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Xinyi Jiang April 15, 2015

Marriage in the Kingdom of Animation: A Study on Animation Consumption and Marriage in Japan

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Abstract

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Using data from the 2008 Japan General Social Survey, this paper studies the correlation between Japanese adults' animation (also known as "anime") viewing habit and likelihood of marriage. As a pop culture product, animation plays an important role in the social life of Japanese people by introducing new life choices and gender roles to its audiences, which may further change their preference on marriage. This study finds that animation consumption is positively correlated with Japanese females' likelihood of marriage but is not correlated with marriage of Japanese males.

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I. INTRODUCTION

While many developing countries are faced with the challenge of a young growing population and inadequate resources to match a rapid population increase, Japan is faced with an opposite problem of a rapidly declining population sometimes referred to as an “inverted pyramid”. The rapidly declining population in Japan has gotten the attention of many countries in the developed world who are also facing decreasing fertility rates. Moreover, this population decline is now a concern of policy makers in Japan as they search for an optimal solution to this growing challenge. As declining marriage has been suggested as an explanation for this demographic shift, this paper will focus on the marriage decision.

Starting in the 1970s, Japan has been witnessing a decrease in marriage rate. There are two main dimensions to this problem. First, more people are choosing not to get married. In 1970, the lifetime non-marriage rate in Japan, which is the proportion of people who have not married in their entire life, was 1.7% for males and 3.34% for females. By 2012, this ratio had increased to 20.14% for males and 10.61% for females (IPSS, 2012a).

Second, those who intend to get married also tend to postpone when they get married. Figure 1 shows the mean age at first marriage for males and females in Japan from 1975 to 2012. In 1975, Japan’s mean age at first marriage was 27.0 for men and 24.7 for women. By the end of 2012, this number had increased to 30.8 for men and 29.2 for women. According to the National Institute of Population and Social Security Research, 64.72 of every 1000 unmarried men above the age of 15 got married in 1970. In 2012, only 28.61 out of 1000 unmarried men above the age of 15 got married. Japanese women saw an even more dramatic decrease in their first marriage ratio from 80.94 in 1970 to 37.64 in 2012 (IPSS, 2012b).

The first result of the low marriage rate is a decrease in fertility (Schoen &Cheng, 2006;

Retherford, Ogawa &Matsukura, 2001). In some economies, children born out of wedlock or a strong immigration program might remediate the problem of declining fertility but these two alternatives are not applicable to Japan's demographic trend at least in the short run. The stringent immigration control policy and homogenous and unique culture in Japan hinders immigration (Okunishi, 1995; Zlotnik, 1994). The traditional Japanese culture against unmarried childbirth also links fertility decrease closer to late and less marriage (Hertog, 2009; Rindfuss et al., 2004). Compared to western counties such as the United States, motherhood without marriage in Japan is still rare. In 2012, only 2.23% of babies were born by an unmarried mother, compared to 40.7% in the United States (IPSS, 2012c; Martin et al., 2013). Given most children are born within marriage in Japan, rapidly declining and delayed marriage catalyzes the unsustainable movement of Japan's population pyramid shown in Figure 2a, 2b, and 2c.

Also linked to low marriage rates and fertility in Japan is a shrinking labor force. Constituted by people age between the age of 16 and 65, this group is the backbone of an economy and usually provide the main source of income for a family. By 2010, the working age group in Japan had decreased to 81.73 million from its peak in 1995 at 87.26 million. This group is also predicted to decrease to 44.18 million by 2060 (IPSS, 2012d). In the long run, the shrinking labor force can weaken Japan's economic competitiveness.

The third significant change resulting from Japan's low fertility and marriage rates is the formation of a super-aging society. In 2010, 25% of the population in Japan were older than 65 years old; this proportion of the elderly age group is expected to expand to 40% in 2060 (IPSS, 2012d). Aging and imbalanced population pyramid challenges a society's sustainable economy growth, pension services, healthcare, as well as local community based support systems (Muramatsu &Akiyama, 2011; Verderber &Song, 2005).

The population challenges faced by Japan have led to discussions and debates on possible explanations for the decline in marriage and possible solutions. The past literature focusing on understanding declining marriage rates in Japan provides two interrelated conceptual frameworks. The first emphasizes change in socio-economic status such as educational attainment, income, labor distribution in households and workplaces, and geographical residence (Lee and Payne, 2008; Boling, 2008; Retherford, Ogawa& Matsukura, 2001; Fukuda, 2013; Raymo & Iwasawa, 2005). The second emphasizes culture shift and attitude change on marriage followed by change in structural factors. Meaning that change in social actors' values on marriage ultimately influences their marriage behavior over time (Boling, 2008; Hammel, 1990; Choe et al, 2014; Memoto et al, 2012).

In this paper, I argue that cultural factors and socio-economic factors are both important in explaining marriage decisions in Japan. While socio-economical characteristics are important in understanding marital decisions within and across countries, differences in marriage rates among societies cannot be fully explained with just these factors. Individuals are social actors, who interact with people living close to them. Through socialization, an individual will witness a change in his or her self-identification and expectation on other social actors. Thus, specific cultural context also plays an important role in studying a country's marriage decline.

Culture shift can change an individual's value and preference for marriage and can be captured by one's consumption of culture products (Freedman & Iwata-Weickgenannt, 2011; Napier, 1998). In this study, I investigate Japan's decreasing marriage rate under the context of a society with a booming and rapidly changing popular culture industry. Incorporating the cultivation theory originally developed by Gerbner and Gross in1977 (Busselle & Bilandzic. 2012), I focus on the development of the animation industry and investigate the linkage between an individual's animation consumption and likelihood of

marriage in Japan. This question can only be answered empirically because there are multiple channels through which Japanese animation consumption can affect individuals' values, attitudes and choices. Popular culture can change a consumer's self-identity by providing information on alternative positions that an individual can place him or herself in the social network. For example, if the values represented in Japanese animations continuously reflect and exceed the current value towards marriage in a society, heavy anime watching habit could lead to an increased preference for marriage. However, if the theme and content of Japanese animations introduces new choices for a consumer's gender role or family role in the social network, the change in the value on marriage can ultimately induce a decreased preference for marriage.

II. BACKGROUND AND LITERATURE REVIEW

A. Cultivation Theory

The conceptual framework of this study is built upon the cultivation theory developed by two American sociologists, Gerbner and Gross in1977 (Busselle &Bilandzic, 2012). Their study focuses on how the exposure to TV changes viewer's conception about social reality in the long term. It suggests that the more an individual is exposed to TV, the more he or she is likely to accept the social reality portrayed in TV programs.

Although this theory was developed based on mass media consumption in the United States, similar researches were later conducted by researchers on other societies. Barber and Axinn (2004) studied 1,901 couples in Nepal who were exposed to mass media in a first-time setting. Their study shows that an individual's access to mass media is correlated to both attitude changes and behavioral changes. The imported TV programs from the Western society weakens local couples' son preferences

and increases tolerance on contraceptive use. Mass media consumption also increases the rate of permanent contraceptive adoption. They further argue that entry of mass media brings a social change to the local community.

There are also studies in Japan that support the aforementioned theory. For example, Saito (2007) conducted a survey of 1000 individuals in Tokyo age between the age of 20 and 69. His study shows that the cultivation theory developed upon the data of TV viewing habits in the United States, also applies to Japan. In his study, Saito sets frequency of watching TV as his main independent variable. In addition to the study of simple correlation between TV watching hours and gender-role attitudes, Saito also constructed a multivariable regression model to control for other demographic characteristics which can potentially influence an individual's attitude on gender roles. The regression results in his study suggests that heavy TV viewers in Japan tend to hold more traditional gender role attitudes.

Saito's research methodology sets an important foundation for this study. However, it also has a few potential limitations. The sampling region of the survey in Saito's study is limited to the Tokyo area. Thus, it can have limited representation on the whole Japanese population. His study also assumes that the gender related portrayals in Japan's TV programs is generally traditional. This assumption can be more reasonable when the contents of TV programs are studied as a whole. However, this assumption can become more arbitrary for a study on a specific type of TV program or popular media.

B. Background of Japanese Animation

This study differs from a traditional study on application of cultivation theory in Japan by focusing on a more specific media type: Japanese animations. This specialization can be crucial for a study on population in a developed country such as Japan, who have enjoyed TV programs for over 50 years. There are several reasons that Japanese animation plays an important role as a source or conduit

of cultural change in the society.

First, animation's wide popularity in Japan has made it a popular media disseminating values and beliefs in the society. Japanese animation (also known as "anime"), which includes animated TV programs and films, has been dominating the country's creative industry since the 1970s. According to the Association of Japanese Animation (2012), the industry was worth 1.37 trillion yen in 2012, which accounted for 0.289% of the country's GDP. This estimation does not take into account the market for amateur manga products, which are self-published comics and animation works created by fan artists. Although it is difficult to estimate the size of this "shadow market", the annual attendance for the Comic Market (also known as "Comiket") provides a hint on the expansion of the amateur manga market. Comic Market is Japan's largest comic exhibition for self-published amateur manga and animations. It is held twice a year at Tokyo International Exhibition Center and has 40 years of history in Japan. Starting in 1990, the exhibition hall chosen for Comic Market has switched more than four times as the popularity of Japanese animation grew. In 2012, the event attracted more than 1.1 million animation fans. Figure 3 shows that the general public attendance of this convention has expanded 55 times from 1980 to 2012.

Second, Japanese animation is generally accepted and appreciated by people across different age groups and genders. The magic of Japanese animation can be traced back to the "pictocentric culture" in Japan originated in the 10th century, during which graphic novels and pictures were widely applied to express thoughts and beliefs in formal contexts (Napier, 2005; Ito &Crutcher, 2013). Instead of depicting purely fictional stories, animation blends reality and fantasy together to produce a world of "virtual reality" that can be appreciated by both young children and adults (Napier, 2005). Similar story telling technique was also applied by many Western animated films such as *Toy Story 3*, by the Pixar

Studio. In order to make adults feel "nurturing", the director and his team injected human emotions and life experiences into the "toy characters" in *Toy Story 3*. Toys no longer seem to be play thing for children. Instead, they become parents, who witness a boy's growth from a kindergartener to a college freshman. This unique story telling technique distinguishes Japanese animation from traditional Western cartoons, which in the past usually targeted young children.

Third, Japanese animations delivers values and conceptions more efficiently to a consumer. Compared to the live-action TV programs or films, Japanese animations incorporate a wider variety of story formats and characters, which allows both traditional and counter-stereotypical values and beliefs to be delivered more vividly. Some may argue that an adult with the proper degree of rationality should be less likely to accept the counter-stereotypical values in an animation by realizing that all the characters in the show are created by a pen or a computer. Busselle and Bilandzic (2012) argue that in contrast to a live-action show, whose perceived reality is related to the show's representativeness, the realism in a fictional show is more related to the plausibility of the story. Counter-stereotypical values conveyed through a live-action show will seem to be less real for an audience because it is inconsistent with his or her expectation based on previous life experiences. Instead of becoming empathetic, audience are more likely to consider such stories as someone else's story. In an interview with Luscombe, an editor of *TIME* magazine, Lee Unkrich, the director and editor of the *Toy Story* series, points out that the animations helps audiences relax and "put down their psychological guards" (Luscombe, 2010). Thus, a counter-stereotypical value can become more convincing in a well-plotted animation than in a live-action show.

Finally, Japanese animations can be distinguished from live-action shows by embracing idealism, also called "roman" in Japanese. Plots depicting pleasant attitudes on human relations, work,

growth, and effort are prevalent in Japanese animations and other similar culture such as manga and TV dramas (Craig, 2000). Depicting fantastic scenes, animations provides their audiences an "escape" from the pressure in the real world. Izawa (2000) argues that Japanese animations also teaches audiences the invaluable lessons on conquering difficulties in real life with dream and hope. She further points out that the touching plot in an animation still "strikes a chord in the heart of the audience" when he or she returns to the reality after the episode ends; such effects can be more obvious on audiences who consume animations often.

The cultivation theory mentioned earlier makes a crucial assumption that types of value and social reality portrayed in TV programs remain constant over time. In Saito's study (2007), the traditional stereotype of women in Japan is assumed to be prevalent over time. Although Barer and Axinn (2004) do not emphasize such assumptions, their empirical study also implies similar assumptions by not controlling value contents being portrayed in the mass media. Content studies on pop culture products in Japan show controversial result against the universality of contents disseminated through TV. One of the hot topics is the changing role of women in Japanese society. In these studies, researchers argue that popular culture changes viewers' values by depicting alternative choices that women have made in their lives.

Freedman and Iwata-Weickgenannt (2011) analyzed the three main characters in the popular Japanese TV Drama, *Around 40*. This drama was watched by 15% of Japan's national audience and was broadcasted across the nation between April and June, 2008. *Around 40* portrays the life of a new social group in Japan referred to "arafo", constituted by females born between 1964 and 1973, who have formed a family and work at least part-time. This study highlights that this popular TV drama promotes the importance of independence rather than the importance of family for a female in Japan. To Freedman

and Iwata-Weickgenannt, *Around 40,* is not only a means of entertainment, but also a reflection of women's role in modern Japan. In addition, the drama itself can serve as an efficient means of education for audiences who hold conservative attitudes on gender roles.

Napier (1998) shows in her study that depictions related to changes of females' social role is also prevalent among Japanese comics targeting female readers. She further points out that products of pop culture such as comics and animations both reflect and induce changes in Japanese women's roles in the society. On the one hand, animations enhance traditional values in Japan by "re-inscribing traditional roles of women". At the same time, they also introduce "versions of escape" from traditional stereotypes on Japanese females.

To verify that the similar changes in depiction of social role can also be captured by TV animations broadcasted in Japan, I conducted a simple content search on 136 top rated animations produced and released in Japan between 1970 and 1999. A summary of this analysis can be found in Appendix 1. I first categorized the TV animations by five themes including sports, adventure, magic power, science fiction, and family according to the specifications presented in Appendix 2. Then I analyzed the social roles of the main character in each animation by focusing on portrayals on personality, family roles, pursuance of free love, and pursuance of personal goals or professional careers shown in Appendix 3.

The results of my analysis suggest a shift in themes of popular animations from 1970 to 1999. Figure 4 shows that diverse themes are equally distributed in the 1970s; in 1980s, popularity animations depicting routine family life trump other themes; in the 1990s, audiences turn their eyes on animations telling stories about adventures and magic powers. Despite the increasing popularity of topics such as adventures and magic powers, science fiction and super hero themed animations continue to lose

popularity in the 1980s and the 1990s. The results also show differences in social roles and personalities of male and female characters. Figure 5 shows that animations depicting stories of male main characters remains dominant from the 1970s to the 1990s. Figure 6 and Figure 7 suggest that female main characters are more likely to possess anti-stereotypical personalities including braveness and intelligence in animations targeting females. Figure 8 and 9 show that among popular animations with female main characters, plots on freedom of marriage or love decreases whereas the plots on persuasion of individual life goals and professional careers remains prevalent. Finally, depictions on family life decreased tremendously among animations with a female main character but remains stable among those with a male main character as shown in Figure 10 and 11.

III. DATA

The empirical data used in this study is extracted from the 2008 Japan General Social Survey (JGSS) designed and carried out by the JGSS Research Center at Osaka University of Commerce in collaboration with the Institute of Social Science at the University of Tokyo. The survey makes use of a two-stage stratified sampling method. The sample includes individuals who are between the ages of 20 and 89 years old in six general regional blocks in Japan. The survey is divided into two parts: easy and stratified questions are distributed through self-enumerated questionnaires; more complicated questions are distributed through computer-assisted self-interviews (CASI) or face-to-face interviews.

The survey has two forms: regular module (Form A) and cultural module (Form B). Form A is designed as the Japanese replication of the General Social Survey conducted by the University of Chicago. Core questions are related to the respondents' occupations, household composition, and other basic attributes. It also includes questions concerning the respondents' daily activities, basic values,

behavioral patterns, and political attitudes. Form B includes most of the core questions in Form A and some topical questions related to events that had attracted public attention in a particular survey year. The survey sample was randomly divided into two equal subsamples. One half were made to fill out Form A while the other half filled out Form B.

The 2008 JGSS is chosen for this study due to its unique sub-module related to culture asset exchange. Individuals who filled out Form B provided their frequency of consuming Japanese animations, Chinese movies, and Korean TV dramas respectively. Out of 4,220 valid responses to the 2008 JGSS, 2,160 filled out the cultural module (Form B). Table 1 presents the descriptive statistics of all the variables being used in this study. The total sample size under analysis decreases from 2,160 to 1,977 due to the exclusion of the respondent who are widowed.

A. Marriage (Dependent Variable)

This study focuses on identifying the factors that increase the likelihood of a respondent to stay single. The question related to an individual's current marital status appears in the face-to-face interview section, as "are you married?" When asked by the interviewees, the interviewers would reply that unregistered common law marriage should also be considered as "married". Out of 2,160 respondents surveyed in 2008, about 71% were married; 338 had never married. About 80% of the respondents who had never married were between 20 and 39 years old.

In this study, I will exclude the 183 people who are widowed from related regression, assuming that this group did not actively choose to stay single. I treat death of a spouse here as an exogenous shock which makes this group of people different from those who did not get married or divorced. Moreover, the death of a spouse can influence an individual psychologically over a long period of time and prevent him or her from seeking a new romantic relationship. As mentioned above,

after excluding the 183 respondents who were widowed in 2008, the sample size of this study decreased from 2,060 to 1,977.

Special attention also needs to be drawn to the group who were cohabiting with their partners in 2008. The survey does not provide further information about whether these respondents had been engaged in any formal marriage before. In this study, I exclude couples cohabiting together from the group who are single at the time of survey. The rationale behind this assumption is that cohabitation can be the prelude of a marriage. Since a formal marriage requires both parties to contribute more both emotionally and economically, young couples may choose to cohabit with each other until they are prepared to start a family. Although the survey data does not specify, it is also possible that cohabitation serves as an alternative for couples who are uncertain about their relationship. However, this assumption on cohabiting couples may not affect the magnitude of the regression results significantly given that only 2.8 out of 1,000 respondents claim that they are cohabiting with their partners during the survey.

To study the factors that can affect an individual's decision to stay single, I create two dummy variables as dependent variables. The first dummy variable, called "never married", is directly extracted from the 2008 JGSS. It equals 1 for respondents who have never been married and equals 0 for those who have been married at least once. The second dummy variable, named "not married", is created to incorporate the group who choose to stay single after divorce or those who are currently separated from their spouses. The variable equals t 1 when a respondent's marital status is never married, divorced, or separated and equals 0 otherwise.

B. Animation Viewing Habits (Independent Variable)

The question related to Japanese animation consumption appears in a self-administrated survey question in 2008 JGSS Form B's culture exchange section as, "how often do you watch Japanese

animation?" Respondents are required to circle one the following options: "often", "sometimes", "seldom", and "not at all". Similar questions on consumption of Chinese movies and Korean TV drama are also asked in the same section of the survey. 20 out of 2,160 subjects did not provide a valid response to the question related to Japanese animation. Since the non-response rate was less than 1%, those who failed to respond to any of these question are assumed to consume no animations at all in this study.

The main goal of this study is to compare the marriage decision of the group consuming animation often with those who are not heavy consumers (this group includes light and non-consumers). Two strategies are applied to measure an individual's animation viewing habits. The first strategy is to create a dummy variable to divide subjects into two groups: those who watches anime often and those who do not watch anime often. The second strategy is to set a discrete integer variable ranging between 0 and 3 to represent relative frequency of animation watching: the variable is set to be 0 for those who claim that they do not watch animation at all or failed to provide a valid response, 1 for those who seldom watch animation, 2 for those who sometimes watch animation, and 3 for those who often watch animation. According to Table 1, approximately 13.6% of the sample consumed animation often in 2008; in contrast to 22.6% of the sample who did not consume animation at all. Animation consumption levels of males and females are very similar although animation is slightly more popular among females.

C. Control Variables

In order to examine the relationship between one's decision to stay unmarried and animation consumption, other factors that affect the marriage decision have to be included in an econometric analysis. The JGSS 2008 provides various social and economic factors that might affect an individual's marriage decision. In this study in particular, I control for gender, education attainment, geographical residence, living with children and employment status using dummy variables. I also control an

individual's age, personal overall income, number of siblings, and degree of interaction with other people outside family. Table 1 presents the summary statistics of all the variables in the 2008 JGSS being used in this study. Selected control variables used are discussed further below.

1) Family Structure: Living with Children

Living with a kid should be controlled in this study because of its potential correlation with both an individual's animation viewing habit and marital status. This correlation of children with both our dependent variable and our variable of interest can produce an omitted variable bias problem if kid is omitted. In other words, without such control, we can wrongly attribute the effect of having a child in a home to animation consumption. Table 1 shows that 19% of the respondents in the study lived with at least one young kid in 2008 whereas about 20% lived with at least one teenager.

Kids are huge consumers of animation in Japan and in most parts of the world. In the past, most animation was geared towards children and teenagers. Currently, animation geared more towards adults is becoming common (Napier, 2005; Price, 2001; Kinsella, 2000). The 2008 JGSS does not require respondents to specify the motivation for their consumption of animation. If an adult is living with his or her own children, he or she is more likely to be exposed to animation indirectly through their children and is hence more likely to consume more animations (Yamamura, 2013; Cheng, 2006).

As noted above, the presence of a kid in a family can also correlate with an individual's marital status given that most of the children in Japan are born within a marriage. Given this possible correlation, controlling for the presence of a young kid or teenagers in a family is important because without such treatment, the estimate of the relationship between an adult's animation consumption and marital status could be biased.

It is also possible that the presence of younger children in the family can have more influence

on an adult's animation consumption. Compared to a teenager, a young kid usually possess less independent living skills and self-control and thus would receive more care from family members. For an adult taking care of children at home, sitting together with a young child and watching the kid's favorite animation can be a good way to build an emotional bond with the kid. As the impacts of younger and older children in a family could differ, it is more reasonable to control for each of them separately in a model.

To control the presence of kids in a family, I constructed two separate dummy variables. The first dummy variable, named "young kid", equals 1 if an adult is living with at least one kid younger than 10 years old and equals 0 otherwise. The other dummy variable, named "teenager", equals 1 if an adult is living with at least one teenager between 10 and 19 years old and equals 0 otherwise. Besides taking a respondent's children (including a respondent's own children, step children, and adopted children) into consideration, this treatment goes a step further by taking other children that an adult is living with, but is not directly related to into consideration. In other words, one of the variables related to living with a kid will equal to 1 if an adult is living with his or her younger siblings, grandchildren, niece, and nephew who are between 0 and 19 years old. The rationale behind this treatment is that a married adult's animation viewing habits can also be influenced by the presence of other kids in the family. For example, a grandfather who is currently married can consume more animation indirectly by sitting with his five-year-old grandson in front of the TV. However, he does not have any children who are younger than 20 years old. That implies that if we had instead controlled for this individuals' own children, we would still have an omitted variable problem because other kids who live with this individual can still affect his animation consumption. In this instance, the estimate of the relationship between animation consumption and marriage will be upwardly biased.

2) Personal Income

This study uses a respondent's personal income as a measure of economic resources. Economic resource is an important factor for a marriage. The 2008 Japan General Social Survey provides data for an individual's personal income in 19 mutually exclusive ranges from "less than 700,000 yen" to "23 million yen or over". Instead of creating a dummy variable for each income range, I incorporate personal income in its log form by conservatively taking the lower bound of each income range. For the group with earnings less than 700,000 yen, income is assumed to be the simple average of the lower bound and upper bound of the income range, which is 350,000 yen.

The log treatment on the personal income data create two problems. The first problem is formation of missing value on respondents with no personal income. Out of 1,977 samples in the survey, 191 stated that they had no personal income. To avoid losing these observations when log income is used, I change the numerical income of people without any income into 0.1 yen. The second problem is the low response rate. 236 stated that they "don't want to state the income"; 56 claimed that they "don't know" about their personal income; 63 simply gave no answer to this question. To still keep these individuals in the sample, I assign a numerical income of 1 yen to these individuals. The disadvantage of doing this is that it can increase noise in the estimate of the impact of income on marriage status. However the benefit of including these individuals in the sample outweighs the cost because the individuals who choose not to answer a question on income are typically not random. Moreover, a robustness check done later in this study also indicates that the estimate of the impact of income on the probability of being unmarried does not change significantly with or without these individuals in the sample.

Studies on marriages in Western societies provide evidence for a positive relationship between

income and likelihood of marriage (Oppenheimer, 1988; Cherlin, 2004; Sweeney, 2002; Dykstra, 2010). It is possible that personal income might create opposite influences on marriage of males and females in Japan. This difference can originate from differences in gender egalitarianism between Western and Eastern culture. In a traditional Japanese family, males are expected to work hard and produce economic resources for their family whereas females are expected to be housewives taking care of the family. Despite the increase in women's education and personal income in Japan, the gender division of labor in the family still remains asymmetrical. The unequal domestic gender role creates a "tension package" for employed women in Japan, making marriage less attractive to females with high personal income before marriage (Tsuya et al, 2005; Nemoto, 2008; Raymo, 2003; Fukuda, 2013). The high working pressure in Japan makes it very difficult for a woman to balance housework and a professional career at the same time. More than half of the women who were previously employed became housewives within the first five years of marriage (Kaneko, 2008).

Raymo and Iwasawa (2005) argue that the stereotype on domestic gender roles also influences males' marriage by creating a "marriage mismatch". Facing the possibility of becoming a housewife after marriage, an employed Japanese woman tends to "marry up" to a male with high personal income. In contrast, a male tends to "marry down" to woman with lower income and lower education because he expects his wife to quit her professional career after marriage.

3) Education Attainment and Unemployment

Educational attainment is another important factor influencing marriage decision. Education can influence both an individual's attitude towards marriage and their personal income. College education and personal income decreases a women's likelihood of getting married (Nemoto, 2008; Raymo, 2003; Rindfuss et al, 2004; Fukuda, 2013; Tsuya et al, 2005). Unemployment increases a male's

probability of getting married (Hansen, 2005; Jensen &Smith, 1990; Payne, 1989; Harknett & Kuperberg, 2011; Larson, 1984). In the 2008 JGSS, education attainment is measured using the face-to-face survey question, "what is the last school you attended or are attending now?" Different answer choices were given depending on whether the respondents received his or her last school education before or after World War II or not. To remove the inconsistency of this variable, I reorganize the educational attainment using a new system shown in Appendix 4.

According to the descriptive statistics shown in Table 1, a gap still exists between males' and females' higher level of education in Japan. 30.6% of the males in the sample were college graduates whereas only 14.2% of the females received college education. For graduate degree, this difference between genders is even more obvious: 2.6% of the men in the sample went to graduate school whereas only 0.7% of women in the sample received the same level of education.

4) Interaction with People other than Family Members

The last control variable measures an individual's degree of socialization with non-family people. In this study, the degree of socialization is estimated using the minimum number of non-family people that an individual interacts with on a typical day. Table 1 shows that samples in this study interact with 12.4 people outside their family on a typical day on average. Males tend to perform more social interaction than females, socializing with 13.6 people on average per day. Females socialize with 11.3 people on average.

Previous studies also show a sharp decrease in arranged marriages and surge in love marriages since 1982. In 2010, nearly 88% of the marriages among couples with the wife under 50 years old in Japan were love marriage (IPSS, 2011). In a modern society with increasing love marriages such as Japan, individuals' degree of interaction with other people provides them the opportunity to expand

their social network. Although the fast development of new communication media such as internet and cell-phones has provided alternatives for direct socialization, face-to-face interactions are still crucial for development of romantic relationships.

IV. EMPIRICAL STRATEGY

To analyze the relationship between animation consumption and marital status, I estimate equation 1 using Ordinary Least Square (OLS) regression:

$$\mathrm{M} = \beta_0 + AC\beta_1 + X\beta_2 + \varepsilon \ (1)$$

M is a dummy variable representing an adult's marital status. As noted above, I focus on both the likelihood of first marriage (never married) and the likelihood of marriage in general (not married). However, the preferred estimation measure in this study is the likelihood of being never married because of its direct linkage with the late marriage and less marriage challenge in Japan. For the analysis on likelihood of first marriage, M equals 1 for individuals who are never married and equals 0 for individuals who have married at least once. For the analysis on likelihood of marriage in general, M equals 1 for individuals who are currently not married and equals 0 otherwise. The variable *AC* represents one's frequency of consuming Japanese animation. The matrix X captures all other control variables that can affect an individual's marital status. These variables includes an individual's gender, family structure, income, employment, geographical residence, sibling size, education, and social interaction. ε is the error term.

In specification 1, I estimate equation 1 by only incorporating control variables that the past literature have shown to affect marital status. These variables includes age, gender, sibling size, educational attainment, personal income, geographical residence, and social interaction. In specification

2, I include my main variable of interest, degree of Japanese animation consumption measured by the dummy variable, watching animation often (we call “anime often”).

In specification 3, I include control for kids to reduce further potential omitted variable bias as highlighted in section III. For completeness, I control for the presence of kids in three different ways. First, I only include a dummy for a young kid in the family. Second, I include a control for if there is a teenager in the family. Third, I include control for both having a young child and a teenager. I also estimate the model separately for men and women, controlling the presence of both young kids and teenagers in specification 4. The rationale behind this is that in Japan, females are still the ones who are mostly responsible for housework and childcare after marriage (Cabinet Office, 2010). Thus, a married woman’s animation consumption can be more affected by her children than a married man.

To measure a less biased relationship between animation consumption and marriage, a separate regression analysis on adults with no child is necessary. According to Table 1, only 24% of the sample in this study did not have any children in 2008. This ratio is 27.5% for males and 20.7% for females respectively. To provide further evidence of the reliability of the estimates, I conduct robustness checks. Specifically, I restrict the data to individuals without any children and estimate equation 1 separately for males and females. The main goal of this test is to provide further evidence that having children is not driving the results. Even though we have controlled for the presence of kids in a family in prior specifications, it is possible for one to argue that including the dummy variables control for young kids and teenagers fails to completely remove the bias in the estimate. For example, the relationship between having children and watching animations could be nonlinear. In this instance, including dummy variables would not completely eliminate potential bias. However, when we concentrate on adults with no children, we can completely eliminate such bias.

The last set of analysis I conduct are falsification tests. I run a falsification test by replacing the "anime often" in specification with consumption of other popular culture products including TV programs, movies, and video games. The purpose of this falsification test is to provide a strong evidence that the noted effect of animation on an individual's marital status is not capturing his or her consumption of other possible pop culture products but rather reflecting the uniqueness of the role that animation consumption plays on an adult's marriage decisions.

I used data on consumption habits of TV programs, movies, and video games provided by 2008 JGSS to conduct the falsification test. In the survey, questions related to movie and video game consumption are structured in the same way as the one related to Japanese animation consumption. TV watching habits are measured by hours that an individual spends watching TV on a typical day. To make the TV watching variable more consistent with other media product consumption variables, I divided all the respondents into 4 quantiles according to their TV watching hours. The quantile that reports the largest amount of TV watching hours is assumed to be heavy TV viewers in this study.

V. RESULTS

Table 2 presents the results from estimating equation 1 using OLS. Columns (1) and (2) show the correlation between different factors and marital status excluding animation consumption, our variable of interest. The controlled variables have the expected signs given the context.[1] Columns (3) and (4) show the result of the specification that incorporates an adult's animation viewing habit. "Anime often", the dummy variable that equals 1 for those who consume animation often, is negatively

[1] While personal income has a positive coefficient in Table 2 and Table 3, this is just an average effect that is driven by the female sample. If we focus on males solely, this relationship is negative but insignificant; for females, this relationship is positive and significant. See full result of Table 4-6 in the Appendix for more details.

correlated to both an adult's probability to stay "never married" and "not married" at 1% significance level.

Table 3a and Table 3b present the result of the modified model controlling for the influence of kids in the three different ways highlighted in section VI. Table 3a shows the result related to "never married". Columns (1) to (3) show the results when the dummy variable "anime often" is used as the variable of interest. Columns (4) to (6) show the results when the ordinal variable "anime watch" is used. Columns (1) and (4) controls the influence from young kid only while Columns (2) and (4) control the influence of teenager only. Columns (3) and (6) control both types of influence. Table 3b is a replication of Table 3a by setting the dummy variable, "not married" as the dependent variable.

The results in Table 3a and Table 3b confirm the strong correlation between an adult's marital status and living without kid. In each regression, all the dummy variables indicating children in the household are negatively correlated with his or her probability of staying never married at 1% significance level. The p-value of the correlation between animation consumption and marriage decreases once presence of kids is controlled. This decrease becomes more obvious when the presence of young kids is controlled in the regression. The p-value of the coefficient on "anime often" in Specification 2, column (3) increases to 0.077 when young kid alone is controlled while it only increases 0.003 when teenagers is controlled. The p-value of coefficient on "anime often" in Specification 2 column (4) increases to 0.087 when young kid alone is controlled while it only increases to 0.009 when a dummy variable for teenager is included. Despite the decrease in the significance of coefficient estimates after incorporating influence of kid, correlation between "anime often" and marriage still remains robust. "Anime often" is still negatively correlated with "never married" at 10% level when young kid is controlled only. Same correlation also exists at 1% level when teenager is controlled only.

However, the correlation disappears when both dummies are included in the regression.

Table 4 presents a summary of the regression results by gender that controlling for both young kids and teenagers. The result shows a clear difference in marital status between female heavy animation viewers and female light viewers or non-viewers. Focusing specifically on our preferred specification using the animation dummy and "never married" as the depend variable, even after controlling for children, females heavy animation viewers are 5.6 percentage points less likely to be never married than light viewers and non-viewers. The same comparison among male animation viewers suggests no significant correlation between males' animation consumption and likelihood of staying either never married or not married.

Table 5 presents the summary results for the robustness test that only involves adults without children. The results are consistent with the earlier results and again show a difference between males and females. When focusing on adults with no children, strong significant correlation between animation consumption and marriage appears among females in all specifications. Our preferred specification suggests that heavy female animation viewers with no children are more 16.6 percentage points less likely to be never married and 19 percentage points less likely to be not married than the control group. In contrast, the regression results provide no strong evidence for differences in marriage outcome for males who watch animation often and those who do not. What these results suggest is that the link between animation consumption and being married exists among females but does not exist among males.

Table 6 highlights the summary result of the falsification test incorporating other types of culture product consumption. If the positive relationship between animation and likelihood of marriage for women is spurious, we should find a similar trend for watching TV, playing video games, and

watching movies. Such correlations would imply that animation consumption is not uniquely positively related to women's marriage. The results in Table 6 show that there exists no positive correlation between other types of pop culture product consumption and likelihood of marriage for females. In contrast, we find that women who play video games in one instance are less likely to be married. This result however does not hold for the preferred specification which has "never married" as the dependent variable. The relationship between video game consumption and not getting married could be signaling something definite and may be a subject of future research. Our falsification test is only focused on females for whom we find a significant link with animation. However for completeness, I also run the same test on males. For men, I find that while animation does not affect marital status, watching TV is significant in the preferred specification though not significant in the alternative specification. This finding on males also needs further exploration and can set a foundation for future research.

VII. LIMITATIONS

Although this study implements robustness checks and falsification tests to support the results, there are some limitations associated with the survey data and the empirical strategy in this study. The 2008 JGSS survey may not precisely measure the adult animation consumption. This limitation is mostly linked with the way the survey questions were asked and the differences in how an individual understands the survey questions. Unlike an individual's consumption of TV, which is measured by exact hours, the answers to questions about consumption of movies, video games, and animations are subjective and more discrete. Different respondents might have different understandings on descriptions such as "often" and "sometimes". However, we do not worry too much about this limitation because as long as the variance in how an individual responds to this type of questions is random, our use of this

variable in this study is justified.

The 2008 JGSS also does not provide a comprehensive measure of culture product consumption. The question related to animation was designed only to measure the direct consumption of Japanese animation, which is to "watch" animations. Thus, the animation consumption variable in this study may not reflect other means of consumption such as purchasing anime themed video games, comics, or toys. In addition, the data used in this study does not specify the theme or type of animations that an individual usually consumes.

Another limitation is the omitted variable bias. The coefficient estimate of the animation consumption in equation (1) can be biased when animation consumption is correlated to the error term ε. For example, an individual's value and decision on marriage can also be influenced by his or her historical animation viewing habit. Content search studies show that animation and video games' influence on a consumer's value and behavior can be significant during childhood (Funk &Buchman, 1996; England, 2011; Thompson &Zerbinos, 1995; Sebastian, 2011). In addition, adults who enjoy popular culture products might also be those who have more free time available for dating and socialization. It is also possible that animation consumption is correlated with an individual's personality, making them more or less attractive to potential partners.

Since this study is based on cross-sectional data, the result is limited in supporting the existence of a causal relationship between animation consumption and marriage in a single direction. Animation consumption may influence an individual's value on marriage and family. Reciprocally, change in value and behavior in marriage can also influence animation viewing behavior. Similar causality issues are prevalent among other studies on cultivation theory (Saito, 2007). While an instrumental variable can be one way to solve this limitation, finding such a variable based on current

data provided by 2008 JGSS remains extremely challenging. Another solution is to conduct a more intelligent survey providing comprehensive information on individuals' value on marriage and family, age of first marriage, animation consumption and opinions on the influence of animation on their daily life such as romantic relationship building and personality improvement.

VIII. SUMMARY & CONCLUSION

The results of this study provide evidence for a correlation between animation consumption and marriage decision among female adults in Japan. Female heavy animation viewers are more likely to be married than light viewers and non-viewers (the control group). Heavy female viewers are 5.6 percentage points (p= .071) less likely to be never married and 7.65 percentage points (p= .028) less likely to be not married than the control group. However, the results do not provide any significant evidence for the correlation between men's animation consumption and marital status.

The study also provides evidence for the importance of children in adults' animation consumpion behavior, which is consistent with my original hypothesis. Despite this important role of children, I show that there is an independent relationship between animation and marriage by focusing on females with no children. The magnitude of the correlation for females with no children is larger than that for all females. In other ways, the samples who consume animation often in this set of regressions are more likely to be real animation fans and primary consumers of animations. Thus, this study can provide some evidence on the marriage decision of female animation enthusiasts. The result suggests that a female animation fan is less likely to stay single than a female who does not consume animations often. Finally, I also show that this unique relationship between animation consumption for females and marriage is neither spurious nor a proxy for one's consumption of other pop culture

products including general TV programs, movies, and video games.

In conclusion, the regression results provide evidence for a positive correlation between likelihood of marriage and animation consumption for females in Japan. This conclusion can be supported by previous content research on the animations and TV dramas targeting female audiences. By depicting equal gender roles and the importance of pursuing individual happiness, these pop culture products convey idealism and positive aspects about life to females. Females who spend a long time watching such programs may relate themselves to the main characters in shows, become more optimistic about their life after marriage, and seek romantic relationships more actively. Given that decline in marriage is one of the challenges facing Japan currently, noting the positive linkage between animation consumption and marriage for women may also suggest a potential positive externality from animation. However, further research would be needed to support this argument.

The result of this study sets the foundation for various future studies on correlation between pop culture product consumption and marriage. Further studies can analyze the role animation plays on marriage by focusing on sub-demographic groups with different education attainments or incomes. Similar studies can also be applied to adults in other countries where animation gains popularity. Using the data from a more sophisticated survey, a future study can also target the relationship between consumption of different types of animation and attitude change. Finally, given some of the evidence noted in this research, analyzing the link between video game consumption and women's marriage and the link between TV consumption and men's marriage may be important in further understanding the declining marriage rates in Japan.

Table 1: Sample Means and Standard Deviations of All Variables, by Gender and Fertility

	Males (N=974)		Females (N=1003)		Total (N=1977)		Males With No Children (N=268)		Females Without Children (N=208)	
Outcomes										
Never Married	0.206	(0.405)	0.137	(0.344)	0.171	(0.377)	0.750	(0.434)	0.639	(0.481)
Not Married	0.245	(0.431)	0.199	(0.400)	0.222	(0.416)	0.799	(0.402)	0.668	(0.472)
Animation Consumption										
Anime Often	0.114	(0.318)	0.122	(0.327)	0.118	(0.323)	0.194	(0.396)	0.183	(0.387)
Anime Sometimes	0.463	(0.499)	0.521	(0.500)	0.493	(0.500)	0.601	(0.491)	0.591	(0.493)
Anime or Not	0.748	(0.434)	0.799	(0.401)	0.774	(0.418)	0.851	(0.357)	0.870	(0.337)
Anime Watch	1.325	(0.975)	1.442	(0.945)	1.384	(0.962)	1.646	(0.959)	1.644	(0.926)
Other Culture Products Consumption										
TV Often	0.093	(0.291)	0.177	(0.382)	0.136	(0.343)	0.086	(0.281)	0.183	(0.387)
Movie Often	0.138	(0.345)	0.122	(0.122)	0.129	(0.336)	0.209	(0.407)	0.202	(0.402)
Game Often	0.113	(0.317)	0.068	(0.252)	0.090	(0.286)	0.246	(0.432)	0.144	(0.352)
Socio-economical Characteristics										
Living with Children										
Young Children	0.168	(0.374)	0.213	(0.410)	0.191	(0.393)	0.019	(0.136)	0.024	(0.154)
Teenagers	0.183	(0.387)	0.213	(0.410)	0.198	(0.399)	0.052	(0.223)	0.048	(0.214)
Age	51.626	(16.752)	50.042	(15.849)	50.822	(16.315)	36.869	(13.858)	36.101	(14.312)
Education Attainment										
Below High School	0.161	(0.368)	0.141	(0.141)	0.151	(0.358)	0.097	(0.297)	0.067	(0.251)
High School	0.443	(0.497)	0.506	(0.500)	0.475	(0.499)	0.414	(0.494)	0.404	(0.492)
Some College	0.065	(0.246)	0.204	(0.403)	0.136	(0.342)	0.093	(0.291)	0.226	(0.419)
College	0.306	(0.461)	0.142	(0.349)	0.223	(0.416)	0.358	(0.480)	0.284	(0.452)
Graduate School	0.026	(0.158)	0.007	(0.083)	0.016	(0.126)	0.037	(0.190)	0.019	(0.138)
Log Income	11.825	(6.145)	8.630	(7.173)	10.204	(6.873)	11.451	(6.411)	9.922	(6.864)

Unemployment	0.024	(0.152)	0.010	(0.099)	0.017	(0.128)	0.060	(0.237)	0.029	(0.168)
Social Interaction	13.613	(18.978)	11.298	(16.782)	12.439	(17.930)	13.313	(17.650)	15.264	(20.637)
Sibling Size	2.475	(1.938)	2.288	(1.695)	2.380	(1.821)	1.724	(1.195)	1.668	(1.263)
Regional Blocks										
Hokkaido or Tohoku	0.143	(0.350)	0.133	(0.339)	0.138	(0.345)	0.131	(0.338)	0.082	(0.275)
Kanto	0.277	(0.448)	0.289	(0.454)	0.283	(0.451)	0.287	(0.453)	0.346	(0.477)
Chubu	0.232	(0.422)	0.198	(0.399)	0.215	(0.411)	0.235	(0.425)	0.231	(0.422)
Kinki	0.141	(0.348)	0.160	(0.366)	0.150	(0.357)	0.108	(0.311)	0.125	(0.332)
Cyugoku or Shikoku	0.101	(0.301)	0.101	(0.301)	0.101	(0.301)	0.119	(0.325)	0.077	(0.267)
Kyusyu	0.107	(0.309)	0.120	(0.325)	0.113	(0.317)	0.119	(0.325)	0.139	(0.347)

Note: Standard deviations are in parentheses

Table 2: OLS Estimates Predicting Marital Status

	Specification 1		Specification 2	
	(1)	(2)	(3)	(4)
Outcomes	Never Married	Not Married	Never Married	Not Married
Anime Often			-0.077***	-0.081***
			(0.027)	(0.030)
Age	-0.058***	-0.056***	-0.058***	-0.056***
	(0.003)	(0.003)	(0.003)	(0.003)
Age2	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.054***	0.026	0.055***	0.028
	(0.016)	(0.019)	(0.016)	(0.019)
High School	-0.012	-0.005	-0.014	-0.007
	(0.020)	(0.025)	(0.020)	(0.025)
Some College	-0.025	-0.042	-0.022	-0.039
	(0.029)	(0.034)	(0.029)	(0.034)
College	0.058**	0.026	0.054**	0.022
	(0.025)	(0.030)	(0.025)	(0.030)
Graduate School	0.078	0.036	0.077	0.034
	(0.070)	(0.072)	(0.069)	(0.072)
Log Income	0.002**	0.005***	0.002**	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)
Unemployment	0.317***	0.318***	0.315***	0.315***
	(0.060)	(0.063)	(0.061)	(0.064)
Social Interaction	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Sibling Size	0.002	-0.004	0.002	-0.004
	(0.003)	(0.005)	(0.003)	(0.005)
Kanto	0.019	0.012	0.019	0.013
	(0.025)	(0.028)	(0.025)	(0.028)
Chubu	0.043*	0.016	0.044*	0.017
	(0.026)	(0.029)	(0.026)	(0.029)
Kinki	0.009	-0.001	0.009	-0.001
	(0.026)	(0.031)	(0.026)	(0.031)
Cyugoku or Shikoku	0.037	0.036	0.040	0.039
	(0.030)	(0.035)	(0.030)	(0.035)
Kyusyu	0.023	0.055	0.024	0.056
	(0.031)	(0.036)	(0.031)	(0.036)
Constant	1.738***	1.743***	1.778***	1.785***
	(0.074)	(0.082)	(0.076)	(0.083)
Observations	1,977	1,977	1,977	1,977
R-squared	0.434	0.340	0.438	0.343

Note: Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3a: Modified OLS Estimates Predicting "Never Married"

	Specification 3					
	(1)	(2)	(3)	(4)	(5)	(6)
	Never	Never	Never	Never	Never	Never
Outcome	Married	Married	Married	Married	Married	Married
Anime Often	-0.039*	-0.074***	-0.036			
	(0.022)	(0.028)	(0.022)			
Anime Watch				-0.007	-0.022**	-0.003
				(0.008)	(0.009)	(0.008)
Young Kid	-0.392***		-0.392***	-0.393***		-0.394***
	(0.017)		(0.018)	(0.017)		(0.018)
Teenager		-0.141***	-0.140***		-0.139***	-0.140***
		(0.014)	(0.013)		(0.014)	(0.013)
Age	-0.057***	-0.055***	-0.054***	-0.057***	-0.055***	-0.054***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)
Age2	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.048***	0.054***	0.047***	0.047***	0.052***	0.046***
	(0.014)	(0.016)	(0.014)	(0.014)	(0.016)	(0.014)
High School	-0.020	-0.024	-0.031*	-0.019	-0.021	-0.030
	(0.019)	(0.020)	(0.019)	(0.019)	(0.020)	(0.019)
Some College	-0.009	-0.032	-0.019	-0.009	-0.031	-0.020
	(0.026)	(0.029)	(0.026)	(0.026)	(0.029)	(0.025)
College	0.038*	0.044*	0.028	0.039*	0.047*	0.030
	(0.023)	(0.025)	(0.023)	(0.023)	(0.025)	(0.023)
Graduate School	0.070	0.064	0.057	0.071	0.068	0.058
	(0.054)	(0.068)	(0.052)	(0.054)	(0.068)	(0.052)
Log Income	0.002	0.002*	0.001	0.002	0.002*	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Unemployment	0.233***	0.310***	0.228***	0.234***	0.311***	0.229***
	(0.055)	(0.059)	(0.053)	(0.055)	(0.059)	(0.053)
Social Interaction	-0.000	0.000	-0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sibling Size	0.003	0.001	0.001	0.003	0.001	0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Regional Blocks	YES	YES	YES	YES	YES	YES
Constant	1.922***	1.760***	1.904***	1.917***	1.767***	1.892***
	(0.062)	(0.076)	(0.063)	(0.063)	(0.077)	(0.064)
Observations	1,977	1,977	1,977	1,977	1,977	1,977
R-squared	0.570	0.455	0.587	0.569	0.454	0.587

Notes: Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3b: Modified OLS Estimates Predicting "Not Married"

	Specification 3					
	(1)	(2)	(3)	(4)	(5)	(6)
	Not	Not	Not	Not	Not	Not
Outcome	Married	Married	Married	Married	Married	Married
Anime Often	-0.042*	-0.077***	-0.038			
	(0.025)	(0.030)	(0.025)			
Anime Watch				-0.011	-0.026***	-0.007
				(0.009)	(0.010)	(0.009)
Young Kid	-0.404***		-0.404***	-0.404***		-0.405***
	(0.020)		(0.020)	(0.020)		(0.020)
Teenager		-0.152***	-0.151***		-0.150***	-0.151***
		(0.017)	(0.017)		(0.017)	(0.017)
Age	-0.055***	-0.053***	-0.052***	-0.055***	-0.052***	-0.051***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Age2	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.021	0.027	0.019	0.020	0.025	0.019
	(0.017)	(0.018)	(0.016)	(0.017)	(0.018)	(0.017)
High School	-0.014	-0.018	-0.025	-0.012	-0.014	-0.024
	(0.024)	(0.025)	(0.024)	(0.024)	(0.025)	(0.024)
Some College	-0.026	-0.050	-0.037	-0.025	-0.048	-0.037
	(0.031)	(0.034)	(0.030)	(0.031)	(0.034)	(0.030)
College	0.005	0.012	-0.005	0.007	0.014	-0.003
	(0.027)	(0.030)	(0.027)	(0.027)	(0.029)	(0.027)
Graduate School	0.026	0.020	0.013	0.028	0.024	0.014
	(0.056)	(0.070)	(0.055)	(0.056)	(0.070)	(0.055)
Log Income	0.004***	0.004***	0.004***	0.004***	0.005***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Unemployment	0.232***	0.310***	0.226***	0.232***	0.311***	0.227***
	(0.059)	(0.061)	(0.057)	(0.059)	(0.062)	(0.057)
Social Interaction	-0.001	-0.000	-0.000	-0.001	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sibling Size	-0.003	-0.005	-0.005	-0.003	-0.005	-0.005
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Regional Blocks	YES	YES	YES	YES	YES	YES
Constant	1.933***	1.766***	1.914***	1.934***	1.779***	1.908***
	(0.072)	(0.084)	(0.073)	(0.074)	(0.085)	(0.074)
Observations	1,977	1,977	1,977	1,977	1,977	1,977
R-squared	0.465	0.361	0.483	0.465	0.360	0.482

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4: Summary Results of Regression by Gender using Modified Model

	Specification 4：Female			
	(1)	(2)	(3)	(4)
	Never	Never	Not	Not
Outcomes	Married	Married	Married	Married
Animation Consumption				
Anime Often	-0.056*		-0.076**	
	(0.031)		(0.035)	
Anime Watch		-0.012		-0.025*
		(0.010)		(0.013)
Living with Kid				
Young Kid	-0.344***	-0.347***	-0.316***	-0.317***
	(0.026)	(0.026)	(0.030)	(0.030)
Teenager	-0.120***	-0.119***	-0.095***	-0.092***
	(0.018)	(0.018)	(0.025)	(0.025)
Observations	1,003	1,003	1,003	1,003
R-squared	0.548	0.546	0.412	0.411

	Specification 4： Male			
	(1)	(2)	(3)	(4)
	Never	Never	Not	Not
Outcomes	Married	Married	Married	Married
Animation Consumption				
Anime Often	-0.023		-0.012	
	(0.032)		(0.034)	
Anime Watch		0.000		0.003
		(0.011)		(0.012)
Living with Kid				
Young Kid	-0.417***	-0.418***	-0.460***	-0.461***
	(0.025)	(0.025)	(0.027)	(0.027)
Teenager	-0.153***	-0.154***	-0.199***	-0.200***
	(0.018)	(0.018)	(0.021)	(0.021)
Observations	974	974	974	974
R-squared	0.629	0.628	0.586	0.586

Note: Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5: Summary Results of Robustness Check on Samples with No Children

	Female			
	(1)	(2)	(3)	(4)
	Never	Never	Not	Not
Outcome	Married	Married	Married	Married
Animation Consumption				
Anime Often	-0.166*		-0.190**	
	(0.084)		(0.084)	
Anime Watch		-0.062*		-0.068**
		(0.033)		(0.033)
Living with Kid				
Young Kid	-0.023	-0.014	-0.042	-0.031
	(0.170)	(0.180)	(0.167)	(0.180)
Teenager	0.051	0.058	0.084	0.091
	(0.089)	(0.090)	(0.088)	(0.091)
Observations	208	208	208	208
R-squared	0.293	0.288	0.274	0.267

	Male			
	(1)	(2)	(3)	(4)
	Never	Never	Not	Not
Outcome	Married	Married	Married	Married
Animation Consumption				
Anime Often	-0.050		-0.056	
	(0.056)		(0.057)	
Anime Watch		-0.009		-0.003
		(0.028)		(0.028)
Living with Kid				
Young Kid	-0.103	-0.098	-0.100	-0.096
	(0.146)	(0.147)	(0.167)	(0.166)
Teenager	-0.046	-0.053	0.011	0.000
	(0.050)	(0.049)	(0.047)	(0.044)
Observations	268	268	268	268
R-squared	0.290	0.289	0.193	0.190

Note: Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6a: Summary Results of Falsification Test on Females

	Female							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Never	Never	Never	Never	Not	Not	Not	Not
Outcomes	Married	Married	Married	Married	Married	Married	Married	Married
Culture Product Consumption								
Anime Often	-0.056*				-0.076**			
	(0.031)				(0.035)			
TV Often		-0.002				0.031		
		(0.022)				(0.030)		
Movie Often			-0.021				0.021	
			(0.030)				(0.036)	
Game Often				0.056				0.105**
				(0.041)				(0.049)
Living with Kid								
Young Kid	-0.344***	-0.350***	-0.352***	-0.347***	-0.316***	-0.321***	-0.322***	-0.318***
	(0.026)	(0.025)	(0.025)	(0.025)	(0.030)	(0.030)	(0.030)	(0.030)
Teenager	-0.120***	-0.120***	-0.122***	-0.120***	-0.095***	-0.093***	-0.094***	-0.094***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.025)	(0.025)	(0.025)	(0.025)
Observations	1,003	1,003	1,003	1,003	1,003	1,003	1,003	1,003
R-squared	0.548	0.545	0.546	0.547	0.412	0.409	0.409	0.412

Note: Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6b: Summary Results of Falsification Test on Males

	Male							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Never	Never	Never	Never	Not	Not	Not	Not
Outcomes	Married	Married	Married	Married	Married	Married	Married	Married
Culture Product Consumption								
Anime Often	-0.023				-0.012			
	(0.032)				(0.034)			
TV Often		0.057*				0.047		
		(0.030)				(0.032)		
Movie Often			0.018				0.009	
			(0.030)				(0.032)	
Game Often				-0.014				0.005
				(0.034)				(0.036)
Living with Kid								
Young Kid	-0.417***	-0.416***	-0.416***	-0.419***	-0.460***	-0.459***	-0.460***	0.461***
	(0.025)	(0.025)	(0.025)	(0.025)	(0.027)	(0.027)	(0.027)	(0.027)
Teenager	-0.153***	-0.153***	-0.153***	-0.154***	-0.199***	-0.199***	-0.199***	0.199***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.021)	(0.021)	(0.021)	(0.021)
Observations	974	974	974	974	974	974	974	974
R-squared	0.629	0.630	0.629	0.628	0.586	0.587	0.586	0.586

Note: Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Figures

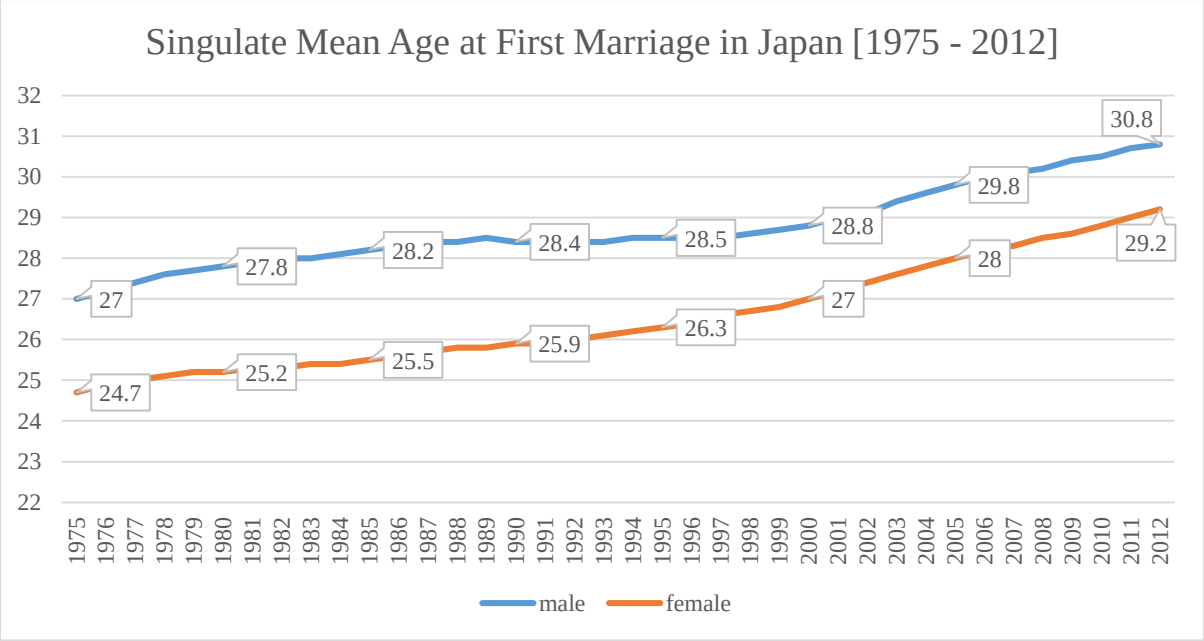

Figure 1: Singulate mean age at first marriage in Japan from 1975 to 2012.[2]

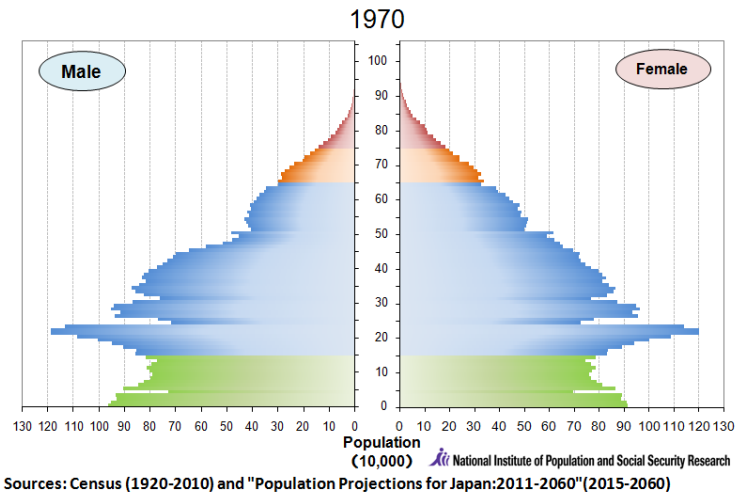

Figure 2a: Japan population pyramid in 1970[3].

[2] Note: Adapted from the *Population Statistics Table 6-9: First Marriage Rates by Age of Groom and Bride to Never-Married Persons: 1930-2010 by* National Institute of Population and Social Security Research, 2012, Japan Ministry of Health, Labor and Welfare. Retrieved from http://www.ipss.go.jp/p-info/e/psj2012/PSJ2012.asp (accessed on 2014/11/16).

[3] Source: IPSS website (http://www.ipss.go.jp/site-ad/TopPageData/1970e.png) (accessed on 2014/12/15).

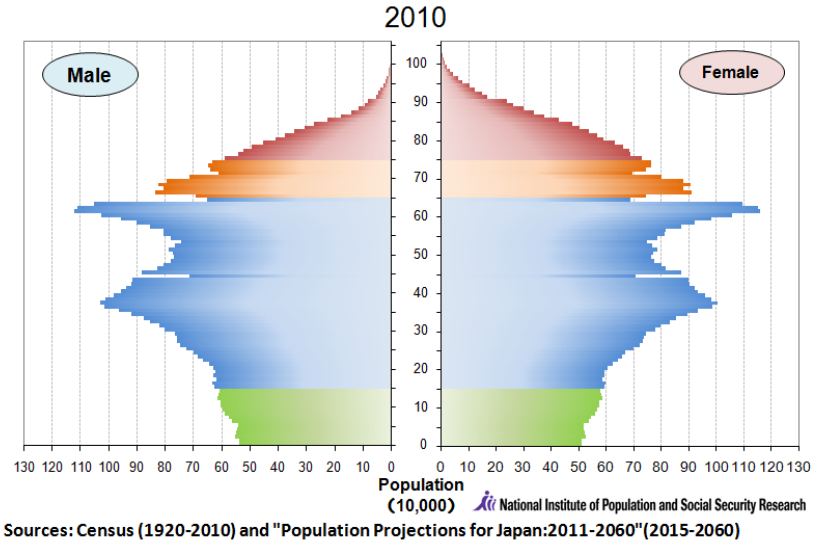

Figure 2b: Japan population pyramid in 2010[4].
Source: National Institute of Population and Social Security Research

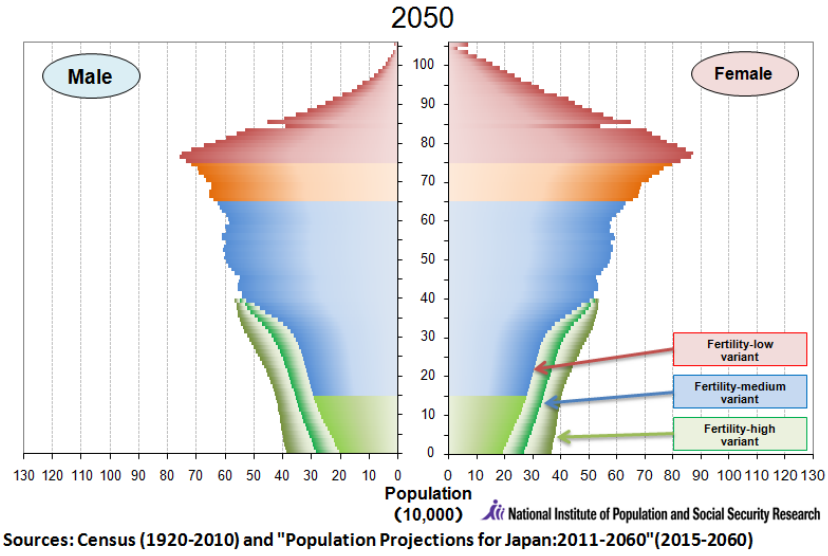

Figure 2c: Population projections for Japan by 2050[5].

[4] Source: IPSS website (http://www.ipss.go.jp/site-ad/TopPageData/2010e.png) (accessed on 2014/12/15).

[5] Source: IPSS website (http://www.ipss.go.jp/site-ad/TopPageData/2060e.png) (accessed on 2014/12/15).

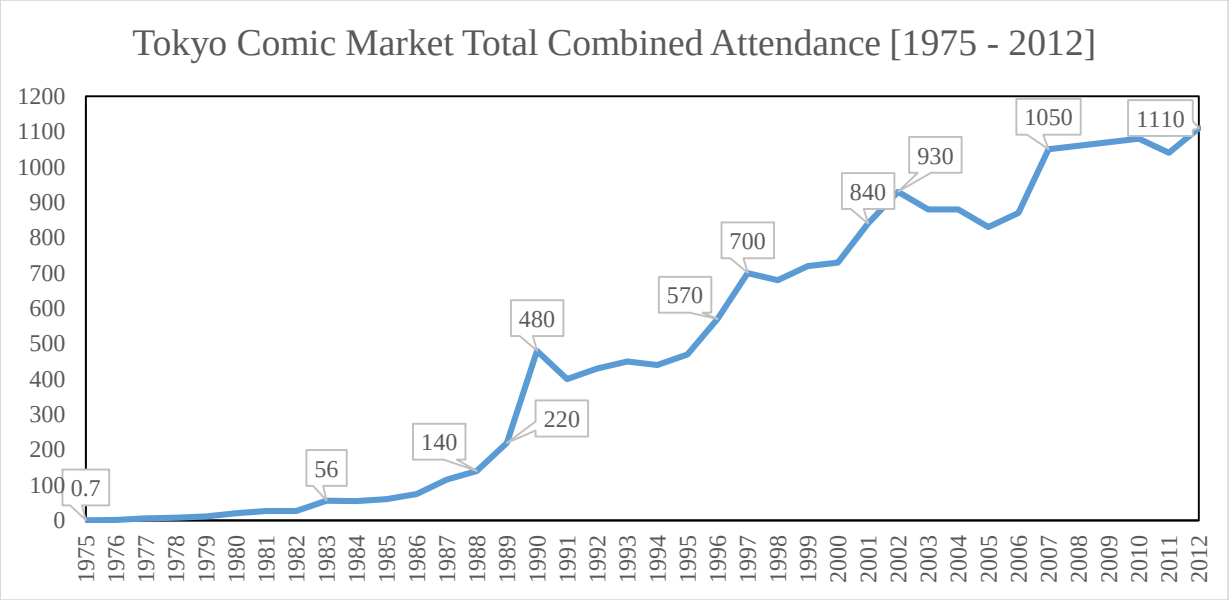

Figure 3: Tokyo Comic Market Total Combined Attendance from 1975 to 2012.[6]

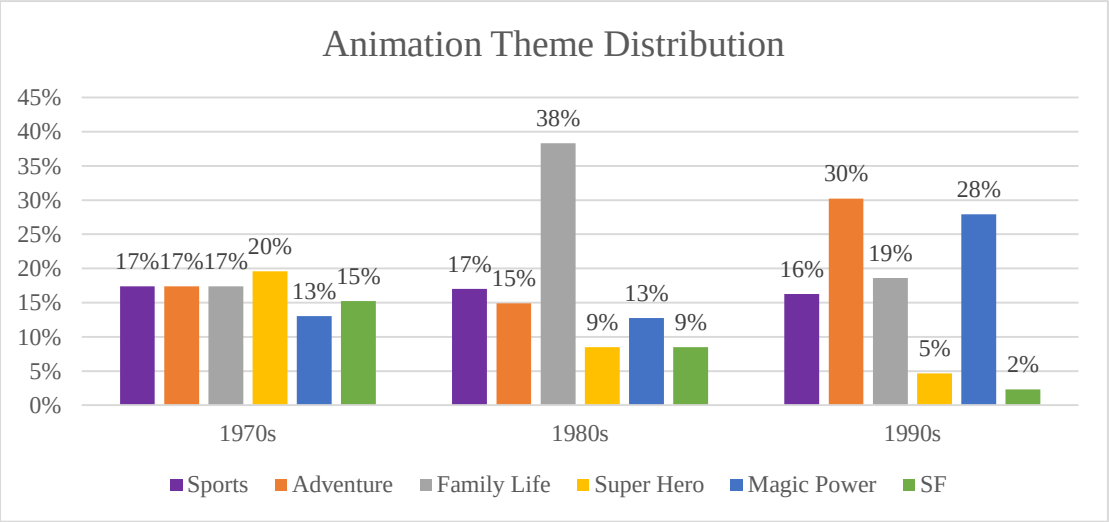

Figure 4: Content Analysis of Animation Themes

[6] Source: Comic Market Committee. (Mar 20, 2015). *The Comic Market Chronology* [In Japanese]. Retrieved from http://www.comiket.co.jp/archives/Chronology.html#graph

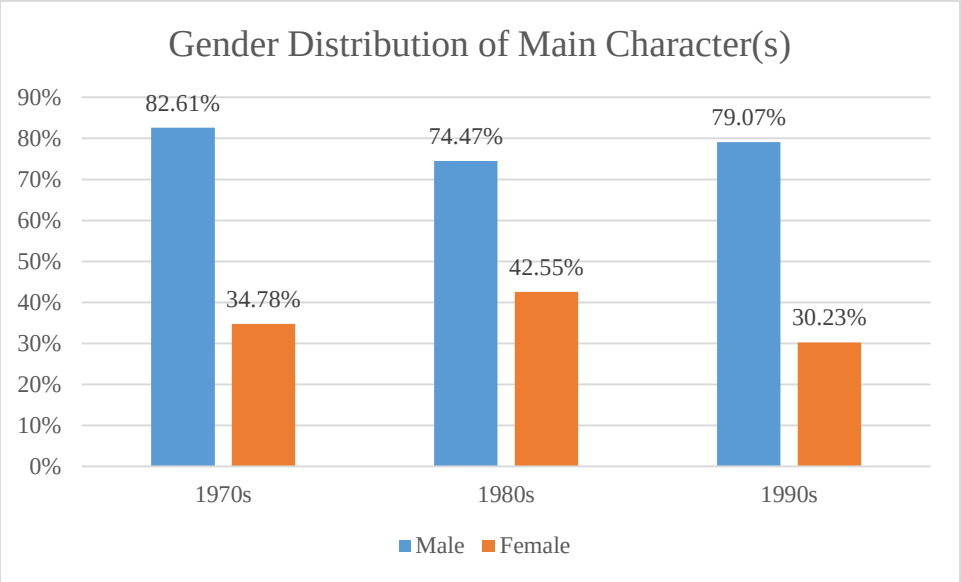

Figure 5: Content Analysis of Animation Main Character Gender Distribution

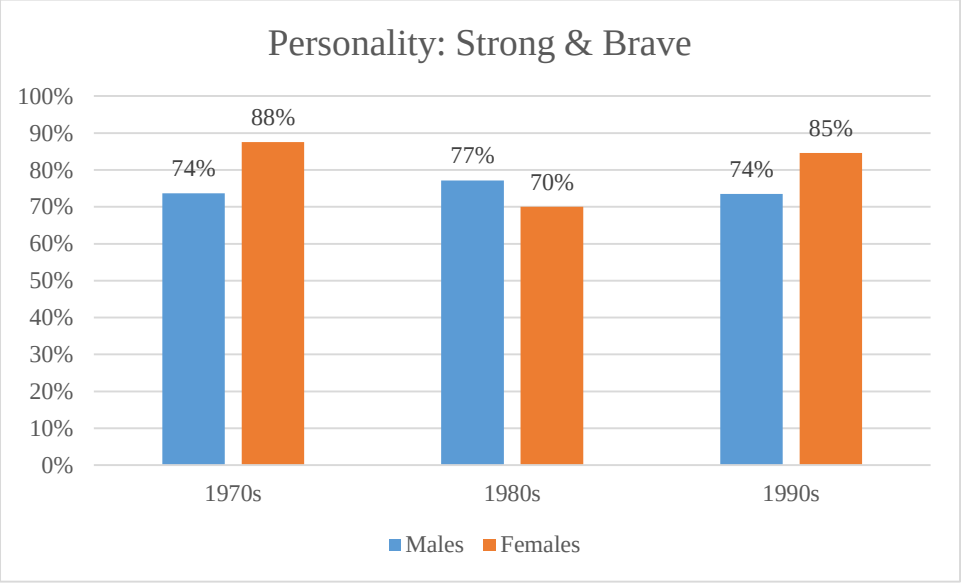

Figure 6: Content Analysis of Main Character Personality: Strong & Brave

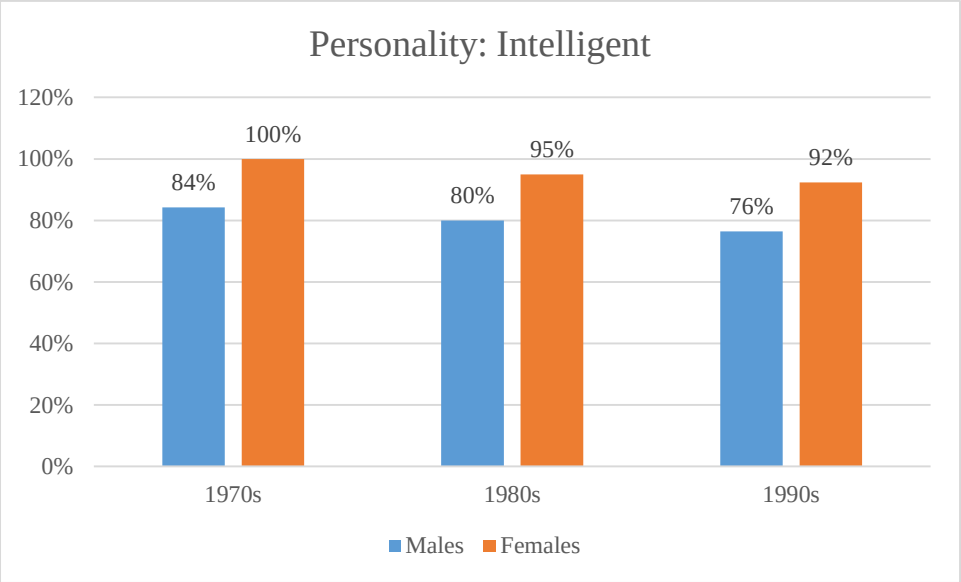

Figure 7: Content Analysis of Main Character Personality: Intelligent

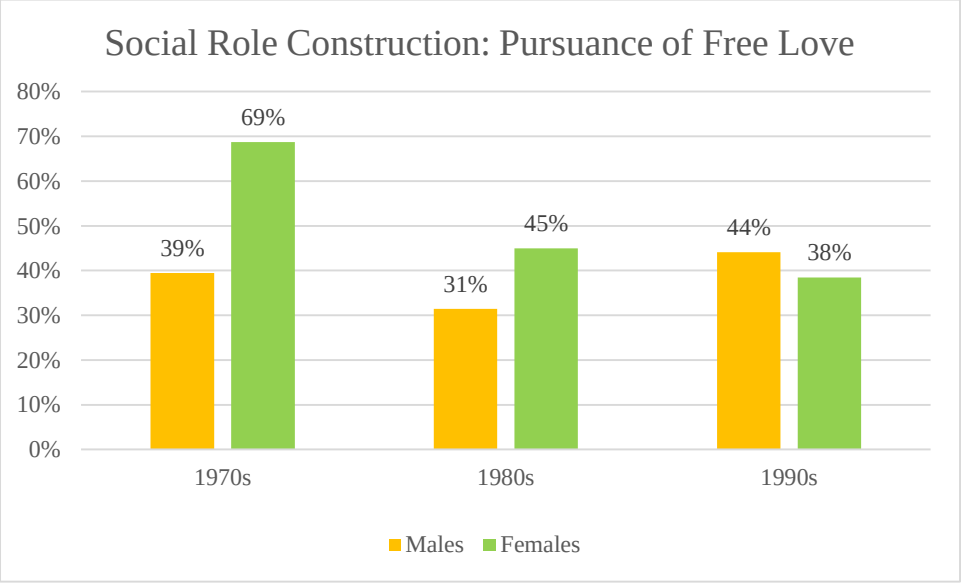

Figure 8: Content Analysis of Social Role: Pursuance of Free Love

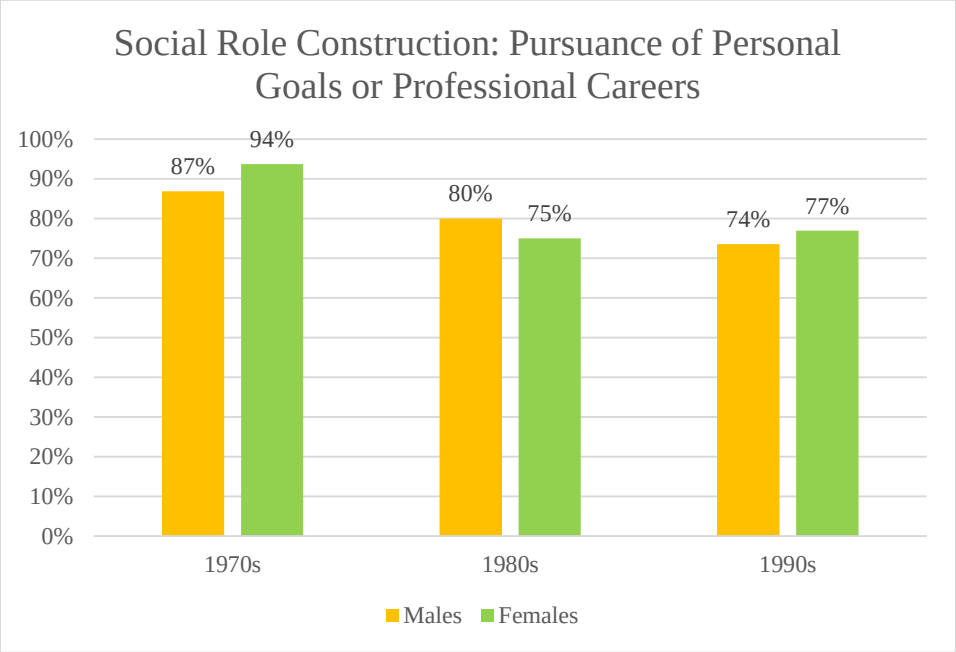

Figure 9: Content Analysis of Social Role: Pursuance of Personal Goals or Professional Careers

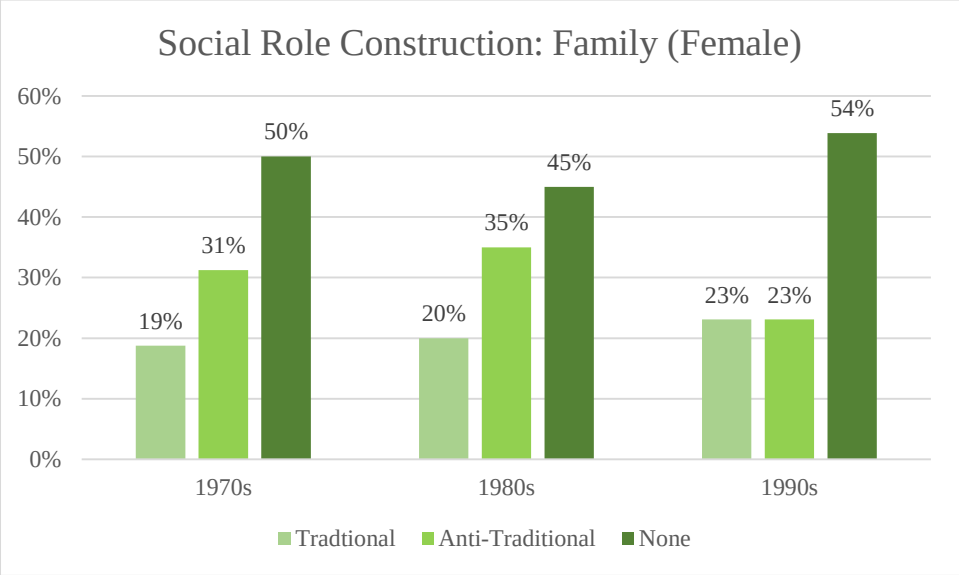

Figure 10: Content Analysis of Main Character Social Role Construction: Family (Female)

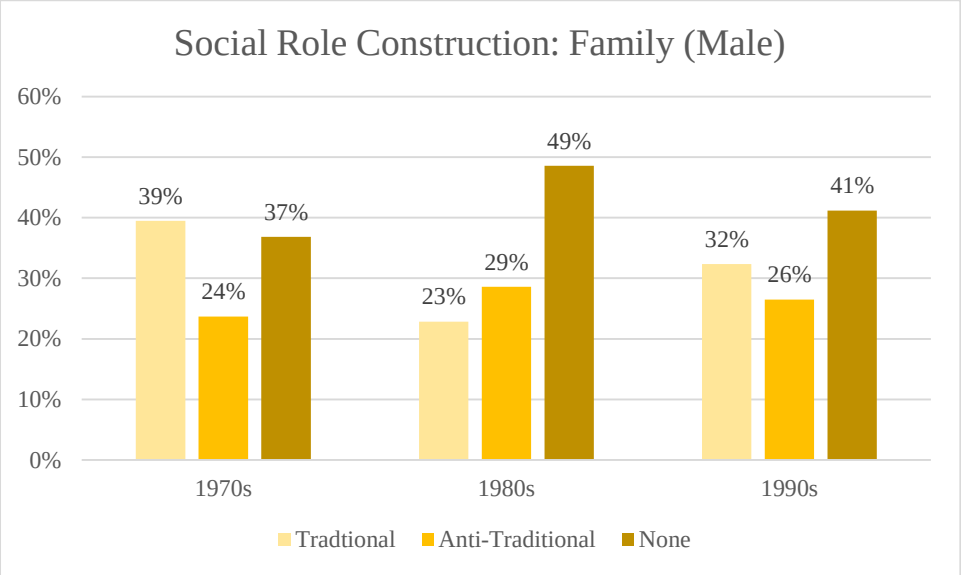

Figure 11: Content Analysis of Social Role: Family (Male)

Appendix 1: Animation Content Search List

No.	Japanese Name	English Name	Year
1	あしたのジョー	Tomorrow's Joe	1970
2	みなしごハッチ	The Adventures of Hutch the Honeybee	1970
3	キックの鬼	The Demon of Kickboxing	1970
4	いなかっぺ大将	The Funny Judo Champion	1970
5	のらくろ	The Norakuro Dog	1971
6	国松さまのお通りだい	Kunimasusama no odoridai	1971
7	天才バカボン	Genius Bakabon	1971
8	ルパン三世	Lupin the Third	1971
9	正義を愛する者 月光仮面	Moonlight Mask	1971
10	赤胴鈴之助	Suzunosuke	1972
11	デビルマン	Devilman	1972
12	科学忍者隊ガッチャマン	Science Ninja Team Gatchaman	1972
13	ど根性ガエル	Gutsy Frog	1972
14	マジンガーZ	Mazinger Z	1972
15	バビル 2 世	Babel II	1973
16	ドラえもん	Doraemon	1973
17	ミクロイド S	Microsuperman	1973
18	新造人間キャシャーン	Casshan	1973
19	ドロロンえん魔くん	Dororon Enma-kun	1973
20	エースをねらえ！	Aim for the Ace	1973
21	侍ジャイアンツ	Samurai Giants	1973
22	キューティーハニー	Cutie Honey	1973
23	アルプスの少女ハイジ	Heidi, Girl of the Alps	1974
24	魔女っ子メグちゃん	Little Meg the Witch Girl	1974
25	ゲッターロボ	Getter Robo	1974
26	グレートマジンガー	Great Mazinger	1974
27	はじめ人間ギャートルズ	First Human Giatrus	1974
28	宇宙戦艦ヤマト	Space Battleship Yamato	1974
29	フランダースの犬	A Dog of Flanders	1975
30	タイムボカン	Time Bokan	1975
31	UFO ロボ グレンダイザー	UFO Robot Grendizer	1975
32	一休さん	Ikkyū-san	1975
33	母をたずねて三千里	3000 Leagues in Search of Mother	1976
34	キャンディ・キャンディ	Candy Candy	1976
35	ドカベン	Dokaben	1976
36	ヤッターマン	Yatterman	1977
37	あらいぐまラスカル	Rascal the Raccoon	1977
38	一発貫太くん	Ippatsu Kanta-kun	1977
39	未来少年コナン	Future Boy Conan	1978
40	はいからさんが通る	Mademoiselle Anne	1978
41	銀河鉄道 999	Galaxy Express 999	1978
42	科学忍者隊ガッチャマンⅡ	Gatchaman II	1978

43	ゼンダマン	Zenderman	1979
44	花の子ルンルン	The Flower Child Lunlun	1979
45	機動戦士ガンダム	Mobile Suit Gundam	1979
46	ベルサイユのばら	The Rose of Versailles	1979
47	トム・ソーヤーの冒険	The Adventures of Tom Sawyer	1980
48	タイムパトロール隊オタスケマン	Time Patrol Team Otasukeman	1980
49	釣りキチ三平	Fishing Enthusiast Sanpei	1980
50	おじゃまんが山田くん	Ojamanga Yamada-kun	1980
51	Dr.スランプ　アラレちゃん	Dr. Slump	1981
52	忍者ハットリくん	Ninja Hattori-kun	1981
53	ダッシュ勝平	Dash Kappei	1981
54	まいっちんぐマチコ先生	Miss Machiko	1981
55	うる星やつら	Urusei Yatsura	1981
56	あさりちゃん	Asari-chan	1982
57	超時空要塞マクロス	Super Dimension Fortress Macross	1982
58	さすがの猿飛	Sasuganosarutobi	1982
59	みゆき	Miyuki	1983
60	キン肉マン	Kinnikuman	1983
61	魔法の天使クリィミーマミ	Creamy Mami, the Magic Angel	1983
62	キャッツアイ	Cat's Eye	1983
63	キャプテン翼	Captain Tsubasa	1983
64	Gu-Gu ガンモ	Gu Gu Ganmo	1984
65	北斗の拳	Fist of the North Star	1984
66	小公女セーラ	Princess Sarah	1985
67	機動戦士 Z ガンダム	Mobile Suit Zeta Gundam	1985
68	タッチ	Touch	1985
69	プロゴルファー猿	Pro-golfer Saru	1985
70	ハイスクール！奇面組	High School! Kimengumi	1985
71	ドラゴンボール	Dragon Ball	1986
72	めぞん一刻	Maison Ikkoku	1986
73	あんみつ姫	Anmitsu Hime	1986
74	聖闘士星矢	Saint Seiya	1986
75	シティーハンター	City Hunter	1987
76	エスパー魔美	Esper Mami	1987
77	のらくろクン	The Norakuro Dog	1987
78	ミスター味っ子	Mister Ajikko	1987
79	キテレツ大百科	Kiteretsu Daihyakka	1988
80	魁！男塾	Sakigake!! Otokojuku	1988
81	つるピカハゲ丸くん	Tsurupika Hagemaru	1988
82	美味しんぼ	Oishinbo	1988
83	おぼっちゃまくん	Obochamakun	1989
84	ミラクルジャイアンツ童夢くん	Miracle Giants Dome-kun	1989
85	悪魔くん	Akuma-kun	1989
86	らんま 1/2	Ranma ½	1989

87	ドラゴンボール Z	Dragon Ball Z	1989
88	桃太郎伝説	The tale of Momotaro	1989
89	ダッシュ!四駆郎	Dash! Yonkuro	1989
90	機動警察パトレイバー	Patlabor	1989
91	YAWARA!	YAWARA!	1989
92	笑ゥせぇるすまん	Warau salesman	1989
93	ドラゴンクエスト	Dragon Quest	1989
94	ちびまる子ちゃん	Chibimaruko Chan	1990
95	まじかるタルるートくん	Magical Taluluto	1990
96	三つ目がとおる	The Three-Eyed One	1990
97	きんぎょ注意報!	Goldfish Warning!	1991
98	少年アシベ	Shonen Ajibe	1991
99	炎の闘球児 ドッジ弾平	Honō no Dōkyūji: Dodge Danpei	1991
100	DRAGON QUEST -ダイの大冒険	Dragon Quest-Dai's Adventure	1991
101	丸出だめ夫	Marude Dameo	1991
102	美少女戦士セーラームーン	Sailor Moon	1992
103	クッキングパパ	Cooking Papa	1992
104	クレヨンしんちゃん	Crayon Shinchan	1992
105	姫ちゃんのリボン	Hime-chan's Ribbon	1992
106	ツヨシしっかりしなさい	Tsuyoshi	1992
107	南国少年パプワくん	Papuwa	1992
108	幽遊白書	YuYu Hakusho	1992
109	コボちゃん	Kobo, the Li'l Rascal	1992
110	剣勇伝説 YAIBA	Yaiba	1993
111	忍たま乱太郎	Nintama Rantarō	1993
112	GS 美神	Ghost Sweeper Mikami	1993
113	ジャングルの王者ターちゃん	Jungle King Tar-chan	1993
114	SLUM DANK	SLUM DANK	1993
115	蒼き伝説　シュート!	Oki Densetsu Shoot!	1993
116	赤ずきんチャチャ	Akazukin Chacha	1994
117	ママレード・ボーイ	Marmalade Boy	1994
118	とっても! ラッキーマン	Very Lucky	1994
119	NINKU－忍空－	Ninku	1995
120	行け! 稲中卓球部	Ping-Pong Club	1995
121	ふしぎ遊戯	Hushigi Yûgi: The Mysterious Play	1995
122	H2	H2	1995
123	新世紀エヴァンゲリオン	Neon Genesis Evangelion	1995
124	名探偵コナン	Detective Conan	1996
125	るろうに剣心 -明治剣客浪漫譚-	Rurouni Kenshin	1996
126	みどりのマキバオー	Midori no Makibaō	1996
127	こちら葛飾区亀有公園前派出所	Kochikame	1996
128	金田一少年の事件簿	Kindaichi Case Files	1997
129	烈火の炎	Flame of Recca	1997
130	セクシーコマンドー外伝	Sexy Commando Gaiden	1998

131	遊戯王	Yu-Gi-Oh!	1998
132	おじゃる丸	Prince Mackaroo	1998
133	おジャ魔女どれみ	Ojamajo Doremi	1999
134	GTO	Great Teacher Onizuka	1999
135	HUNTER×HUNTER	HUNTER×HUNTER	1999
136	ONE PIECE	ONE PIECE	1999

Note: The list of animation in the content search section of this study is retrieved from http://nendai-ryuukou.com/. It only includes newly released animations produced and broadcasted in Japan. The ranking is based on audience ratings during the year the animation is first released on TV.

Appendix 2: Animation Theme Categorization Based on Story of Main Characters

1) *Sports*: Pursues career as a professional athlete. Examples include boxing, traditional Japanese martial arts, baseball, kendo, tennis, basketball, golf, and soccer.
2) *Adventure*: Travel to different geographic locations for a purposes including searching for family members, serving as a solider, professional thief, punish bad people, time travel to help others, rescue endangered animals
3) *Magic Power*: Gain magic power or meets and live with a creature with magic power in modern society. Creatures with magic powers include: talking animals, intelligent robot pets, coming from another plant or space, being a Ninja
4) *Normal Family Life*: Live a normal life with families and friends either in a modern society or in the primitive age.
5) *Super Hero*: Receive secret power and become super hero saving the earth. Secret powers can be received from others and or be gained through magic armors or high technology.

Science Fiction: Live in an age with robot and become robot pilot. Travel between planets or galaxies. Most episodes depict main characters fighting in space wars.

Appendix 3: Common Traits of Males and Female Characters in Animations

Personality

1) *Strong and Brave*: Being muscular and capable of fighting. Keen to adventures and competitions and always ready to help the weak.
2) *Intelligent*: Smart and always give mindful ideas to solve problems.
3) *Dominant*: Takes responsibility and leadership in a team.
4) *Physically and/or Mentally Weak*: Abused by others and always need help. Unable to face difficulties independently. Physically sick. Sometimes cause trouble. Not confident in front of challenges.
5) *Emotional*: Easy to cry. Care about others and always being patient. Fall in love easily.

Social Role Construction of Main Characters

1) *Pursue Free Love*: Believe that love or marriage should not be bonded by parents' choices. Reject marriage that is based on social and financial bondage. Show optimism about love and life after marriage.
2) *Pursue Professional Career or Dream*: Ambitious and confident about one's future. Pursue a clearly defined life goal or dream.
3) *Traditional Family*: Main character raised up by both parents and enjoy family life
4) *Family Content Not available*: No presence of family related contents
5) *Anti-Traditional Family*: Main character abandoned by parents or lost parents at early age. Live in a single parent family. Parents loss ability or do not take responsibility to take care of young children. Main character leave family early.

Appendix 4: Categorization of Education Attainment

Categorization	Old Education System	New Education System
Below High School	No Education Ordinary Elementary School Higher Elementary School	No Education Junior High School
High School	Junior High School Girls' High School Vocational School Commerce School Normal School	High School
Some College	Higher School Vocational School Higher Normal School	College of Technology 2-year College
College	University	University
Graduate School	N/A	Graduate School

Appendix 5: Full Results of Regression by Gender using Modified Model

	Specification 4：Female				Specification 4： Male			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Never	Never	Not	Not	Never	Never	Not	Not
Outcomes	Married	Married	Married	Married	Married	Married	Married	Married
Animation Consumption								
Anime Often	-0.056*		-0.076**		-0.023		-0.012	
	(0.031)		(0.035)		(0.032)		(0.034)	
Anime Watch		-0.012		-0.025*		0.000		0.003
		(0.010)		(0.013)		(0.011)		(0.012)
Living with Kid								
Young Kid	-0.344***	-0.347***	-0.316***	-0.317***	-0.417***	-0.418***	-0.460***	-0.461***
	(0.026)	(0.026)	(0.030)	(0.030)	(0.025)	(0.025)	(0.027)	(0.027)
Teenager	-0.120***	-0.119***	-0.095***	-0.092***	-0.153***	-0.154***	-0.199***	-0.200***
	(0.018)	(0.018)	(0.025)	(0.025)	(0.018)	(0.018)	(0.021)	(0.021)
Other Regressors								
Age	-0.055***	-0.055***	-0.060***	-0.059***	-0.053***	-0.043***	-0.052***	-0.043***
	(0.003)	(0.003)	(0.005)	(0.005)	(0.003)	(0.003)	(0.003)	(0.003)
Age2	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
High School	0.012	0.014	0.061*	0.066**	-0.078***	-0.118***	-0.077***	-0.117***
	(0.023)	(0.023)	(0.032)	(0.032)	(0.028)	(0.033)	(0.028)	(0.033)
Some College	0.040	0.042	0.048	0.053	-0.097*	-0.130**	-0.099**	-0.132**
	(0.030)	(0.030)	(0.038)	(0.037)	(0.050)	(0.054)	(0.049)	(0.054)
College	0.066*	0.070**	0.061	0.066	0.001	-0.059*	0.002	-0.058*
	(0.035)	(0.035)	(0.043)	(0.043)	(0.030)	(0.034)	(0.030)	(0.034)
Graduate School	0.022	0.027	-0.004	0.004	0.032	-0.046	0.032	-0.046
	(0.150)	(0.148)	(0.150)	(0.147)	(0.052)	(0.053)	(0.052)	(0.053)

Log Personal Income	0.003**	0.003**	0.008***	0.008***	-0.002	-0.002	-0.002	-0.002
	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
Unemployment	0.119	0.109	0.058	0.043	0.251***	0.271***	0.253***	0.272***
	(0.105)	(0.103)	(0.100)	(0.099)	(0.058)	(0.060)	(0.058)	(0.060)
Social Interaction	0.001	0.001	0.000	0.000	-0.001*	-0.001**	-0.001*	-0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Sibling Size	0.001	0.001	-0.015*	-0.015*	0.001	0.003	0.001	0.003
	(0.004)	(0.004)	(0.008)	(0.008)	(0.005)	(0.006)	(0.005)	(0.005)
Regional Blocks	YES	YES	YES	YES	YES	YES	YES	YES
Constant	1.786***	1.784***	1.886***	1.896***	2.058***	1.959***	2.044***	1.947***
	(0.093)	(0.094)	(0.113)	(0.114)	(0.084)	(0.089)	(0.087)	(0.093)
Observations	1,003	1,003	1,003	1,003	974	974	974	974
R-squared	0.548	0.412	0.546	0.411	0.629	0.628	0.586	0.586

Note: Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 6: Full Results of Robustness Check on Samples with No Children

	Female				Male			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Never	Never	Not	Not	Never	Never	Not	Not
Outcomes	Married	Married	Married	Married	Married	Married	Married	Married
Animation Consumption								
Anime Often	-0.166*		-0.190**		-0.050		-0.056	
	(0.084)		(0.084)		(0.056)		(0.057)	
Anime Watch		-0.062*		-0.068**		-0.009		-0.003
		(0.033)		(0.033)		(0.028)		(0.028)
Living with Kid								
Young Kid	-0.023	-0.014	-0.042	-0.031	-0.103	-0.098	-0.100	-0.096
	(0.170)	(0.180)	(0.167)	(0.180)	(0.146)	(0.147)	(0.167)	(0.166)
Teenager	0.051	0.058	0.084	0.091	-0.046	-0.053	0.011	0.000
	(0.089)	(0.090)	(0.088)	(0.091)	(0.050)	(0.049)	(0.047)	(0.044)
Other Regressors								
Age	-0.032***	-0.032***	-0.043***	-0.043***	-0.011	-0.010	0.000	0.001
	(0.011)	(0.011)	(0.010)	(0.010)	(0.008)	(0.008)	(0.008)	(0.008)
Age2	0.000*	0.000	0.000***	0.000***	-0.000	-0.000	-0.000	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
High School	0.251*	0.296**	0.392***	0.442***	-0.057	-0.054	-0.072	-0.072
	(0.132)	(0.140)	(0.134)	(0.141)	(0.102)	(0.101)	(0.101)	(0.099)
Some College	0.368**	0.421***	0.516***	0.574***	-0.119	-0.125	-0.107	-0.120
	(0.147)	(0.154)	(0.146)	(0.152)	(0.129)	(0.125)	(0.124)	(0.121)
College	0.278*	0.339**	0.400***	0.468***	0.048	0.050	-0.028	-0.028
	(0.145)	(0.151)	(0.146)	(0.153)	(0.100)	(0.099)	(0.099)	(0.097)
Graduate School	0.064	0.157	0.190	0.294	0.154	0.155	0.091	0.091

	(0.284)	(0.281)	(0.282)	(0.278)	(0.105)	(0.103)	(0.102)	(0.100)
Log Personal Income	0.003	0.003	0.005	0.005	-0.004	-0.004	-0.004	-0.004
	(0.005)	(0.005)	(0.005)	(0.005)	(0.003)	(0.003)	(0.003)	(0.003)
Unemployment	0.006	-0.028	-0.043	-0.081	0.215***	0.221***	0.159***	0.165***
	(0.200)	(0.201)	(0.197)	(0.197)	(0.054)	(0.054)	(0.052)	(0.051)
Social Interaction	0.001	0.001	0.001	0.001	-0.000	-0.000	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Sibling Size	-0.001	0.003	-0.013	-0.009	-0.002	-0.002	-0.001	-0.002
	(0.024)	(0.025)	(0.024)	(0.025)	(0.021)	(0.021)	(0.021)	(0.021)
Regional Blocks	YES	YES	YES	YES	YES	YES	YES	YES
Constant	1.340***	1.348***	1.365***	1.373***	1.278***	1.269***	1.102***	1.084***
	(0.256)	(0.260)	(0.250)	(0.253)	(0.207)	(0.212)	(0.195)	(0.202)
Observations	208	208	208	208	268	268	268	268
R-squared	0.293	0.288	0.274	0.267	0.290	0.289	0.193	0.190

Note: Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 7a: Full Results of Falsification Test on Females

	Female							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Never	Never	Never	Never	Not	Not	Not	Not
Outcomes	Married	Married	Married	Married	Married	Married	Married	Married
Anime Often	-0.056*				-0.076**			
	(0.031)				(0.035)			
TV Often		-0.002				0.031		
		(0.022)				(0.030)		
Movie Often			-0.021				0.021	
			(0.030)				(0.036)	
Game Often				0.056				0.105**
				(0.041)				(0.049)
Young Kid	0.344***	0.350***	0.352***	0.347***	0.316***	0.321***	0.322***	0.318***
	(0.026)	(0.025)	(0.025)	(0.025)	(0.030)	(0.030)	(0.030)	(0.030)
Teenager	0.120***	0.120***	0.122***	0.120***	0.095***	0.093***	0.094***	0.094***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.025)	(0.025)	(0.025)	(0.025)
Age	0.055***	0.055***	0.055***	0.054***	0.060***	0.059***	0.059***	0.058***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)	(0.005)	(0.005)
Age2	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
High School	0.012	0.012	0.013	0.012	0.061*	0.064**	0.061*	0.061*
	(0.023)	(0.023)	(0.023)	(0.023)	(0.032)	(0.032)	(0.032)	(0.032)
Some College	0.040	0.039	0.040	0.041	0.048	0.053	0.048	0.051
	(0.030)	(0.029)	(0.030)	(0.030)	(0.038)	(0.037)	(0.038)	(0.038)
College	0.066*	0.069**	0.070**	0.070*	0.061	0.071*	0.065	0.066
	(0.035)	(0.035)	(0.035)	(0.035)	(0.043)	(0.043)	(0.043)	(0.043)
Graduate School	0.022	0.024	0.025	0.032	-0.004	0.009	-0.000	0.012
	(0.150)	(0.148)	(0.150)	(0.148)	(0.150)	(0.147)	(0.146)	(0.147)
Log Income	0.003**	0.003**	0.003**	0.003**	0.008***	0.008***	0.008***	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Unemployment	0.119	0.111	0.112	0.105	0.058	0.049	0.046	0.036
	(0.105)	(0.101)	(0.100)	(0.098)	(0.100)	(0.093)	(0.095)	(0.089)
Social Interaction	0.001	0.001	0.001	0.001	0.000	0.001	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Sibling Size	0.001	0.001	0.001	0.001	-0.015*	-0.014*	-0.014*	-0.015**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.008)	(0.008)	(0.008)	(0.008)
Regional Blocks	YES	YES	YES	YES	YES	YES	YES	YES
Constant	1.786***	1.766***	1.773***	1.739***	1.886***	1.841***	1.849***	1.809***
	(0.093)	(0.094)	(0.094)	(0.095)	(0.113)	(0.113)	(0.114)	(0.116)
Observations	1,003	1,003	1,003	1,003	1,003	1,003	1,003	1,003
R-squared	0.548	0.545	0.546	0.547	0.412	0.409	0.409	0.412

Note: Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 7b: Full Results of Falsification Test on Males

	Male							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Never	Never	Never	Never	Not	Not	Not	Not
Outcomes	Married	Married	Married	Married	Married	Married	Married	Married
Anime Often	-0.023				-0.012			
	(0.032)				(0.034)			
TV Often		0.057*				0.047		
		(0.030)				(0.032)		
Movie Often			0.018				0.009	
			(0.030)				(0.032)	
Game Often				-0.014				0.005
				(0.034)				(0.036)
Young Kid	0.417***	0.416***	0.416***	0.419***	0.460***	0.459***	0.460***	0.461***
	(0.025)	(0.025)	(0.025)	(0.025)	(0.027)	(0.027)	(0.027)	(0.027)
Teenager	0.153***	0.153***	0.153***	0.154***	0.199***	0.199***	0.199***	0.199***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.021)	(0.021)	(0.021)	(0.021)
Age	0.053***	0.052***	0.052***	0.053***	0.043***	0.043***	0.043***	0.043***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Age2	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
High School	0.078***	0.075***	0.077***	0.077***	0.118***	0.116***	0.117***	0.117***
	(0.028)	(0.027)	(0.028)	(0.028)	(0.033)	(0.033)	(0.033)	(0.033)
Some College	-0.097*	-0.096*	-0.100**	-0.099**	-0.130**	-0.128**	-0.131**	-0.131**
	(0.050)	(0.049)	(0.050)	(0.050)	(0.054)	(0.054)	(0.054)	(0.054)
College	0.001	0.004	0.002	0.002	-0.059*	-0.057*	-0.059*	-0.059*
	(0.030)	(0.029)	(0.030)	(0.030)	(0.034)	(0.034)	(0.034)	(0.034)
Graduate School	0.032	0.035	0.033	0.031	-0.046	-0.043	-0.045	-0.045
	(0.052)	(0.052)	(0.052)	(0.053)	(0.053)	(0.053)	(0.053)	(0.054)
Log Income	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Unemployment	0.251***	0.250***	0.251***	0.256***	0.271***	0.269***	0.270***	0.270***
	(0.058)	(0.056)	(0.059)	(0.060)	(0.060)	(0.059)	(0.060)	(0.061)
Social Interaction	-0.001*	-0.001	-0.001*	-0.001*	-0.001**	-0.001**	-0.001**	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sibling Size	0.001	0.001	0.001	0.001	0.003	0.002	0.003	0.003
	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)	(0.005)	(0.005)
Regional Blocks	YES	YES	YES	YES	YES	YES	YES	YES
Constant	2.058***	2.028***	2.043***	2.058***	1.959***	1.939***	1.952***	1.948***
	(0.084)	(0.083)	(0.081)	(0.085)	(0.089)	(0.089)	(0.087)	(0.091)
Observations	974	974	974	974	974	974	974	974
R-squared	0.629	0.630	0.629	0.628	0.586	0.587	0.586	0.586

Note: Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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