A COGNITIVE MODEL OF PERCEPTIONS OF CLASS, STATUS AND LEVEL OF LIVING AMONG JAPANESE MEN: EVIDENCE FROM LATENT STRUCTURE ANALYSIS

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Recent development of latent structure analysis due to Goodman (1974a, b) enabled us to build a cognitive model of perceptions of class, status and level of living. We propose a) that individuals covertly evaluate in a cognitive space their relative standing within the stratification systems, b) that two of the basic dimensions of the space pertain to cognition of the position in the labor market and life chances, c) that overt evaluation, i.e., identification, of class and level of living is derived from cognition in the first and second dimensions, respectively, but not jointly, and, d) that status identification is affected by the two types of cognition. To test our model, the SSM survey data collected in 1975 were used. The evidence obtained from the present analysis confirmed our propositions.

1. Introduction

1.1 General Overview

Recent public release of the 1975 SSM (Social Stratification and Mobility) survey data collected in Japan is of great value to researchers interested in individual's self-evaluation of relative standing in the social stratification systems. The survey contains multiple measures of respondent's evaluation instead of a single measurement approach typical in sociological inquiries by American researchers. An obvious advantage of multiple measures is that responses to related questions can be statistically treated as indicators of a latent concept, whereas inferences about such a concept from a single measure must rely on analyst's intuition. However, the advantage has not been fully appreciated by specialists involved in the analysis of the SSM survey (Naoi, 1979; Hirose, 1979) and similar surveys (e.g., Yasuda, 1967, 1973). Rather, research efforts in the past were directed to the discovery of the causal relationships between manifest responses to structural and personal determinants, on the one hand, and to behavioral consequences, on the other, with partially developed cognitive models of self-evaluation of relative social standing. It is, therefore, felt necessary to build a more mature, viable cognitive model by taking advantage of the multiple measures in the SSM survey data with an aid of latent structure analysis of Goodman (1974a, b) and Lazarsfeld and Henry (1968). If applied appropriately, such a model should contribute to gaining fuller understanding of the causal linkages.
mentioned above. In order to clarify our approach, relevant literature on the subject will be briefly reviewed.

Early surveys in the U.S., generally found that nearly 80 percent or more Americans ranked themselves as middle class (Cantril, 1943; Fortune Survey, 1940; Gallup & Rae, 1940). However, the validity of the general findings was questioned by Centers (1949) who argued that the observed predominance of middle class identifiers could be attributed to the omission of the term working class from the response alternatives. When asked to choose among upper, middle and lower classes as their social class, he maintained, working class identifiers were forced to locate themselves in the middle class due to socially negative connotations attached to the term lower class. When he included the working class alternative along with usual three class categories, the proportion of middle class identifiers dropped to less than half and slightly over 50 percent of people now emerged as the working class. Thus, the newly added response alternative successfully separated those who actually perceived their social ranks lower than middle class. The results of further analysis of determinants (occupation, education and income) and behavioral consequences (voting, attitudes, and union affiliation) of class perceptions were congruent with his interest theory (Centers, 1949, pp. 34–205).

The evidence presented by Centers appeared so convincing that the inclusion of the middle and working class labels became the rule in subsequent research on class perceptions (e.g., Gross, 1953; Jackman & Jackman, 1973; Kahl & Davis, 1955; Hamilton, 1966; Hodge & Treiman, 1968; Lauman & Senter, 1976; Schreiber & Nygreen, 1970; Tucker, 1968; Vanneman, 1980; Vanneman & Pampel, 1977) with some variations in the questionnaire wordings and the number of response alternatives (see Shreiber & Nygreen for some information in these respects). Interestingly, few attempts were made so far, among American researchers, to measure self-perceptions of social ranks in more than one dimension, perhaps stemming from their strong concern for subjective class identification. It is not, however, that they were altogether ignorant of the possibility of multi-dimensional cognition of social standing besides class. For instance, Shreiber and Nygreen (1970) pointed that subdivision labels of the middle class (upper- and lower-middle) added in Tucker's (1968) study to the Center's scale might have confounded class and stratum perceptions. (But, they did not elaborate how the two types of perceptions might be separated unlike the founders of the SSM survey in Japan, as will be discussed shortly.) Furthermore, Vanneman and Pampel (1977) inferred from a series of multivariate analysis that individuals perceived their social standing in terms of both class and status and that subjective identifications in the two dimensions were linked to different sets of attitudes and social behaviors. The existence and operation of status perception, nevertheless, was only indirectly interpreted on the basis of the observed relations of the NORC (National Opinion Research Center) occupational prestige scores to the selected dependent variables, but not on the basis of measurement on a special scale for status perception. Despite the shortcomings in this respect, their view of individual's cognition about his/her social position gave us an impetus to formulating a cognitive model of multi-dimensional perceptions of social standing which will be explained in the next section.
Though stimulated also by Center's work (1949), founders of the SSM survey in Japan recognized the danger of confounding class and status perceptions by the use of Center's scale, and constructed separate questions to measure them, as described in Yasuda (1967). The distinction of the two perception types delineated by them was in close similarity to the well-known Weber's (1946) theory of social stratification. In essence, the term "class" refers to a group of people in a society differentiated from others with respect to control over goods, labor, skills (see Bendix, 1974) and, possibly as Marx argued, the relation to the means of production (see Ollman, 1968, for a useful evaluation of Marx's theory of class), while a "status" group is comprised of people enjoying the same prestige accorded to their occupations, possession of valued goods, life styles and so on. Set aside controversies over structural reality of the class versus status dimensions in the stratification systems (see, for example, Yasuda, 1971, pp. 42-43, 1973, pp. 3-6), it is a well known fact that different sets of self-identification scales can elicit different kinds of subjective placement in the stratification systems at least in Japan (Naoi, 1979; Odaka, 1966; Yasuda, 1967). In other words, cognition of the relative social standing is multi-dimensional in nature (see also Vanneman and Pampel, 1977). More specifically, class and status perceptions in three SSM surveys (since 1955) were measured respectively as identification with exact class labels (i.e., capitalist, middle and working classes) and ordered strata (i.e., upper, upper- and lower-middle, upper- and lower-lower strata), although there have been minor modifications in the questionnaire wordings and response alternatives. (see Yasuda, 1967, 1971, 1973, for the designs and analysis of similar surveys.)

Given the current state of knowledge and data resources, one of the central tasks imposed on cognitive social-psychologists is to find the cognitive bases of overt, subjective evaluation of relative social standing including class and status. Suffice it to say, here, a) that individuals covertly evaluate their social standing in a cognitive space, and, b) that they are able to derive, through certain cognitive algebra, overt evaluations of relative social standing, i.e., subjective identification, if so desired or required. Intriguing as it may, we do not attempt in this paper to determine the exact form(s) of such algebra. Our present purpose is confined to obtaining evidence of the cognitive bases of class and status identifications.

1.2 A Cognitive Model

In building our cognitive model we first define the following key terms:

a) "Cognition" is covert evaluation of one's social standing in the stratification systems;

b) Subjective "identification" is overt evaluation of one's social standing;

c) "Perception" denotes either cognition or identification, or both.

With these definitions we propose the following:

1. Cognition is essentially conducted in a multi-dimensional space, involving verbal or nonverbal evaluation (see Vanneman & Pampel, 1977).

2. Two of the most fundamental dimensions of the space, not necessarily orthogonal to each other, pertain to perceptions of a) one's relative position in workplace or more broadly in the labor market, and, b) life chances accruing from
individual or household income, assets and expenditures.

2.1 The former perception is what analysts have intended to measure without making clear distinction between cognition and identification. Whether relative positions are determined by the relationships to the means of production, specific or general economic power, or authority, we assume that cognitive evaluation is performed essentially in dichotomy - subordinate vs. superordinate, or inferior vs. superior. To avoid cumbersomeness, we will refer to them as inferior and superior positions in the labor market under which all related and similar concepts are taken to be subsumed.

2.2 The latter perception is determined chiefly by one's financial state. Hence it is most likely to be elicited by a question asking identification of one's level of living. For convenience, we assume that individuals covertly locate themselves on a trichotomy scale, (low, intermediate and high), in evaluating their life chances. Some may argue that such cognition is done on a continuous scale, but we can still propose that they are indeed able to hold both discrete and continuous scales for perceptions in general. Good examples supporting us are perceptions of height, temperature and distance.

3. Subjective identification with the social class, status and level of living are derived from cognition in one or more pertinent dimensions. However, forced identifications with response alternatives provided in a questionnaire may fail to accurately measure related cognition, because of measurement errors, errors in labelling response alternatives, and/or errors in questionnaire wordings. It seems reasonable, therefore, to regard manifest identifications as indicators of related latent cognition as explained below.

3.1 We assume that social class identification depends solely on cognition of the relative position in the labor market.

3.2 Similarly, manifest evaluation of one's level of living is assumed to be made solely on the basis of cognition of one's life chances.

3.3 Finally, we maintain that status identification is affected by joint cognition in the two basic dimensions on the assumption that status denotes total or general aspects of life in contrast to specific nature of the other identifications.

The most suitable statistical technique for testing our cognitive model is latent structure analysis developed by Lazarsfeld and his colleagues (see Lazarsfeld & Henry, 1968). The technique is designed to "explain" the relationships among variables of interest by a latent, unobservable variable. Recently, Goodman (1974a, b) provided more efficient algorithms for estimating parameters than those previously proposed by various statisticians. He also presented a method for testing a model with more than one latent variables, which is of particular value to the present purpose. Application of Goodman's technique is explained in the next section.

2. Method

2.1 Data

The present study uses the data of a national survey conducted in 1975 by the SSM (Social Stratification and Mobility) Committee. Details of the sampling design are described in Ando (1978). The population for the survey covered all Japanese civilian males aged 20 to 69 from which a random sample was drawn. Stratified two-stage, systematic sampling was employed with the national electoral districts and registered
As the primary and secondary sampling units. Stemming from the survey purposes, it was decided to divide the sample into two subsamples (Samples A and B) in the ratio of two to one. Since the interview questionnaire for Sample B was designed primarily for constructing occupational prestige scores and contained only two of the three items of interest to us, it was excluded from the present analysis. In Sample A, 2724 persons completed interviews with 68.1 percent completion ratio.

2.2 Variable Recoding and Case Selection

Respondents in Sample A were asked to evaluate their social standing with respect to class (C), status (S) and level of living (L). The variables will be denoted in the text and tables by the single letter indices enclosed in the parentheses, where necessary. Evaluation was actually performed by identifying category labels of each questionnaire item. Cases with missing values due to non-responses were eliminated listwise from our analysis. Also deleted were students whose relationships to the labor market in the stratification systems must be treated separately. As a result, 2536 cases remained for the present analysis.

Cross-classification of these cases with respect to variables (C, S, L) will produce a large number of sparse cells, if we use the original categories of these variables (3 by 5 by 5). Under the circumstances, parameter estimates may not be asymptotically efficient. In order to cope with this problem, we recoded some categories as shown below:

- **CLASS (C)**—(1) working class (2) middle and capitalist classes;
- **STATUS (S)**—(1) lower-lower stratum (2) upper-lower stratum (3) lower-middle stratum, and, (4) upper-middle and upper strata;
- **LIVING (L)**—(1) very low and low levels (2) average level (3) high and very high levels.

We do not believe that such recoding radically distorted the structure underlying the responses.

2.3 Latent Class Models

2.3.1 Unrestricted models

Shown in Table 1 is the three-way cross-classification of 2536 cases with respect to the three manifest variables (C, S, L). Let $\pi_{ijk}^{csl}$ denote the probability that an individual is a level $(i, j, k)$ with respect to the joint variable (C, S, L), where $1 \leq i \leq 2$, $1 \leq j \leq 4$ and $1 \leq k \leq 3$. Had we been able to observe a latent variable $X$ consisted of $T$ classes, we would have a four-way table comprised of $(C, S, L, X)$. Let $\pi_{ijkl}^{cslx}$ denote the joint probability that an individual is at level $(i, j, k, l)$ with respect to the joint variable $(C, S, L, X)$. (The term class in latent structure analysis should not be confused with the term social class.)

Concerning the last joint probabilities, equation (1) holds true due to the axiom of local independence (see Lazarsfeld and Henry, 1968, p. 17), given level $t$ of variable $X$ (for $1 \leq t \leq T$)

$$
\pi_{ijkl}^{cslx} = \pi_t^x \pi_{it}^{lx} \pi_{jl}^{sx} \pi_{kl}^{lx},
$$

where $\pi_t^x$ denote the probability that an individual is in class $t$ with respect to variable...
X, and \( \pi_{it}^{C,t} \) denote the conditional probability that an individual is at the \( i \)th level of variable \( C \), given class \( t \). \( \pi_{ij}^{S,X} \) and \( \pi_{kl}^{L,X} \) can be similarly defined with respect to variables \( S \) and \( L \). The interpretation of equation (1) is straightforward: manifest variables \( (C, S, L) \) are independent of each other within each level of latent variable \( X \).

If we sum cells in the hypothetical four-way table across \( T \) classes of variable \( X \), we obtain Table 1. Thus, we have

\[
\pi_{ijk}^{C,S,L} = \sum_{t=1}^{T} \pi_{ijk}^{C,S,L,X} \quad (2)
\]

Substituting equation (1) into equation (2), we can rewrite equation (2) as

\[
\pi_{ijk}^{C,S,L} = \sum_{t=1}^{T} \pi_{it}^{X} \pi_{it}^{C,X} \pi_{it}^{S,X} \pi_{kl}^{L,X} \quad (3)
\]

The probabilities defined above are subject to the usual constraints:

\[
0 \leq \pi_{ijk}^{C,S,L}, \pi_{ijk}^{C,S,L,X}, \pi_{it}^{X}, \pi_{it}^{C,X}, \pi_{it}^{S,X}, \pi_{kl}^{L,X} \leq 1 \quad (4)
\]

and,

\[
\sum_{ijk} \pi_{ijk}^{C,S,L} = \sum_{ijk} \pi_{ijkl}^{C,S,L,X} = \sum_{t} \pi_{it}^{X} = \sum_{i} \pi_{it}^{C,X} = \sum_{j} \pi_{it}^{S,X} = \sum_{k} \pi_{kl}^{L,X} = 1 \quad (5)
\]

The iterative procedure provided by Goodman (1974a, b) yields the estimates for the basic set of parameters \( (\pi_{it}^{X}, \pi_{it}^{C,X}, \pi_{it}^{S,X}, \pi_{kl}^{L,X}) \) that are maximum likelihood estimates, terminal maxima (0 or 1) or some other solutions. The estimate of \( \pi_{ijk}^{C,S,L} \) obtained from equation (3) can be used to compute the estimated expected frequency, \( \hat{m}_{ijk} \), for Table 1 by

\[
\hat{m}_{ijk} = n \hat{\pi}_{ijk}^{C,S,L} \quad (6)
\]

where \( n \) is the total number of observations, i.e., 2536 in our study. Let \( x_{ijk} \) denote the corresponding observed frequency. Then, the likelihood ratio chi-square statistic defined by

\[
\chi^2 = \sum_{ijk} \frac{(x_{ijk} - \hat{m}_{ijk})^2}{\hat{m}_{ijk}}
\]
\[ LR^2 = 2 \sum_{ijk} x_{ijk} \log \left( \frac{x_{ijk}}{\hat{n}_{ijk}} \right) \]  

(7)

is known to be minimized by the maximum likelihood estimates for the basic set of parameters.

The fit of an unrestricted latent class model applied to a three-way table \( m=3 \) can be tested in light of the associated degrees of freedom to be computed by (see Clogg, 1977; Goodman, 1974a)

\[ df = \prod_{u=1}^{m} h_u - 1 - \left[ \sum_{u=1}^{m} h_u - (m-1) \right] T - 1 \],  

(8)

where \( h_u \) is the number of the categories of manifest variable \( u \): \( h_u = (2, 4, 3) \) in Table 1. Hence, \( T \) must not exceed three for Table 1 in our model in order that parameters in a model will be locally identifiable (see Goodman, 1974a).

However, there is no assured way, at present, to study whether the calculated \( LR^2 \) is minimum unless one compares all different values of the statistic resulting from various sets of initial values. But it is implausible in any sense to exhaust possibilities in the choice of the initial values. Our practical solution to the problem is to choose among the estimates in the basic set, \( (\pi_{i1}^X, \pi_{i2}^X, \pi_{i3}^{sX}, \pi_{k1}^{lx}) \), producing \( LR^2 \) that is reasonably small under a given latent class model, in a hope that the obtained \( LR^2 \) is minimum.

When \( T=1 \), the model referred as model 1 or M1 hereinafter, is a usual log-linear, model of no interactions applied to Table 1. The fit of the model is poor (see Matsuda 1981). From the standpoint of latent structure analysis, it means that \( T \) should be greater than 1. Nevertheless, model 1 can serve as a baseline model for evaluating the relative efficiency of more complex models in terms of reduction in \( LR^2 \). Of these, unrestricted models may have two or three classes under the aforementioned condition of local identifiability. Both models (to be referred as models 2 and 3, or M2 and M3) will be tested for exploratory purposes, whereas the restricted model explained in the next section is confirmatory with regard to our theoretical propositions presented earlier in introduction.

2.3.2 Restricted latent class model

Let \( Y_r (r=1, 2) \) and \( Z_s (s=1, 2, 3) \) denote the latent variables pertaining to cognition of the position in the labor market and life chances, respectively. The two latent variables form a \( 2 \times 3 \) table (see Table 2) in which cell \( (r, s) \) can be treated as the \( t \)th level of another latent variable, \( X \). Thus, we have indeed six classes, \( i.e., T=6 \), in our model. The axiom of local independences applies to the joint occurrences of \( Y \) and \( Z \), or alternatively stated, to variable \( X \).

Category orders of variables \( Y \) and \( Z \) correspond to those of variables \( C \) and \( L \) decribed in section 2.2 (See also section 1.2.)

From equation (8) it is clear that the model of six latent classes is not locally identifiable unless we impose restrictions on the parameters in the basic set. The degrees of freedom of a restricted model can be derived from formula (8) adjusted for the number of non-redundant parameters, \( \hat{d} \): \( i.e., \)

\[ df^* = df + \hat{d}, \]  

(9)
d is non-redundant in the sense that restricted parameters are still subject to constraints (5). It means that more than 13 non-redundant restrictions are necessary on the latent structure underlying the variables under study. We will achieve this in the following steps.

First, we assume, in accordance with proposition (3.1), that verbal identification with class (C) depends on cognition with respect to Y, but not Z. Similarly, we assume that verbal identification with level of living (L) depends on cognition with respect to Z, but not Y. We now translate these assumptions into equality restrictions on a set of conditional probabilities:

\[
\begin{align*}
\pi_{11}^{C} &= \pi_{12}^{C} = \pi_{13}^{C} = \pi_{14}^{C} = \pi_{15}^{C} = \pi_{16}^{C}; \\
\pi_{11}^{L} &= \pi_{14}^{L} = \pi_{13}^{L} = \pi_{15}^{L} = \pi_{16}^{L}; \\
\pi_{24}^{L} &= \pi_{24}^{L} = \pi_{22}^{L} = \pi_{25}^{L} = \pi_{23}^{L} = \pi_{26}^{L}.
\end{align*}
\]

Restrictions on \(\pi_{21}^{C} \) and \(\pi_{21}^{L} \) can be expressed similarly, but they are redundant under constraints (5).

Second, we assume, in accordance with proposition (3.2), that no individual identifies with the lowest status strata \( (S_1) \), given cognition of the highest level of living \( (Z_3) \). That is,

\[
\pi_{13}^{S} = \pi_{16}^{S} = 0.
\]

Finally, we compute estimates under the model incorporating restrictions (10) and (11), although the model is still unidentifiable. Thus derived estimates, then, will be used as the initial values in the iteration procedure under a modified model. For the new model, (to be referred as model 4 or M4), we put more strict restrictions on the parameters in (10): the initial values of these parameters will remain fixed in the iterative procedure for estimating the rest of parameters. Model 4 is identifiable with this provision while restrictions (10) and (11) are still in effect. All parameter estimates will be performed by a general program for latent structure analysis provided by Clogg (1977).
3. Results

The fit of models 1 through 4 are summarized in Table 3. Of these, model 4 is acceptable as judged by the likelihood ratio chi-square ($LR^2=1.374$, $df=4$, $p>.500$). Although M3 improved the fit over M1 by 98.1 percent, the chi-square statistic of the model ($LR^2=13.233$, $df=4$) is still large in light of the associated degrees of freedom. Thus, the model is to be rejected at the .010 significance level. In sum, the evidence from latent structure analysis is congruent with out theoretical propositions. Shown in Table 4 are the parameters in the basic set estimated under M4.

Table 3
Test results of the unrestricted (M1, M2 and M3) and restricted models (M4)

<table>
<thead>
<tr>
<th>Model</th>
<th>$T$</th>
<th>$LR^2$</th>
<th>$df$</th>
<th>$p$</th>
<th>Reduction in $LR^2$ Over M1</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>1</td>
<td>652.410</td>
<td>17</td>
<td>.000</td>
<td>--</td>
</tr>
<tr>
<td>M2</td>
<td>2</td>
<td>167.351</td>
<td>10</td>
<td>.000</td>
<td>75.8</td>
</tr>
<tr>
<td>M3</td>
<td>3</td>
<td>13.283</td>
<td>4</td>
<td>.010</td>
<td>98.1</td>
</tr>
<tr>
<td>M4</td>
<td>6</td>
<td>1.374</td>
<td>4</td>
<td>&gt;.500</td>
<td>99.8</td>
</tr>
</tbody>
</table>

Table 4
Estimates for parameters in the basic set under Model 4

| Probabilities | Latent Class
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$\pi_{CX}$</td>
<td>t=1 (1, 1)</td>
</tr>
<tr>
<td></td>
<td>t=2 (1, 2)</td>
</tr>
<tr>
<td></td>
<td>t=3 (1, 3)</td>
</tr>
<tr>
<td></td>
<td>t=4 (2, 1)</td>
</tr>
<tr>
<td></td>
<td>t=5 (2, 2)</td>
</tr>
<tr>
<td></td>
<td>t=6 (2, 3)</td>
</tr>
</tbody>
</table>

Note — Probabilities may not sum to 1 due to rounding. The asterisked entries were predetermined. See restrictions (5) and (11) in the text for more details.

Inspection of $\pi_{CX}$ reveals the relative proportions of the six latent classes among Japanese men: approximately half (47.6%) of them belong to latent class 2, while classes 3 and 4 are very small with respective proportions less than 1 percent (.9 and .4); the rest of the classes are of intermediate sizes. When the parameters are studied with respect to subcomponent latent variables $Y$ and $Z$, a symmetrical pattern emerges among the rank order of the classes of $Z$ at the two levels of $Y$: parameters pertaining to $Y_1$, $\pi_{CX}$ (for $t=1, 2, 3$), decrease in order of $Z_2(.476)$, $Z_1(.118)$ and $Z_3(.009)$, while those pertaining to $Y_2$, $\pi_{CX}$ (for $t=4, 5, 6$), decrease in order of $Z_2(.236)$, $Z_3(.158)$.
and $Z_1(.004)$. It follows that cognition of the average level of living ($Z_2$) is most likely to be made regardless of cognition with respect to $Y$. The small value of $\hat{\beta}_3X$ indicates incompatibility between cognition of inferior positions in the labor market ($Y_1$) and the high level of living ($Z_3$). The same holds for the joint occurrence of $Y_2$ and $Z_1$, i.e., $\hat{\beta}_4X$. Latent classes 1 and 6 are of like combinations of cognition with respect to $Y$ and $Z$. They are less incompatible (.118 an .158) than classes 3 and 4 comprised of unlike cognition pairs. The proportions of the latent classes of $Y$ (or $Z$) can be computed by summing appropriate $\hat{\beta}_tX$ s across levels of $Z$ (or $Y$) at each level of $Y$ (or $Z$) as shown in Table 2: we obtained $((\hat{\beta}_1Y, \hat{\beta}_2Y)=(.603, .398)$ and $(\hat{\beta}_1Z, \hat{\beta}_2Z, \hat{\beta}_3Z)= (.122, .712, .167)$. Similar figures were computed under M1 (see Table 1) which treats the manifest variables $C$ and $L$ (as well as $S$) as correct measures of cognition. However, if one accepts M1 that is indeed inadequate, he/she tends to underestimate the size of $Y_2$ by more than 10 percent but overestimate that of $Z_2$ by approximately 4 percent.

Concerning $\hat{\beta}_tZX$, there are in fact only two sets of estimates because of constraints (11) under which

$$\hat{\beta}_{1t}ZX = \hat{\beta}_{1t}CX \quad (\text{for } t = 1, 2, 3) ; \quad \text{and}, \quad \hat{\beta}_{2t}ZX = \hat{\beta}_{2t}CX \quad (\text{for } t = 4, 5, 6). \quad (12)$$

As an indicator of cognition of $Y$ at level 1, the “working class” alternative of variable $C$ reflects cognition of inferior positions in the labor market with 99.6 percent accuracy rate. In contrast, the rate reduces to 70.5 percent for the “middle class” alternative, $C_2$, reflecting cognition of superior positions at $Y_2$. In other words, the term “working class” induces false identification with the label from those who actually hold cognition $Y_2$ in addition to the true responses with respect to $Y_1$.

Under constraints (11), estimates $\hat{\beta}_{kt}LX$ are classifiable into three sets.

Namely, $\hat{\beta}_{1t}LZ = \hat{\beta}_{1t}LX \quad (\text{for } t = 1, 4)$, $\hat{\beta}_{2t}LZ = \hat{\beta}_{2t}LX \quad (\text{for } t = 2, 5)$, and $\hat{\beta}_{3t}LZ = \hat{\beta}_{3t}LX \quad (\text{for } t = 3, 6). \quad (13)$

Cognition of the intermediate level of life chance ($Z_2$) is not only prevalent, as mentioned earlier with respect to $\hat{\beta}_tX$, but it facilitates unambiguous identification with the “average level of living” on variable $L$ with 89.3 percent accuracy rate. At the other levels of latent variable $Z$, identification with true response alternatives are less clear as indicated by the sizes of $\hat{\beta}_{11}LZ$ (.658) and $\hat{\beta}_{33}LZ$ (.520). Besides, the false identification with level 2 of variable $L$ is greater in latent class $Z_3$ (.471) than in $Z_1$ (.343) approximately by 13 percent. To be brief, the former group of people may be called modest claimers about the level of living, while the latter may be called bold claimers.

Since status identifications have two cognitive sources, the pattern exhibited by $\hat{\beta}_tSZX$ is complicated as compared with the other parameters for conditional probabilities. However, as far as modal probability within latent class $t$ is concerned, there is one to one correspondence between categories of $S$ and $Z$ across levels of $Y$: $(S_2, Z_1), (S_2, Z_2)$ and $(S_4, Z_3)$. For respondents in these pairs, status identification is a (positive) monotonic function of covert evaluation of life chances. However, due to the joint
effect of latent variable Y, the probabilities of these pairs are not identical for the two levels of variable Y. The difference is greatest where cognition of life chance is lowest (Z1), i.e., latent classes 1 and 4 (.491 and .899): when cognition of life chance is held at level 1, cognition of superior labor market positions (Y1) induces much less ambiguous status identification with lower-lower stratum (S2) than cognition of inferior labor market positions (Y1). The differences in the modal probabilities between latent classes 2 and 4 (.666, .706) as well as between classes 3 and 6 (.886, .834) are approximately 5 percent, indicating weaker influences of cognition with respect to Y than those seen for latent classes 1 and 4. Cognition with respect to joint latent variable (Y, Z) at the lowest level, i.e., latent class 1, causes dispersion in status identification, (particularly at levels 1, 2 and 3), reflected in relatively high non-modal probabilities at levels 1 (.230) and 3 (.245) as well as the aforementioned low modality in this class. Status identification in other latent classes are more concentrated on the modal levels Sj.

4. Discussion

The results obtained from the present analysis are congruent with our cognitive model which incorporated the notion of multi-dimensional cognition as the basis of overt self-evaluation (i.e., identification) of one’s social standing in the stratification systems. In an earlier study of Naoi (1979) who worked on the same data set, perceptions of class and status were treated as mutually independent on no objective ground. To add to it, in her causal scheme, perception of the level of living was viewed as a determinant of both class and status perceptions. The evidence from our latent structure analysis conflicts with her model: class and status identifications are derived from the same basis in the cognitive space, i.e., cognition of one’s standing in the labor market, though the latter identification also depends on cognition of one’s life chance, and; class identification is affected solely by cognition of the standing in the labor market and not by cognition of one’s life chance which is the sole basis of identification of the level of living. A more direct test on Naoi’s model by log linear analysis (Matsuda, 1981) also disconfirmed her hypothesis about the causal relationships among the three kinds of self-identification. In brief, inadequacy of her model seems attributable to her failure to recognize cognitive bases on which overt self-evaluation is made.

According to a recent report of the National Survey of Social Needs (Economic Planning Agency, 1981), there was a noticeable change in the trend among middle strata identifiers: the proportion of upper-middle stratum identifiers declined for the first time in the past nine years, and; the proportion of lower-middle stratum identifiers increased as if compensating for it. The report explained the change as a result of slowdown in the economic growth and the decline in disposable income. The interpretation of the trend is compatible with the present findings. We obtained an indication that identification with these strata (S3 and S4) was under relatively strong influence of cognition with respect to life chance. However, a close examination of the question used in the survey suggests that the questionnaire wording elicited self-evaluation of one’s level of living which is unconfounded with cognition of the standing in
the labor market unlike status identification. Whichever kind of self-evaluation was actually measured in the survey, the observed trend lends further support to our model.

Finally, in lieu of conclusion, we note some cautionary remarks about our model. Although, we believe that it is fairly widely generalizable, the model is based on information within the limits of the SSM survey design. Presently, our knowledge is specific with respect to sex (males), socio-economic environment (Japan) and time (as of 1975). Also, multi-dimensionality of the cognitive space was affirmed only in two dimensions. To affirm the existence of different dimensions, either different sets or increased number of questions must be included in future studies. Despite these limitations, we expect that the utility of the model will be found in future research on concomitant or consequential expressions of self-evaluation of one’s social standing such as satisfaction and attitudes of various kinds as well as voting, consumption and investment behaviors. The model can also be applied to studies on causal determinants, contextual and/or personal.

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