda et al., 2008; Senzaki et al., 2014), I used the ratio of the location of the drawn horizon line to the entire frame of the drawing paper in order to determine perspective. The horizon line was assessed by two independent coders who followed the same coding guide as Study 1. Generally, the horizon line was determined by measuring from the bottom of the drawing paper to the drawn horizon line. The interrater agreement for the horizon height was 97% for the Japanese secondary school landscape drawings and 98% for Canadian.[5] In the undergraduate sample, interrater agreement was 97% for Japanese and 83% for Canadian drawings.[6] Any discrepancies in horizon height were resolved through discussion between the coders and the primary investigator.

A 2(Culture: Japan vs. Canada) x 6(Grade: 7, 8, 9, 10, 11, & 12) ANOVA was applied to the ratio of the horizon against the entire frame. There was a main effect of culture for secondary school students from Grades 7 through 12, $F(1, 352)=56.63$, $p<.001$, $\eta_p^2=.139$. However, there was no main effect of grade, $F(5, 352)=1.99$, $p=.09$. In general, Japanese secondary school students drew the location of the horizon higher ($M=58.62$, $SD=19.59$) than Canadians ($M=45.78$,

[5] Interrater agreement was also checked by running a bivariate correlation. The results indicated that the agreement for secondary school was $r=.97$ for Japanese and $r=.99$ for Canadian.

[6] Interrater agreement was again checked by running a bivariate correlation. The results indicated that the agreement for undergraduates was $r=.97$ for Japanese and $r=.89$ for Canadian.

SD=15.42), demonstrating their context-inclusivity (Figure 1). There was also a significant interaction between culture and grade, $F(5, 352)=2.59$, $p<.05$, $\eta_p^2 =.035$, demonstrating that the cultural difference in horizon height depended on the grade. The simple effect analyses showed that within each grade, cultural differences were significant for Grade 7, $t(352)=5.36$, $p<.001$, Grade 9, $t(352) =2.48$, $p<.02$, Grade 10, $t(352)=2.48$, $p<.02$, Grade 11, $t(352)=2.68$, $p<.01$, and Grade 12, $t(352)=3.79$, $p<.001$. However, no significant cultural difference was found for Grade 8, $t(352)=1.23$, $p=.20$, indicating minor differences in the pattern of results (Figure 2).

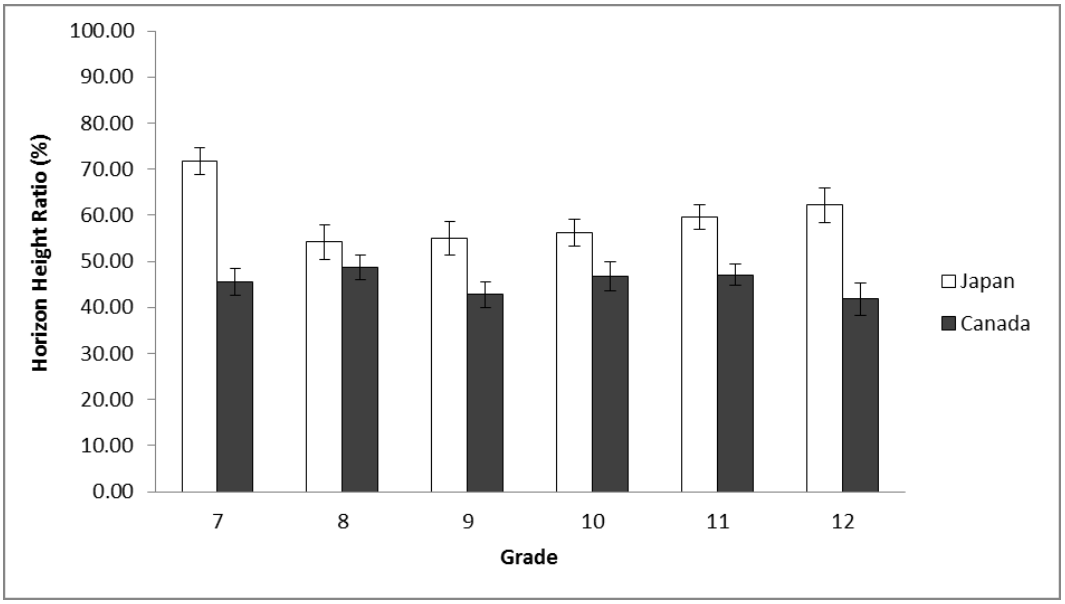

Figure 2: Average horizon height ratio in percentage by grade for Japanese and Canadian adolescent landscape drawings

For undergraduate students, an independent samples t-test was conducted. Cultural differences emerged in that Japanese undergraduate students (*M*=60.18,

SD=18.41) depicted higher horizons than Canadian undergraduate students (*M*=52.53, *SD*=14.21), $t(133)=2.65$, $p<.01$, $d=.465$.

To assess the cross-sectional generational trend of drawing, I combined and contrasted my data with Senzaki et al.'s (2014) elementary school data and with my university data (Figure 3) and then merged the information according to school level (Figure 4). Again, a 2 (Culture: Canada vs. Japan) X 4 (School Level: Elementary, Junior High, High School, and University) ANOVA was applied to the ratio of the horizon against the entire frame. The results indicated that there was a main effect of culture, $F(1, 940)=75.85$, $p<.001$, $\eta_p^2=.075$. Consistent with previous findings, Japanese, in general, drew the location of the horizon higher (*M*=55.41, *SD*=24.34) than Canadians (*M*=38.21, *SD*=21.55), demonstrating their context-inclusiveness. There was a main effect of school level, $F(3, 940)=30.26$, $p<.001$, $\eta_p^2=.088$. The locations of horizon in drawings produced by junior high school students (*M*=52.45, *SD*=19.56), high school students (*M*=52.94, *SD*=18.22), and university students (*M*=56.78, *SD*=17.05) were significantly higher than that of elementary school children (*M*=39.54, *SD*=28.09), *t*s (940)=6.48, 6.18, and 7.58, all *p*s<.001, respectively. There was a significant interaction between culture and school level, $F(3, 940)=4.79$, $p<.005$, $\eta_p^2=.015$, demonstrating that cultural differences in the horizon height depended on school level. The simple effect analyses showed that Japanese placed the location of horizon higher in their artworks than did their Canadian counterparts in elementary schools, $t(940)=10.50$, $p<.001$; in junior high schools, $t(940)=3.90$,

$p<.001$; in high schools, $t(940)=3.97$, $p<.001$; and in university $t(940)=2.01$, $p<.05$ (Figure 4).

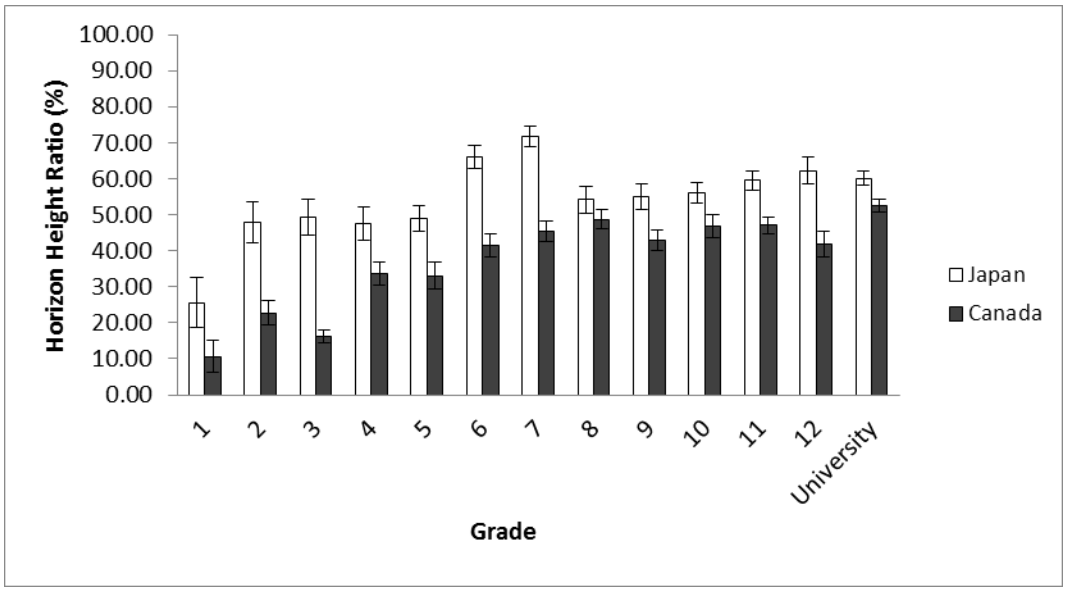

Figure 3: Average horizon height ratio in percentage by grade for Japanese and Canadian landscape drawings. Data from grades 1 through 6 used with permission from Senzaki et al. (2014)

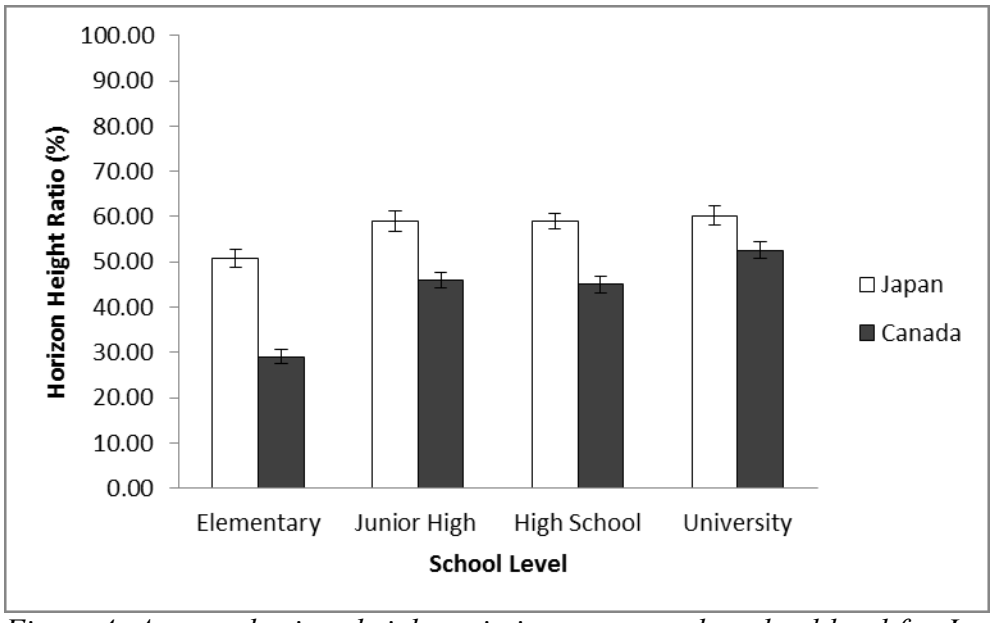

Figure 4: Average horizon height ratio in percentage by school level for Japanese and Canadian landscape drawings. Data for elementary school used with permission from Senzaki et al. (2014)

Study 2b: Contemporary School-Age Landscape Collages

Study 2a determined cultural variation in attention styles; however, provided the variability in drawing styles, it was difficult to determine context-sensitivity through counting the number of objects and the area the objects occupied. Therefore, I opted to use Senzaki et al.'s (2014) collage methodology to determine the number of objects in landscape artwork.

Method

Participants: Participants were recruited from the same suburban secondary schools in Japan (Iwakuni, Yamaguchi) and in Canada (Sherwood Park, Alberta). However, students who had participated in Study 2a did not participate in Study 2b. As Senzaki and colleagues (2014) had recently collected collage data from Japanese undergraduate students at the University of Kobe and European Canadian undergraduate students at the University of Alberta, I incorporated that information into this study.

Data were collected from 177 Japanese secondary school students (85 male, 89 female, 3 unspecified) who were an average age of 14.82 (SD=1.64, Range: 12 to 18). The sample was comprised of 19 seventh graders, 29 eighth graders, 39 ninth graders, 47 tenth graders, 26 eleventh graders, and 17 twelfth graders. All but one of the Japanese students identified as being Japanese and spoke Japanese as their first language. A majority had lived in Japan for their entire life.

There were 149 Canadian secondary school students who participated (38 male, 110 female, 1 unspecified) who were, on average, 14.84 years old (*SD*=1.41, Range: 12 to 18). The sample was comprised of 27 seventh graders, 26 eighth graders, 26 ninth graders, 30 tenth graders, 20 eleventh graders, and 20 twelfth graders. A majority of Canadian students (81%) identified as being European Canadian, 95% spoke English as their first language and 11% had lived overseas for a short period of time.

Similar to Study 2a, students who did not follow instructions, take the task seriously or understand the concept of a horizon were excluded from the analysis. *Procedure:* In a classroom setting, secondary school and undergraduate students in Japan and Canada engaged in a collage task. They were instructed to create a landscape using any of thirty pre-made collage items (Appendix E) developed by Senzaki and colleagues (2014) and placing their selected pieces onto a 392 mm × 271 mm sheet of standardized laminated drawing paper (*Drawing paper* or *Gayoushi* by Maruai) using sticky tack. As in Study 2a, they were told to include least one of the following: a tree, a house, a person, and a horizon (see Appendix F). They were also given the same definition of a horizon as in Study 2a. Horizons were drawn in using a China marker.

Participants had fifteen minutes to create their landscape and afterward, fill out a demographic questionnaire about their gender, date of birth, ethnicity, years lived abroad (if any), and spoken languages.

Results

Horizon Height

Two coders independently coded the horizon height for the collage landscape images. Interrater agreement was 99% for the Japanese secondary school collages and 93% for the Western collages.[7] Any disagreements about horizon height were resolved by discussion between the coders and the first author.

As in Study 2a, I conducted a 2(Culture: Japan vs. Canada) x 6(Grade: 7, 8, 9, 10, 11, & 12) ANOVA in order to determine cultural variations in perception through horizon height. There was a main effect of culture for secondary school students from Grades 7 through 12, $F(1, 314)=42.90$, $p<.001$, $\eta_p^2=.120$ (Figure 4). However, there was no main effect of grade, $F(5, 314)=1.99$, $p>.10$, nor an interaction, $F(5, 314)=1.07$, $p>.30$. As in Study 2a, Japanese secondary school students drew higher horizons ($M=65.34$, $SD=21.34$) than Canadian secondary school students ($M=50.74$, $SD=17.62$). The simple effect analyses showed that within each grade, cultural difference were significant for Grade 7, $t(314)=3.69$, $p<.001$, Grade 8, $t(314)=3.37$, $p<.001$, Grade 10, $t(314)=2.11$, $p<.05$, Grade 11, $t(314)=3.19$, $p<.005$, and Grade 12, $t(314)=2.05$, $p<.05$. However, no significant cultural difference was found for Grade 9, $t(1, 314)=1.23$, $p>.15$, indicating a minor differences in the pattern of results (Figure 5).

[7] Interrater agreement was also checked by running a bivariate correlation. The results indicated that the agreement was $r=.99$ for Japanese collages and $r=.98$ for Canadian.

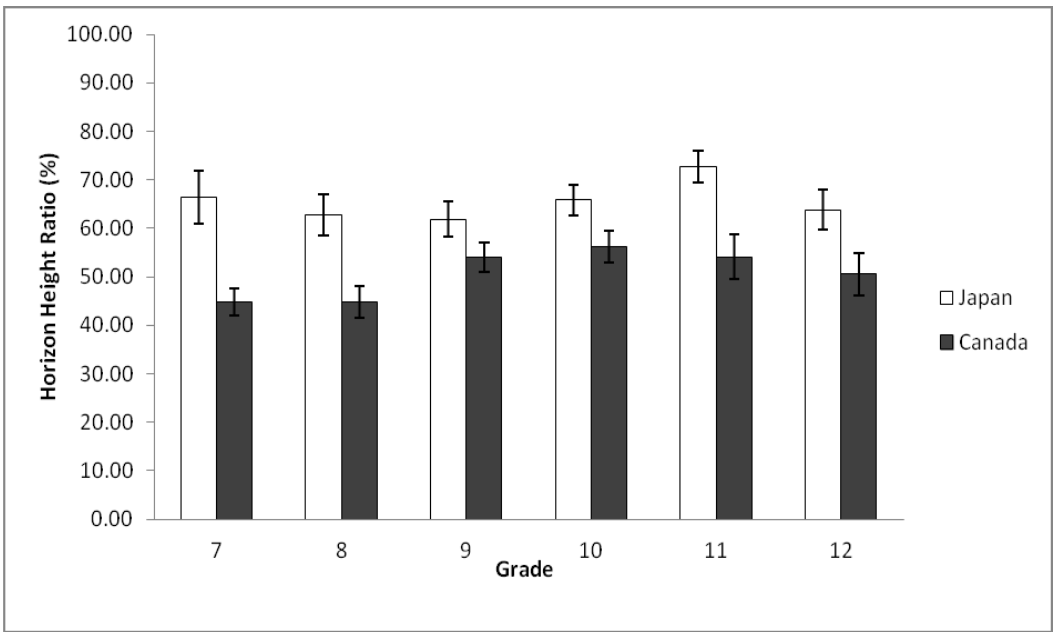

Figure 5: Average horizon height ratio in percentage by grade for Japanese and Canadian adolescent landscape collages

Generally, throughout secondary school, horizon height in collage images remained relatively similar within each culture. When combined with Senzaki et al.'s (2014) elementary school and undergraduate data, it appears that horizon height decreases from adolescence for Japanese but remains relatively stable for Canadians (Figure 6). As in Study 2a, I merged the data according to school level (Figure 7) and applied a 2 (Culture: Canada vs. Japan) X 4 (School Level: Elementary, Junior High, High School, and University) ANOVA to the ratio of the horizon against the entire frame. The results indicated that there was a main effect of culture, $F(1, 718)=79.74$, $p<.001$, $\eta_p^2=.100$. Consistent with Study 2a, Japanese, in general, drew the location of the horizon higher ($M=70.10$, $SD=23.39$) than Canadians ($M=51.24$, $SD=21.32$), demonstrating their context-inclusiveness. There was also a main effect of school level, $F(3, 718)=5.06$,

$p<.002$, $\eta_p^2=.021$. These results are however qualified by a significant interaction between culture and school level, $F(3, 718)=4.82$, $p<.002$, $\eta_p^2=.020$. The simple effect analyses showed that Japanese placed the location of horizon higher in their artworks than did their Canadian counterparts in elementary schools, $t(718)=2.42$, $p<.001$; in junior high schools, $t(718)=3.42$, $p<.001$; in high schools, $t(718)=3.51$, $p<.001$; and in universities, $t(718)=2.28$, $p<.05$, showing a robust cultural variation in the horizon height. In addition, Japanese elementary school students placed the horizon significantly higher than did their junior high school, $t(718)=4.47$, $p<.001$, high school, $t(718)=3.10$, $p<.002$, and university counterparts, $t(718)=2.01$, $p<.05$, whereas Canadian junior high school students placed the horizon significantly lower than did university students, $t(718)=2.11$, $p<.05$, indicating minor differences in patterns

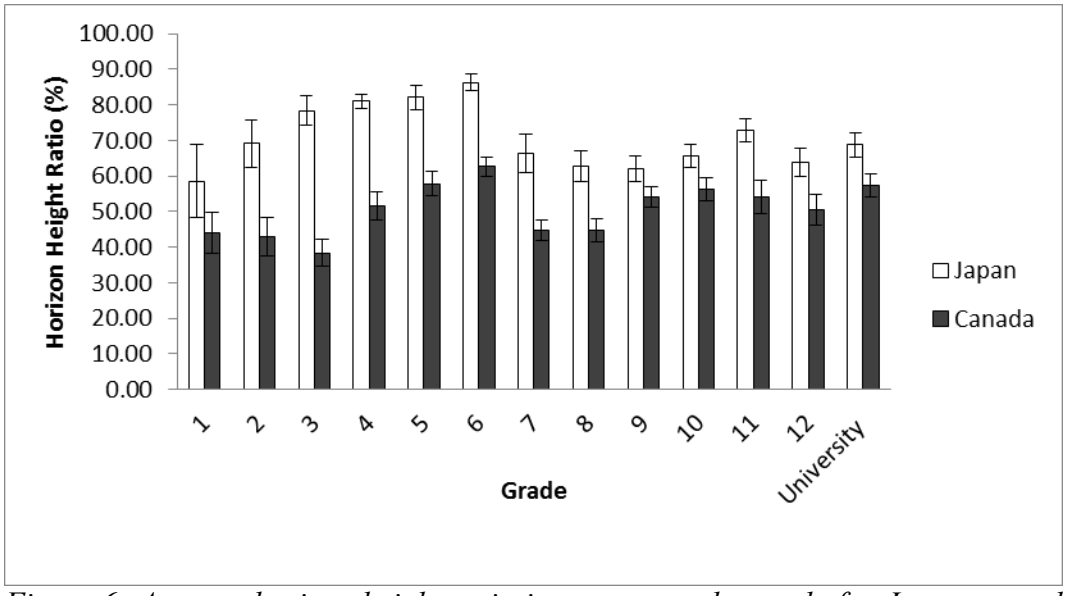

Figure 6: Average horizon height ratio in percentage by grade for Japanese and Canadian landscape collages. Data from grades 1 through 6 and University used with permission from Senzaki et al. (2014)

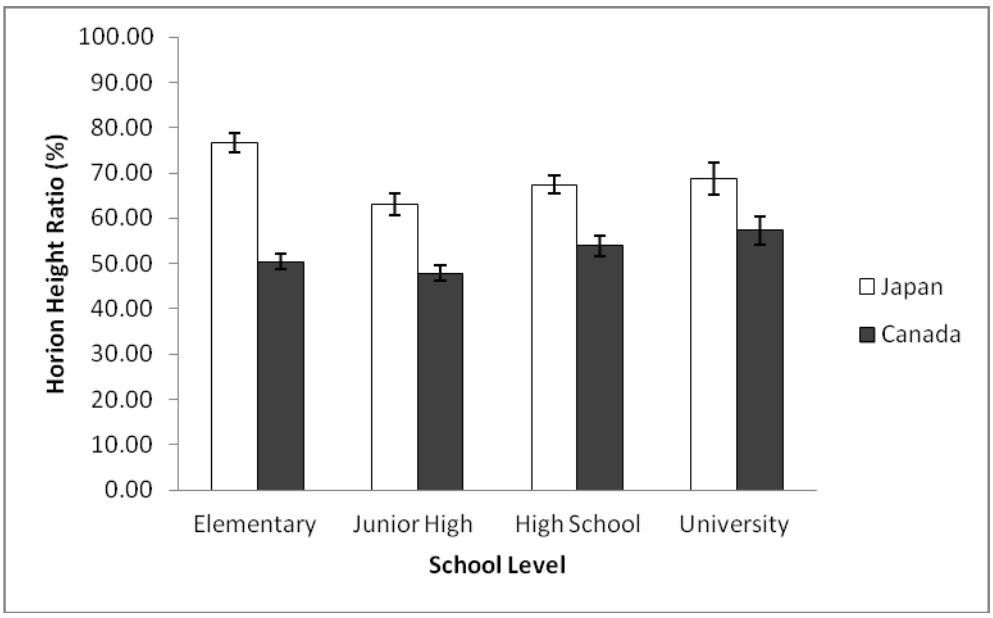

Figure 7: Average horizon height ratio in percentage by school level for Japanese and Canadian landscape collages. Data from elementary school and University used with permission from Senzaki et al. (2014)

Number of Objects

Two coders independently counted the number of objects in each collage landscape. Interrater agreement was 99% for the Japanese secondary school collages and 95% for Canadian.[8]

A 2(Culture: Japan vs. Canada) x 6(Grade: 7, 8, 9, 10, 11, & 12) ANOVA was used to determine context-sensitivity for secondary school students through the number of objects in the landscape scene. There was an interaction between culture and grade, $F(5, 314)=3.16$, $p<.01$, $\eta_p^2 =.048$ and a main effect of grade, $F(5, 314)=3.23$, $p<.05$, $\eta_p^2 =.049$ (Figure 8). Unlike horizon height, no main effect of culture was found, $F<1$, *ns*. In general, although not significant, Japanese

[8] Interrater agreement was also checked by running a bivariate correlation. The results indicated that the agreement was $r=.99$ for Japanese and $r=.92$ for Canadian.

adolescents used more objects than Canadians. Interestingly, simple effect analyses revealed a cultural difference for Grade 9; however, contrary to expectation, Canadians had more objects than Japanese, $t(314)=3.12$, $p=.002$.

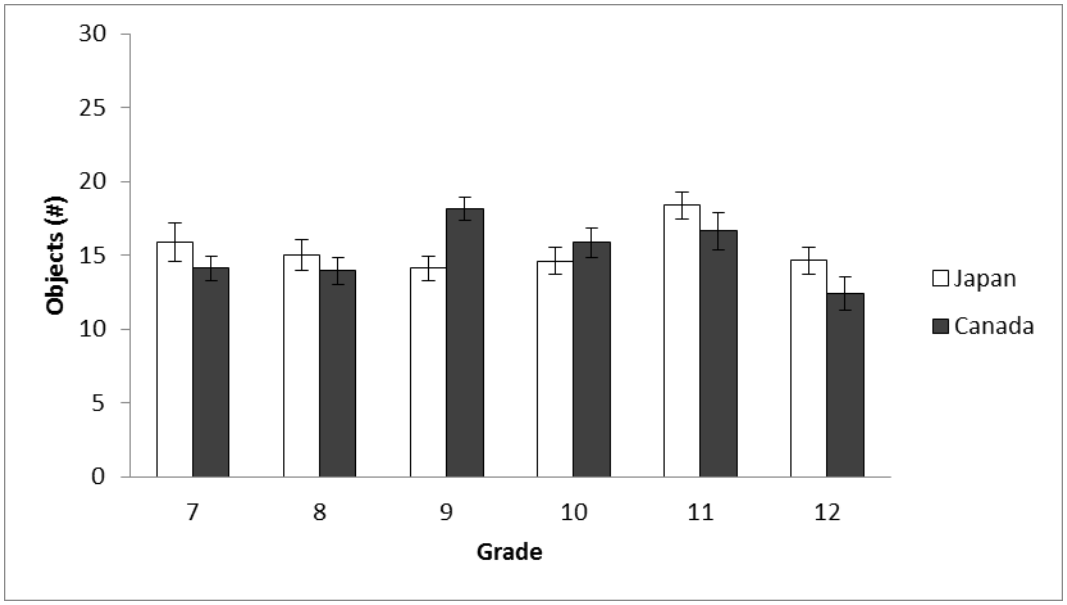

Figure 8: Average number of objects by grade for Japanese and Canadian adolescent landscape collages

The findings surrounding adolescents are interesting in relation to the undergraduate data and the elementary school data collected by Senzaki et al., (2014), which do demonstrate cultural variations in the number of objects and space used (Figure 9). In order to examine the patterns more clearly, I again combined the data according to school level (Figure 10) and applied a 2 (Culture: Canada vs. Japan) X 4 (School Level: Elementary, Junior High, High School, and University) ANOVA to the ratio of the horizon against the entire frame. The results indicated that there was a main effect of culture, $F(1, 718)=22.47$, $p<.001$, $\eta_p^2=.030$, and of school level, $F(1, 718)=15.17$, $p<.001$, $\eta_p^2=.060$. These patterns

were qualified by an interaction of culture and school level, $F(1, 718)=11.59$, $p<.001$, $\eta_p^2=.046$. The simple effect analyses revealed that elementary school and university data showed culturally dominant patterns—Japanese placed more objects in their artworks than did Canadians, ts(718)=8.07 and 2.01, ps<.001 and 005, respectively. The junior high school and high school data, however, did not show any cultural differences regarding the number of objects, Fs<1, ns. In Japanese data, the number of objects in junior high school data was significantly smaller than these of elementary school and university data, $t(718)=7.70$, $p<.001$, and $t(718)=2.89$, $p<.005$, respectively. The same patterns were observed for high school data, $t(718)=6.62$, $p<.001$, and $t(718)=2.89$, $p<.005$, respectively. In contrast, the patterns were rather constant in Canadian data (all ps are ns). In sum, Japanese adolescents' patterns regarding the number of objects were different from the dominant patterns observed in elementary school and university data, and similar to that of Canadian data, suggesting a substantial drift during this ontogenetic period only for Japanese.

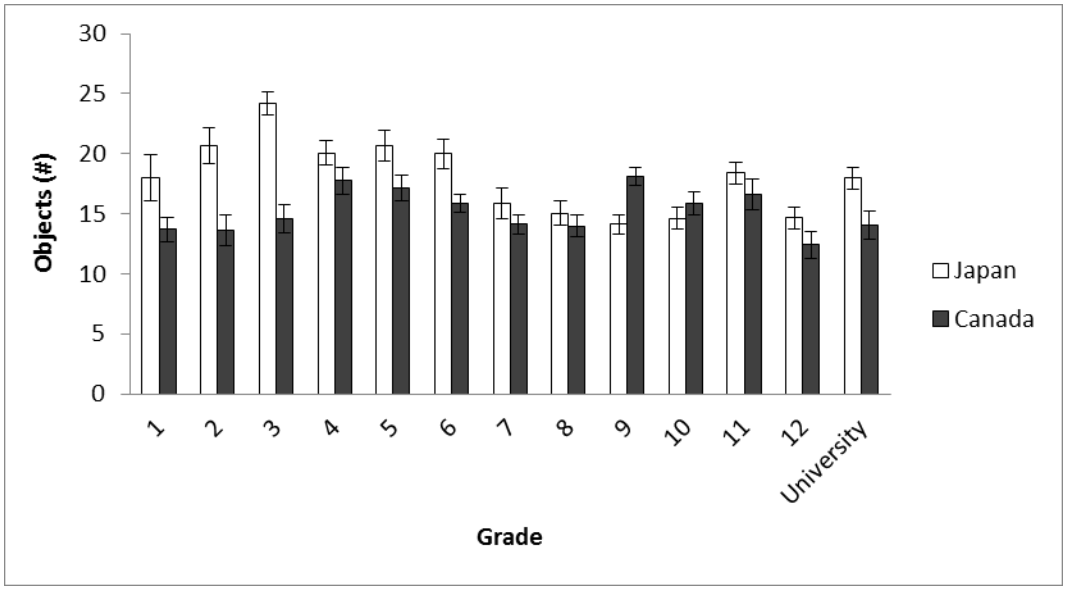

Figure 9: Average number of objects by grade for Japanese and Canadian landscape collages. Data from grades 1 through 6 and University used with permission from Senzaki et al. (2014)

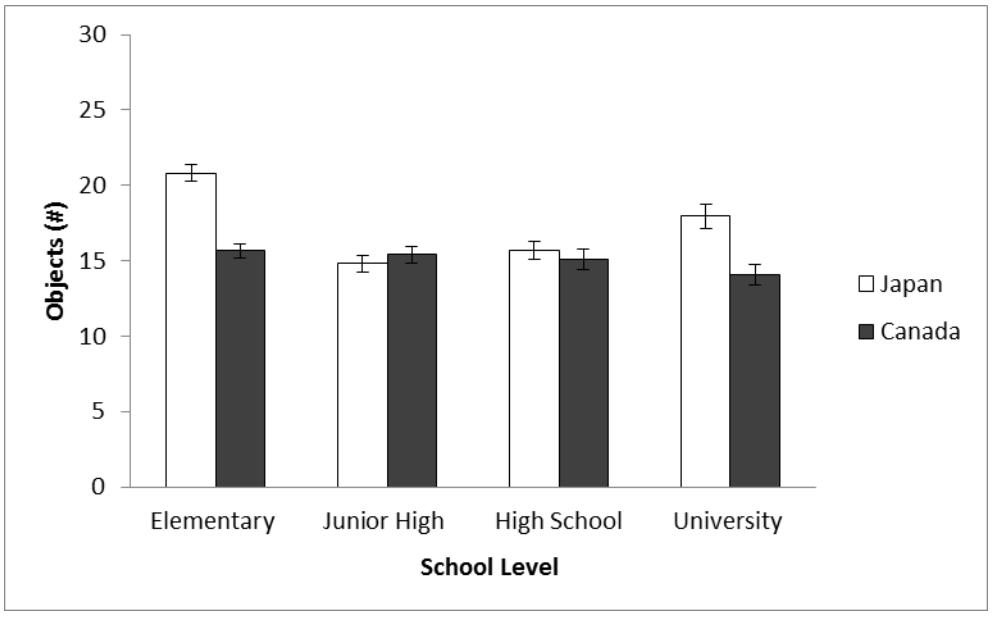

Figure 10: Average number of objects by school level for Japanese and Canadian landscape collages. Data from elementary school and University used with permission from Senzaki et al. (2014)

Object Area

As another measure of context-sensitivity, I also determined the amount of space used in the created landscapes through the area occupied by the collage pieces on the frame. A 2(Culture: Japan vs. Canada) x 6(Grade: Grade 7, 8, 9, 10, 11, & 12) ANOVA was applied to the area of the objects and indicated that for the secondary school data, there was no main effect of culture, no main effect of grade and no culture by grade interaction, Fs<1, ns. Therefore, there was no difference in the area covered by objects for Japanese and Canadian secondary school students (Figure 11).

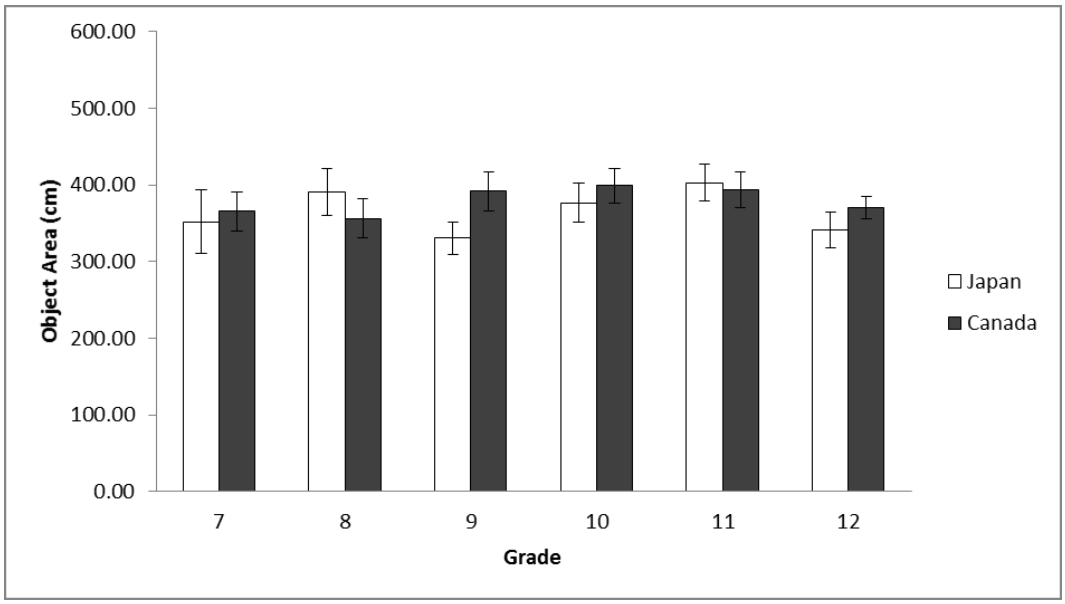

Figure 11: Average area covered by objects in centimeters by grade for Japanese and Canadian adolescent landscape collages.

For the undergraduate data, a t-test found that more area was covered by objects in landscape collages created by Japanese (M=423.70, SD=120.23) than Canadians (M=346.37, SD=88.85), $t(75)=3.19$, $p<.01$, $d=.732$.[9]

Similar to the number of objects, the findings for the area covered by objects in the landscape frame carried no significant cultural variations for adolescents. I combined these data with elementary data from Senzaki et al.'s study (Figure 12) in order to depict a cross-sectional developmental trajectory. In order to simplify the amount of data, I organized it according to school level (Figure 13). After merging our data with Senzaki et al.'s (2014) elementary school data and university data, a 2 (Culture: Canada vs. Japan) X 4 (School Level: elementary, junior high, high school, and university) ANOVA was applied the object area. The results indicated that there was a main effect of culture, $F(1, 718)=17.24$, $p<.001$, $\eta_p^2=.023$, and of school level, $F(1, 718)=19.01$, $p<.001$, $\eta_p^2=.074$. These patterns were quailed by an interaction of culture and school level, $F(1, 718)=16.61$, $p<.001$, $\eta_p^2=.065$. The simple effect analyses revealed that although elementary school and university data showed culturally dominant patterns—Japanese used more area in their artworks than did Canadians, ts(718)=8.89 and 2.72, ps<.001 and 01, respectively. The junior high school and high school data did not show any cultural differences regarding the number of objects, Fs < 1, ns. This pattern was observed only in Japanese data, as the area of objects in junior high school data was significantly smaller than that of

[9] Senzaki et al. (in press) did not report Area findings for University students

elementary school and university data, $t(718)=7.70$, $p<.001$, and $t(718)=2.89$, $p<.005$, and that of high school data was significantly smaller than that of elementary school data, $t(718)=7.64$, $p<.001$, and marginally smaller than that of university data, $t(718)=1.94$, $.05<p<.10$. In contrast, the patterns were rather constant in Canadian data (all *p*s were *ns*). Similar to the data of the number of objects, Japanese adolescents' patterns regarding the area of objects were different from the dominant patterns observed in elementary school and university data, and similar to that of Canadian data, again suggesting a substantial drift during this ontogenetic period only for Japanese.

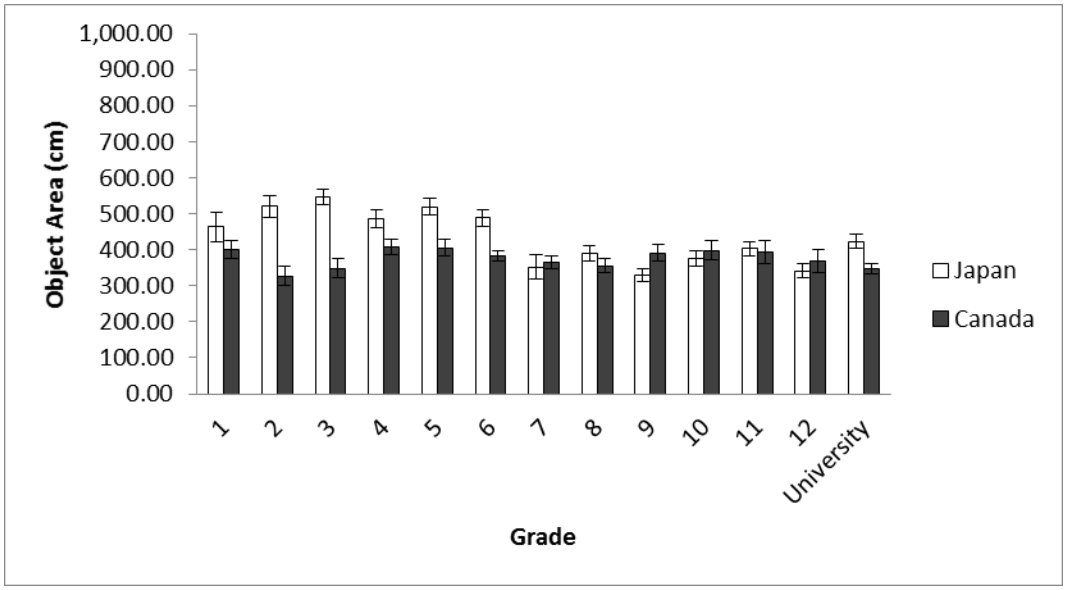

Figure 12: Average area covered by objects in centimeters by grade for Japanese and Canadian landscape collages. Data from grades 1 through 6 and University used with permission from Senzaki et al. (2014)

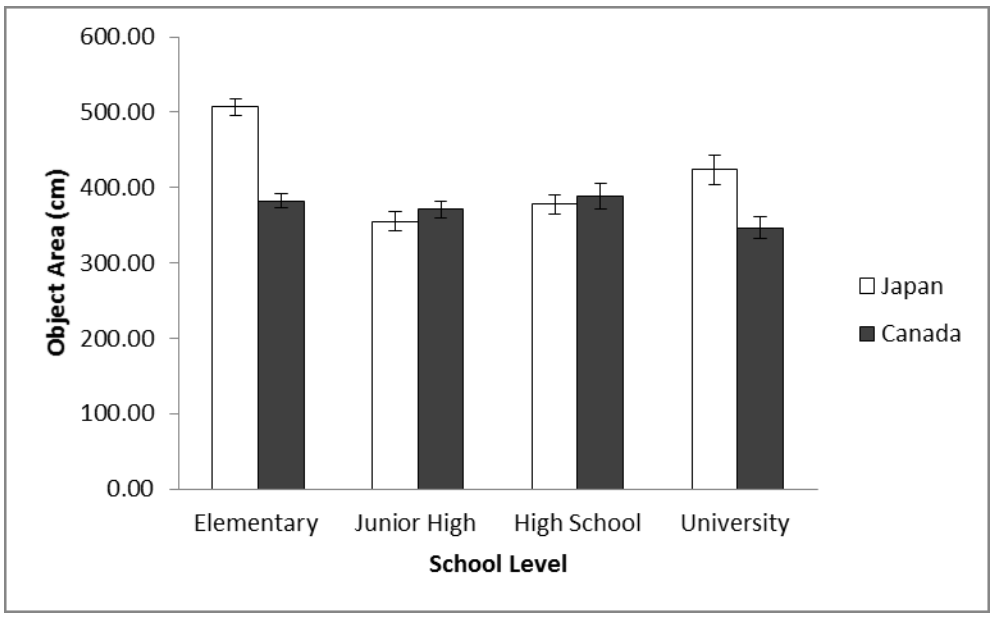

Figure 13: Average area covered by objects in centimeters by school level for Japanese and Canadian landscape collages. Data from elementary school and University used with permission from Senzaki et al. (2014)

Discussion

Study 2 demonstrated that culturally specific tendencies are both robust and subject to change depending on what factors are being examined. There were cultural variations in both Study 2a and 2b for horizon height, Japanese drawing higher horizons than Canadians throughout development, supporting Hypothesis 2. However, in terms of the number of objects and the area covered by objects, though present in elementary school children and undergraduates, there were no cultural variations in adolescence. That is, Japanese adolescents had significantly less context-sensitivity than their elementary school and undergraduate counterparts, supporting Hypothesis 1 in that there were cultural drifts during this developmental period. However, Hypothesis 1 is only partially supported as Canadian adolescents' context-sensitivity was consistent throughout development and therefore did not demonstrate cultural drift.

General Discussion

In an extension of Masuda et al.'s (2008) and Senzaki et al.'s (2014) findings, I examined Japanese and Western historical landscape masterpieces from the 17th to 20th century and adolescents' landscape artworks in order to comprehensively examine the trends regarding perceptual tendencies using two forms of time.. This research is among the first to use both historical and ontogenetic data in order to thoroughly examine both culturally-specific psychological tendencies between cultures but also cultural drifts.

In the examination of historical landscape masterpieces, Study 1 demonstrated that there were cultural drifts in both cultural groups, which resulted in no cultural differences from 1900-1949; however, the pattern in which these changes proceeded differed. As expected, horizons in Japanese masterpiece landscapes were significantly lower from 1850-99 in comparison to earlier time periods but began increasing again from the 1900s. Similarly, horizons in Western landscapes changed but had been progressively increasing from the 1700s. From the 1900s continued to increase in a linear pattern throughout the subsequent time periods. Overall, this study demonstrated that there is a bidirectional influence of culture, which may contribute to cultural drift.

Developmental data in Study 2 demonstrated that cultural differences were indeed robust as Japanese throughout development had higher horizon heights than Canadians. However, Study 2b revealed that these cultural variations are subject to change. That is, the number of objects decreased for Japanese during adolescence and was significantly lower than their elementary and undergraduate

counterparts. In fact, as there were no cultural variations in adolescence, Japanese contextual-sensitivity was similar to Canadians'.

The Bidirectional Influence of Culture

These findings suggest that aesthetic products from other cultures may influence perception demonstrated in cultural products, especially when considering the historical circumstances in Study 1. Recently, researchers have been acknowledging that with globalization our psyche will inevitably be affected as well (Chiu & Hong, 2006; Chiu, Gries, Torelli, & Cheng, 2011). Although Study 2a and b demonstrated that culturally specific tendencies are strong, Study 1 and 2b showed that it is not impermeable. In fact, as Study 1 demonstrated, I observed substantial cultural drifts away from traditional perspective in artworks as a function of historical circumstance. In Japan's case, modernization during the Meiji Restoration was associated with the consumption of Western ideals and products; however, with these drifts in thinking also came fear in the loss of cultural identity (Rimer, 2012; Sam-Sang, 2011). In forming cultural identity, the data demonstrated that Japan engaged in both embracing and rejecting the West as it wanted to modernize and yet maintain its uniqueness and traditional ideals. This is, however, a common reaction in cultures in the face of globalization (Barber, 1995). In this sense, not all Japanese artists may be receptive to adopting Western artistic techniques and instead emulate perspective similar to their traditional counterparts. For example, aesthetic nationalists such as Okakura Tenshin (Yamaguchi, 2012) emphasized the importance of maintaining tradition in the face

of Westernization. Furthermore, aesthetics in culture tend to have patterns in which old styles may become popular or emulated again in a cyclic nature. The data for Western horizon location, however, did not demonstrate this kind of vacillation. One reason for this difference may be that Japanese were forced to learn and adopt Western painting styles as part of governmental policy during the Meiji Restoration, whereas Western artists adopted Japanese techniques of their own accord (Sullivan, 1989). However, I speculate that given the inherent nature of our culturally-formed psychological processes, ultimately cultural patterns may return to that of the norm.

In Study 2b, Japanese adolescents' context-sensitivity was similar to that of Canadians adolescents. Studies have found that Japanese are becoming more individualistic with each generation (Hamamura, 2012) and universal materialistic values alongside Western ideologies within institutions have contributed to reducing differences between Japanese and North American adolescents (White, 1993). Whether this change in self construals and values influences context-sensitivity is unknown and requires further research. Thompson (2007) mentions that art education tends not to address other cultural sources of artistic influence for children apart from the classroom setting and what is chosen by adult members. This disconnect between art educators and children may explain the decline in art production starting from adolescence, which may be a function of the changing interests of students who may want to draw in order to express themselves (Gardner, 1990) or to even draw and experiment outside of the cultural

norm (Toku, 2002). For example, Kinsella (1995) suggests that following the introduction of Disney in the early 20th century, Japanese adolescents were receptive to 'cute' European styles because it contrasted with dated products in traditional Japanese society. Essentially, it was novel and different from what their parents considered aesthetically appealing. Interestingly, in Study 2a some Canadian students had people in their drawings that bore similarities to Japanese drawing styles in comics or manga. In the last decade, manga has become internationally popular and is readily available in bookstores across North America, the first issue of *Shonen Jump* selling out at 250,000 copies (Wong, 2006). Furthermore, given the proliferation of the internet, youth have ready access to cultural products from many countries. Although we do not know how much manga may influence landscape art, the depiction of art similar to that of Japanese suggests that adolescents may be more willing to access, be influenced by and receptive to emulating the work of other cultures. Another explanation may be that as Japanese become older, they may be more sensitive to spacing, which is exemplified in the concept of *ma* or space (Pilgrim, 1986). In Japanese traditional arts, space is seen as contextual and possessing meaning; therefore, they may be less encouraged to place multiple objects into the frame but are still sensitive to context, demonstrated through their high horizons found in Studies 1 and 2. In fact, recent findings in eye-tracking have demonstrated that East Asians tend to fixate more on the white space in traditional Chinese landscape paintings in relation to Westerners (Liu et al., 2013). Furthermore, white and space is

readily used and appreciated in Japanese architecture (Hara, 2009), although whether it is more present in Japanese environments in comparison to Western ones is unknown and would be an interesting topic for investigation.

In general, cultural members, especially younger generations, are active in their seeking of visual products, and receptive to new trends whether it is from their own culture or another. This resonates with Tomasello's (1999) assertion that with each generation, cultures are modified. Where this may lead culturally specific tendencies in art production is unknown, especially given the differing trends demonstrated in the results, but similar to the opening of Japan to the West during the Meiji Restoration, the exchange of culture and its influence on our psychological tendencies is inevitable. Acculturation studies clearly depict linear trends regarding changes in perception and cognition. For example, Heine and Lehman (2004) and Kitayama and colleagues (2003) both determined that through living in another culture, psychological tendencies in self-esteem and attention can change, demonstrating that our culturally-specific psychological tendencies are not set in stone but in fact can be malleable depending on cultural exchange and context. But such changes in cognition can be observed even when researchers focus on a culture. In a longitudinal developmental study, Stevenson and Lee (1996) demonstrated that over the course of ten years, Chinese mothers who had initially focused on their children's ability to fit in with others were more likely to support their independence. Furthermore, Hamamura (2012) recently found that as a result of economic growth, Japanese are becoming more

individualistic on some indices. Findings by Norasakkunkit, Uchida and Toivonen (2012) also demonstrate that Japanese youth may possess differing cultural values from their elder counterparts, which may result in them being marginalized in their own society. This is not to say that the world is becoming westernized. Rather, culturally-specific psychological tendencies still exist; however, as demonstrated in this current research, particular aspects of a given culture may be subject to cultural drifts. Culture is not stagnant but dynamic; as culture and psyche mutually construct one another, when people interact with their contexts, they create change just as their contexts (through economy, institutions, products, etc) can change them (Markus & Kitayama, 2010; Miyamoto, Nisbett & Masuda, 2006).

Implications

Investigating cultural products is an important method to understand how culture is both created and maintained. This particular research utilized two types of methodological frameworks, developmental and historical, in order to demonstrate not only that cultural variations in the human psyche do exist, but it may be subject to cultural drifts across time. Future studies in psychology should thus integrate and explore both historical and developmental data in order to know patterns regarding whether the human psyche is indeed changing and how. Indeed, the transmission of culture occurs between generations, but how robust these psychological tendencies are compared to the previous generation and whether developmental stages causes cultural drifts needs to be further investigated. In

particular, this study demonstrated that adolescents behaved somewhat differently than their elementary school and adult counterparts, suggesting that universally this developmental stage may have drifts away from culturally normative behavior. As explained by Vygotsky (1978) and Tomasello (1999), human development occurs both ontogenetically and historically through interaction with the environment. With changing environments are differences in what children learn, modify and pass down. This leads to our psychological tendencies changing and evolving. Thus, adolescent data may indicate change in the coming generation. It is important to address differences between youth and older members of a society as it not only demonstrates that the human mind is changing in relation to culture but may result in the marginalization of youth (Norasakkunkit, Uchida, & Toivonen, 2012) and misunderstanding between the current and future leaders of a society.

Furthermore, research in cultural psychology should comprehensively address the full cycle of culture and psyche. Aesthetic products in particular are a rich medium and a snapshot in time in order to examine how psychological tendencies create and maintain culture. Historical data can also present a more thorough picture of cultural change and what to possibly anticipate for the future. However, cultural change takes time, which may require data spanning hundreds of years in order to have a more comprehensive understanding of pervasive cultural tendencies, drifts and the historical circumstances that create change. Therefore, there should be continued research in this area, especially considering

that with technological advances like the internet, we are exposed to and have increasing access to aesthetic products of other cultures. Unlike self-report data, cultural products and historical data are also generally free of biases and accurate as long as the coding is reliable (Hamamura, 2012; Morling & Lamoreaux, 2008).

Lastly, the evidence of cultural change is consistent with the assertion that cultures borrow and modify ideas from one another in a form of cultural evolution. Cultural members, both ontogenetically and historically, modify and make improvement to their tools. In this sense, younger cultural members may improve a product from experience alone or through exposure to another culture from which they could find meaning within. Cultural drift, then, is a form of adaptation and one, like evolution, that is inevitable. It may be interesting to see what aspects of one culture that another would construe meaning from and adapt toward their own traditions and artifacts, and how this could impact psyche.

Limitations and Future Directions

The findings of this research are interesting in regards to changes during adolescence in cultural patterns; however, as this thesis focused on cross-sectional data, there remains the possibility of cohort effects as one cohort may be exposed to different circumstances than another, which may influence their psychological tendencies. For instance, whereas Japanese junior high and high school students showed substantial cultural drifts regarding the number of objects included, and the area occupied by these objects in their artworks, perhaps the elementary sample in this study will not demonstrate cultural drift during adolescence due to

growing up and being exposed to differing factors such as domestic pop culture, which changes frequently,, or political changes that may direct them to be more or less ethnocentric, etc. Similarly, although North American adolescents did not strongly show any cultural drifts in their artworks, the elementary sample in this study may be strongly influenced by pop cultures that originated from East Asia. Therefore, in order to comprehensively examine cultural variations and drifts in development as a function of historical circumstances and to account for possible cohort effects, a longitudinal study both within and between generations should be conducted in future research. Longitudinal data allows for developmental changes to be examined more closely at both group and individual level. Furthermore, as demonstrated in Study 1, changes in behavior within and across generations can also be investigated alongside historical circumstances. If indeed technology is allowing there to be increased access to products from other cultures, a longitudinal study may be able to illustrate whether cultural drifts occur more within one generation in comparison to another and at what period in development. For example, a future study may want to examine cultural products from different cohorts of East Asian and North American elementary school participants. By having a new cohort and following up with the previous one after a set amount of time, cultural drift can be closely examined through whether or not there is a change in their cultural products from the previous sampled time and cohort and why. However, it is important to note that longitudinal studies are difficult to execute as there are a variety of methodological constraints. For

instance, a longitudinal study would literally need approximately 13 years to investigate the trends of a specific cohort groups from elementary school to the beginning of adulthood and therefore would be very time consuming. Furthermore, we expect data attrition as participants may move or decide to no longer participate, which will strongly undermine the quality of the data. Therefore, thinking of the practicality and feasibility factors, we decided to not apply longitudinal methods and instead conduct a cross-sectional study in order to get a general idea of how cultural patterns in attention proceed throughout development. Furthermore, there may be attrition in the number of participants.

Next, in regards to the historical data, the time periods were categorized arbitrarily and only took into account the Meiji Restoration. Within these time periods, various other historical factors may have influenced cultural tendencies, such as interactions with other cultures, wars or industrialization. Furthermore, history cannot be divided into succinct one hundred or fifty year sections. However, as this was an exploratory study, I chose to focus on only one specific historical incident in order to determine whether it did indeed have impact in the depiction of culturally-formed attention in aesthetic products. Moreover, in terms of data collection, gathering paintings created in a specific year or time period can be difficult, especially for Japanese paintings. Thus, in order to maintain a large sample size and to minimize confounds, I chose to organize the data according to every hundred years from 1600 to 1800 and then every fifty years from 1800 onward. Collaboration with art historians may be useful for future studies in order

to effectively categorize time periods and more closely scrutinize cultural change as a result of historical factors.

Given that there are various possibilities regarding how to remove or manipulate potential confounding variables, in future studies it may be useful to determine whether or not participants are accessing or have exposure to artwork from other cultures. In this study, I did not assess whether or not students were taking art as an option and if students had exposure to different perspectives for landscape art in their optional art classes. In Alberta, the concept of a horizon taught in elementary school (Alberta Education, 1985). After speaking with teachers in the Canadian sampled schools, I was told that what the student is taught regarding perspective and exposure to the art of different cultures may vary depending on the art teacher, what they choose to teach and how they teach it

One confounding variable may be the circumstances surrounding the creation of a piece of landscape art. In terms of art in classroom settings, children tend to draw more realistic scenes but as they become older, they value creativity and imagination over realism (Gardner, 1990). Therefore, it could be that children are drawing directly from their vantage point in the school. Toku (2002) mentions that Japanese elementary school children's drawings in a bird's eye style may be a result of their school building and from what floor they study on, students on higher floors demonstrating more of a bird's-eye perspective than those on a lower. However, this would mean that perception is free of meaning and culture, and as previous research has found (Duffy et al., 2009; Imada et al., 2012;

Kuwabara et al., 2011), children internalize culturally specific psychological tendencies from a young age and portray this in their cultural products (Ishii et al., 2014; Rübeling et al., 2011). Furthermore, Miyamoto et al. (2009) found that our physical environments are a product of culture, which landscape art may further reflect. In this current research, students in the Japanese schools ranged from being on the first to third floor of their school depending on their grade; however, their patterns of perception were similar. The Canadian schools, in contrast, had only one floor for all grades. However, in order to maintain consistency and to prevent any additional confounding variables, controlling the floor in which students create their landscapes and attending to other possible confounds in the environment may be recommended.

Conclusion

Provided the increasing globalization of our world, it is easy to assume that cultural variations may diminish. Some aspects of this research support this line of thinking as there were no or reversed cultural variations for adolescents in terms of objects used or area covered in Study 2b, nor for a brief period of time in the historical findings. However, the historical data did show an interesting trend in that Japanese horizon heights began to increase again from the 1900s and cultural variations were still robust. This research demonstrates that cultural variations in our psychological processes are indeed substantial and it is important to continue to identify systematic differences in the thinking styles of different cultures. However, as Shweder (1991) states, we live in intentional worlds and are

intentional people. Therefore, we replicate meaning depending on what we consider important from both our own and other cultures. These decisions may furthermore be influenced by the social-historical context. During the Meiji Restoration, Japan aimed to modernize; however, following World Wars I and II, the desire to connect with the past again and maintain culture became salient within the members of Japanese society and was demonstrated in the findings. In this sense, cultural products are unique in that it can represent our psychological tendencies at a given moment in time and how it may be influenced by other cultures. Therefore, whether or not a meaning system and associated behavioral patterns gradually drift from the cultural norm based on external influences needs to be further researched.

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Appendix A: Accessed Museums and Books

Japanese Historical Landscapes

Abe, N. (1997). *Aoki Shigeru*. Tokyo: Shinchosha.

Aichi Prefectural Museum

Asano, S. (1997). *Kitagawa Utamaro*. Tokyo: Shinchosha.

Asian Art Photographic Distribution (AAPD) (University of Michigan)

Chunichi Shinbun. (2014). *From Hakubakai to Kofukai: Aspects of Japanese oil painting*. Nagoya: The Chunichi Shinbun.

Fujiura, M. (1997). *Iwasa Matabei*. Tokyo: Shinchosha.

Fukushima Prefectural Art Museum

Harvard Art Museum

Hibino, H. (1997). *Watanabe Kazan*. Tokyo: Shinchosha

Hiroshima Prefectural Museum

Honolulu Museum of Art, http://honolulumuseum.org/

Hoshino, S. (1996). *Maruyama Okyo*. Tokyo: Shinchosha.

Indianapolis Museum of Art. (2004). *Edo kaiga he no atsumanzashi: Indianaporisu Bijutsukan meihinten (Japanese Masterworks: Paintings from the Indianapolis Museum of Art)*. Osaka: Yomiuri Shinbun Osaka Honsha.

Iwate Prefectural Museum of Art

Jingu Museum

Kamiya, H. (1998). *Katsushika Hokusai*. Tokyo: Shinchosha

Kawaguchi, N. (1998). *Maeda Seison*, Shinchosha. Tokyo: Shinchosha

Kano, H. (1997). *Soga Shohaku*. Tokyo: Shinchosha.

Kobayashi, C. (1993). *Nihon bijutsu zenshu, volume 19: Taiga to Okyo (The complete Japanese art collection, volume 19: Taiga and Okyo)* Tokyo: Kodansha.

Kobayashi, T. (1996). *Ito Jakuchu*. Tokyo: Shinchosha.

Kobe City Museum

Kouno, M. (1996). *Yosa Buson*. Tokyo: Shinchosha.

Kumamoto Prefectural Museum

Kuroda, T. (1997). *Hasegawa Tohaku*. Tokyo: Shinchosha.

Kyoto National Museum

Maekawa, H. (1997). *Asai Chu*. Tokyo: Shinchosha

Mie Prefectural Art Museum

Miwa, H. (1997). *Kuroda Seiki*. Tokyo: Shinchosha

Munakata, K. (1997). *Tanomura Chikuden*. Tokyo: Shinchosha

Museum of Fine Arts, Boston

Nagasaki Municipal Museum

Naito, M. (1997). *Utagawa Kuniyoshi*. Tokyo: Shinchosha

Nakamachi, K. (1996). *Ogata Korin*. Tokyo: Shinchosha.

National Palace Museum

Ozaki, M. (1997). *Hishida Shunso*. Tokyo: Shinchosha

Oka, Y. (1998). *Shiba Kokan*. Tokyo: Shinchosha.

Okudaira, S. (1997). *Tawaraya Sotatsu*. Tokyo: Shinchosha.

Ozaki, M. & Tsurumi, K. (2008). *Motto shiritai Higashiyama Kaii (I want to know more about Higashiyama Kaii)*. Tokyo: Tokyo Bijutsu.

Princeton University Art Museum

Sakamoto, K. (1998). *Takahashi Yuichi*. Tokyo: Shinchosha

Satoh, Y. (1997). *Urakami Gyokudo*. Tokyo: Shinchosha.

Takaoka Art Museum

Takeda, K. (1997). *Ikeno Taiga*. Tokyo: Shinchosha.

Tamamushi, T. (2008). *Motto shiritai Sakai Houitsu (I want to know more about Sakai Houitsu)*. Tokyo: Tokyo Bijutsu, Tokyo, 2008.

The John C. and Susan L. Huntington Archive of Buddhist and Related Art

The Mainichi Newspapers Co. (2013). *Kano Sanraku and Sansetsu*. Tokyo: The Mainichi Newspapers Co.

The Metropolitan Museum of Art

The Museum of Modern Art, Kamakura and Hayama

The National Museum of Modern Art, Kyoto

The National Museum of Modern Art, Osaka

The National Museum of Modern Art, Tokyo

Tohoku History Museum

Tokyo Fuji Art Museum

Tokyo National Museum

Tokyo University of the Arts

Tsuji, N. (2013). *Nihon bijutsu zenshu, volume 14: Shogakukan (The complete Japanese art collection, volume 14: Shogakukan)* Tokyo: Kodansha.

Uchiyama, T. (1997). *Tomioka Tessai*. Tokyo: Shinchosha

Wakayama City Museum

Yale University Art Gallery

Yamaguchi, A. (2013). *Dai gamen sakuhin shu (The big picture) 2nd Ed.* Kyoto: Seigensha Art Publishing.

Yasumura, T. (1998). *Kano Tanyu*. Tokyo: Shinchosha.

Yoshinaka, M. (2013). *Motto shiritai Takeuchi Seiho (I want to know more about Takeuchi Seiho)*. Tokyo: Tokyo Bijutsu.

European Historical Landscapes

Armstrong, C. (2007). *The painted valley: Artists along Alberta's Bow River, 1845-2000.*

Art Gallery of Ontario

British Museum

Cleveland Museum for Arts

de Young Museum

Detroit Institute of Arts

Fine Arts Museums of San Francisco

Foundation for Landscape Studies

Frick Art Reference Library

McMichael Canadian Art Collection

musée d'Orsay

Museum of Fine Arts, Boston

Museum of Modern Art

Philadelphia Museum of Fine Arts

Rijksmuseum

Smithsonian Institution

Tate Gallery

The Art Institute of Chicago

The Getty

The Guggenheim Museums and Foundations

The Louvre

The Metropolitan Museum of Art

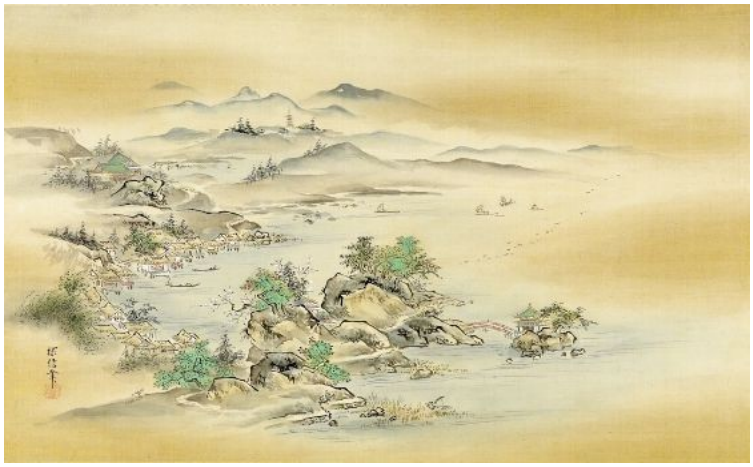
The National Gallery of Art

Usher Gallery

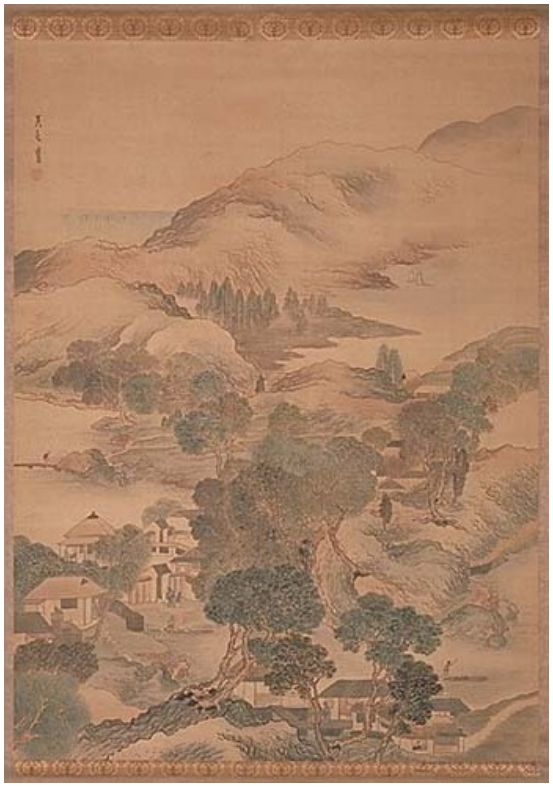
Walters Art Museum

Appendix B: Sample Historical Masterpieces

Japanese Landscape Masterpieces



(Copyright Harvard Art Museum. Created by Kano Tanshin, *Chinese Seaport Landscape*, circa 1681)



(Copyright Kyoto National Museum. Created by Goshun, *Tranquility in a River Village*, circa 1790)

(Copyright Tokyo National Museum. Created by Goseda Houryuu, *Nihonbashi's Landscape*, from circa 1860~)

(Copyright Honolulu Museum of Art. Created by Ogawa Sen'yo, *Eight Views of Omi*, circa 1933)

Western Landscape Masterpieces

(Copyright The Metropolitan Museum of Art. Created by Jan van Goyen, *View of Haarlem and the Haarlemmer Meer*, circa 1646)

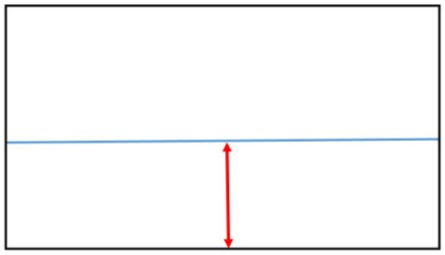
(Copyright The Getty. Created by Canaletto, circa 1738)

(Copyright the Art Institute of Chicago. Created by Claude Monet, *Cliffwalk at Pourville,* circa 1882)

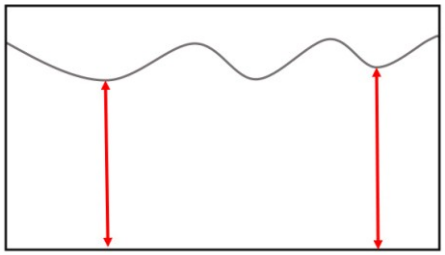
(Copyright the Smithsonian American Art Museum. Created by Maurice Grosser, *View of Tangier with Washerwomen: Afternoon,* circa 1969)

Appendix C: Horizon Measuring Guide

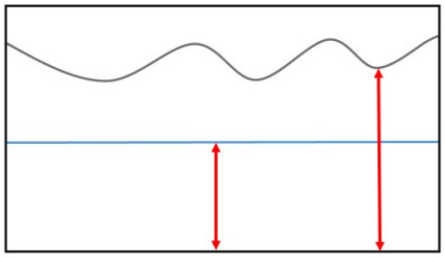
1. If it is a standard horizon (a horizontal line dividing sky and land),measure from the bottom of the page to the highest point on the line and the lowest.



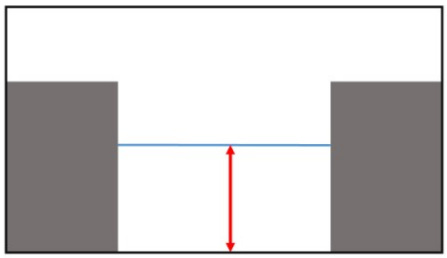
2. If there are mountains, measure:
    a. The highest dip or descent and the lowest.



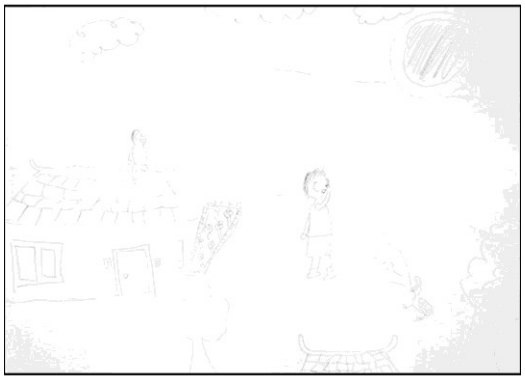
    b. If there is a horizontal line below the mountain, measure the lowest point on the horizontal line and the highest dip or descent



3. If there are cliffs are in the foreground, measure only what is in the background.

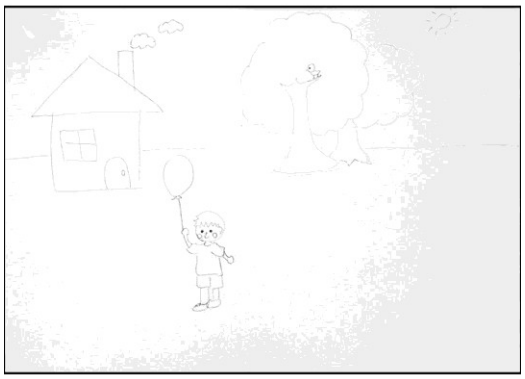


Appendix D: Samples of Landscape Drawings

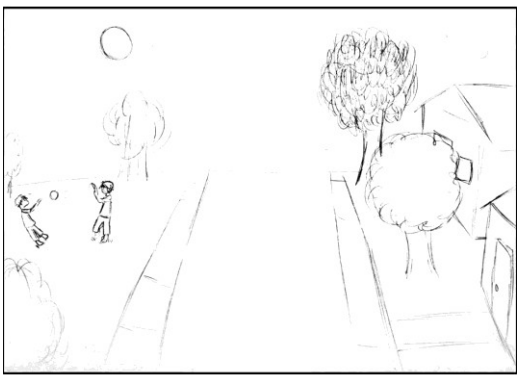


Grade 7 (Japanese)

Grade 7 (Canadian)

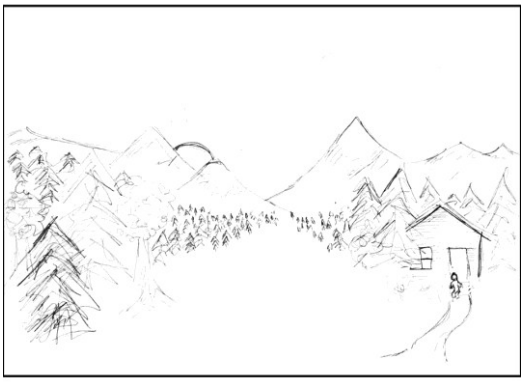


Grade 10 (Japanese)



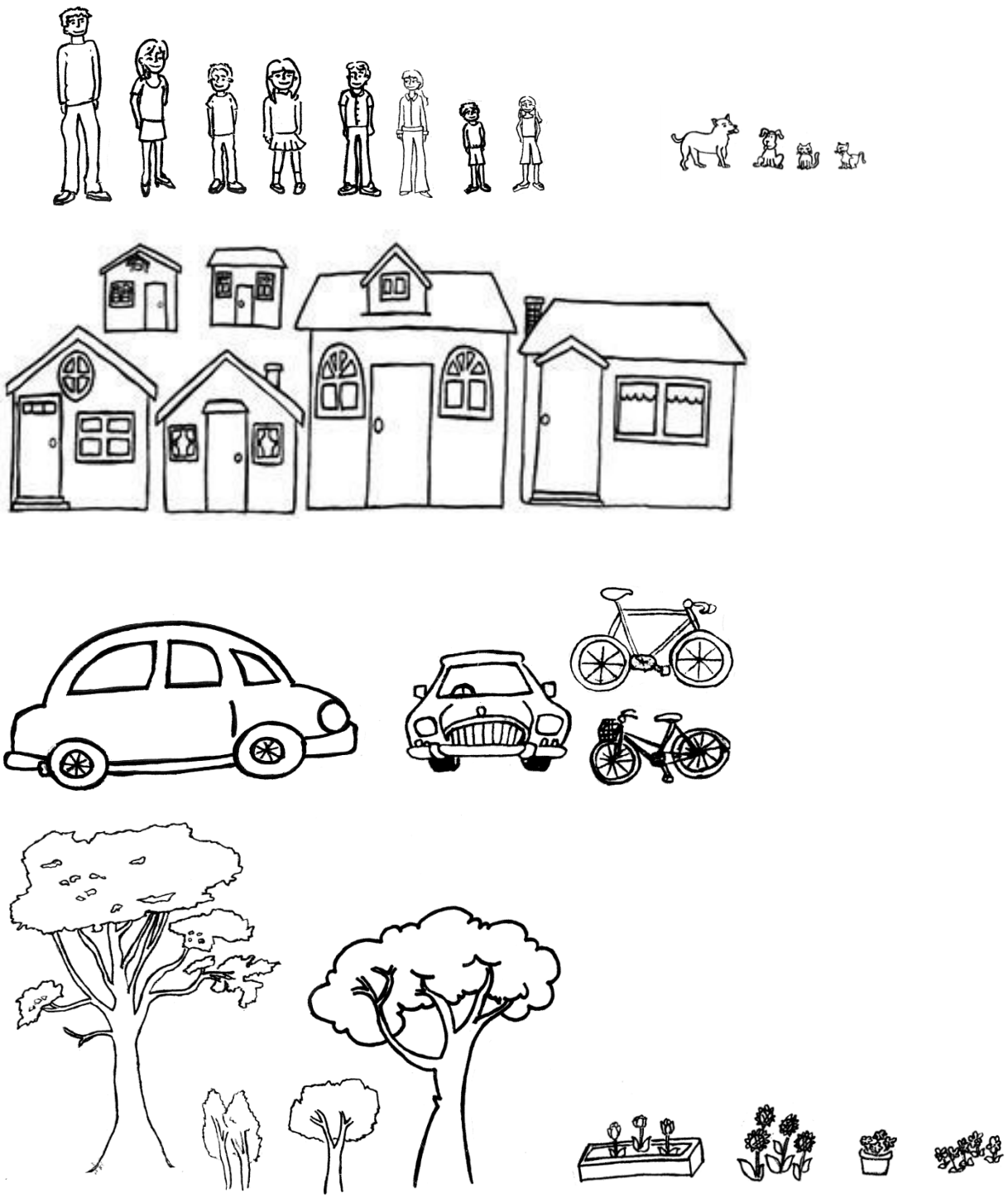
Grade 10 (Canadian)

University (Japanese)



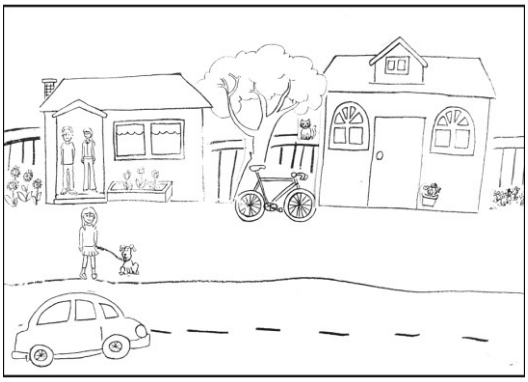
University (Canadian)

Appendix E: Landscape Collage Objects

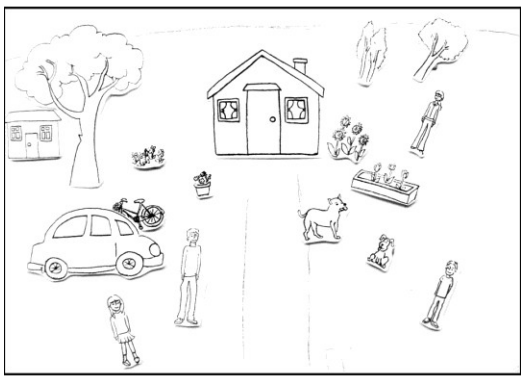


Appendix F: Samples of Landscape Collages

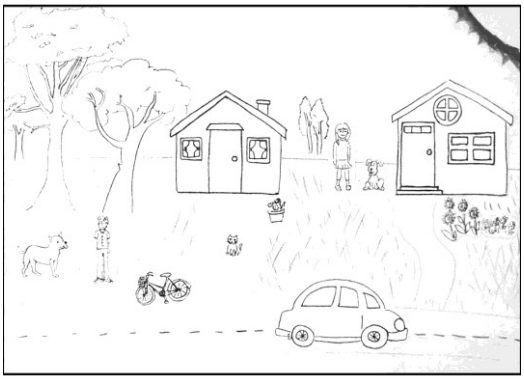
Grade 7 (Japanese)



Grade 7 (Canadian)



University (Japanese)



University (Canadian)