# Hard News & Soft News: Effects of TV Programs Exposure on Political Involvement and Political Knowledge in Japan with Propensity Score Matching Method

Ling Liu

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## Ling Liu[†]

## Abstract

The current study examines the exposure effects of hard and soft TV programs on political involvement and political knowledge. By using the method of propensity score matching, this study has made improvements in the methodology to make the causal claim clearer. The empirical results show that hard and soft TV program viewing do not have effects on political involvement. However, regarding the political knowledge, watching hard programs enhances viewers' political knowledge, but soft program watching depresses the audience's knowledge acquisition. Furthermore, by testing the exposure effects on three dimensions of knowledge separately, the results also suggest that this difference between the effect of hard programs watching and the effect of soft programs watching on political knowledge is most significant in the domain of political leader knowledge.

Key words: Hard News, Soft News, Political Involvement, Political knowledge, Propensity Score Matching

**Introduction**

In the last three decades, the emergence of so-called "soft news" programs has profoundly changed the media and political information environments in the United States and Europe. Compared to the traditional news program, soft news programs tend to report news in "more sensational", "more personality-centered" and "more practical" ways (Patterson, 2000:4). This change has attracted great research interest and a considerable number of studies have been conducted to explore the exposure effect that soft news may exert upon audiences. Although the empirical findings are inconsistent and still under debate, scholars have demonstrated that the consumption of soft news deeply affects some political dimensions like political involvement, political interest and political knowledge (e.g., Baum & Jamison, 2006; Prior, 2003; Baum, 2003; Baum, 2002; Patterson, 2000).

The softening of political news has also been experienced in Japan. In particular during the period that Koizumi Junichiro, whose strategy was to utilize commercial programs to boost his popularity, served as Japan's prime minister, political news was not only reported in hard traditional news programs, but also began to be picked up in "soft programs", such as "wide shows" (e.g., Collet and Kato, 2014; Inamasu and Ikeda, 2009; Sakaiya, 2008). With regard to this phenomenon, scholars in Japan show similar concerns to foreign researchers. By conducting empirical research, they have confirmed that exposure to soft political news may link to cynicism toward politics and broaden the knowledge gap, while it may also bring some positive impacts like enhancing viewers' political interest, particularly for those who are less knowledgeable (e.g., Collet and Kato, 2014; Inamasu and Ikeda, 2009; Sakaiya, 2008; Taniguchi, 2002). However, previous research on this topic still has some drawbacks. For instance, most of the relevant studies in Japan examine exposure effects by analyzing survey data that was collected in the period of the Koizumi Administration. However, due to the fact that the softening of political news was proceeding extremely rapidly at that time, it

may be difficult to apply the findings of that very unique case to the present situation. Furthermore, several methodological problems remain. The absence of objective analyses of the content of programs and the uncertainty of causal direction may make the results confusing.

In light of these limitations, the purposes of this study are as follows. First, I seek to update the understanding of hard and soft program exposure effects in Japan. By testing data from the 2012 general election, we can examine whether or not the situation at present is similar to ten years previously. Second, I try to address the methodological problems in prior studies. To investigate the exposure effects more rigorously, hard and soft programs are categorized by objective analysis. Moreover, I apply the method of propensity score matching to draw the causal inference more clearly.

This paper consists in four sections. First, I will review the debate related to the exposure effects of hard and soft news in the previous literature. The remaining methodological limitations will also be discussed. Next, the dataset, variables and analytical methods that are employed in this study will be briefly introduced. After presenting the analysis results in the third section, finally, in the fourth section, I will summarize the findings and further implications will be discussed.

**The Hard News and Soft News Debate**

Although scholars have tested the exposure effects of soft news program on various dimensions, we can broadly categorize them into two levels: effects on the attitudinal/behavioral level and effects on the cognitive level. On the attitudinal/behavioral level, scholars have shown most interest in dimensions like political interest, distrust (dissatisfaction, cynicism) toward politics, and political involvement or participation. The findings, however, have yielded controversy. On the pessimistic side, one concern is that the

sensational and critical reporting styles of soft news may cause declines in interest and trust toward politics (e.g., Patterson, 2000). This view has also been confirmed in Japan by Taniguchi (2002), with the finding that exposure to critical views in the "Hodo Station" news program was linked to cynicism toward politics. On the other side, with an optimistic view, Matthew Baum and his collaborator suggest that the watching of soft programs may arouse political interest in those who are politically inattentive and as a result, prompt them to vote consistently (e.g., Baum, 2002; Baum & Jamison, 2006).

Meanwhile, on the cognitive level, researchers have focused on the knowledge learning effect. With regard to this dimension, similarly, pessimistic voices and optimistic voices both exist. On the pessimistic side, Markus Prior has voiced concerns that soft programs may produce lesser learning effects (Prior, 2003). Consistent with Prior (2003), Collet & Kato (2014), which studied Japanese political knowledge, suggests that soft program viewing may even have a depressive effect. In contrast, Baum (2003) argues that under some circumstances, viewers of soft programs did acquire knowledge. According to Baum (2003), audiences can obtain factual knowledge from watching soft programs, particularly for those political issues that contain "soft news-friendly themes" (Baum, 2003:183).

One possible reason for these inconsistent results may be the difference in the measurement of dependent variables. Especially for political knowledge, as has been mentioned, the measurement of knowledge in Prior (2003) and Baum (2003) is different: Prior (2003) tests the effects on "long-term" factual knowledge while Baum (2003) appears to test knowledge in the "short run" (Baum, 2003:185). Besides that, focusing on different dimensions of knowledge may also make the results confusing. For instance, it is suggested that political knowledge can be divided into three domains: "rules of the game", "the substance of politics" and "people and parties" (Delli Carpini & Keeter, 1996:65), which can

also be called institutional knowledge, policy knowledge and political party or leader knowledge (e.g., Delli Carpini & Keeter, 1996; Imai, 2008; Collet & Kato, 2014). In light of the characteristics of soft news, which is "more personality-centered" (Patterson, 2000:4), it can be predicted that soft programs may not create a learning effect for knowledge about institution and policy, but may have a positive effect on political leader knowledge. Although this idea has been rarely examined, in Collet & Kato (2014), the exposure effects on different domains of knowledge are shown to be different[1].

In light of the debate, in this study I first test the effects of soft program viewing on political involvement. After that, I examine the exposure effects of hard and soft programs on three fields of knowledge separately. Through these analyses, I seek to confirm and extend knowledge about the exposure effects of hard and soft programs on the political process.

**The Methodological Limitations**

Despite widespread interest in exposure effects of hard and soft news on voters' cognition and attitude, several major obstacles exist, which can be summarized as follows. The first is the question of how to define programs/news. As has been pointed out, in spite of the fact that a large amount of research has been conducted, scholars are not able to reach a consensus about what hard and soft news exactly are (e.g. Reinemann et al., 2012; Collet and Kato, 2014). In fact, researchers have provided various definitions of hard and soft news with different focuses, while some even consider multiple dimensions of news. According to Reinemann and his colleagues' review, there are at least five dimensions that have been used to define hard/soft news in prior studies: ①"topic/events", ②"news production", ③"news focus", ④"news style" and ⑤"news reception" (Reinemann et al., 2012, p.225)[2].

In Japan, the classification schemes of hard and soft news also vary by study. Among them, one common way to identify a news program is to observe the network that it belongs

to (e.g., Taniguchi, 2002; Krauss, 2000). In Japan, the national broadcasting network, called NHK, is thought to be "harder", while the commercial networks like TBS, Nippon Television and Fuji Television are considered to be "softer" (Krauss, 2000). In addition to networks, the elements of "broadcasting time" and "genres" have also been used to categorize news programs. Generally, the morning programs and afternoon programs, in which the target audience is housewives, are considered to offer more soft topics. In contrast, the evening programs may provide more hard news. Regarding genres, traditional news programs like NHK news shows are regarded as hard news programs, while the "wide shows", as mentioned before, are considered to be soft news programs (e.g., Sakaiya, 2008). Meanwhile, instead of those formal elements, recent studies tend to define hard and soft news from their news content. For instance, Inamasu and Ikeda (2009) conduct content analysis from a "news focus" perspective, in which policy-centered programs are considered to be hard while politician-centered programs are defined as soft. Additionally, Hagiwara (2001) and Collet & Kato (2014) define news programs according to their topics, which are also based on content analysis results.

Similar to overseas research, the absence of a standardized definition for hard and soft news in Japan causes confusion and difficulty in making comparisons between different studies. Besides, those methods for classification may also raise some other problems. As I mentioned above, most of the research in Japan defined programs by formal factors rather than news content. However, these kinds of definitions tend to be subjective and unambiguous. Moreover, the classification ignores variation between programs. Especially for the networks, as Inamasu & Ikeda (2009) have also pointed out, due to the consideration of balance and competition between the networks, it is no surprise to see some soft programs on NHK (such as NHK's Asayichi, whose target audience is housewives), while some hard programs featuring policy discussion air on the commercial networks. Therefore, descriptive

studies of content become necessary.

The third obstacle that scholars have faced is the uncertainty about causality of hard/soft news' effects. Especially in Japan, almost all studies measure the exposure effect by analyzing cross-sectional data (e.g., Inamasu & Ikeda, 2009; Collet & Kato, 2014; Sakaiya, 2008). Although some of the studies find substantial hard/soft news impact on Japanese political knowledge or interest, the analysis of cross-sectional data has only examined the correlative relationship rather than a causal relationship. Moreover, cross-sectional data can not reflect the change within individuals. Hence, analyzing cross-sectional data can not answer questions like whether or not watching hard (soft) news increases (decreases) political involvement or knowledge.

Another crucial problem that prevents scholars from drawing correct causal direction is the concern about *endogeneity*. Several previous studies demonstrated that the audience of hard news programs tends to have higher political interest and be more knowledgeable, compared to soft programs' viewers (e.g., Sakaiya, 2008). Therefore, it is difficult to rule out the possibility that political involvement and political knowledge cause people to tune in to hard and soft programs.

A further relevant concern is regarding the problem of *selection bias*. If it is true that the audiences of hard programs and soft programs are heterogeneous, then the problem of selection bias is unavoidable. In that case, conducting statistical analysis without adjustment will yield biased results. However, very few studies have recognized the severity of this problem in examining the exposure effect of hard and soft news program viewing.

Taking account of the methodological drawbacks existing in prior studies, the study I present here employs the following research design. Initially, instead of identifying hard and soft with formal factors, this study follows Collet & Kato (2014)'s method to classify hard and soft programs based on the analysis of story leads of each program that are presented on

TV listings. Additionally, focusing on the concern about endogeneity and selection bias, this study applies the *propensity score matching* method to reduce the bias caused by a non-randomized sample. This research design enables the present study to categorize hard and soft programs with objective evidence, while drawing the causal inference more clearly.

**The Present Study**

In this section, I will first discuss the hypotheses. After that, the dataset and main variables included in the analytical models will be introduced.

*Hypotheses*

The focus of this study is directed at two levels: the attitudinal level and the cognitive level. First, on the attitudinal level, I examine the impact of exposure to hard and soft programs on political involvement. In previous studies, although the findings about soft news watching were inconsistent, most scholars concluded that hard programs viewing had a positive effect on political involvement. However, the term "positive effect" (or "negative effect") is ambiguous. To understand the exposure effect more precisely, we need to investigate from more than one dimension. Here, I have two sets of research questions: a) whether or not people who are watching more hard (soft) news have higher (lower) political involvement; b) whether or not watching more hard (soft) news increases (depresses) political involvement. With regard to the former question, referring to the relevant findings in prior studies (such as Inamasu and Ikeda (2009)), it is expected that hard programs' audiences have relatively higher levels of political involvement while soft programs' viewers tend to be less motivated. For the latter question, I expect that exposure to hard programs increases political involvement; while soft program viewing may have a depressive effect, due to the critical viewpoints and content regarding politics in soft programs.

*H1a*: Compared to viewers of fewer hard news programs, people watching more hard

news programs have higher political involvement.

*H1b*: Compared to viewers of fewer soft news programs, people watching more soft

news programs have lower political involvement.


*H2a*: Hard news program viewing increases political involvement.

*H2b*: Soft news program viewing depresses political involvement.


On the cognitive level, I focus on political knowledge. Similarly to the case of political involvement, I investigate the impact from two dimensions: the influence on knowledge and knowledge change. Since prior studies have suggested that the exposure effects may vary in different knowledge domains, this study separately tests the hard and soft effects on three domains - institutional knowledge, political leader knowledge and policy knowledge. For Hard programs, consistent with previous findings, we can expect that those who are consuming more hard programs know more. Furthermore, because of the educational function of hard programs, it can also be expected that watching hard programs boosts all types of knowledge.

In contrast, the exposure effects of soft programs may vary by domain. Specifically, since soft news program tends to report politics in "episodic" and "personality-centered" ways rather than explaining policy, we can infer that soft programs' viewers could be more interested in people and be more knowledgeable regarding political leaders. Due to this way of presenting information, it can also be predicted that watching soft news programs may yield a knowledge boost on political leader knowledge, but no or even depressive effects on the other two knowledge dimensions. Following these expectations, the hypotheses can be

presented as follows:

H3a: Compared to viewers of fewer hard news programs, people watching more hard

news programs are more knowledgeable in all types of political knowledge.

H3b: Compared to viewers of fewer soft news programs, people watching more soft

news programs know more about political leaders, but are less knowledgeable

about other domains of political knowledge.

H4a: Hard news program viewing consistently increases all domains of knowledge.

H4b: Soft news program viewing increases political leader knowledge, but has no or

even depressive effects on institutional knowledge and policy knowledge.

*Data and variables*

The dataset that I utilize in this study is the "Survey on Japanese Social Expectation

and Election", an internet panel carried out by researchers at Waseda University (which will

be abbreviated as W-WEB 2012&2013 henceforth)[3]. This survey was conducted in the period

of the 2012 Japanese General Election and the 2013 Upper House Election. The panel survey

consisted in four waves: the first wave and the third wave are pre-election waves, which were

conducted one week before the 2012 and 2013 election days; while the second wave and the

fourth wave are post-election waves, held shortly after the election days. In this study, only

the respondents who completed all four interviews are included in the analyses (N=2,813).

Political involvement and political knowledge, the two main dependent variables of

this study, are measured repeatedly in W-WEB 2012&2013. Political involvement is asked in

all four interviews and eight questions were used to evaluate to what extent a respondent was

willing to participate in voting or political movements (measured by five-point scales from

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not willing to willing). Although political involvement is measured at four time points, in this study I focus on the first two to examine the changes. The political involvement score is constructed by aggregating the responses. Meanwhile, W-WEB 2012&2013 measures political knowledge twice, in the first wave and the third wave, with factual test questions regarding institutions, political leaders and party policy. Specifically, institutional questions are about Japan's judicial system, the cabinet's responsibility and the term for members of the upper house. Meanwhile, the positions held by politicians and the placement of party policy were asked. To create the knowledge scores, correct responses in each field are aggregated at an individual level. In addition to those factual tests, the survey also asked the respondents whether or not they knew the political party and party leaders in different questions. Similarly, those responses are also calculated and utilized in the analyses.

At the same time, television exposure during the election campaign was also measured in detail. The itemized list, which contains a total of 57 television programs across NHK and four commercial networks, covered almost all of the programs that might possibly have had politics relevant content. Among them, new programs, talk shows and wide shows are included. Those items are shown in a TV listing design and presented to respondents as schedules. Respondents could select as many programs as they want.

**Methodology**

*TV listings analysis*

To identify hard programs and soft programs, a TV listings analysis was conducted following the method employed by Collet & Kato (2014). The story leads of each program listed in W-WEB 2012&2013 were analyzed in the period of 2012 election campaign (December 4, 2012~December 15, 2012). Story leads that are related to politics, economics, policy, military affairs or foreign affairs are categorized as hard news; while story leads about

entertainment, celebrity, life, crime, weather or sports are categorized as soft news. The number of hard news and soft news items in each program is calculated and those above average are defined as hard programs (please see the appendix for detailed lists of hard/soft programs).

*Propensity score matching*

As mentioned above, the problem of heterogeneity between hard and soft programs' viewers has impeded scholars' attempts to draw causality correctly. Therefore, adjusting the unbalanced sample is a priority. To solve this problem, the present study implements a propensity score matching method. Propensity score matching was first proposed by Rosenbaum & Rubin (1983), and is now widely used in economics and health-related fields (Li, 2012). It is considered to be an efficient way to reduce the bias in estimating non-randomized observational data (e.g., Morgan, 2001; Huang & Wang, 2012).

Propensity score matching was developed under the framework of the *counterfactual model of causality*. According to Holland (1986), models for investigating casual inference can be summarized into two types. The first type, also known as the traditional approach, is "looking for the cause of an effect" (Holland, 1986:959). The other is "studying the effects of causes" (Holland, 1986:959), and the counterfactual model belongs to the latter approach. In deciding whether or not to apply the counterfactual model, Morgan & Winship (2007) give their suggestion: if researchers are interested in "estimating the effects of causes", then they should use counterfactual models; on the other hand, if researchers' interest is in detecting "all of the causes of an observed effect", the counterfactual model is not appropriate (Morgan & Winship, 2007:280). Since this study focuses on the exposure effect of hard/soft program watching rather than exploring all the causes of improving (depressing) political involvement and knowledge, employing the framework of counterfactual modelling is more suitable.

There are several steps included in the implementation of propensity score matching (Caliendo & Kopeinig, 2008). The first step is to calculate the propensity score. According to Rosenbaum and Rubin (1984), if the strongly ignorable assumption has been satisfied, then we can use the assignment probabilities - the propensity score - to balance the sample. The next step is choosing a matching algorithm to match propensity scores. Various matching methods are available: *Nearest-Neighbor Matching*, *Radius Matching*, *Kernel Matching* and so on. Furthermore, matching conditions may also be different such as with/without caliper restriction, or choosing whether to apply one-to-one matching. Trade-offs between accuracy and efficiency always occur when choosing a method (Caliendo & Kopeinig, 2008). Finally, the treatment effect can be estimated.

Following these procedures, the present study examines the exposure effect of hard program viewing and soft program viewing separately by applying propensity score matching. In testing the hard programs' viewing effect, the treatment group is the group of individuals who have a greater exposure to hard news programs, while the control group includes individuals who have no or relatively less exposure to hard news programs. On the other hand, in the estimation of soft programs' viewing effect, respondents watching more soft programs are considered as treated while those who watched no or fewer soft programs are put into control group[4]. Meanwhile, the method of nearest-neighbor matching with caliper restriction is applied in the matching process. The details will be discussed further in the next section.

**Results and Findings**

*Determinants of hard and soft program exposure – does heterogeneity exist?*

Table 2 depicts the logistic model that I have established to estimate the propensity score. Since the propensity score is the core element used to balance the sample, many scholars have placed emphasis on the quality of the propensity score analytical model. They

suggest that covariate choice should be based on theory or findings from previous studies (e.g., Simith & Todd, 2005; Caliendo & Kopeinig, 2008). Here, I build the model based on the idea proposed by Bennett (1995): people acquire political information when they have the "intellectual capability", "motivation" and "opportunity". Specifically, pre-treatment variables like knowledge(t1) and education (capability), political involvement(t1), interest and party identity strength (motivation), work dummy and housewife dummy (opportunity), and other demographic factors (age, gender and income) are chosen. General media consumption is also included.

With regard to the results, basically the same factors determine whether a subject is assigned to the treatment group or not in both models. Overall knowledge(t1), gender, age, TV watching frequency and the total numbers of TV programs consumed are significant in both cases. However, most of the coefficients are reversed. Previous knowledge, gender and age show positive impacts (odds ratio>1) on hard program watching but negative (odds ratio<1) on soft. Additionally, political interest in model 1, education level and the strength of party identity in model 2 also show significance. It indicates that those with high political interest, who are more knowledgeable, older and male are more likely to watch comparatively "harder" programs, while less knowledgeable, less educated, stronger party supporters, younger and female viewers tend to watch more soft programs. Thus it suggests that the audience for hard and soft programs in Japan is different and segmented. This confirmation of the heterogeneity between hard and soft programs' audiences also supports the validity of applying the propensity score matching method.

Table 1. Logistic models for calculating propensity scores

| | Model 1 treatment: hard program watching | | Model 2 treatment: soft program watching | |
|---|---|---|---|---|
| | Odds Ratio | Std. Err. | Odds Ratio | Std. Err. |
| Political involvement (t1) | 1.000 | 0.010 | 0.985 | 0.010 |
| Overall political knowledge (t1) | 1.518 *** | 0.106 | 0.788 ** | 0.058 |
| Education | 1.072 | 0.054 | 0.891 * | 0.046 |
| Political interest | 1.140 * | 0.074 | 0.991 | 0.065 |
| Party identity strength | 0.953 | 0.068 | 1.131 † | 0.084 |
| Work (dummy) | 1.186 | 0.161 | 1.062 | 0.150 |
| Housewife (dummy) | 1.096 | 0.182 | 1.134 | 0.194 |
| Gender (0=female) | 1.202 † | 0.126 | 0.627 *** | 0.067 |
| Age | 1.027 *** | 0.004 | 0.969 *** | 0.004 |
| Income | 1.040 | 0.027 | 0.963 | 0.027 |
| Watching TV programs (total) | 1.041 *** | 0.008 | 1.063 *** | 0.008 |
| TV watching freq. | 1.518 *** | 0.079 | 1.341 *** | 0.070 |
| Newspaper reading freq. | 1.022 | 0.028 | 0.991 | 0.028 |
| (Intercetpt) | 0.006 | 0.002 | 1.259 | 0.471 |
| Number of obs | 2,813 | | 2,813 | |
| Pseudo R2 | 0.126 | | 0.072 | |
| Area under ROC curve | 0.733 | | 0.687 | |

†p<0.1; *p<0.05; **p<0.01; ***p<0.001

*Effects on political involvement*

Turning to the hypothesis tests, the results here demonstrate the impacts of exposure to hard and soft programs on political involvement. By balancing the propensity scores, unbiased exposure effects can be calculated. Specifically, I apply nearest-neighbor matching within a 0.1 caliper to match the propensity scores. Replacements are allowed. Treatment observations whose propensity scores are outside the range of the controls' propensity scores have been dropped[5].

Table 2 shows the test results for H1(a, b). When the sample is unmatched, those who watched more hard programs did have higher scores of political involvement, while those who watched more soft programs had lower scores, providing strong support for H1a and H1b. However, when balanced by propensity scores, the differences between treatment groups and control groups diminish. It demonstrates that the results obtained from unmatched samples are biased in a way that overestimates the exposure effects.

H2(a, b) are also not supported. Exposure effects on the change of political

involvement are depicted in Table 3. As it displays, the extent of political involvement change shows no difference between the treated and control groups, regardless of watching hard programs or soft programs. Greater exposure to hard/soft programs does not cause a change in willingness to take part in politics.

Table 2. Effects of hard/soft program viewing on political involvement (H1a, b)

| Model 1 (treatment: hard program watching) | | | | | | |
|---|---|---|---|---|---|---|
| Outcome Variable | Sample | Treated | Controls | Difference | S.E. | T-stat |
| Political involvement (t2) | Unmatched | 26.849 | 25.134 | 1.715 | 0.190 | 9.040 *** |
| | ATT | 26.848 | 26.894 | -0.046 | 0.281 | -0.170 |
| Model 2 (treatment: soft program watching) | | | | | | |
| Outcome Variable | Sample | Treated | Controls | Difference | S.E. | T-stat |
| Political involvement (t2) | Unmatched | 25.626 | 26.014 | -0.388 | 0.208 | -1.870 † |
| | ATT | 25.626 | 25.712 | -0.086 | 0.299 | -0.290 |

†p<0.1; *p<0.05; **p<0.01; ***p<0.001

Table 3. Effects of hard/soft program viewing on the change of political involvement (H2a, b)

| Model 1 (treatment: hard program watching) | | | | | | |
|---|---|---|---|---|---|---|
| Outcome Variable | Sample | Treated | Controls | Difference | S.E. | T-stat |
| Change of political involvement (t2-t1) | Unmatched | -0.006 | -0.195 | 0.189 | 0.138 | 1.370 |
| | ATT | -0.009 | 0.022 | -0.031 | 0.203 | -0.150 |
| Model 2 (treatment: soft program watching) | | | | | | |
| Outcome Variable | Sample | Treated | Controls | Difference | S.E. | T-stat |
| Change of political involvement (t2-t1) | Unmatched | 0.021 | -0.168 | 0.189 | 0.149 | 1.270 |
| | ATT | 0.021 | 0.224 | -0.203 | 0.206 | -0.990 |

†p<0.1; *p<0.05; **p<0.01; ***p<0.001

*Effects on political knowledge*

What about the hard and soft exposure effects on political knowledge? As described in the first analysis, viewers who are more knowledgeable tend to watch more hard programs while less informed people are likely to consume more soft programs. Does hard and soft news viewing affect political knowledge acquisition even after balancing the propensity scores? Here I present the t-test results for program exposure effects on overall political knowledge and for three sub-domains of knowledge separately. In addition, the results of party and party leader recognition are also displayed.

The testing results for the knowledge differences between the treated and the controls are showed in Table 4 and Table 5. First, regarding hard program watching, the estimations from the unmatched sample have exaggerated the exposure effects in all knowledge domains consistently. With the balanced sample, however, significant differences between treatment group and control group only remain in the overall political knowledge and leader knowledge. It suggests that people with greater exposure to hard programs have a higher knowledge testing score only in the leader knowledge domain, hence achieving a higher score as a whole.

For soft program viewing, overestimations of the unmatched sample are also experienced in overall knowledge, institutional knowledge, leader knowledge and party recognition. After matching, significance remains in political leader knowledge, and emerges in party leader recognition. At first glance, this result is a little bit complicated and partly inverse to what was hypothesized, in that viewers who have watched more soft programs know less about political leaders. However, if we view this result together with party leader recognition, it becomes more understandable. As shown in Table 5, viewers of more soft programs did have higher recognition of party leaders. Despite the fact that the leaders whose positions are asked about in the factual test questions and the leaders listed in the leader recognition questions are not exactly the same person, comparing the two results here tends to suggest that although the viewers of soft programs know who the leaders are, they are less informed about what positions those political leaders take; in another words, they do not know what those leaders are doing in office.

When the "change in knowledge" is used as the outcome variable, similar results are obtained. With a balanced sample, significant results are viewed in overall knowledge, institutional knowledge and leader knowledge, indicating that exposure to hard programs has boosted the audience's political knowledge. It should be also noted that there is no significant

difference between the treated and the control groups in terms of the extent of change of policy knowledge. That implies that the audience has not acquired knowledge about policy by watching hard news programs.

For soft program viewing, a significant depressive effect is only shown in political leader knowledge, which suggests that watching soft programs has made viewers less knowledgeable about the positions of political leaders. No significant difference is shown in institutional knowledge, policy knowledge and overall knowledge. Meanwhile, although it is not statistically significant, a positive learning effect can be viewed in party leader recognition, providing support for the result of Table 5. The implication will be further discussed in the next section.

Table 4. Effects of hard program viewing on political knowledge (H3a)

| Model 1 (treatment: hard program watching) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Outcome Variable | Sample | Treated | Controls | Difference | S.E. | T-stat | |
| Overall political knowledge (t3) | Unmatched | 1.770 | 1.352 | 0.418 | 0.029 | 14.650 | *** |
| | ATT | 1.769 | 1.681 | 0.088 | 0.043 | 2.040 | * |
| Political institutional knowledge (t3) | Unmatched | 2.079 | 1.680 | 0.399 | 0.040 | 9.890 | *** |
| | ATT | 2.079 | 2.034 | 0.046 | 0.061 | 0.750 | |
| Political leader knowledge (t3) | Unmatched | 1.477 | 0.876 | 0.601 | 0.041 | 14.670 | *** |
| | ATT | 1.476 | 1.246 | 0.230 | 0.064 | 3.610 | *** |
| Policy knolwedge (t3) | Unmatched | 5.257 | 4.498 | 0.759 | 0.092 | 8.250 | *** |
| | ATT | 5.257 | 5.291 | -0.034 | 0.138 | -0.250 | |
| Party recognition (t3) | Unmatched | 7.839 | 7.027 | 0.812 | 0.084 | 9.670 | *** |
| | ATT | 7.838 | 7.810 | 0.028 | 0.120 | 0.230 | |
| Party leader recognition (t3) | Unmatched | 8.367 | 7.224 | 1.143 | 0.090 | 12.690 | *** |
| | ATT | 8.366 | 8.295 | 0.070 | 0.126 | 0.560 | |

†p<0.1; *p<0.05; **p<0.01; ***p<0.001

Table 5. Effects of soft program viewing on political knowledge (H3b)

| Model 2 (treatment: soft program watching) | | | | | | |
|---|---|---|---|---|---|---|
| Outcome Variable | Sample | Treated | Controls | Difference | S.E. | T-stat |
| Overall political knowledge (t3) | Unmatched | 1.428 | 1.585 | -0.158 | 0.032 | -4.960 *** |
| | ATT | 1.428 | 1.504 | -0.077 | 0.047 | -1.620 |
| Political institutional knowledge (t3) | Unmatched | 1.748 | 1.905 | -0.157 | 0.044 | -3.550 *** |
| | ATT | 1.748 | 1.770 | -0.022 | 0.066 | -0.340 |
| Political leader knowledge (t3) | Unmatched | 0.941 | 1.231 | -0.290 | 0.046 | -6.350 *** |
| | ATT | 0.941 | 1.152 | -0.211 | 0.066 | -3.220 ** |
| Policy knolwedge (t3) | Unmatched | 4.780 | 4.860 | -0.080 | 0.101 | -0.800 |
| | ATT | 4.780 | 4.769 | 0.011 | 0.149 | 0.070 |
| Party recognition (t3) | Unmatched | 7.506 | 7.336 | 0.170 | 0.092 | 1.850 † |
| | ATT | 7.506 | 7.294 | 0.212 | 0.140 | 1.510 |
| Party leader recognition (t3) | Unmatched | 7.785 | 7.709 | 0.076 | 0.100 | 0.760 |
| | ATT | 7.785 | 7.408 | 0.377 | 0.155 | 2.440 * |

†p<0.1; *p<0.05; **p<0.01; ***p<0.001


Table 6. Effects of hard program viewing on the change of political knowledge (H4a)

| Model 1 (treatment: hard program watching) | | | | | | |
|---|---|---|---|---|---|---|
| Outcome Variable | Sample | Treated | Controls | Difference | S.E. | T-stat |
| Change of overall political knowledge (t3-t1) | Unmatched | 0.010 | -0.008 | 0.019 | 0.027 | 0.700 |
| | ATT | 0.011 | -0.107 | 0.118 | 0.041 | 2.860 ** |
| Change of political institutional knowledge (t3-t1) | Unmatched | 0.017 | -0.014 | 0.030 | 0.031 | 0.990 |
| | ATT | 0.017 | -0.064 | 0.081 | 0.046 | 1.750 † |
| Change of political leader knowledge (t3-t1) | Unmatched | 0.047 | -0.038 | 0.084 | 0.033 | 2.570 * |
| | ATT | 0.047 | -0.121 | 0.169 | 0.050 | 3.360 *** |
| Change of policy knolwedge (t3-t1) | Unmatched | -0.049 | 0.039 | -0.088 | 0.038 | -2.280 * |
| | ATT | -0.048 | -0.043 | -0.005 | 0.057 | -0.090 |
| Change of party recognition (t3-t1) | Unmatched | -0.010 | 0.008 | -0.017 | 0.035 | -0.490 |
| | ATT | -0.009 | 0.015 | -0.024 | 0.052 | -0.460 |
| Change of party leader recognition (t3-t1) | Unmatched | 0.004 | -0.003 | 0.008 | 0.028 | 0.270 |
| | ATT | 0.004 | 0.037 | -0.033 | 0.042 | -0.780 |

†p<0.1; *p<0.05; **p<0.01; ***p<0.001


Table 7. Effects of soft program viewing on the change of political knowledge (H4b)

| Model 2 (treatment: soft program watching) | | | | | | |
|---|---|---|---|---|---|---|
| Outcome Variable | Sample | Treated | Controls | Difference | S.E. | T-stat |
| Change of overall political knowledge (t3-t1) | Unmatched | -0.014 | 0.006 | -0.020 | 0.029 | -0.700 |
| | ATT | -0.014 | 0.051 | -0.065 | 0.041 | -1.570 |
| Change of political institutional knowledge (t3-t1) | Unmatched | 0.011 | -0.005 | 0.016 | 0.033 | 0.490 |
| | ATT | 0.011 | -0.004 | 0.016 | 0.049 | 0.320 |
| Change of political leader knowledge (t3-t1) | Unmatched | -0.045 | 0.019 | -0.064 | 0.036 | -1.810 |
| | ATT | -0.045 | 0.068 | -0.113 | 0.048 | -2.330 * |
| Change of policy knolwedge (t3-t1) | Unmatched | 0.001 | -0.001 | 0.002 | 0.042 | 0.050 |
| | ATT | 0.001 | 0.054 | -0.053 | 0.060 | -0.870 |
| Change of party recognition (t3-t1) | Unmatched | 0.006 | -0.003 | 0.009 | 0.038 | 0.230 |
| | ATT | 0.006 | -0.018 | 0.024 | 0.053 | 0.460 |
| Change of party leader recognition (t3-t1) | Unmatched | 0.019 | -0.008 | 0.028 | 0.030 | 0.910 |
| | ATT | 0.019 | -0.027 | 0.046 | 0.043 | 1.070 |

†p<0.1; *p<0.05; **p<0.01; ***p<0.001

**Discussion**

In this study, I have examined the exposure effects of hard and soft programs on political involvement and political knowledge at both the attitudinal level and the cognitive level. By conducting TV listings analysis and applying the method of propensity score matching, this study has made improvements in the methodology and the measurement of the exposure effect. Furthermore, my findings in this paper confirm and extend the findings of prior research about hard and soft news.

The main findings of this study can be summarized as follows. First, it has been confirmed that heterogeneity between the audience of hard programs and soft programs exists. Focusing on the education level, in accordance with the "knowledge gap" hypothesis, the audience of hard programs appears to hold higher socioeconomic status while soft programs viewers tend to have lower socioeconomic status. Additionally, compared to females or younger viewers, males or older viewers are more likely to watch hard programs, which also indicates that viewers of hard programs hold higher status in Japan society. Therefore, it is necessary to adjust the unbalanced sample. Second, by applying propensity score matching, it has been shown that hard/soft program viewing has no effects on political involvement. Inconsistent with previous findings, watching hard and soft programs did not increase or depress willingness to participate in politics. Furthermore, audiences who watched more hard programs are not highly motivated while more soft program viewers are not less so. Third, it has also been confirmed that the audiences of hard programs tend to be more knowledgeable and watching hard programs enhances this, but soft program watching does not have that sort of educational effect, or even depresses the audience's knowledge acquisition. This finding is consistent with Collet & Kato (2014) and the present study has improved their work by clarifying the causality. Furthermore, by testing the exposure effects on three dimensions of knowledge separately, it has been revealed that the most notable difference is shown in the

domain of political leader knowledge. In spite of the fact that the absence of program content analysis in the present study makes it impossible to detect what factor causes the exposure effects to differ, it can be hypothesized that these effects are associated with the difference in the reporting styles of hard and soft programs.

Here, I would like to highlight three implications that can be drawn from those findings. First, almost a decade after political news began to soften in the media, especially with the boom in political coverage on "wide shows" during the period of the Koizumi administration, today the channels for Japanese people to acquire political information seem to be segmented: hard programs for higher socioeconomic status people and soft programs for people with lower status. Furthermore, this information acquisition pattern - hard program viewing or soft program viewing - appears to widen the gap, particularly in terms of knowledge. As a result, those who are already in lower socioeconomic status and poorly informed are further "isolated". This, which Prior (2005) has also pointed out, may become a crucial problem for Japanese politics and democracy.

So is this to say that there is no positive outcome from watching soft news? Actually, in this study, a certain extent of positive effect was observed from soft program viewing, with the consumption of soft programs facilitating viewers' ability to recognize political leaders. However, at the same time, it was also revealed that in spite of the fact that viewers recognized the leaders more readily, they had not acquired knowledge about what those leaders do in office. In light of this, we can say that although the viewing of soft programs may generate some sorts of knowledge learning, the knowledge that is acquired from soft programs is segmented and limited.

Also, it should be noted that although exposure to hard and soft news program has deeply influenced knowledge learning, no significant effect was shown in political involvement. This can be said to provide a support from another angle for the idea that media

deeply shapes the audience's cognitions, but has minimal power to change people's attitudes or behaviors.

Several limitations remain in this study which could be improved upon. The first is regarding the classification of hard and soft programs. Although the classification in the present study is based on objective analysis results, the method may be biased since only a portion of the stories covered in each program are included in the TV listings. Moreover, although this study focused on "topics", other dimensions such as "news focus" and "news style" also matter and need to be considered. To address on these potential problems, the analysis of news content would be be required. Second, despite the fact that there are several merits to employing the W-WEB 2012&2013, a representative problem may exist. This leads me to be tentative about applying the findings to all voters in Japan. Thus, panel data with a nationally representative sample may need to be examined in future.

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[1] The results of Collet & Kato (2014) show that the viewing of soft programs has significant negative impacts on the political leader knowledge and the overall knowledge, but has no significant effects on the institutional knowledge and policy knowledge. However, there is no further discussion about these results.

[2] Specifically, "topic/events" refers to the classification by using topics, which politics or economy news is harder while sports or entertainment news is softer. For "news production", the characteristic of "timeliness" is one of conceivable factors to distinguish between hard and soft news. "News focus" is an approach focusing on the reporting frameworks. "News style" dimension focuses on the way that news is presented. "News reception" focuses on how news are used (Reinemann et al., 2012).

[3] The W-WEB 2012&2013 was conducted under the Global-COE Project and the project of Grant-in-Aid for Scientific Research (KAKEN S), which are both headed by Aiji Tanaka of Waseda University. The author is given the data directly from the research project member. All the analyses in this study is conducted under the responsibility of the author; the research project members who have collected the data are not responsible.

[4] For model 1 with treatment of hard program watching, treatment group includes 1,251 observations and control group has 1,562 observations. For model 2 with treatment of soft program watching, the observations included in treatment group and control group are 853 and 1,960 individually.

[5] To ensure the quality of matching, overlap checking and balance checking have also been conducted. The results are shown in the appendix. In turns of the results, it can be said that the matching is effective.

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## Appendix
### Table1. List of hard news programs

| Hard News Programs | | | |
| --- | --- | --- | --- |
| Programs | (Japanese) | Networks | On Air Schedule |
| "NEWS WEB24" | NEWS WEB24 | NHK | Weekday |
| "News Japan" | ニュースJAPAN | Fuji TV | Weekday |
| "Good Morning Japan" | おはよう日本 | NHK | Weekday |
| "FNN Speak" | FNNスピーク | Fuji TV | Weekday |
| "News 7" | ニュース7 | NHK | Weekday |
| "Hoto Station" | 報道ステーション | TV Asahi | Weekday |
| "Minomonta no Asa Ziba!" | みのもんたの朝ズバッ! | TBS | Weekday |
| "NEWS 23 Close" | NEWS23クロス | TBS | Weekday |
| "Toku Dane!" | とくダネ！ | Fuji TV | Weekday |
| "News Watch 9" | ニュースウォッチ9 | NHK | Weekday |
| "Weekly News" | 週刊ニュース深読み | NHK | Saturday |
| "Minomonta no Asa Ziba!" | みのもんたの朝ズバッ! | TBS | Saturday |
| "Taseyasuhiro no Syuukan Nyu | 田勢康弘の週刊ニュース新書 | TV Tokyo | Saturday |
| "Week Up! Plus" | ウェークアップ！ぷらす | Nippon TV | Saturday |
| "News 7" | ニュース7 | NHK | Saturday |
| "news every. Saturday" | news every.サタデー | Nippon TV | Saturday |
| "J Channel" | Jチャンネル | TV Asahi | Saturday |
| "Hoto Tokusyu" | 報道特集 | TBS | Saturday |
| "Good Morning Japan" | おはよう日本 | NHK | Saturday |
| "Nichiyo Toron" | 日曜討論 | NHK | Sunday |
| "News 7" | ニュース7 | NHK | Sunday |
| "N Suta" | Nスタ | TBS | Sunday |
| "New Hodo 2001" | 新報道2001 | Fuji TV | Sunday |
| "Super News" | スーパーニュース | Fuji TV | Sunday |

### Table 2. List of soft news programs

| Soft News Programs | | | |
| --- | --- | --- | --- |
| Programs | (Japanese) | Networks | On Air Schedule |
| "news every." | news every. | Nippon TV | Weekday |
| "Wide Scramble" | ワイド! スクランブル | TV Asahi | Weekday |
| "N Suta" | Nスタ | TBS | Weekday |
| "NEWS ZERO" | NEWS ZERO | Nippon TV | Weekday |
| "Shiritagari!" | 知りたがり！ | Fuji TV | Weekday |
| "Super News" | スーパーニュース | Fuji TV | Weekday |
| "Morning Bird" | モーニングバード！ | TV Asahi | Weekday |
| "Hiruobi" | ひるおび！ | TBS | Weekday |
| "NEWS Answer" | NEWSアンサー | TV Tokyo | Weekday |
| "Yajiuma TV" | やじうまテレビ！ | TV Asahi | Weekday |
| "Information Live Miyaneya" | 情報ライブ ミヤネ屋 | Nippon TV | Weekday |
| "J Channel" | Jチャンネル | TV Asahi | Weekday |
| "Mezamasi TV" | めざましテレビ | Fuji TV | Weekday |
| "Sutukiri!!" | スッキリ！！ | Nippon TV | Weekday |
| "ZIP!" | ZIP! | Nippon TV | Weekday |
| "Super News" | スーパーニュース | Fuji TV | Saturday |
| "Information 7 days Newscaste | 情報7daysニュースキャスター | TBS | Saturday |
| "Mezamasi TV" | めざましどようび | Fuji TV | Saturday |
| "Zoom in!! Saturday" | ズームイン！！サタデー | Nippon TV | Saturday |
| "Going! Sports & News" | Going! Sports & News | Nippon TV | Saturday |
| "Asa Navi" | あさナビ | TV Asahi | Saturday |
| "News & Suporuto!" | ニュース&すぽると！ | Fuji TV | Saturday |
| "J Channel" | Jチャンネル | TV Asahi | Sunday |
| "Sunday Morning" | サンデーモーニング | TBS | Sunday |
| "Hoto Station Sunday" | 報道ステーションSUNDAY | TV Asahi | Sunday |
| "Mr. Sunday" | Mr.サンデー | Fuji TV | Sunday |
| "Good Morning Japan" | おはよう日本 | NHK | Sunday |
| "Shu Yichi" | シューイチ | Nippon TV | Sunday |
| "Going! Sports & News" | Going! Sports & News | Nippon TV | Sunday |
| "Sunday Japan" | サンデージャポン | TBS | Sunday |

## Graph 1. Overlap checking



Model 1 (treatment: hard program watching)          Model 2 (treatment: soft program watching)
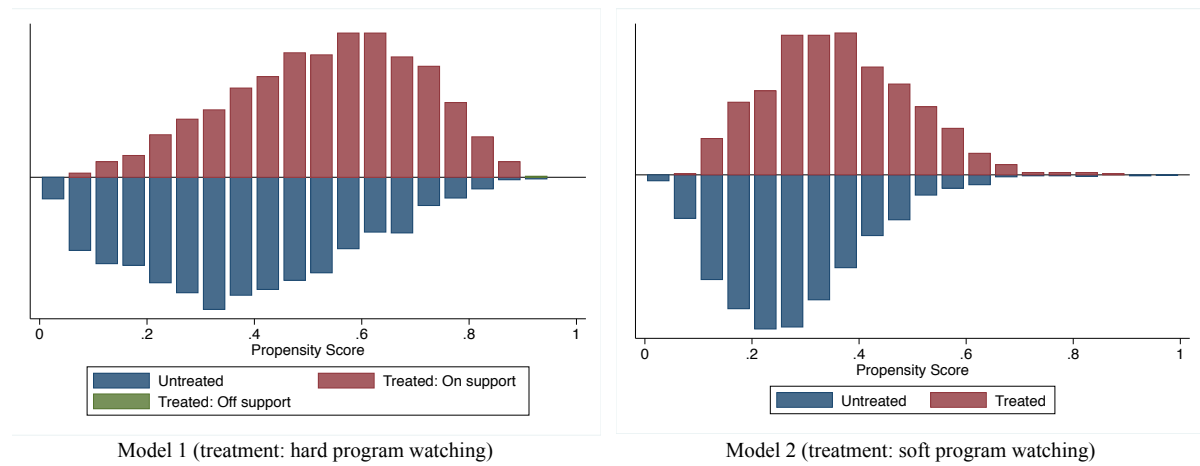
## Table 3. The balance checking for Model 1 (treatment: hard program watching)

| Variable | | Treated (Mean) | Control (Mean) | bias (%) | reduct bias (%) | t-test | |
|---|---|---|---|---|---|---|---|
| Political involvement (t1) | U | 26.86 | 25.33 | 30.2 | | 7.96 | *** |
| | M | 26.86 | 26.87 | -0.3 | 99 | -0.07 | |
| Overall political knowledge (t1) | U | 1.60 | 1.22 | 53.6 | | 14.11 | *** |
| | M | 1.60 | 1.60 | -0.5 | 99.1 | -0.12 | |
| Education | U | 3.21 | 3.12 | 10.4 | | 2.75 | ** |
| | M | 3.21 | 3.24 | -3.1 | 70.6 | -0.79 | |
| Political interest | U | 3.25 | 2.91 | 42.8 | | 11.19 | *** |
| | M | 3.25 | 3.27 | -2.2 | 94.9 | -0.61 | |
| Party identity strength | U | 0.63 | 0.52 | 17.7 | | 4.67 | *** |
| | M | 0.63 | 0.67 | -6.7 | 62.4 | -1.62 | |
| Work | U | 0.65 | 0.65 | -0.4 | | -0.11 | |
| | M | 0.65 | 0.63 | 3.9 | -816.5 | 0.96 | |
| Housewife | U | 0.23 | 0.23 | 1 | | 0.27 | |
| | M | 0.23 | 0.23 | 0.4 | 63.5 | 0.09 | |
| Gender | U | 0.55 | 0.50 | 9.1 | | 2.38 | * |
| | M | 0.55 | 0.54 | 1 | 89.4 | 0.24 | |
| Age | U | 48.46 | 42.28 | 49.3 | | 13.03 | *** |
| | M | 48.45 | 48.53 | -0.7 | 98.6 | -0.17 | |
| Income | U | 3.59 | 3.25 | 19.6 | | 5.19 | *** |
| | M | 3.58 | 3.52 | 3.6 | 81.6 | 0.87 | |
| Watching TV programs (total) | U | 7.63 | 4.27 | 52.2 | | 13.79 | *** |
| | M | 7.59 | 7.52 | 1.1 | 97.9 | 0.25 | |
| TV watching freq. | U | 4.76 | 4.19 | 56.6 | | 14.43 | *** |
| | M | 4.76 | 4.77 | -0.4 | 99.3 | -0.15 | |
| Newspaper reading freq. | U | 3.96 | 3.35 | 36.6 | | 9.6 | *** |
| | M | 3.96 | 4.03 | -4.1 | 88.8 | -1.1 | |
| Overall | | Ps R2 | LR chi2 | p>chi2 | MeanBias | MedBias | |
| Unmatched | | 0.126 | 488.250 | 0.000 | 29.200 | 30.200 | |
| Matched | | 0.003 | 9.070 | 0.767 | 2.100 | 1.100 | |

Table 4. The balance checking for Model 2 (treatment: soft program watching)

| Variable | | Treated (Mean) | Control (Mean) | bias (%) | reduct bias (%) | t-test | |
|---|---|---|---|---|---|---|---|
| Political involvement (t1) | U | 25.61 | 26.18 | -11.50 | | -2.76 | ** |
| | M | 25.61 | 25.49 | 2.30 | 79.70 | 0.49 | |
| Overall political knowledge (t1) | U | 1.30 | 1.43 | -18.60 | | -4.46 | *** |
| | M | 1.30 | 1.32 | -3.40 | 81.70 | -0.71 | |
| Education | U | 3.06 | 3.20 | -16.50 | | -4.03 | *** |
| | M | 3.06 | 3.03 | 3.60 | 78.40 | 0.74 | |
| Political interest | U | 3.05 | 3.07 | -2.40 | | -0.57 | |
| | M | 3.05 | 3.01 | 4.70 | -91.50 | 0.95 | |
| Party identity strength | U | 0.59 | 0.56 | 3.60 | | 0.88 | |
| | M | 0.59 | 0.57 | 2.80 | 22.00 | 0.58 | |
| Work | U | 0.62 | 0.67 | -10.40 | | -2.55 | * |
| | M | 0.62 | 0.61 | 0.20 | 97.60 | 0.05 | |
| Housewife | U | 0.27 | 0.21 | 15.00 | | 3.72 | *** |
| | M | 0.27 | 0.26 | 2.70 | 81.70 | 0.55 | |
| Gender | U | 0.43 | 0.56 | -25.90 | | -6.31 | *** |
| | M | 0.43 | 0.44 | -0.50 | 98.20 | -0.10 | |
| Age | U | 43.09 | 45.87 | -22.00 | | -5.29 | *** |
| | M | 43.09 | 43.14 | -0.40 | 98.10 | -0.09 | |
| Income | U | 3.29 | 3.45 | -9.20 | | -2.19 | * |
| | M | 3.29 | 3.19 | 6.40 | 30.20 | 1.41 | |
| Watching TV programs (total) | U | 7.36 | 5.07 | 35.50 | | 8.54 | *** |
| | M | 7.36 | 7.25 | 1.60 | 95.40 | 0.31 | |
| TV watching freq. | U | 4.64 | 4.36 | 28.80 | | 6.51 | *** |
| | M | 4.64 | 4.68 | -3.20 | 89.00 | -0.83 | |
| Newspaper reading freq. | U | 3.61 | 3.63 | -1.30 | | -0.33 | |
| | M | 3.61 | 3.58 | 1.70 | -23.20 | 0.34 | |

| Overall | Ps R2 | LR chi2 | p>chi2 | MeanBias | MedBias |
|---|---|---|---|---|---|
| Unmatched | 0.072 | 249.570 | 0.000 | 15.400 | 15.000 |
| Matched | 0.003 | 7.210 | 0.891 | 2.600 | 2.700 |