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Psychological motivations for collectivist behavior: comparison between Japan and the U.S

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Abstract
This paper explores the psychological motivations behind collectivist behavior in Japan and the U.S. Using data from a large-scale questionnaire survey, we examine the causes of collectivist behavior (i.e., group conformity) at workplaces and at home. Our key findings are as follows: (i) in Japan, people conform to their groups, both at work and at home, because they consider that cooperation with others will result in greater achievement; (ii) in both Japan and the U.S., people conform to their groups, both at work and at home, because behaving similarly to others makes them feel comfortable; and (iii) in both Japan and the U.S., people conform to their family's opinion at home because they value cooperation with family members. Our findings suggest that institutional differences between Japan and the U.S. give rise to the differences in psychological motivations for collectivist behavior.

Keywords Collectivism · Conformity · Motivations · Efficiency · Institutions

1 Introduction

For the past two decades, economics has drawn attention to the role of culture in understanding economic phenomena. Culture is defined as "those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation" (Guiso et al. 2006). Culture not only shapes people's

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preferences and expectations, but also influences law and political institutions in society, and therefore it significantly affects economic behavior and outcomes (Aoki 2010; Guiso et al. 2003, 2006; Tabellini 2008; Williamson 2000; Zingales 2015).

While there are several dimensions that describe the elements of culture, individualism-collectivism (IC) is one of the most important dimensions characterizing the values of a particular society, as well as the beliefs and behavior of its people. A society's degree of IC varies depending on factors such as affluence, geographical environment, social mobility, and cultural complexity (Hofstede 1980). For instance, Brazil, India, Russia, and Japan are collectivist countries, whereas France, the U.S., England, and Germany are individualist countries, though to varying degrees (Gelfand et al. 2004; Triandis 1995).[1]

IC also varies widely within countries (Hofstede 1980; Triandis 2001; Triandis et al. 1993). In other words, there are individualist people in collectivist countries and vice versa. Comparing individuals in the U.S. and Japan, within-country variation in IC is substantially greater than between-country variation (Matsumoto et al. 1996). Personal individualist or collectivist tendency typically reflects traits such as age, social class, education, occupation, and sex (Triandis 1995). However, based on previous studies in economics and social psychology, we argue that individuals' *internal* or *psychological* factors (e.g., mentality, cognition patterns, beliefs, and emotions) would predict individual IC behavior, and investigation of the relationship between these psychological factors and IC could be a key to understanding why IC emerges. For example, people who believe that cooperation promotes or inhibits outcomes can be more or less collectivist, respectively.

We propose that the psychological motivations for collectivist behavior would differ among countries. This should depend not only on each country's formal institutions such as laws but also on its informal institutions such as customs, traditions, and peoples' beliefs (Greif 2006; North 1991; Williamson 2000). For example, in countries where people believe that intra-group cooperation will result in better outcomes, collectivist behavior would arise with the expectation that better economic outcomes can be achieved through cooperation in a group. Conversely, in countries where people do not believe in the efficiency of group cooperation, collectivist behavior could arise due to different psychological motivations, such as feeling comfortable when behaving similarly to others.

In this paper, we analyze data from a large-scale questionnaire conducted in Japan and the U.S. to examine the associations of various psychological factors with collectivist behavior. In doing so, we examine individuals' motivations for collectivist behavior and compare them between the two countries.

Following earlier research, we operationalize individual IC as individuals' self-reported group conformity (Bond and Smith 1996; Schimmack et al. 2005; Takano

[1] Several studies have shown that IC significantly affects economic activities. For example, Gorodnichenko and Roland (2011, 2017) provide empirical evidence that individualistic countries have experienced more technological innovation and higher economic growth rates than collectivist countries.

and Osaka 1999).[2] Respondents rated their degree of following group opinion in their workplace and family, respectively, on a 5-point Likert scale. Responses are considered to indicate two factors: workplace conformity (W-CONF) and family conformity (F-CONF). Additionally, we examine the following psychological factors affecting conformity: the efficiency factor (EFFICIENCY) refers to the individual's belief that cooperation in a group promotes achievement, the comfort factor (COMFORT) indicates comfort felt when behaving similarly to others, and the satisfaction factor (SATISFACTION) denotes satisfaction felt when cooperating with others. We then examine associations of W-CONF and F-CONF with EFFICIENCY, COMFORT, and SATISFACTION to examine individual motivations for group conformity.[3]

We expect the motivations for conformist behavior to differ between Japanese and U.S. individuals, because the two countries have had different social histories and environments that shaped different institutions. We therefore analyze the Japanese and U.S. data separately. More concretely, we conduct regression analysis for each of Japan and the U.S. in terms of whether and how the above three psychological factors are associated with conformity behavior; thus, we compare differences in individuals' motivation for conformity between those two countries.

The remainder of the paper is organized as follows. Section 2 discusses psychological motivations for conformity behavior and institutional differences between Japan and the U.S. Section 3 describes our data and methods. Section 4 reports empirical results. Section 5 discusses the results and their implications. Section 6 concludes.

2 Psychological motivations and Japan–U.S. institutional differences

2.1 Psychological motivations for conformity

People have several motives to conform to their groups. Following the previous literature on social psychology and economics, we consider three psychological factors motivating conformity: (a) the *efficiency* factor, (b) the *comfort* factor, and (c) the *satisfaction* factor.

The efficiency factor refers to the individuals' belief that cooperation in a group promotes achievement. In human society, it is widely known that cooperative action within a group often yields better economic outcomes than when individuals in a group act independently. This is supported by evidence suggesting that groups

[2] Researchers have used various definitions and measures of collectivism; definitions used in earlier research typically considered certain individual behaviors and values related to the individual's group (e.g., emotional attachment, harmony, cooperation, obedience, prioritization of group interests, and conformity; see Hofstede 1980; Oyserman et al. 2002; Triandis et al. 1993). Among these behaviors and values, conformity is central to typical conceptions of collectivism (Schimmack et al. 2005; Takano and Osaka 1999). Therefore, the current study considers levels of group conformity to indicate individuals' collectivism.

[3] Cross et al. (2017), Renkema et al. (2008), and Griskevicius et al. (2006) conduct laboratory experiments to examine individual motivations for conformity.

that cooperated tended to survive and expanded more than other groups (Bowles and Gintis 2011). If people believe in the efficiency of in-group cooperation, they will cooperate by conforming to the group's decisions even when their opinions are different.

The comfort factor indicates the comfort that individuals feel when behaving similarly to others. In uncertain events and situations, people are not confident in the accuracy of their own information. Accordingly, following others can lead to safer and better decisions (Griskevicius et al. 2006). Thus, people often feel more comfortable when following group judgments based on the information of various members in the group (Castelli et al. 2001; Quinn and Schlenker 2002).

The satisfaction factor corresponds to satisfaction individuals feel when cooperating with others. Some people conform to groups in order to gain approval and affiliation and increase the likelihood that they will be liked by others (Castelli et al. 2001; Cialdini et al. 1999; Renkema et al. 2008). In addition, some people obtain psychological satisfaction from going along with others because they may gain "identity utility" when their behavior is consistent with the group's code of conduct (Akerlof and Kranton 2010). Others try to avoid conflict by emphasizing harmony within the group; that is, they tend to suppress their own opinions and conform to the opinions of the group (Yamaguchi 1994).

2.2 Institutional differences between Japan and the U.S.

Previous studies in economics, social psychology, and political science have shown that institutions in each country significantly affect human behavior and outcomes (Greif 2006; North 1991; Williamson 2000). North (1991) states that "institutions are the humanly devised constraints that structure economic and political interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights)" (p. 97). There are differences between Japan and the U.S. not only in formal rules such as laws but also in informal institutions such as customs, traditions, and norms (Hofstede 1980; La Porta et al. 2008). These institutional differences would give rise to differences in psychological motivations for conformity between the two countries. In particular, we conjecture that differences in informal institutions between Japan and the U.S. will lead to a difference in the impact of the *efficiency* factor on people's conformity.

In Japan, given its historical practices, the belief in achieving better economic outcomes through intra-group cooperation is likely to motivate people's conformity. First, Japan's high population density, coupled with its limited natural resources, may have forced people to cooperate as it seemed more efficient for survival (Matsumoto et al. 1996). Second, in the past, most Japanese individuals secured their livelihood through agricultural activities that require cooperation (Triandis et al. 1993). In particular, they were engaged in rice farming, which requires irrigation systems

and an extraordinary amount of labor, making cooperation more valuable (Talheim et al. 2014).[4] Reflecting this history, Japanese elementary education has encouraged pupils to study in groups and teaches the restraint of the ego (Vogel 1979). These historical and educational traditions can inculcate belief in the economic value of cooperation and conformity among the Japanese people.

Furthermore, Japan was a country with low mobility of people, which may also have contributed to the efficiency of in-group cooperation.[5] As is well known from game theory, long-term interactions among the same members promote greater gains through cooperation (Fudenberg and Levine 2009). Individuals will not pursue self-interest for the benefit of the group as long as they expect rewards from the group in the long-run or punishment by other group members (Greif 1994; Yamaguchi 1994). This may also have fostered the belief that cooperation promotes achievement, implying that as belief in the economic efficiency of in-group cooperation becomes stronger, people will behave in a more collectivist manner. Therefore, we conjecture that the efficiency factor will predict Japanese conformity behavior.

In contrast, the U.S. is characterized by abundant resources and a vast land area. In such an environment, the need to cooperate for economic gain is relatively small. Therefore, Americans are taught to cultivate independence rather than cooperation (Matusmoto et al. 1996). Moreover, the U.S. has been well known as a country with many immigrants and high mobility of people (Campbell and Kean 2012). In highly mobile societies, relationships and interactions among people tend to be shorter-term than in low-mobility societies. Game theory has accurately predicted that individuals in short-term interactions with others may experience failures of coordination and socially inefficient outcomes (Bowles and Gintis 2011). Therefore, in the U.S., even if a person recognizes that in-group cooperation efficiently achieves better outcomes, he or she may behave individualistically due to a perceived risk of exploitation by others. This suggests that the efficiency factor is less likely to predict conformity behavior in the U.S. compared with Japan.

We will examine the three psychological factors that can lead to conformity in Japan and the U.S., and thereby attempt to provide an insight into whether and how institutional differences between the two countries influence the effects of these factors.

[4] Talhelm et al. (2014) argue that farmers in rice villages needed to adopt more collectivistic behavior compared to farmers in wheat villages. They predict that these agricultural legacies continue to affect people in the modern world and provide empirical evidence that people from rice provinces (southern China) are more interdependent and collectivistic than people from wheat provinces (northern China).

[5] With respect to the mobility of people in the workplace, it has been said that Japan had low mobility of workers, as seen from the "lifetime employment system" (Abegglen 1958). In fact, Flath (2005) shows that the average tenure of employment was the highest for Japan and the lowest for the U.S. among 10 developed countries in 1991.

3 Method

3.1 Basic data

This study used data collected in Japan and the U.S. during February 2006 in a panel survey conducted by the Center of Excellence (COE) project at Osaka University. The survey gathered data suitable for the analysis of human behavior and preferences in both countries, and particularly examined respondents' preferences (e.g., time discounting, risk aversion, personal values). The questionnaire contained 87 questions, some of which included sub-questions, and the same questions were asked in both countries. Questions were initially composed in Japanese and then translated into English by a Japanese person who had stayed in the U.S. from ages 10 to 18 years. The translation was conducted with assistance from a specialist at a U.S. survey company. Finally, a prominent bilingual Japanese American economist assessed the semantic identities of the Japanese and English surveys. The survey was conducted annually from 2003 in Japan and from 2005 in the U.S., until 2013. However, five questions concerning IC were included in only the 2006 and 2012 waves of the survey.

This paper analyzed data collected in the 2006 survey from the five questions concerning IC.[6] In Japan, 4879 people aged 20–75 years nationwide were selected using double stratified random sampling. Respondents were visited at their homes and handed the questionnaire. Completed questionnaires were collected several days later; 3763 questionnaires were returned (response rate: 77.1%). In the U.S., 4868 people aged 15–99 years were randomly selected from the registered membership of a large survey company, which covered all U.S. states, except Alaska and Hawaii. Questionnaires were distributed by mail; 3120 were returned (response rate: 64.1%).

3.2 Measurement of conformity

We assume that individuals' group conformity predicts their tendency to follow group decisions in their workplace and at home. Thus, we assume the following factors of conformity: (i) workplace conformity (W-CONF; i.e., the individual's tendency to follow group decisions in the workplace), and (ii) home conformity (F-CONF; i.e., the individual's tendency to follow family decisions at home). In our survey, respondents rated their conformity on these factors by responding to the following questions: "At work, I should follow opinion as a group" and "At home, I should follow my family's opinion." Responses to all questionnaire items used a

[6] We conjecture that analysis of the 2012 results would yield similar results, because the 2006 and 2012 surveys both collected large-scale data from a representative sample of the population of each country and the psychological motivations for collectivist behavior in two large populations seem unlikely to change over 6 years. Nonetheless, it remains possible that public attitudes toward IC in each country would have changed in the interim, particularly following the 2008 global financial crisis and the 2011 Great East Japan Earthquake. The financial crisis may have affected collectivism in both countries, and the earthquake may have promoted collectivism in Japan. Future research should examine the effects of these events on public IC in Japan and the U.S., and in other countries.

5-point Likert scale (1 = *it doesn't hold true at all for me;* 5 = *it is particularly true for me*). Therefore, higher scores indicate greater conformity on each factor.

3.3 Psychological factors

As discussed above, we assume that individual conformity behavior stems from three psychological factors, namely, the efficiency factor, the comfort factor, and the satisfaction factor. First, we measure respondents' prioritization of the efficient factor (EFFICIENCY) using the item "Working as a group results in greater achievement than working individually." Higher scores on EFFICIENCY indicate a stronger belief that cooperation more efficiently promotes outcomes. Second, we measure respondents' prioritization of the comfort factor (COMFORT) using the item "Behaving similarly to people around me makes me feel comfortable." Higher scores on COMFORT indicate more comfort from behaving similarly to other group members. Third, we measure respondents' prioritization of the satisfaction factor (SATISFACTION) using the item "I am more satisfied when I achieve a goal by cooperating with others than by myself." Thus, higher scores on SATISFACTION indicate greater satisfaction from cooperation itself.

3.4 Regression equations for conformity in the workplace and at home

We analyze the following ordered probit models to estimate respondents' psychological motivation to conform at work and at home:

$$\begin{aligned}\Pr(\text{W-CONF}_i = j) = \Pr(\kappa_{j-1} < \alpha \cdot \text{EFFICIENCY}_i + \beta \cdot \text{COMFORT}_i + \gamma \cdot \text{SATISFACTION}_i \\ + \text{CONTROL}_i \cdot \Theta' + \varepsilon_i \leq \kappa_j),\end{aligned} \tag{1}$$

$$\begin{aligned}\Pr(\text{F-CONF}_i = j) = \Pr(\kappa_{j-1} < \alpha \cdot \text{EFFICIENCY}_i + \beta \cdot \text{COMFORT}_i + \gamma \cdot \text{SATISFACTION}_i \\ + \text{CONTROL}_i \cdot \Theta' + \varepsilon_i \leq \kappa_j),\end{aligned} \tag{2}$$

In these models, i represents a respondent from either Japan or the U.S. and j represents the W-CONF or F-CONF score of 1–5. CONTROL_i represents a set of individual attribute variables such as sex, age, family structure, education, occupation, and religion.[7] Table 1 presents definitions and summary statistics of the variables. In models (1) and (2), underlying scores are estimated as the probability that the linear function of the three psychological factors and individual attributes, plus random error, is within the cutoffs. κ_j represents a set of cut-points corresponding to an ordinal value j. ε_i represents normally distributed random error. We estimate the ordered probit models (1) and (2) separately for the Japanese and U.S. samples, thereby examining the ability of EFFICIENCY, COMFORT, and SATISFACTION to predict W-CONF and F-CONF among Japanese and U.S. respondents, respectively.

[7] Previous studies have shown that individual attributes (e.g., age, sex, social class) affect individuals' degree of collectivism (Triandis 1995).

Table 1 Summary statistics

		Definition	Japan	U.S
Conformity variables	W-CONF	See Sect. 3.2	3.167 (0.850)	2.155 (1.017)
	F-CONF		3.170 (0.918)	2.469 (1.077)
Psychological factors	EFFICIENCY	See Sect. 3.3	3.547 (0.838)	3.232 (1.113)
	COMFORT		2.676 (0.982)	2.817 (1.107)
	SATISFACTION		3.642 (0.927)	3.031 (1.097)
Attribute variables	Sex	1 for Male	49.09%	45.84%
	Age 10	1 if age is 10 to 19	0.04%	0.60%
	Age 20	1 if age is 20 to 29	7.83%	12.95%
	Age 30	1 if age is 30 to 39	17.88%	17.50%
	Age 40	1 if age is 40 to 49	22.88%	20.17%
	Age 50	1 if age is 50 to 59	27.03%	21.13%
	Age 60	1 if age is 60 to 69	22.02%	12.68%
	Age 70	1 if age is 70 to 79	2.32%	8.31%
	Divorced	1 if the respondent has divorced	3.90%	9.05%
	Married	1 if the respondent has a spouse	80.05%	64.12%
	Not married	1 if the respondent has never married	12.37%	21.04%
	Widow	1 if the respondent is widowed	3.68%	5.79%
	No child	1 if the respondent has no children	17.66%	32.48%
	Single	1 if the respondent is a single person	5.43%	28.71%
	How many	The number of family members	3.562 (1.507)	2.684 (1.418)
	Junior highschool or lower	1 if the highest level of education is junior highschool or lower	10.44%	0.37%
	Highschool	1 if the highest level of education is highschool	50.09%	23.52%
	Junior college	1 if the highest level of education is junior college	15.55%	38.49%
	University	1 if the highest level of education is university	21.92%	17.50%
	Graduate	1 if the highest level of education is graduate school	2.00%	20.12%
	Housewife, house-husband or retired	1 if the respondent is a house-wife, a househusband or retired	24.81%	28.43%
	Office	1 if the respondent is a office worker	13.34%	12.17%
	Shop	1 if the respondent is a shop worker	6.19%	2.71%
	Management	1 if the respondent is in a managerial post	8.51%	10.61%
	Specialist	1 if the respondent is a specialist	11.94%	23.29%
	Service	1 if the respondent is a worker in a service industry	9.62%	7.44%

Table 1 (continued)

	Definition	Japan	U.S
Field	1 if the respondent is a field worker	9.15%	5.88%
Agriculture	1 if the respondent is an agricultural worker	2.36%	0.83%
Part-time	1 if the respondent is a part-time worker	11.51%	2.34%
Student	1 if the respondent is a student	1.25%	3.08%
Unemployment	1 if the respondent is unemployed	1.32%	3.22%
No religion	1 if the respondent has no religion	61.61%	16.46%
Catholic	1 if the respondent is a catholic	0.39%	27.56%
Protestant	1 if the respondent is a protestant	0.46%	39.86%
Other christian	1 if the respondent belongs to other christian denominations	0.43%	7.03%
Judaism	1 if the respondent is a judaist	0.00%	2.73%
Islam	1 if the respondent is a muslim	0.07%	1.77%
Hinduism	1 if the respondent is a hindu	0.00%	0.23%
Buddhism	1 if the respondent is a buddhist	32.71%	0.41%
Other religion	1 if the respondent belongs to other religions	4.33%	3.95%
Alcohol	1 if the respondent drinks every day	28.46%	8.50%
Tobacco	1 if the respondent smokes	26.64%	12.82%
Gambling	1 if the respondent has a habit of gambling	15.73%	14.84%
Number of Observations		2797	2177

Note: For conformity variables (W-CONF and F-CONF), psychological factors (EFFICIENCY, COMFORT and SATISFACTION), and the number of household member (How many), the number indicates the sample mean, while the number in a parenthesis indicates the standard deviation

Table 2 Mean-comparison test results for collectivism variables

		Japan		U.S		*t* Test Statistics
Conformity variables	W-CONF	3.167	(0.850)	2.155	(1.017)	28.77***
	F-CONF	3.170	(0.918)	2.469	(1.077)	21.41***
Psychological factors	EFFICIENCY	3.547	(0.838)	3.232	(1.113)	6.988***
	COMFORT	2.676	(0.982)	2.817	(1.107)	−3.648***
	SATISFACTION	3.642	(0.927)	3.031	(1.097)	15.65***

4 Results

4.1 Data overview

Respondents did not necessarily answer all questions related to the variables we analyzed. We excluded responses without data for these variables. Thus, the final number of responses included in the data analyses was reduced to 2797 in Japan and 2177 in the U.S. Table 1 summarizes statistics for all variables included in our analyses. Table 2 compares the mean values of conformity variables and psychological factors in the Japanese and U.S. samples. Mean W-CONF and F-CONF scores in the Japanese sample were significantly larger than in the U.S. sample, suggesting that Japanese people were generally more motivated to conform to their group than American people (Yamagishi et al. 2008).[8] Additionally, this inference remained supported after we controlled for differences in response style between the two countries, using a within-culture standardization procedure for each variable (Table 3).[9] Figure 1 presents response distributions for each conformity variable in the Japanese and U.S. samples, respectively. The distributions of W-CONF and F-CONF were both skewed to the right for Japan, and to the left for the U.S. These results support

[8] Regarding W-CONF, some may wonder whether the mean difference observed between Japan and U.S. samples stems from the fact that the proportion of specialists in the U.S. sample was twice as high as that of Japanese sample (Table 1), as specialists may respond with lower scores on the W-CONF than other occupations because they tend to work more individually than as a group. To check this possibility, we compared the W-CONF mean between the two countries, excluding specialists. We found that the mean W-CONF of the Japanese sample (3.103) was still significantly higher (at the 1% level) than that of the U.S. sample (2.131). Similarly, regarding F-CONF, the mean difference between Japan and the U.S. may have stemmed from the larger proportion of single individuals in the U.S. sample than in the Japanese sample (Table 1), as many single people respond with lower scores on the F-CONF measure than those with larger family units. To check this possibility, we compared the mean of F-CONF between the two countries, excluding single people. We found that the mean F-CONF of the Japanese sample (3.202) was still significantly higher (at the 1% level) than that of U.S. sample (2.107).

[9] Previous literature has established the necessity of controlling for national differences in response style in cross-cultural research (Fisher 2004; Fisher and Milfont 2010; Hofstede 1980; Schimmack et al. 2005). We used within-culture standardization (i.e., the mean score across all variables and individuals within a country is subtracted from the individual's raw score on each specific variable and divided by the standard deviation across all variables and individuals), as this method is appropriate for comparison of means and regression analysis (Fisher 2004).

Table 3 Mean-comparison test results for collectivism variables: within-culture standardization

		Japan		U.S		*t* Test Statistics
Conformity variables	W-CONF	0.074	(0.020)	−0.599	(0.018)	24.63***
	F-CONF	0.142	(0.016)	−0.350	(0.019)	18.97***
Psychological factors	EFFICIENCY	0.432	(0.017)	0.282	(0.020)	5.605***
	COMFORT	−0.251	(0.018)	−0.078	(0.020)	−6.237***
	SATISFACTION	0.505	(0.019)	0.119	(0.019)	13.98***
	Number of observations	2797		2177		

t test statistics are based on mean-comparison tests for the difference between the sample mean of a Japanese collectivism variable and the sample mean of the U.S. one. The null hypothesis is that the difference is zero, and the alternative is that the difference is not zero

For conformity variables (W-CONF and F-CONF) and psychological factors (EFFICIENCY, COMFORT and SATISFACTION), the number indicates the sample mean, while the number in a parenthesis indicates the standard deviation

In within-culture standardization, we subtracted the mean across all variables and individuals within a country from the individual's raw score on specific variable, and then we divided this by the standard deviation across all variables and individuals

*** indicates the 1% level of significance

the view that Japanese people are more collectivist than American people (Hofstede 1980; Triandis 1995).[10]

Mean differences in scores for psychological factors were also found between the two countries (Table 2). EFFICIENCY and SATISFACTION were significantly higher in Japan than in the U.S. ($p<0.01$); however, COMFORT was significantly higher in the U.S. than in Japan ($p<0.01$). A comparison of means after within-culture standardization was consistent with these results (Table 3). Additionally, a considerable proportion of U.S. respondents assigned high scores to COMFORT (Fig. 2), although individualism and independence are commonly regarded as representative American values (Matsumoto et al. 1996).

A large amount of heterogeneity in conformity and psychological factors scores was observed within countries, in addition to differences between the two countries (Figs. 1 and 2); this result allowed us to analyze the motivations of conformist behavior in each country.

4.2 Workplace conformity

Tables 4 and 5 present the estimation results concerning workplace conformity [model (1)] and home conformity [model (2)], respectively.[11]

[10] Nonetheless, collectivism rates in the U.S. may sometimes exceed those in Japan (Oyserman et al. 2002).

[11] See the Appendix for discussion of the procedure for calculating the marginal effects in ordered probit models (1) and (2).

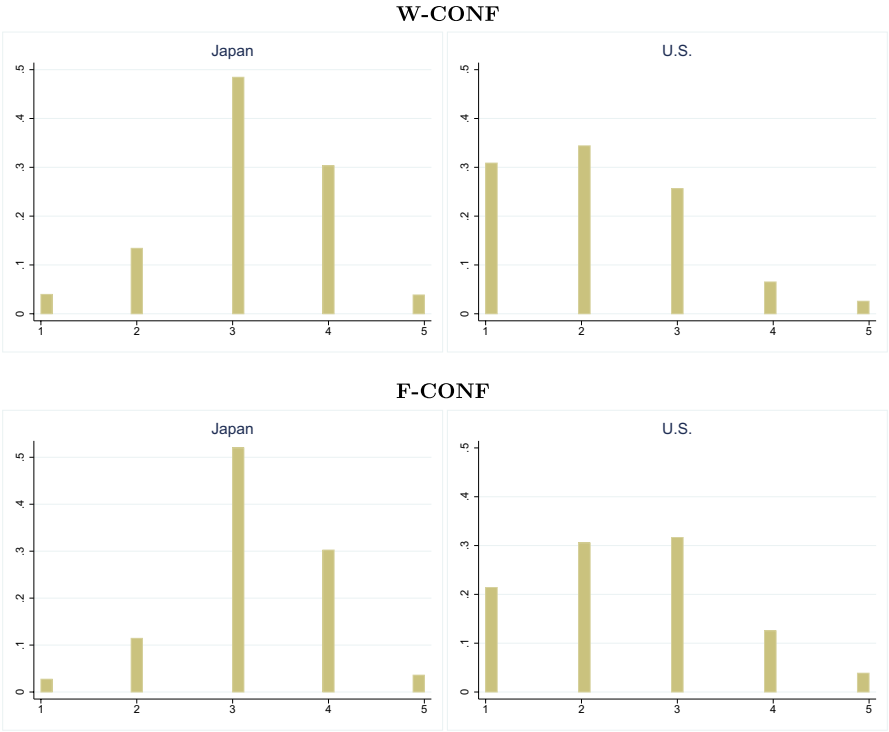

Fig. 1 Conformity variables: W-CONF and F-CONF. Each figure shows the histogram of respondents in Japan and the U.S. The vertical axis indicates the percentage number of respondents, and the horizontal axis indicates the questionnaire choice in which 1= "it doesn't hold true at all for me" and 5= "it is particularly true for me"

Table 4 shows the estimation results for the ordered probit regression of W-CONF in the Japanese and U.S. samples. EFFICIENCY had significantly positive estimates in Japan ($p < 0.05$), but non-significant estimates in the U.S. The magnitude of the coefficient was significantly larger in Japan than in the U.S. ($p < 0.05$). This result suggests that Japanese people tend to conform in the workplace because they believe that cooperation more effectively promotes productivity, and that economic efficiency is less likely to motivate workplace conformity among Americans.

COMFORT had significantly positive estimates in both Japan and the U.S. ($p < 0.05$), suggesting that both Japanese and American people tend to conform in the workplace because it makes them feel comfortable. The Wald test revealed that the difference in both coefficients was not significant.

In contrast, non-significant estimates were obtained for SATISFACTION in both Japan and the U.S., suggesting that Japanese and American people do not tend to conform in the workplace because they find it satisfying.

Regarding individual attributes, the estimated coefficient of respondents' sex was significantly negative in the W-CONF regression in both Japan and the U.S. ($p < 0.05$). This result suggests that men in both countries are less likely to conform

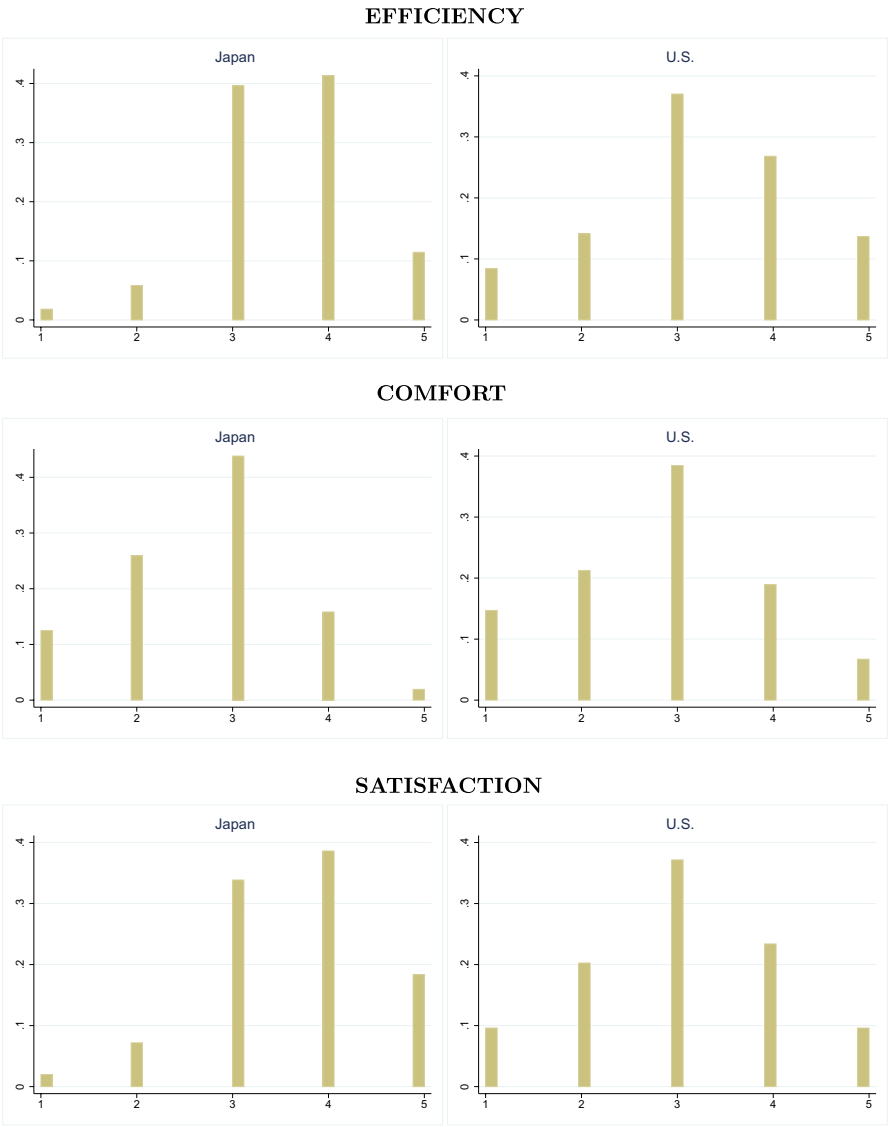

Fig. 2 Psychological factors. Each figure shows the histogram of respondents in Japan and the U.S. The vertical axis indicates the percentage number of respondents, and the horizontal axis indicates the questionnaire choice in which 1= "it doesn't hold true at all for me" and 5= "it is particularly true for me"

at work than women, supporting earlier research (e.g., Cross et al. 2017; Triandis 1995). Except for management status, the other attributes were not significant for the Japanese sample, while some variables including occupation were significant in the U.S. sample. This last result suggests that degree of conformity in the workplace in the U.S. depends on occupation.

Table 4 Ordered probit regression for W-CONF with individual attribute variables

Dependent variables	W-CONF	Japan		U.S		Wald test statistics
Psychological factors	EFFICIENCY	0.159**	(0.042)	0.082	(0.064)	4.265**
	COMFORT	0.274**	(0.040)	0.140**	(0.026)	2.649
	SATISFACTION	0.026	(0.033)	0.090	(0.128)	1.159
Attribute Variables	Sex	−0.074**	(0.030)	−0.061**	(0.025)	
	Age 10	Reference		Reference		
	Age 20	0.011	(0.383)	0.264**	(0.119)	
	Age 30	0.048	(0.397)	0.097	(0.107)	
	Age 40	0.102	(0.407)	0.130	(0.110)	
	Age 50	0.107	(0.404)	0.009	(0.102)	
	Age 60	0.178	(0.421)	0.073	(0.113)	
	Age 70	0.274	(0.508)	0.024	(0.120)	
	Divorced	Reference		Reference		
	Not married	0.234	(0.193)	−0.053	(0.088)	
	Married	0.081	(0.129)	−0.094	(0.092)	
	Widow	0.068	(0.191)	0.133	(0.119)	
	No child	0.036	(0.115)	0.105	(0.161)	
	Single	−0.138	(0.112)	0.019	(0.087)	
	How many	0.003	(0.019)	0.056**	(0.016)	
	Junior highschool or lower	Reference		Reference		
	Highschool	−0.084	(0.094)	−0.136	(0.284)	
	Junior college	−0.145	(0.100)	−0.228	(0.284)	
	University	−0.182	(0.195)	−0.229	(0.286)	
	Graduate	−0.198	(0.159)	−0.270	(0.285)	
	Housewife, house- husband or retired	Reference		Reference		
	Office	−0.049	(0.079)	0.372**	(0.087)	
	Shop	0.034	(0.115)	0.092	(0.137)	
	Management	−0.121*	(0.067)	0.154*	(0.080)	
	Specialist	0.008	(0.089)	0.229**	(0.069)	
	Service	0.019	(0.096)	0.265**	(0.099)	
	Field	0.089	(0.114)	0.263*	(0.116)	
	Agriculture	−0.064	(0.155)	0.311	(0.263)	
	Part-time	0.039	(0.086)	0.296*	(0.165)	
	Student	0.173	(0.305)	0.294**	(0.144)	
	Unemployment	−0.133	(0.208)	0.081	(0.147)	
	No religion	Reference		Reference		
	Catholic	0.078	(0.329)	0.069	(0.056)	

Table 4 (continued)

Dependent variables	W-CONF	Japan		U.S		Wald test statistics
	Protestant	0.080	(0.428)	−0.023	(0.052)	
	Other christian	−0.004	(0.474)	−0.123	(0.083)	
	Judaism	–		0.037	(0.127)	
	Islam	0.125	(0.698)	−0.082	(0.151)	
	Hinduism	–		−0.161	(0.234)	
	Buddhism	−0.012	(0.054)	0.373	(0.516)	
	Other religion	0.166	(0.141)	0.187	(0.210)	
	Alcohol	−0.004	(0.060)	−0.163	(0.126)	
	Tobacco	−0.077	(0.055)	−0.248**	(0.062)	
	Gambling	−0.023	(0.066)	−0.099	(0.062)	

Marginal effects on the independent variables are reported. See the Appendix for the procedure to calculate the marginal effects. * and ** indicate the 10% and 5% levels of significance, respectively. The number in a parenthesis is the robust standard error

Age 10, Junior highschool or lower, Housewife, househusband or retired, and No religion are set as the reference variables of the age, education, occupation, and religion dummy variables, respectively

The null hypothesis of the Wald test is that the difference of estimated coefficients between the U.S. and Japanese samples is zero

In the regression for Japanese sample, two dummy variables, Judaism and Hinduism, are omitted, since there are no respondents who are judaist or hindu

4.3 Home conformity

Table 5 presents the estimation results for the ordered probit regression of F-CONF. The estimated coefficients of EFFICIENCY were significantly positive in Japan ($p < 0.05$) and non-significant in the U.S. This result suggests that Japanese, but not U.S. individuals tend to conform at home because they believe it more efficiently promotes better outcomes.

The estimated coefficients of COMFORT were significant in both Japan and the U.S. The U.S. coefficient was larger than the Japanese one ($p < 0.10$), suggesting that COMFORT is an important motivation for home conformity in the U.S. The results suggest that Americans tend to conform at home because it makes them feel comfortable.

The estimated coefficients of SATISFACTION were significantly positive in both Japan and the U.S. ($p < 0.05$); additionally, the Wald test indicated that the estimated coefficient was significantly larger in the U.S. than in Japan. These results suggest that both Japanese and American people tend to conform at home because they find it more satisfying; additionally, this tendency can be stronger among Americans than among Japanese people.

Table 5 Ordered probit regression for F-CONF with individual attribute variables

Dependent variables	F-CONF	Japan		U.S		Wald Test Statistics
Psychological factors	EFFICIENCY	0.080**	(0.038)	0.102	(0.129)	3.160*
	COMFORT	0.160**	(0.031)	0.230**	(0.029)	3.359*
	SATISFACTION	0.086**	(0.033)	0.162**	(0.031)	5.159**
Attribute variables	Sex	0.115**	(0.001)	0.196**	(0.054)	
	Age 10	Reference		Reference		
	Age 20	0.052	(0.160)	0.210*	(0.124)	
	Age 30	0.064	(0.177)	0.204*	(0.122)	
	Age 40	0.042	(0.177)	0.161	(0.119)	
	Age 50	0.052	(0.176)	0.100	(0.117)	
	Age 60	0.118	(0.188)	0.030	(0.125)	
	Age 70	0.327	(0.307)	0.218*	(0.119)	
	Divorced	Reference		Reference		
	Not married	0.055	(0.192)	0.023	(0.108)	
	Married	0.109	(0.123)	0.105	(0.105)	
	Widow	0.169	(0.212)	−0.221**	(0.134)	
	No child	−0.054	(0.192)	0.048	(0.074)	
	Single	−0.190*	(0.109)	−0.040	(0.100)	
	How many	−0.005	(0.018)	0.049**	(0.020)	
	Junior highschool or lower	Reference		Reference		
	Highschool	−0.121*	(0.068)	0.137	(0.499)	
	Junior college	−0.067	(0.098)	0.060	(0.048)	
	University	−0.043	(0.102)	0.053	(0.044)	
	Graduate	−0.041	(0.173)	0.011	(0.047)	
	Housewife, househusband or retired	Reference		Reference		
	Office	0.019	(0.088)	0.022	(0.086)	
	Shop	0.030	(0.117)	0.227	(0.171)	
	Management	−0.021	(0.103)	−0.110	(0.086)	
	Specialist	−0.030	(0.090)	0.035	(0.076)	
	Service	0.033	(0.100)	−0.015	(0.102)	
	Field	0.131	(0.116)	0.028	(0.117)	
	Agriculture	0.031	(0.180)	−0.244	(0.215)	
	Part-time	0.015	(0.084)	0.143	(0.164)	
	Student	−0.185	(0.201)	0.017	(0.171)	
	Unemployment	−0.213	(0.193)	0.049	(0.161)	
	No religion	Reference		Reference		
	Catholic	−0.048	(0.348)	0.139**	(0.067)	

Table 5 (continued)

Dependent variables	F-CONF	Japan		U.S		Wald Test Statistics
	Protestant	0.027	(0.441)	0.120*	(0.064)	
	Other christian	0.040	(0.200)	0.121	(0.106)	
	Judaism	–		−0.126	(0.119)	
	Islam	−0.339**	(0.108)	−0.282*	(0.152)	
	Hinduism	–		0.193	(0.158)	
	Buddhism	0.022	(0.053)	0.355	(0.636)	
	Other religion	0.246	(0.156)	0.105	(0.305)	
	Alcohol	−0.039	(0.059)	−0.187**	(0.056)	
	Tobacco	−0.092*	(0.056)	−0.100	(0.171)	
	Gambling	−0.048	(0.066)	−0.134	(0.141)	

Marginal effects on the independent variables are reported. See the Appendix for the procedure to calculate the marginal effects. * and ** indicate the 10% and 5% levels of significance, respectively. The number in a parenthesis is the robust standard error

Age 10, Junior highschool or lower, Housewife, househusband or retired, and No religion are set as the reference variables of the age, education, occupation, and religion dummy variables, respectively

The null hypothesis of the Wald test is that the difference of estimated coefficients between the U.S. and Japanese samples is zero

In the regression for Japanese sample, two dummy variables, Judaism and Hinduism, are omitted, since there are no respondents who are judaist or hindu

Regarding individual attributes, sex was significantly positive, suggesting that men in both countries are *more* likely to conform at home than women are. This is an interesting phenomenon yet to be identified by previous research. Concerning other individual attributes, religion did not affect workplace conformity in the U.S. but affected home conformity. On the other hand, occupation affected workplace conformity but did not affect home conformity. These results suggest that in the U.S. religion is an important element of home conformity, while occupation affects workplace conformity.

Our empirical results are summarized as follows:

1. In Japan, EFFICIENCY predicted conformity both in the workplace and at home, while this was not observed in the U.S.
2. In both the U.S. and Japan, COMFORT predicted conformity both in the workplace and at home,
3. In both the U.S. and Japan, SATISFACTION predicted conformity at home, but not in the workplace.

Table 6 Control-function regression for W-CONF with ordered probit model

Dependent variable	W-CONF	Marginal effects				Wald test statistics
		Japan		U.S		
Psychological Factors	EFFICIENCY	0.441**	(0.194)	0.095	(0.163)	6.991**
	COMFORT	0.310**	(0.110)	0.745**	(0.130)	5.439**
	SATISFACTION	−0.022	(0.187)	−0.218	(0.206)	0.820
First-stage Residuals	$e^{\text{EFFICIENCY}}$	−0.293	(0.247)	0.005	(0.174)	
	e^{COMFORT}	−0.040	(0.090)	−0.339	(0.352)	
	$e^{\text{SATISFACTION}}$	0.129	(0.186)	0.564	(0.405)	
Control variables	Sex	−0.074**	(0.031)	−0.060**	(0.023)	
	Age 10	–		Reference		
	Age 20	–		0.263**	(0.118)	
	Age 30	–		0.085	(0.111)	
	Age 40	–		0.129	(0.110)	
	Age 50	–		0.007	(0.104)	
	Age 60	–		0.079	(0.112)	
	Age 70	–		0.021	(0.118)	
	How many	–		0.059**	(0.014)	
	Housewife, househusband or retired	Reference		Reference		
	Office	−0.051	(0.080)	0.376**	(0.088)	
	Shop	0.033	(0.116)	0.089	(0.139)	
	Management	−0.120*	(0.068)	0.153*	(0.082)	
	Specialist	0.005	(0.079)	0.232**	(0.067)	
	Service	0.016	(0.094)	0.263**	(0.105)	
	Field	0.089	(0.112)	0.260*	(0.113)	
	Agriculture	−0.063	(0.155)	0.325	(0.270)	
	Part-time	0.042	(0.083)	0.302*	(0.162)	
	Student	0.174	(0.306)	0.2884**	(0.124)	
	Unemployment	−0.134	(0.205)	0.080	(0.145)	
	Tobacco	–		−0.243**	(0.066)	
Sargan's J Test (P-value)		0.499		0.682		

The results are based on control-function instrumental variable estimation of Eq. (1)

Marginal effects on the independent variables are reported. See the Appendix for the procedure to calculate the marginal effects. * and ** indicate the 10% and 5% levels of significance, respectively. The number in a parenthesis is the robust standard error

The null hypothesis of the Wald test is that the difference of estimated coefficients between the U.S. and Japanese samples is zero

In the first stage regression, the psychological variables were regressed over the attribute variables that were insignificant in Table 4. In the second stage regression, the attribute variables that were significant in Table 4 were included as the control variables

$e^{\text{EFFICIENCY}}$, e^{COMFORT} and $e^{\text{SATISFACTION}}$ are generalized residuals for EFFICIENCY, COMFORT, and SATISFACTION equations, respectively. See Eq. (18) in Vella (1993) for definition of the generalized residuals

Table 6 (continued)

Sargan's J Test is conducted by running the OLS regression of the first-stage generalized residuals on the instrument variables. The test statistics are calculated as nR^2 where n is the sample size. The test has large-sample $\chi^2(13)$ and $\chi^2(19)$ distributions in theregressions for Japan and the U.S. See Arellano (2002) for details on Sargan's J test for nonlinear instrumental variables estimation

4.4 Endogeneity

The above estimated coefficients for EFFICIENCY, COMFORT, and SATISFACTION in models (1) and (2) may partly involve an endogeneity problem: conformist behaviors could have caused individuals to hold pro-conformist beliefs, such as "I don't feel satisfied or comfortable working individually because I have cooperated with others for so long." Therefore, we employed the control-function instrumental variable estimation (CF) to manage potential reverse causality among the conformity variables and psychological factors.[12] CF provides consistent estimates for coefficients on endogenous regressors in parametric nonlinear models, including the ordered probit model, while the consistency is not guaranteed in two-stage predictor substitution, the usual IV method, for nonlinear models (Terza et al. 2008; Vella 1993; Wooldridge 2014, 2015). Thus, we used CF to estimate the two ordered probit models with the instrumental variables. In the first stage of estimation of CF, auxiliary regressions for endogenous regressors were conducted using instrumental variables the same as in the usual IV method. The second-stage regressions were subsequently performed by including the first-stage generalized residuals in the outcome equation of interest, that is, Eqs. (1) and (2).[13] In CF, the significance of the first-stage residuals in the second-stage regression indicates the endogeneity of the regressors.

Tables 6 and 7 present the CF estimated coefficients for models (1) and (2). We adopted the individual attributes that were not significant in Tables 4 and 5 as the instrumental variables in the first-stage regressions and those that were significant as the control variables in the second-stage regressions.[14] In these tables, $e^{\text{EFFICIENCY}}$, e^{COMFORT}, and $e^{\text{SATISFACTION}}$ indicate residuals for EFFICIENCY, COMFORT, and SATISFACTION in the first-stage regression.

In Tables 6 and 7, no residuals of the first-stage regression are significant, suggesting that the three psychological variables were exogenous in all cases. As per the orthogonality conditions, Sargan's J-test statistics reported at the bottom of Tables 6 and 7 could not reject the validity of our instruments. As for the weak-instruments

[12] CF is often called two-stage residual inclusion (2SRI) in contrast to the method used more often, two-stage predictor substitution, and can be estimated in STATA.

[13] See Eq. (18) in Vella (1993) for the definition of the first-stage generalized residuals in the ordered probit model.

[14] Regarding the dummy variables, such as age, we treated the whole variables together; for example, since age 20 years was significant for W-CONF in the U.S., none of the age dummy variables were included in the instrumental variables but were used as control variables in the second-stage regression. For a robustness check, we also estimated the CF by treating each variable separately: for example, only age 20 years was excluded from and the other age dummies were included in the instrumental variables. However, the results were qualitatively unchanged.

problem, conventional tests in linear instrumental variable regression, such as the test of Stock and Yogo (2005) were not applicable to our non-linear regressions. Still, we confirmed that one or more instruments were significant at the 1% level in the first-stage regression for EFFICIENCY, COMFORT, and SATISFACTION, suggesting that the weak instruments problem was not serious in our case if it was present.

Accordingly, the estimates of psychological variables were qualitatively the same as those in Tables 4 and 5, except that COMFORT became non-significant in the F-CONF regression for the Japanese sample. Thus, the endogeneity problem was not serious in the estimation of Eqs. (1) and (2).

4.5 Other robustness checks

Persons without a regular occupation (resp., without a family) may not provide meaningful responses to the workplace (resp., home) conformity questions. Therefore, as an additional robustness check, we conducted a subsample regression of W-CONF by excluding respondents with no regular occupation, and a subsample regression of F-CONF by excluding single respondents.[15] However, we found that the estimation results did not change substantially in the sub-sample regressions.[16]

We also used the ordered logit model instead of the ordered probit models; the estimation results on the three psychological factors remained qualitatively unchanged. Additionally, the estimation results remained qualitatively unchanged in the least-squared estimation. Furthermore, we repeated all estimations following application of a within-culture standardization procedure for each variable; the estimation results again remained qualitatively unchanged.

[15] We defined persons who have no regular occupation as students (Student = 1 in Table 1), the unemployed (Unemployment = 1 in Table 1), or retirees. We defined single persons as Single = 1 in Table 1.

[16] Considering the possibility of sample selection bias in conducting these subsample regressions, we also employed a Heckman two-step procedure: in the first step, we estimated a selection equation of employment participation choice for W-CONF and a selection equation for being single for F-CONF. Then, in the second, we ran the ordered probit regressions of W-CONF and F-CONF by including the inverse Mills ratio. The resultant estimation results remained qualitatively unchanged. In the selection equation for employment participation, we included the individual attribute variables except for the job-status variables (as in Table 1) as explanatory variables, while in the selection equation for being a single person, we included those except for the family structure variables.

Table 7 Control-function regression for F-CONF with ordered probit model

Dependent variable	F-CONF	Marginal effects				Wald test statistics
		Japan		U.S		
Psychological Factors	EFFICIENCY	0.459*	(0.224)	−0.298	(0.223)	5.714**
	COMFORT	0.064	(0.112)	0.383**	(0.138)	6.301**
	SATISFACTION	0.293**	(0.124)	0.432**	(0.212)	5.261**
First-stage Residuals	$e^{\text{EFFICIENCY}}$	−0.380	(0.331)	0.218	(0.221)	
	e^{COMFORT}	0.083	(0.110)	−0.145	(0.141)	
	$e^{\text{SATISFACTION}}$	−0.019	(0.194)	−0.259	(0.223)	
Control Variables	Sex	0.116**	(0.001)	0.193**	(0.058)	
	Age 10	–		Reference		
	Age 20	–		0.204*	(0.125)	
	Age 30	–		0.209*	(0.120)	
	Age 40	–		0.153	(0.130)	
	Age 50	–		0.104	(0.119)	
	Age 60	–		0.031	(0.124)	
	Age 70	–		0.212*	(0.119)	
	Divorced	–		Reference		
	Not married	–		0.019	(0.132)	
	Married	–		0.132	(0.126)	
	Widow	–		−0.214**	(0.114)	
	Single	−0.193*	(0.111)	–		
	How many	–		− 0.047**	(0.022)	
	Junior highschool or lower	Reference		–		
	Highschool	−0.119*	(0.065)	–		
	Junior college	−0.071	(0.103)	–		
	University	−0.038	(0.110)	–		
	Graduate	−0.042	(0.174)	–		
	No religion	Reference		Reference		
	Catholic	−0.050	(0.347)	0.140**	(0.068)	
	Protestant	0.026	(0.438)	0.119*	(0.067)	
	Other christian	0.042	(0.198)	0.130	(0.116)	
	Judaism	–		−0.118	(0.125)	
	Islam	−0.413**	(0.109)	−0.276*	(0.152)	
	Hinduism	–		0.188	(0.159)	
	Buddhism	0.019	(0.057)	0.357	(0.641)	
	Other religion	0.261	(0.159)	0.105	(0.311)	
	Alcohol	–		−0.186**	(0.058)	
	Tobacco	−0.091*	(0.059)	–		
Sargan's *J* Test (*P*-value)		0.739		0.822		

The results are based on control-function instrumental variable estimation of Eq. (2)

Marginal effects on the independent variables are reported. See the Appendix for the procedure to calculate the marginal effects. * and ** indicate the 10% and 5% levels of significance, respectively. The

Table 7 (continued)

number in a parenthesis is the robust standard error

The null hypothesis of the Wald test is that the difference of estimated coefficients between the U.S. and Japanese samples is zero

In the first stage regression, the psychological variables were regressed over the attribute variables that were insignificant in Table 5. In the second stage regression, the attribute variables that were significant in Table 5 were included as the control variables

$e^{\text{EFFICIENCY}}$, e^{COMFORT} and $e^{\text{SATISFACTION}}$ are generalized residuals for EFFICIENCY, COMFORT, and SATISFACTION equations, respectively. See Eq. (18) in Vella (1993) for definition of the generalized residuals

Sargan's J Test is conducted by running the OLS regression of the first-stage generalized residuals on the instrument variables. The test statistics are calculated as nR^2 where n is the sample size. The test has large-sample $\chi^2(15)$ and $\chi^2(20)$ distributions in the regressions for Japan and the U.S. See Arellano (2002) for details on Sargan's J test for nonlinear instrumental variables estimation

5 Discussion

We examined factors affecting individual conformity behavior in Japan and the U.S. We particularly examined individual psychological factors, thereby analyzing motivations for conformist behavior among Japanese and American people.

In Japan, EFFICIENCY significantly affects respondents' workplace and home conformity, suggesting that Japanese people tend to conform because they believe that it more effectively promotes outcomes. As discussed in Sect. 2, the efficiency motivation for Japanese conformity would come from people's belief in the economic efficiency of group cooperation, which likely reflects the history of Japan. Most Japanese individuals in the past were rice farmers who needed to cooperate to survive due to scarce natural resources (Benedict 1946; DeVos 1973). A low-mobility society encouraged people to cooperate in the long-run and enabled the group to improve its economic outcomes. Indeed, in Japan, there is the conviction that the group is the most effective working unit (Nakane 1970).

This argument implies that Japanese collectivism may be fundamentally motivated by self-interest. Indeed, Japanese people tend to commit and conform to their group, expecting that they will benefit from it later (Hamaguchi 1982). Moreover, many Japanese workers are self-interested and are willing to share in the fate of their company only to the extent that it promotes their own objectives (Befu 1980).

If Japanese collectivism stems from pragmatism, Japanese people in an unproductive group will leave that group. Previous research has supported this conjecture. For instance, Triandis et al. (1993) show that scores on a particular cultural factor ("Task Emphasis") are highest in Japan among ten countries, and that scores on this factor are correlated with individuals' agreement with the statement, "If the group is slowing me down, it is better to leave it and work alone." Further, Japanese people are more likely to leave a poorly performing group than Americans (Yamagishi 1988). These results suggest that Japanese people particularly tend to leave groups that do not benefit them. Additionally, these results also support our inference that Japanese people behave in collectivist ways to pursue efficiency.

In contrast, EFFICIENCY scores are not significantly correlated with conformity scores in the U.S. sample. This shows that there is less belief in the economic

efficiency of group cooperation, which may reflect the environment of the U.S. With relatively plentiful food and land, there is little need for people to increase efficiency through cooperation. Moreover, people experience greater difficulty achieving socially efficient outcomes through cooperation in a highly mobile society such as the U.S. (Bowles and Gintis 2011).

Our results suggest that the institutional differences between Japan and the U.S., which probably reflect differences in social history and environment, would give rise to differences in people's psychological motivations for group conformity. The Japanese conform to the group's opinion for the economic benefits of cooperation, but the Americans do not.

Instead, among the factor scores in the U.S. sample, COMFORT principally predicts conformity both at work and at home, indicating that Americans tend to conform because it makes them feel comfortable. This is interesting, as conformity is generally considered to indicate lack of individuality in U.S. society and hence the direct expression of individual opinions is valued (Matsumoto et al. 1996). A considerable proportion of people in the U.S. feel comfortable when conforming (approximately a quarter gave scores of 4 or 5 in response to the COMFORT question; Fig. 2). Moreover, those people tend to conform at home as well as at work (Tables 4, 5, 6 and 7). Thus, collectivist behavior among American people would generally reflect individuals who feel comfortable when conforming.

SATISFACTION does not significantly affect workplace conformity in Japan or the U.S., suggesting that Japanese and American people do not tend to conform at work because they find it satisfying. In contrast, SATISFACTION significantly predicts conformity at home in both Japan and the U.S., suggesting that Japanese and American people behave in collectivist ways at home because they value cooperation with family members for its own sake. The psychological factors motivating collectivist behavior thus vary, depending on the circumstances.

6 Conclusion

This research examined psychological factors motivating collectivist behavior in Japan and the U.S. We found that the Japanese conform to their groups both at workplaces and at home because they consider that cooperation with other group members will result in greater achievement. In contrast, Americans do not conform to their groups for achievement. We conjecture that this difference in psychological motivation for conformity between Japan and the U.S. would arise from institutional differences based on the history and environments of these two countries.

We also found that both Japanese and American respondents conform both at workplaces and at home because it makes them feel comfortable. On the other hand, in both of the countries, people conform at home because they value cooperation with family members for its own sake. Note that we did not detect this type of conformity based on a high valuation of cooperation with other members at workplaces in either Japan or the U.S. These results suggest that motivations for collectivism would substantially differ between home and the workplace.

This paper exclusively analyzed group conformity as a measure of individual collectivism; however, other measures of collectivism are available. Therefore, future research should examine individual motivations for collectivist behavior using other measures.

Appendix: Calculating marginal effects in ordered probit models

This appendix discusses the procedure for calculating the marginal effects of the estimated coefficients of independent variables in models (1) and (2). $y(y = 1, 2, \ldots 5)$ represents dependent variables; W-CONF, F-CONF, and $X(K \times 1)$ represent independent variables. In this context, the expected value of the dependent variable $E(y|X)$ is defined as follows:

$$E(y|X) = \sum_{j=1}^{5} j \cdot P(y = j|X).$$

A marginal effect of an independent variable x_k , ME_k, is therefore defined as follows:

$$ME_k = \frac{\partial E(y|X)}{\partial x_k}\Big|_{X=\bar{X}} = \sum_{j=1}^{5} j \cdot \frac{\partial P(y = j|X)}{\partial x_k}\Big|_{X=\bar{X}} = \sum_{j=1}^{5} j \cdot ME_k^j, \qquad \text{(A-1)}$$

where $ME_k^j = \frac{\partial P(y=j|X)}{\partial x_k}\Big|_{X=\overline{X}}$. $\overline{X}$ denotes the sample means of the independent variables (X).

We used the delta method, thereby calculating the standard error of the marginal effect ME_k on the independent variable x_k as follows:

$$\sigma_{ME_k} = \sum_{j=1}^{5} j.\sigma_{x^k}^j, \qquad \text{(A-2)}$$

where σ_{ME_k} indicates the standard error of the marginal effect ME_k, and $\sigma_{x^k}^j$ denotes the standard error of ME_k^j. We calculated the marginal effect (A-1) and its standard error (A-2) for each independent variable in our ordered probit models.

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Declarations

Conflict of interest None.

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