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**"Husbands' Housework Sharing Behavior in Japan:  
Field Experiments on Identity and Gender Display"**

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**Husbands' Housework-Sharing Behavior in Japan: Field  
Experiments on Identity and Gender Display**

## **Abstracts**

Gender display in housework sharing can be considered one example of identity economics, which claims that identity affects the economic behavior of the self and others. This paper focuses on the effects of identity on husbands' housework-sharing behavior in Japan, using data from the responses of 151 men and 155 women to questions concerning gender identity and housework sharing in an imaginary situation in which the husband's work share was extremely small. Data were collected in field experiments in Japan in 2008, and were then analyzed using two-way ANOVAs and multiple comparisons. The results show that Japanese husbands are likely to show varying degrees of gender display when their work time shares are extremely small, and that such gender display can be partially attributed to wives' lost gender identity as well as to losses in husbands' gender identity.

**Key Words:** identity, gender display, norm, housework

**JEL Codes:** C93, D03, D19, J16, Z13

## 1 Introduction

This paper aims to investigate the effects of identity on husbands' housework-sharing behavior in Japan using survey questions based on hypothetical situations. In standard economics, agents are assumed to be rational. If that is the case, husbands and wives should trade their housework shares with their work shares rationally: husbands should accept larger housework shares as their work shares decrease. This means, when given husbands' housework shares as  $y$ -coordinates and their work shares or earnings shares as  $x$ -coordinates, the resultant graph should be linear, with a positive intercept and a negative slope. This is called an economic exchange model or a dependency model. On the other hand, some previous empirical studies have resulted in graphs for husbands' housework behavior with slopes that are partly positive or that become nearly horizontal at the left side. These results have been attributed to gender display, a topic often focused on by sociologists (Brines 1994; Greenstein 2000; Bittman et al. 2003; Evertsson and Neramo 2004; Gupta 2007), who claim that gender display is caused by gender deviance neutralization. Akerlof and Kranton (2000) exaggerated the effects of identity on husbands' and wives' housework sharing from a behavioral economics point of view and produced a graph that clearly demonstrates husbands' gender display. However, as Gupta and Ash (2008) pointed out, regardless of geographic location, there are few husbands with a work share or earnings share as low as that depicted by Akerlof and Kranton (2000). In addition, conclusions about whether husbands show gender display or not have been based on the results of estimations and the shapes of the related graphs, and although researchers have focused on the effects of gender identity, no sociologists and economists have yet proven that gender display is caused by the effects of identity. Therefore, another method of empirical analysis should be sought in order to prove this.

I participated in a research group of the Institute of Social Sciences of Meiji University

for three years, beginning in 2006. During that time, the group conducted two social research surveys. In the second survey, conducted in 2008, the questionnaires used included additional hypothetical situations on whether identity can affect husbands' and wives' housework-sharing behavior. This paper shows the results of the statistical analyses of the data related to those hypothetical situations.

This paper is composed of six sections. In the following section, previous literature on gender display will be overviewed. In section 3, the questionnaires and experiments are described. In section 4, descriptive statistics are shown by age and by the degree of lost identity for men and women. In section 5, the results of two-way ANOVAs and multiple comparisons are presented. Conclusions are discussed in section 6.

## **2 Previous Literature**

### *2.1 Gender Display*

There are two main theories for explaining couples' housework behavior. One theory is based on dependency models from the field of sociology. For example, some economists have tried to explain the behavior from game theoretic perspectives (Manser and Brown 1980; McElroy and Horney 1981; Lundberg and Pollak 1993, 1996; Parkman 2004), using economic exchange models or bargaining models. The other theory uses a gender display model, and studies based on this model have been made and developed mainly in the field of sociology. Brines (1994) explicitly specified a gender display model with the second-order functional form and a cumulative disadvantage model with the third-order functional form. In that study, the data employed were from the wave 20 of the Panel Study of Income Dynamics (PSID), and samples were restricted to black and white husbands and wives who were 18 years old or older and whose union had remained intact from 1983 to 1986, excluding couples with a retired,

physically disabled, institutionalized, or student partner. Brines (1994) estimated a dependency model, a gender display model, and a cumulative disadvantage model for husbands and wives respectively, in which the natural log of an individual's weekly housework time in 1985 was used as a dependent variable and a dependency measure was used as an independent variable. Ordinary least squares (OLS) regression was used for wives and the Tobit model was used for husbands. The results were found to support a dependency model for wives and a gender display model for husbands.

Greenstein (2000), using the 1987–1988 National Survey of Families and Households (NSFH) and the seemingly unrelated regressions (SUR) technique, estimated five models for husbands and wives, two of which are replications of Brines's models (1994). In one model, using Brines's dependency measure as a dependent variable, he found gender display for husbands and economic exchange for wives, as had Brines (1994). However, when distributional measure (husband's or wife's share for total housework) was substituted for dependency measure as a dependent variable, gender display was found not only for husbands but for wives as well. Both housework behaviors were depicted as a quadratic form, and what Brines (1994) calls a "cumulative disadvantage model," which is depicted as the third-order functional form, was rejected statistically. These results were unchanged when the model was expanded by adding more control variables. Greenstein (2000) claimed that such gender display is caused by "deviance neutralization."<sup>1</sup>

Bittman et al. (2003) compared Australian husbands and wives with American husbands and wives, using the 1992 Australian national Time-Use Survey (ANTUS) and the 1987–1988 NSFH. In their models, weekly housework hours without child care was employed as a dependent variable, and the husband's relative earnings was used as an independent variable.

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<sup>1</sup> Bittman et al. (2003) redefined the term as "gender deviance neutralization."

From their results of estimations for Australian couples, gender display was found for wives, but neither economic exchange nor gender display was confirmed for husbands. They also estimated the model for American couples using almost the same control variables that were used with the estimation for Australian couples. They found gender display for husbands and economic exchange, not gender display, for wives, and they concluded that there are national differences between the US and Australia.

Evertsson and Neramo (2004) compared husbands' and wives' housework behavior in Sweden with that in the US for four different years. They used the Swedish Level of Living Survey for the years 1974, 1981, 1991, and 2000 for Sweden and the PSID for the years 1973, 1981, 1991, and 1999 for the US. Samples were restricted to respondents between 18 and 65 years of age and retired, disabled, and student respondents were excluded. The dependent variable employed was the number of weekly hours spent in housework, and OLS regression was used to estimate a dependency model and a gender model for both countries. The dependency model explained housework behavior for both husbands and wives in Sweden for all years studied, and the housework behavior of American wives was explained by the gender display model for the years 1981, 1991, and 1999, although neither model was rejected for the year 1973. For American husbands, the results supported the gender display model for the year 1973 and the dependency model for the years 1981 and 1991, but neither model explained US husbands' housework behavior for the year 1999.

Gupta (2007) compared the results of display models with those of what he calls an "autonomy model," maintaining the importance of women's absolute earnings for explaining wives' housework behavior.<sup>2</sup> He estimated the models using the second wave of NSFH, and the

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<sup>2</sup> Gupta (2007) bases his "autonomy model" on Parkman (2004), whose empirical results implied the importance of wives' absolute earnings as a factor decreasing their housework hours. Leeds and von

results showed that for working married women with ages ranging from 18 to 65 gender display models no longer accounted for their housework behavior, which was explained by their own absolute earnings, not by their relative earnings or by their husbands' absolute earnings.

In the field of economics, Akerlof and Kranton (2000) installed the concept of identity into individual utility function to explain why economic agents sometimes choose non-rational behavior:

$$U_j = U_j(\mathbf{a}_j, \mathbf{a}_{-j}, I_j) \quad (2.1)$$

$$I_j = I_j(\mathbf{a}_j, \mathbf{a}_{-j}; \mathbf{c}_j, \boldsymbol{\varepsilon}_j, \mathbf{P}) \quad (2.2),$$

where  $U_j$  is person  $j$ 's utility,  $I_j$  is  $j$ 's identity or self-image, and  $\mathbf{a}_j$ ,  $\mathbf{a}_{-j}$ ,  $\mathbf{c}_j$ ,  $\boldsymbol{\varepsilon}_j$ , and  $\mathbf{P}$  are vectors of  $j$ 's actions, others' actions, social categories assigned to  $j$ ,  $j$ 's own given characteristics, and social prescriptions, respectively. Equation (2.1) means that  $j$ 's utility depends on  $j$ 's own actions as well as the actions of others and on  $j$ 's identity, and equation (2.2) shows that  $j$ 's identity depends not only on the actions of  $j$  and others but also on the behavioral norms of the social category assigned to  $j$  and the extent to which  $j$ 's characteristics match them. Akerlof and Kranton (2000) claimed that the utility function  $I_j$  gives the social status of a category and that increases or decreases in utility derive from gains or losses in identity. Husbands are assigned to the social category *man*, and one of their social behavioral norms is *man should work* or *man should earn*. In contrast, wives are assigned to the social category *woman*, and one of their social behavioral norms is *woman should do housework*. Therefore, husbands' smaller work shares or earnings shares violate their social norm, and their utility decreases through their losses in identity. When a wife sees her husband working less than she is, or when his work share is smaller than hers is, she loses her identity and does housework or undertakes a larger

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Allmen (2004) also showed that for married working mothers and for wives, both with and without children, who do not work outside the home, absolute earnings decreases their time spent on housework.



housework share in an attempt to restore her husband's identity and utility. Using 1983 and 1992 PSID data, Akerlof and Kranton (2000) showed that American husbands' housework-sharing behavior can be depicted as the fourth-order functional form and that those husbands become inelastic to undertaking the share at the left side of the graph.

Ando (forthcoming) estimated gender display models using data from social research conducted in 2007 and showed that (i) a parabolic quadratic functional form can be adopted for Japanese husbands; (ii) Japanese husbands begin to decrease their housework shares when their work shares become less than 58.69%; and (iii) when their work shares are 58.69%, their maximum housework shares are 24.25% if their youngest child is 0–6 years old, 22.33% if their youngest child is 7–12 years old, and 36.18% if they have no children or if their youngest child is over the age of 13.<sup>3</sup>

## 2.2 Gender Norms

As mentioned above, Akerlof and Kranton (2000) incorporated social prescriptions into an economic model and argued that gender norms have effects on husbands' and wives' housework-sharing behavior, although they did not introduce them explicitly into the regression model. Whether gender norms exert effects on husbands' and wives' housework behavior has been examined empirically by installing husbands' and/or wives' attitudes on gender ideologies as one of the independent variables into the models, but these studies do not necessarily find consistent results.

Blair and Lichter (1991), using data from the 1998 NSFH, examined what contributes to gender-segregated housework for American couples and found that for all households, including

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<sup>3</sup> It should be noted that control variables were restricted for the estimations because of limitation of the number of questionnaires for each researcher. Control was made only by variables for the youngest child's age.

dual-earner households, sex role ideology increases the segregation and is also significantly and negatively related to male housework hours, total housework share, and housework share of traditionally female tasks.<sup>4</sup>

Kamo (1994) compared American and Japanese couples, using samples from the American Couples Survey and social research conducted in the Tokyo metropolitan area. His results indicated that for the total sample of American couples, husbands' and wives' gender-role attitudes were significantly and negatively associated with husbands' relative housework shares and that for the total Japanese sample, wives' traditional attitudes for gender role decreased the husbands' shares. The results for subsamples by wives' employment status also showed that husbands' and wives' gender-role attitudes still significantly and negatively related to the shares of American and Japanese husbands who were married to wives engaged in part-time jobs, and these significant and negative relations could be found for American husbands married to non-employed wives.

Greenstein (1996) obtained the score on gender ideologies from the first wave of NSFH, which asked respondents to rate on a scale from 1 to 7 how much they approved of "mothers who work full-time when their youngest child is under age 5" and how much they approved of "mothers who work part-time when their youngest child is under age 5," and to rate on a scale from 1 to 5 how much they agreed with "it is much better for everyone if the man earns the living and the woman takes care of the home and family," "preschool children are likely to suffer if their mother is employed," "parents should encourage just as much independence in their daughters as in their sons," and "if a husband and wife both work full-time, they should

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<sup>4</sup> As Blair and Lichter (1991) noted, it is respondents' gender ideology that is used for their regressions. Therefore, it is not that two kinds of gender ideology are introduced to the models as independent variables.

share housework tasks equally,” and tested the hypothesis that husbands’ and wives’ gender ideologies decrease husbands’ household labor shares. His empirical results showed that both husbands’ and wives’ gender ideologies are negatively and significantly associated with the husbands’ shares of all domestic labor and of traditionally female labor (preparing meals, washing dishes, cleaning house, washing and ironing, and grocery shopping), and the interaction between husbands’ and wives’ gender ideologies is positively and significantly related to the shares. However, none of husbands’ gender ideologies, that of wives’, and the interaction term between them were significantly associated with the husbands’ shares of traditionally male tasks (yard work, auto maintenance) or gender-neutral tasks (paying bills, driving other household members). In addition, from the results, no statistically significant effects of husbands’ gender ideologies on their household work shares could be found for husbands married to the most traditional wives, while the shares were negatively and significantly associated with wives’ traditionalism for husbands married to the most egalitarian wives. Greenstein argued that husbands share little domestic labor unless both husbands and wives are relatively egalitarian and that this is true for traditionally female household tasks as well as for traditionally male and gender-neutral tasks.

Greenstein (2000) included gender ideology as one of the independent variables in only one of the five models that he used, that is, *Model V*, and found that traditional gender attitudes were negatively associated with wives’ housework shares and positively associated with those of husbands, but that the association was not significant in either case. Parkman (2004) introduced gender ideologies of the spouses and investigated whether they affected husbands’ and wives’ time spent on nine housework tasks. He found that for wives, only the task of paying bills was positively associated with gender ideologies and that for husbands, five tasks (preparing meals, washing dishes, cleaning house, washing clothes, and ironing) were also positively associated with the control variable. He therefore concluded that the less traditional

perspective husbands have on gender ideologies, the less time they spend on those nine tasks.

Cunningham (2005) utilized the data from the Intergenerational Panel Study of Parents and Children and examined whether egalitarian attitudes held by men and women not only in early adulthood but also in later adulthood affected older men's participation in housework, for married couples as well as for cohabiters. He made it clear that for married couples ( $n = 531$ ), gender ideologies at the age of 18 of any one of the spouses positively but insignificantly related to the degree of men's housework participation, while women's egalitarian attitudes were significantly but negatively related with the degree of housework participation for female respondents' husbands ( $n = 271$ ). He also found that for husbands of all respondents, men's egalitarian attitudes at the age of 31 were positively and significantly related with the degree of husbands' housework participation and that for female respondents' husbands, women's egalitarianism also significantly decreased the degree of participation.

Fuwa (2004) connected individual-level relationships in each country to macro-level gender inequality for 22 industrialized countries, using the hierarchical linear modeling (HLM) technique, and found that couples with less-traditional gender ideologies had a more egalitarian division of housework, and that this result was clearer in countries with a higher Gender Empowerment Measure.

Gupta (2007) controlled for women's traditional family role attitudes in the models but found no significant difference between time spent on housework by fully employed married women and the variable for any of the models.

### **3 Experiments**

Generally, previous studies on gender display have only shown the results of estimations and/or the resultant graphs, and they have not referred to whether gender display is attributed to

gender deviance neutralization, as sociologists insist, or to losses in identity on the part of husbands as well as on the part of wives, as Akerlof and Kranton (2000) claimed. This paper describes a study that examined whether husbands show gender display when their work shares are extremely small, using, to establish proof, a method that is fundamentally different from that used in the previous studies mentioned above. In this study, field experiments were employed and questionnaires were explicitly installed which concerned husbands' and wives' losses in their gender identities.

In 2008, in Japan, our research group conducted a second round of social research using questionnaires to which we had added, following the first round, experiments on identity and gender display. We used two questionnaires each for men and women, irrespective of their marital status. It should be noted that in this paper the term *housework* includes child care. An imaginary situation was set, in which the husband's work share was extremely small. For men, imagining the situation, they were asked to i) state the maximum housework share (%) that they might undertake in the situation, and ii) use a scale of 1 (*strongly yes*), 2 (*somewhat yes*), 3 (*neither yes or no*), 4 (*somewhat no*), and 5 (*strongly no*) to rate the following statement on gender ideology: "Men should never do housework in any situation." Women, imagining the same situation, were asked to i) state the minimum housework share (%) that they might have their husband undertake in the situation, and ii) use the scale described above to rate the following statement: "I'm willing to undertake a larger housework share, because I feel sorry for my husband accepting an extremely small work share." For both men and women, respondents who rated the statement as 1 were assumed to lose their identities the most, while those who selected a rating of 5 were assumed to lose their identities the least. In subsequent analysis, respondents were grouped according to the rating that they chose.

## **4 Descriptive Statistics**

#### 4.1 *Men*

Descriptive statistics and frequency distribution for men are shown in Table 1 and Table 2, respectively. The sample size was 151. The mean share of housework that the men were willing to undertake was 51.4%, while the minimum and maximum shares were 0% and 100%, respectively. The mean share of those respondents who gave the set statement a rating of 3 was the smallest, which shows that it cannot be necessarily said that the larger the degree of the loss in identity, the smaller the mean share. Interestingly, there was an upper limit of the share for each of three respondent groups—50% for Group 1 and 70% for Group 2 and Group 3—but groups 4 and 5 had no share limit, that is, there were respondents in both of those groups who answered “100%.” Standard deviations show that when the degree of loss in identity was small, the range of housework share undertaken by men in the set situation was greater. In Table 4.2, although a histogram is not shown, four peaks can be found easily in the distribution. Seen by respondent groups, Group 4 had two peaks while Group 5 had as many as five peaks in its distribution.

#### Table 1

#### Table 2

Descriptive statistics for men by age are shown in Table 3. For the respondents 20–29, 30–39, 40–49, and 50–59 years old, the maximum shares were all 100%, which means that, in contrast to those men 60–69 years old and those over the age of 70, the younger men had no upper limit of the share over which they might not accept housework in the situation. The minimum share of men 30–39 years old was relatively high compared to that of the other five

age categories. Except for the 30–39 age category, the higher the respondents' ages, the lower the mean share.

### Table 3

Because the number of the respondents who gave the set statement a rating of 1 was much lower than expected, the five respondent groups were regrouped into three: groups 1 and 2 and groups 4 and 5 were unified and renamed as Groups I and Group III, respectively, while Group 3 was not regrouped but was renamed Group II. This produced new descriptive statistics (shown in Table 4) and frequency distribution (shown in Table 5). The mean share of Group I was 41.7%, which was smaller than that of Group III, but higher than that of Group II. Standard deviations were 16.2, 20.5, and 24.2 for groups I, II, and III, respectively, which means that husbands with the smaller degree of loss in identity accepted a wider range of the share. It should be noted that cumulative relative frequency had already reached 0.8 at the 50%–60% share category for Group I and at the 40%–50% share category for Group II, while it passed 0.8 at the 80%–90% share category for Group III. Groups I and II each had only one distribution peak, while Group III had four.

### Table 4

### Table 5

From the statistical insights above, it can be said that husbands who lose identity the most accept a higher level of housework share than those who lose it less or the least, when their work shares are extremely small, and that, roughly, Group III consists of three different groups

of husbands distinguished by the levels of the share that they might undertake in the situation. It can also be pointed out that younger men, who supposedly have received more education in gender equality and have less gender traditionalism than older men do, do not necessarily share more.

#### 4.2 *Women*

Descriptive statistics for women, in five respondent groups, are shown in Table 6, and women's frequency distribution is shown in Table 7. The sample size was 155, or almost the same as that of the male respondents. The mean share was 44.9%, and the minimum and maximum shares were 1% and 100%, respectively. The mean share was mostly consistent with the degree of the loss in identity: the more that wives lost identity, the less likely they were to have their husbands accept housework shares in the set situation. If the maximum 98% share for Group 4 is considered nearly equal to 100%, an upper limit of the share can be found for three groups: 50% for Group 1 and 70% for groups 2 and 3. Standard deviations show that when the degree of the loss in identity was smaller, the minimum housework share that women would have their husbands undertake ranged more widely. In Table 7, two peaks can be found in the distribution, although a histogram by the share category is not shown. It is interesting that, seen by statement ratings that they chose, the distribution deviates to the right, that is, a greater number of respondents gave the identity statement a rating of 4 and 5 compared with those who rated it 1 and 2. This distribution for the women is almost the same as that for the men, but it deviates less to the right than that of the men. Groups 3 and 4 each had two peaks in distribution. The distribution of Group 5 deviated to the right, while that of Group 2 deviated to the left.

Table 6



Table 7

Descriptive statistics for women by age are shown in Table 8. With respect to the mean share, it can be roughly said that the higher the respondents' ages, the smaller the minimum housework share that wives might have their husbands undertake in the situation. Groups 1 and 2 had an upper limit to the share, and shares were relatively low except for women over the age of 70.

Table 8

Because the number of women who chose a rating of 1 was much lower than expected, data for female respondents was regrouped and renamed in the same way that the data for male respondents was. Descriptive statistics for the new groupings is shown in Table 9. The data still indicates that the more that wives lose identity when their husbands' work shares are extremely small, the lower the minimum share that wives might have their husbands undertake. Standard deviations for the groups I, II, and III are 14.4, 16.5, and 20.7, respectively, which indicates that as the degree of the loss in identity decreases, the share ranges more widely. Frequency distribution for groups I, II, and III is shown in Table 10. The cumulative relative frequency of Group I and Group II had already exceeded 0.8 at the 40%–50% share category and at the 50%–60% share category, respectively, while that of Group III reached 0.8 at the 70%–80% share category. In their distribution, groups I and II had only one peak each, in contrast to Group III, which had four peaks.

Table 9

## Table 10

From the statistical insights above, it can be said that when their husbands' work shares are extremely small, wives who lose identity the most might have their husbands share low levels of housework, compared to those wives who lose less, or the least, identity, and that, roughly, Group III consists of three different groups of wives distinguished by the minimum levels of housework share that they might have their husbands undertake in the set situation. It can also be pointed out that the younger women called for husbands to share more in the situation.

## **5 Results**

In order to investigate the main effect on the shares and to test whether population means were different among the five, or the three, groups or not, two-way ANOVAs were employed, in which the ages of respondents and the extent to which they lost their identity were set as two factors. In addition, multiple comparisons were also conducted following the initial ANOVAs when either or both factors could be found to have a main effect, that is, when the means of the shares were significantly different among the groups of either or both factors.

### *5.1 Men*

Results of the two-way ANOVA for men by five respondent groups are presented in Table 11. The table shows that the factor of the degree of loss in identity could be found to have a main effect and, therefore, the null hypothesis that means are all equal among the five groups could be rejected at the 1% level, which indicates that the population means were significantly

different among the groups. However, in regard to the age factor, the null hypothesis that all means are equal among the six categories could not be rejected, even at the 5% level. An interaction effect could not be found between these two factors.

Table 11

Results of multiple comparisons by the degree of the loss in identity are presented in Table 12, which shows that the mean share of Group 3 was significantly different from the mean share of Group 4 and that of Group 5, the mean share of Group 4 was not significantly different from that of Group 5, and the mean share of Group 1 was not significantly different from that of any other group, nor was the mean share of Group 2.

Table 12

Table 13 shows the results of the two-way ANOVA after regrouping and renaming were done. The factor of the degree of the loss in identity was shown to have a main effect, and the null hypothesis that the means of the shares of the three groups are all equal could be rejected at the 0.1 % level. However, with respect to the age factor, the null hypothesis that the means of the shares of the six age categories are all equal could not be rejected, even at the 5% level. An interaction effect could not be found between the two factors. From the results of multiple comparisons in Table 14, it could be found that means of the shares of Group II and of Group III were significantly different from each other, but the mean share of Group I was not significantly different from the mean share of either of the other two groups.

Table 13

Table 14

5.2 *Women*

The results of the two-way ANOVA for women by five respondent groups are presented in Table 15, which shows that with respect to the degree of the loss in identity, the null hypothesis that means are all equal among five groups could be rejected at the 0.1% level, indicating that, the population means were significantly different among the groups. However, in regard to the age factor, the null hypothesis that means are all equal among the six age categories could not be rejected even at the 5% level. An interaction effect could not be found between the two factors.

Table 15

Now, our interest shifts to the results of multiple comparisons. They are presented in Table 16, which shows that i) the mean share of Group 5 was significantly different from the mean share of any other groups, ii) the means of the shares were significantly different among groups 3, 4 and 5, and of these three groups the mean share of Group 5 was the largest while that of Group 3 was the smallest, iii) the mean share of Group 1 was significantly different only from that of Group 5, and iv) the mean share of Group 2 was significantly different from that of Group 4 and that of Group 5, but not from that of Group 3.

Table 16

The results of the two-way ANOVA after regrouping and renaming are shown in Table 17. With regard to the factor of the degree of the loss in identity, the null hypothesis that means of the shares of the three groups are all equal could be rejected at the 0.1% level, but, naturally, in regard to the age factor, the null hypothesis that the means of the shares of the six age categories were all equal could not be rejected, even at the 5% level. Still, an interaction effect could not be found between the factors.

#### Table 17

The results of multiple comparisons for the degree of the loss in identity are shown in Table 18. The table demonstrates that the mean share of Group III was significantly different not only from that of Group I but also from that of Group II, and that the means of the shares of groups I and II were not significantly different from each other. Therefore, it can be said that the mean share of Group III was higher than that of either of the other two groups.

#### Table 18

## **6 Conclusion**

In this paper, two points were focused on and they were experimentally and empirically investigated. One is whether husbands display gender when their work shares are extremely small, and the other is, if they do, whether husbands' gender display can be attributed to losses in identity—gender identity—not only on the part of husbands but also on the part of wives. Taking into account that all male and female respondents included in the category “less than 60%” answered “50%,” as seen in Tables 2 and 4, it could be found that irrespective of the

degree of their loss in identity, 63.5% of husbands undertake a housework share of no more than 50% and 71.0% of wives help their husbands to do so, in the set situation. Firstly, therefore, depending on the combination of both spouses' degree of loss in identity, Japanese husbands are more or less likely to show gender display in the extreme situation set in this paper.

From the results of ANOVAs, the degree of lost identity of both husbands and wives can be thought to affect husbands' housework shares and to lead to the difference in the means of husbands' and wives' shares. However, in this study, the results of multiple comparisons for both male and female respondents show that in the set situation, husbands and wives who lose identity the least support husbands' rational housework-sharing behavior. The greater the degree of lost identity, for wives as well as for husbands, the higher the degree of husbands' gender display. This leads to the second conclusion, which is that husbands' gender display can be only partially attributed to their loss in identity; wives' lost identity can also be used to explain husbands' gender display, and there may be other factors for husbands' gender display. Lastly, as Greenstein (1996) argued, it is likely that in the situation where husbands' work shares are extremely small, economic exchange cannot be realized unless wives who lose identity the least are married to husbands who lose it the least.

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**Table 1 Descriptive Statistics for Men, by Five Respondent Groups**

						(%)
	group	frequency	mean	min	max	s.d.
	1	2	40.0	30.0	50.0	10.0
	2	10	42.0	10.0	70.0	17.2
	3	15	30.3	0.0	70.0	20.5
	4	50	50.9	20.0	100.0	20.9
	5	74	57.5	10.0	100.0	25.9
	total	151	51.4	0.0	100.0	24.6

**Table 2 Frequency Distribution Table for Men, by Five Respondent Groups**

share	frequency						relative frequency	cumulative relative frequency
	Total	Group 1	Group 2	Group 3	Group 4	Group 5		
0 – 10%	2	0	0	2	0	0	0.013	0.013
10 – 20%	6	0	1	2	0	3	0.040	0.053
20 – 30%	15	0	1	2	5	7	0.099	0.152
30 – 40%	23	1	1	4	12	5	0.152	0.304
40 – 50%	13	0	2	2	1	8	0.086	0.390
50 – 60%	37	1	3	1	14	18	0.245	0.635
60 – 70%	9	0	2	0	4	3	0.060	0.695
70 – 80%	18	0	0	2	6	10	0.119	0.814
80 – 90%	8	0	0	0	5	3	0.053	0.867
90 – 100%	13	0	0	0	1	12	0.086	0.953
100%	7	0	0	0	2	5	0.046	1.000
Total	151	2	10	15	50	74	1.000	—

**Table 3 Descriptive Statistics for Men, by Age, by Five Respondent Groups**

	age	group	frequency	mean	min	max	s.d.
20-29		1	0	NA	NA	NA	NA
		2	2	35.0	10.0	60.0	35.4
		3	2	50.0	30.0	70.0	28.3
		4	15	56.0	30.0	80.0	16.4
		5	14	58.5	20.0	100.0	27.0
		total	33	55.4	10.0	100.0	22.6
30-39		1	0	NA	NA	NA	NA
		2	2	45.0	50.0	50.0	7.1
		3	4	36.3	70.0	70.0	22.9
		4	9	62.8	100.0	100.0	23.1
		5	13	43.1	80.0	80.0	20.2
		total	28	48.6	100.0	100.0	22.4
40-49		1	0	NA	NA	NA	NA
		2	1	20.0	20.0	20.0	NA
		3	0	NA	NA	NA	NA
		4	12	50.1	20.0	100.0	26.4
		5	18	58.6	10.0	100.0	25.8
		total	31	54.4	10.0	100.0	26.2
50-59		1	0	NA	NA	NA	NA
		2	2	35.0	30.0	40.0	7.1
		3	5	31.0	5.0	50.0	16.7
		4	10	34.5	20.0	65.0	15.4
		5	18	64.9	10.0	100.0	27.2
		total	35	49.7	5.0	100.0	26.9
60-69		1	1	30.0	30.0	30.0	NA
		2	2	50.0	50.0	50.0	0.0
		3	2	10.0	10.0	10.0	0.0
		4	2	67.5	65.0	70.0	3.5
		5	5	60.0	40.0	80.0	18.7
		total	12	48.8	10.0	80.0	23.6
over 70		1	1	50.0	50.0	50.0	NA
		2	1	60.0	60.0	60.0	NA
		3	2	20.0	0.0	40.0	28.3
		4	2	35.0	20.0	50.0	21.2
		5	6	56.7	20.0	90.0	21.2
		total	12	46.7	0.0	90.0	28.4

						(%)
	group	frequency	mean	min	max	s.d.
	I	12	41.7	10.0	70.0	16.2
	II	15	30.3	0.0	70.0	20.5
	III	124	54.9	10.0	100.0	24.2

**Table 5 Frequency Distribution for Men, by Three Respondent Groups**

share	Group I			Group II			Group III		
	frequency	relative frequency	cumulative relative frequency	frequency	relative frequency	cumulative relative frequency	frequency	relative frequency	cumulative relative frequency
0 — 10%	0	0.000	0.000	2	0.133	0.133	0	0.000	0.000
10 — 20%	1	0.083	0.083	2	0.133	0.267	3	0.024	0.024
20 — 30%	1	0.083	0.167	2	0.133	0.400	12	0.097	0.121
30 — 40%	2	0.167	0.333	4	0.267	0.667	17	0.137	0.258
40 — 50%	2	0.167	0.500	2	0.133	0.800	9	0.073	0.331
50 — 60%	4	0.333	0.833	1	0.067	0.867	32	0.258	0.589
60 — 70%	1	0.083	0.917	0	0.000	0.867	7	0.056	0.645
70 — 80%	1	0.083	1.000	2	0.133	1.000	16	0.129	0.774
80 — 90%	0	0.000	1.000	0	0.000	1.000	8	0.065	0.839
90 — 100%	0	0.000	1.000	0	0.000	1.000	13	0.105	0.944
100%	0	0.000	1.000	0	0.000	1.000	7	0.056	1.000
Total	12	1.000	—	15	1.000	—	124	1.000	—

						(%)
	group	frequency	mean	min	max	s.d.
	1	4	30.0	20.0	50.0	12.2
	2	30	29.8	10.0	70.0	14.6
	3	39	38.6	1.0	70.0	16.5
	4	55	48.7	15.0	98.0	18.8
	5	27	65.2	30.0	100.0	19.9
	total	155	44.9	1.0	100.0	21.1

share	frequency						relative frequency	cumulative relative frequency
	Total	Group 1	Group 2	Group 3	Group 4	Group 5		
0 – 10%	1	0	0	1	0	0	0.006	0.006
10 – 20%	9	0	5	3	1	0	0.058	0.065
20 – 30%	16	2	8	3	3	0	0.103	0.168
30 – 40%	35	1	7	11	13	3	0.226	0.394
40 – 50%	19	0	5	5	7	2	0.123	0.516
50 – 60%	30	1	4	11	12	2	0.194	0.710
60 – 70%	16	0	0	3	7	6	0.103	0.813
70 – 80%	17	0	1	2	8	6	0.110	0.923
80 – 90%	5	0	0	0	2	3	0.032	0.955
90 – 100%	5	0	0	0	2	3	0.032	0.987
100%	2	0	0	0	0	2	0.013	1.000
Total	155	4	30	39	55	27	1.000	—

**Table 8 Descriptive Statistics for Women, by Age, by Five Respondent Groups**

	age	group	frequency	mean	min	max	s.d.
20-29		1	1	20.0	20.0	20.0	NA
		2	6	28.3	10.0	50.0	13.3
		3	8	41.3	20.0	70.0	16.4
		4	13	49.6	30.0	70.0	13.9
		5	13	65.8	35.0	100.0	21.3
		total	41	49.3	10.0	100.0	21.3
30-39		1	1	30.0	30.0	30.0	NA
		2	10	29.5	10.0	50.0	12.6
		3	5	34.0	20.0	50.0	11.4
		4	15	55.2	20.0	98.0	22.7
		5	6	65.0	40.0	90.0	22.7
		total	37	46.3	30.0	90.0	22.1
40-49		1	2	35.0	20.0	50.0	21.2
		2	2	30.0	30.0	30.0	0.0
		3	7	42.3	1.0	70.0	23.8
		4	5	48.0	30.0	70.0	14.8
		5	3	66.7	50.0	80.0	15.3
		total	19	45.6	1.0	80.0	20.2
50-59		1	0	NA	NA	NA	NA
		2	7	20.0	10.0	50.0	14.1
		3	10	45.0	30.0	60.0	10.8
		4	13	47.3	15.0	80.0	16.7
		5	4	77.0	50.0	90.0	19.1
		total	35	45.4	10.0	90.0	21.1
60-69		1	0	NA	NA	NA	NA
		2	4	40.0	30.0	50.0	8.2
		3	6	30.0	10.0	50.0	8.2
		4	4	42.5	20.0	90.0	32.0
		5	1	30.0	30.0	30.0	NA
		total	15	36.0	10.0	90.0	18.4
over 70		1	0	NA	NA	NA	NA
		2	1	70.0	70.0	70.0	NA
		3	3	23.3	10.0	70.0	23.1
		4	5	36.0	20.0	50.0	13.4
		5	0	NA	NA	NA	NA
		total	9	35.6	10.0	70.0	20.7

	group	frequency	mean	min	max	s.d.	(%)
	I	34	29.9	10.0	70.0	14.4	
	II	39	38.6	1.0	70.0	16.5	
	III	82	54.1	15.0	100.0	20.7	

**Table 10 Frequency Distribution for Women, by Three Respondent Groups**

share	Group I			Group II			Group III		
	frequency	relative frequency	cumulative relative frequency	frequency	relative frequency	cumulative relative frequency	frequency	relative frequency	cumulative relative frequency
0 – 10%	0	0.000	0.000	1	0.026	0.026	0	0.000	0.000
10 – 20%	5	0.147	0.147	3	0.077	0.103	1	0.012	0.012
20 – 30%	10	0.294	0.441	3	0.077	0.179	3	0.037	0.049
30 – 40%	8	0.235	0.676	11	0.282	0.462	16	0.195	0.244
40 – 50%	5	0.147	0.824	5	0.128	0.590	9	0.110	0.354
50 – 60%	5	0.147	0.971	11	0.282	0.872	14	0.171	0.524
60 – 70%	0	0.000	0.971	3	0.077	0.949	13	0.159	0.683
70 – 80%	1	0.029	1.000	2	0.051	1.000	14	0.171	0.854
80 – 90%	0	0.000	1.000	0	0.000	1.000	5	0.061	0.915
90 – 100%	0	0.000	1.000	0	0.000	1.000	5	0.061	0.976
100%	0	0.000	1.000	0	0.000	1.000	2	0.024	1.000
Total	34	1.000	-	39	1.000	-	82	1.000	-

**Table 11 Results: Two-Way ANOVA for Men, by Five Degrees**

dependent variable: housework share					
source	type III sum of squares	<i>df</i>	mean square	<i>F</i> -value	sig.
corrected model	22863.533 a	24	952.647	1.747	0.026
intercept	83629.973	1	83629.973	153.378	0
age	1053.046	5	210.609	0.386	0.857
degree of the loss in identity	9246.087	4	2311.522	4.239	0.003
age*degree of the loss in identity	11830.812	15	788.721	1.447	0.136
error	68701.951	126	545.254		
total	490152	151			
corrected total	91565.483	150			

a:  $R^2 = .250$  (*adj. R*<sup>2</sup> = .107)



**Table 12 Multiple Comparisons for Men, by Five Degrees (Tukey )**

(I) degree of the loss in identity	(J) degree of the loss in identity	mean difference (I-J)	std. error	sig.	95% confidence interval	
					lower bound	upper bound
1	2	-1	18.08735	1	-51.06	49.06
	3	9.3333	17.57774	0.984	-39.3162	57.9829
	4	-11.3	16.8384	0.962	-57.9033	35.3033
	5	-17.3378	16.73305	0.838	-63.6495	28.9739
2	1	1	18.08735	1	-49.06	51.06
	3	10.3333	9.53287	0.814	-16.0506	36.7172
	4	-10.3	8.08891	0.708	-32.6875	12.0875
	5	-16.3378	7.86725	0.237	-38.1119	5.4362
3	1	-9.3333	17.57774	0.984	-57.9829	39.3162
	2	-10.3333	9.53287	0.814	-36.7172	16.0506
	4	-20.6333 *	6.87425	0.026	-39.659	-1.6076
	5	-26.6712 *	6.612	0.001	-44.9711	-8.3713
4	1	11.3	16.8384	0.962	-35.3033	57.9033
	2	10.3	8.08891	0.708	-12.0875	32.6875
	3	20.6333 *	6.87425	0.026	1.6076	39.659
	5	-6.0378	4.27474	0.621	-17.8689	5.7933
5	1	17.3378	16.73305	0.838	-28.9739	63.6495
	2	16.3378	7.86725	0.237	-5.4362	38.1119
	3	26.6712 *	6.612	0.001	8.3713	44.9711
	4	6.0378	4.27474	0.621	-5.7933	17.8689

\*: The mean difference is significant at the .05 level.

**Table 13 Results: Two-Way ANOVA for Men, by Three Degrees**

dependent variable: housework share						
source	type III sum of squares	<i>df</i>	mean square	<i>F</i> -value	sig.	
corrected model	13909.003 <sup>a</sup>	16	869.313	1.5	0.108	
intercept	67006.051	1	67006.051	115.622	0	
age	1246.216	5	249.243	0.43	0.827	
degree of the loss in identity	9841.601	2	4920.801	8.491	0	
age*degree of the loss in identity	4004.541	9	444.949	0.768	0.646	
error	77656.48	134	579.526			
total	490152	151				
corrected total	91565.483	150				

a:  $R^2=.152$  (adj.  $R^2=.051$ )

**Table 14 Multiple Comparisons for Men, by Three Degrees (Tukey )**

(I) degree of the loss in identity	(J) degree of the loss in identity	mean difference (I-J)	std. error	sig.	95% confidence interval	
					lower bound	upper bound
I	II	10.7692	9.2722	0.478	-11.2063	32.7447
	III	-14.134	7.01801	0.113	-30.767	2.499
II	I	-10.7692	9.2722	0.478	-32.7447	11.2063
	III	-24.9032 *	6.78736	0.001	-40.9896	-8.8169
III	I	14.134	7.01801	0.113	-2.499	30.767
	II	24.9032 *	6.78736	0.001	8.8169	40.9896

\*: The mean difference is significant at the .05 level.

**Table 15 Results: Two-Way ANOVA for Women, by Five Degrees**

dependent variable: housework share					
source	type III sum of squares	<i>df</i>	mean square	<i>F</i> -value	sig.
corrected model	29818.57 <sup>a</sup>	25	1192.743	3.948	0
intercept	93469.961	1	93469.961	309.363	0
age	1179.42	5	235.884	0.781	0.565
degree of the losses in identity	8884.594	4	2221.149	7.351	0
age*degree of the losses in identity	6838.854	16	427.428	1.415	0.145
error	38975.649	129	302.137		
total	381680	155			
corrected total	68794.219	154			

a:  $R^2=.433$  (adj.  $R^2=.324$ )

**Table 16 Multiple Comparisons for Women, by Five Degrees (Tukey )**

(I) degree of the loss in identity	(J) degree of the loss in identity	mean difference (I-J)	std. error	sig.	95% confidence interval	
					lower bound	upper bound
1	2	0.1667	9.25232	1	-25.4321	25.7654
	3	-8.359	9.12586	0.89	-33.6079	16.8899
	4	-18.6909	9.00153	0.237	-43.5958	6.214
	5	-35.7407 *	9.3126	0.002	-61.5063	-9.9752
2	1	-0.1667	9.25232	1	-25.7654	25.4321
	3	-8.5256	4.22118	0.262	-20.2045	3.1533
	4	-18.8576 *	3.9452	0	-29.7729	-7.9422
	5	-35.9074 *	4.61102	0	-48.6649	-23.1499
3	1	8.359	9.12586	0.89	-16.8899	33.6079
	2	8.5256	4.22118	0.262	-3.1533	20.2045
	4	-10.3319 *	3.63875	0.041	-20.3994	-0.2645
	5	-27.3818 *	4.35171	0	-39.4218	-15.3417
4	1	18.6909	9.00153	0.237	-6.214	43.5958
	2	18.8576 *	3.9452	0	7.9422	29.7729
	3	10.3319 *	3.63875	0.041	0.2645	20.3994
	5	-17.0498 *	4.08456	0.001	-28.3508	-5.7489
5	1	35.7407 *	9.3126	0.002	9.9752	61.5063
	2	35.9074 *	4.61102	0	23.1499	48.6649
	3	27.3818 *	4.35171	0	15.3417	39.4218
	4	17.0498 *	4.08456	0.001	5.7489	28.3508

\*: The mean difference is significant at the .05 level.

**Table 17 Results: Two Way-ANOVA for Women, by Three Degrees**

dependent variable: housework share						
source	type III sum of squares	<i>df</i>	mean square	<i>F</i> -value	sig.	
corrected model	24502.031 <sup>a</sup>	17	1441.296	4.458	0	
intercept	149698.491	1	149698.491	463.032	0	
age	473.936	5	94.787	0.293	0.916	
degree of the loss in identity	5159.461	2	2579.73	7.979	0.001	
age*degree of the loss in identity	5999.426	10	599.943	1.856	0.057	
error	44292.189	137	323.301			
total	381680	155				
corrected total	68794.219	154				

a:  $R^2=.356$  (adj.  $R^2=.276$ )

**Table 18 Multiple Comparisons for Women, by Three Degrees (Tukey)**

(I) degree of the loss in identity	(J) degree of the loss in identity	mean difference (I-J)	std. error	sig.	95% confidence interval	
					lower bound	upper bound
I	II	-8.506	4.21884	0.112	-18.5024	1.4903
	III	-24.4519 *	3.66763	0	-33.1422	-15.7616
II	I	8.506	4.21884	0.112	-1.4903	18.5024
	III	-15.9459 *	3.49749	0	-24.2331	-7.6587
III	I	24.4519 *	3.66763	0	15.7616	33.1422
	II	15.9459 *	3.49749	0	7.6587	24.2331

\*: The mean difference is significant at the .05 level.