STATUS GROUP EFFECTS ON CULTURE CONSUMPTION *

An Application of Diagonal Reference Models

Nan Dirk De Graaf & Harry Ganzeboom

Contents

* Nan Dirk de Graaf is a research fellow, subsidized by the Dutch Organization of Scientific Research (NWO no. 279.101), at the University of Nijmegen, Department of Sociology, PO.Box 9108, 6500 HK Nijmegen, Netherlands, Email U211313@HNYKUN11.BITNET. Harry Ganzeboom holds a Huygens Scholarship (H50.293) awarded by the Netherlands' Organization for Scientific Research NWO, Utrecht State University, Section on Empirical and Theoretical Sociology, Heidelberglaan 2, 3584 CS Utrecht, Netherlands, Email SSLZHEM@HUTRUU0.BITNET. Substantial parts of this paper were written during stays of the second author at the University of Arizona and of both authors at the Max Planck Institute for Human Development and Education in Berlin. A first version of this paper was presented at the Utrecht Meeting of the ISA Research Committee on Social Stratification, April 26-29, 1989. We thank Wout Ultee for his extensive comments on an earlier version and Karl Ulrich Mayer for the excellent facilities given to us at the Max-Planck-Institute for Human Development and Education.

STATUS GROUPS EFFECTS ON CULTURE CONSUMPTION

An Application of Diagonal Reference Models

ABSTRACT

We test several hypotheses about the impact of an individual's education in relation to spouse's and parents' education on culture consumption. Sobel's 'Diagonal Reference Models' are preferred for modelling this impact. New extensions of this class of models are presented; they model complex interaction effects covering acculturation hypotheses, while applying relatively parsimonious models. Our analysis of Dutch data of 1977 shows that wives, irrespective of duration of marriage, weigh the influence of their husband's education almost equal to their own education. In case of young males the wife has a minor influence, whereas, in case of long duration of marriage the education of the wife is even more important than that of the male respondent. For the intergenerational relationships the main conclusion is that the influence of parents' education is conditional: i.e. in case the respondent's education is lower than parents' education the influence of parents' education is larger than respondent's own education. If, however, the education of the respondent is higher, the influence of the parents is negligible. The results corroborates a strong 'impoverished nobility' hypothesis and a weak 'parvenu' hypothesis.

INTRODUCTION

The history of arts and culture is replete with anecdotal evidence on the relationship between status motives and culture consumption. The tendencies of the mighty, rich and famous of all times and places to illustrate and to confirm their virtues and distinct tastes by the conspicuous display of artistic objects or performances are known so well, that they do not need further documentation. Somewhat more specific is the relationship that persons who have recently gained high status are supposed to have with culture consumption. A classical anecdote in this respect is Molière's "Le Bourgeois Gentilhomme" (1953, that portrays the typicalities of the snob (=sine nobilis!) who has recently come to wealth and tries to confirm this by exaggerated status display, among which various forms of cultural activities. The main character in the play, Mr. Jourdain, who stems from humble backgrounds and is trying to make inroads into the 'gentlemen' classes, surrounds himself with a music master, a dancing master, a fencing master, a philosopher and various dancers and singers. Mr. Jourdain's case can be diagnosed as a 'nouveau riche' or 'parvenu' effect; persons, who have newly won high status, will tend to over-stress their new status position. In line with this effect is the argument made by historians (William Weber 1975), who have argued that the appearance of public museums, theaters and concerts, as they have evolved in the 19th century, can be understood best against the background of the economic and political rise of the bourgeoisie in that period and their need for confirming their newly won status.

There is a - somewhat less popular - counterpart to the stereotype of the parvenu: the notion of 'impoverished nobility'. This would include the phenomenon that persons from a high status background will stick to their old manners, even if they have lost the material position belonging to it. Indeed, one of the secondary characters in Molière's play, the nobleman Dorante, embodies exactly this phenomenon. Dorante's possessions have vanished, but he is able to make a living out of Jourdain's pocket by showing him how a nobleman should behave properly. Jourdain, in response, does not only pay with his money, but with his admiration as well.

The implicit theory of culture consumption, that can be extracted from these anecdotal examples, would hold that culture consumption can be used as a status rendering device: culture consumption confers social status upon its consumer. The higher a person's existing social status, the more likely s/he is to use culture consumption as status confirmation. However, there is more to this than culture consumption as a simple status confirmation process. One's level of culture consumption does not simply depend upon one's current status, but upon earlier statuses as well and is arrived at by an adjustment process that depends upon the specific components of status group membership. Jourdain displays his high level of culture consumption because he has recently come to high status. Durante displays his high level of culture consumption because he has recently fallen from high status. Persons whose social status is somehow insecure (e.g. by their humble background) are even more prone to conspicuous consumption of culture, in order to ascertain and confirm their unbalanced positions. Persons who have lost a high status position, will nevertheless incline to display culture consumption in line with their former status.

Historically, the status variables in these propositions have been equated with the position in the division of labor (occupation) or the position in the distribution of political power or wealth. This part of the argument is somewhat at variance with modern empirical evidence on the determinants of culture consumption. This research consistently (DiMaggio and Useem 1978; Bourdieu 1984[1979]; Ganzeboom 1982) shows that of the three major dimensions of social stratification (education, occupation, income) education is the one that by far outweighs the others in influencing culture consumption. The higher educated are so more likely to participate in high culture that this confounds most of the over-representation of groups with higher income and higher

occupational status. This statement has consistently been confirmed, not only for research in the country, where we will extract our data from (Netherlands), but throughout modern societies. However, in line with Molière's implicit theory, recent research shows that culture consumption is highly dependent upon family background, or more specifically the educational level of the parents (Ganzeboom 1984). High culture is one of the behavioral forms, for which a strong socialization effect, over and above the effects of current statuses, can be demonstrated.

Molière's 'Bourgeois Gentilhomme's' wife, Mrs. Jourdain, does not share much of her husband's fads. She tries to keep him away from his noblemen friends and discourages his extravagant behavior. This may make for Molière as a sympathetic psychologist of marriage and the family, but as a theorist of culture consumption, he cannot cope with one other striking result of modern research (Ganzeboom 1982): one's amount of culture consumption is also strongly conditioned by status characteristics, in particular the education of one's spouse. At first appearance, this seems to be only a trivial result. In many forms of culture consumption (such as theater and concert) one participates together and spouses are most likely to keep each other company. At second thoughts, however, there is nothing trivial about this. First, hardly any form of cultural participation truly requires the presence of an accompanying person. It is not clear why the enjoyment of culture diminishes if one were to participate on one's own. Second, the tendency of spouses to influence each other's behavior is not very different between forms of culture that are usually attended by couples or small groups (e.g. theater, concert) and forms of culture consumption, one necessarily does on one's own (e.g. reading). Participation in high culture is therefore not only a household decision process (similar to buying a dishwasher), but indicates taste and norms that play a part in creating solidarity between spouses. Partners mutually adjust their behavior to each other's expectations and requirements. Culture consumption can best be understood as a process in which individuals adapt their behavior to the norms that prevail in their status group.

In this paper, we formulate the status group hypotheses that are implicit in Molière's play into a set of testable predictions on the pattern of influence of educational statuses of respondents, their spouse and their parents on respondents' level of culture consumption. How does educational status of the respondent in relation to his/her parents' education influence respondent's level of culture consumption? Can we discern effects parallel to the 'parvenu' and 'impoverished nobility' effects, that rule the behavior of Molière characters? And how do spouses' educational statuses combine in their influence on respondent's culture consumption? Is the influence of mother and father the same and does it last throughout respondent's lifetime? Do wives adjust to their husbands more than husbands do to their wives?

We add age- and gender-specific forms of status group acculturation to the perspective offered by Molière. Is the effect of spouse's education the same throughout marriage? Does the influence of prior statuses diminish during the life-cycle? We formulate hypotheses answering each of these research questions. We then formalize these predictions in diagonal reference model (Sobel 1981, 1985), that exactly test the suggested effects.

HYPOTHESES

A list of all hypotheses about the impact of status groups on the process of acculturation is given in Figure 1 according to a logical hierarchy.

Our first and most general assumption on acculturation processes is the status group hypothesis. This states that respondent's culture consumption is not only a function of his/her own education, but also increases with the educational level of others who connect respondent to the status group: his/her spouse and parents.

The second set of hypotheses is a specification of the general status group hypothesis and derives from the principle of status maximization: everyone will stress the highest possible status of the total status group membership configuration. This principle applies both to the marriage relationship and the intergenerational relationship. In both cases one has the situation in which respondent's education is higher than other's education, as well as the situation in which respondent's education is lower than other's education. For the context of intergenerational mobility the labels of 'parvenu' and 'impoverished nobility' are appropriate; we generalize these labels for the marriage context as well. In all four situations the principle reads that the highest status prevails as the determinant of culture consumption and respondents will adjusts their culture consumption to what is usual in this highest possible status group. We include in this the variation that respondents' level of culture consumption actual overshoots the mark set by the usual behavior in the highest status group. That is we distinguish between 'weak' (tendency to confirm to highest status) and 'strong' (exaggeration of a norm in the highest status group) versions of the status maximization hypothesis.

The third group of hypotheses deals with sex specific variations of the acculturation process. We take as our point of departure the idea of male domination, that is that men have the overruling influence, both in marriage and in the intergenerational context. Within marriage, the appropriate prediction reads that husbands' education dominates their wives' in the determination of the culture consumption level. Within the intergenerational context, the prediction reads that father's education is more important than mother's. Naturally, all this implies the reverse possibility of female domination as well, both in marriage and the intergenerational context. For example, one might conjecture that the mother actually is the main agent of socialization in the family. The prime importance of the role of the mother is well documented in the socialization literature (Hess and Shipman 1965; Brophy 1970; White 1971). Similar arguments can apply in the marriage context. But as we will see below, these possibilities are actually covered by the male domination thesis. Within this set of hypotheses, we will entertain one more mode of gender specific acculturation processes, namely that of like-sex modelling. This applies only in the intergenerational context: men tend to follow their fathers, whereas women tend to follow their mothers. This also implies the reverse possibility, namely that men tend to follow their mother and women follow their father.

Our fourth set of hypotheses concerns the influence of duration on the importance of the different components of status group membership. The general idea is that status components become more important, the longer they last. Within marriage, we predict an increasing influence of the spouse with marriage duration, up to the point where the influence of both spouse balance. For the intergenerational relationship we expect the influence of parents to dwindle with age, while current status characteristics grow in importance.

Finally, for the marriage context, we entertain the hypothesis that combines the (fe)male domination and marriage duration effects in one interaction term: it implies that the growing influence of spouse's education with marriage duration is different for men and women. We have formulated this hypothesis again for the male domination variant: i.e. wives adjust more to their husbands, than do husband adjust to their wives. Naturally, this applies again the reverse possibility, namely that husbands do accommodate more than their wives.

METHODS: DIAGONAL REFERENCE MODELS

To specify and to test the different hypotheses forwarded in Figure 1, we will utilize and expand on the diagonal reference models[1] given in Sobel (1981, 1985). This section will briefly review these models and argue why the diagonal reference models adequately formalize our hypotheses in Figure 1. We will illustrate the basics of each model by a square fourway display. The individual scores for culture consumption are referred to as Y_{ijk}, where i refers to first status, j to second status and k to individuals. The means over k in the i,j distribution will be referred to as M_{ij}. We will first discuss the two-dimensional models, that are appropriate to adjustment processes that take place between two statuses. In our case, the influences of the spouse's and one's own education is an example of this, and we will phrase our exposition in term of husband's and wife's education. In the next section, we discuss three-dimensional diagonal reference models, where the adjustment between three statuses is modeled. The problem of the relative contribution of father's, mother's and one's own education on one's culture consumption is an example of this. There we will phrase our exposition in term of intergenerational educational mobility.

Models for two independent variables

Square additive model

First, we will pay attention to some models with two educational statuses (both having four categories) as independent variables and culture consumption as a dependent variable. The familiar square additive model (of analysis of variance) for the effect of two independent on a third variable can be displayed in the following way:

$M+a_1+b_1$	$M+a_1+b_2$	$M+a_1+b_3$	$M+a_1+b_4$
$M+a_2+b_1$	$M+a_2+b_2$	$M+a_2+b_3$	$M+a_2+b_4$
$M+a_3+b_1$	$M+a_3+b_2$	$M+a_3+b_3$	$M+a_3+b_4$
$M+a_4+b_1$	$M+a_4+b_2$	$M+a_4+b_3$	$M+a_4+b_4$

In formula:

$$Y_{ijk} = M + a_i + b_j + e_{ijk}$$

$$\Sigma_i a_i = \Sigma_j b_j = 0$$

Assuming an orthogonal design (the two independent variables are uncorrelated) and disregarding the overall effect M, the square additive model assumes that the scores are the sum of two constants that can be estimated from the marginals. It is easy to extend the

[1] We refer to these model as 'diagonal reference models', in stead of 'diagonal mobility models' (Sobel, 1981), not only because the earlier term is substantively better, but also to avoid confusion with Goodman's 'diagonal mobility models' (Goodman, 1972).

model with other variables (covariates) that are also of influence on the dependent variable. If we take X_{ijkl} as the covarying variables 1 through L, the formula is:

$$Y_{ijk} = M + a_i + b_j + \Sigma\, c_l\, X_{ijkl} + e_{ijk}$$

In the 4x4 table, the model uses 7 degrees of freedom to estimate the cell means. The square additive model does not necessarily fit the observed cell means M_{ij}. Indeed, one of the main objectives of the model is usually to test whether there is interaction by testing the lack-of-fit on the 16-7=9 degrees of freedom that are left. One could model the pattern of these interaction effects by introducing additional constraints and contrasts. Interaction between covariates and factors can also be tested and modeled. Since we will not use the model beyond the additive version with covariates, the reader is referred to any textbook on analysis of (co)variance,

The square additive model expresses a process, where two independent variables are assumed to work separately on a criterion variable. There is no assumption about the combination of their effects other than independence. Although the existence of interaction effects can be tested, the model does not lend itself very easily to an interpretation or modelling of these effects in a sociologically meaningful sense. As Hope (1971, 1975) points out, the usual status inconsistency effects (e.g. the extent to which one status is higher than the other), are already incorporated within the main effects of the additive model (even without row by column interactions). Furthermore, no assumption about the specific relation between educational statuses is assumed (see also Sobel 1981). In particular, the fact that educational statuses are identically coded for all dimensions (parents, respondents and spouses) is not used to inform the model.[2]

A new class of models about how the mutual adjustment takes place, is provided by Sobel's (1981, 1985) diagonal reference models. Whereas the square additive model uses the average culture consumption of status categories as a reference (where these marginal references pertain to culture consumption rates that are averaged over persons with consistent and inconsistent statuses), diagonal reference models use as a reference the 'estimated' average culture consumption of persons with consistent status characteristics, that pertain to the 'pure' norms on this behavior among groups with consistent statuses.[3] The question becomes to what extent "off-diagonal" persons (i.e. heterogamous marriage partners) adjust their cultural behavior to their own educational category and to what extent to the educational categories of their spouse. In order to answer this question the diagonal reference models take the level of culture consumption of spouses with similar educational training (i.e. the diagonal in the homogamy table) as a reference value. The status maximization hypotheses in Figure 1 include this reference category verbally as: "... in accordance with or even higher than is usual in ...". The 'usual' in this formulation refers to the norm, that is a level of culture consumption typical for those in marriages with equally educated partners.

---

[2] Also, the fact that educational status measures usually have at least ordinal, but for practical purposes even metric properties, is not used to inform the model. However, this is no difference with the diagonal reference model discussed in the sequel. Metric restrictions on the square additive model result in the common regression model; the methodology for parallel restrictions in diagonal reference models is not yet developed.

[3] Diagonal reference models do not have a grand mean like the square additive model.

Simple diagonal reference models

The simple version of the diagonal reference model (i.e. without covariates and status inconsistency effects) can be represented as:

u_{11}	$p.u_{22}+(1-p).u_{11}$	$p.u_{33}+(1-p).u_{11}$	$p.u_{44}+(1-p).u_{11}$
$p.u_{11}+(1-p).u_{22}$	u_{22}	$p.u_{33}+(1-p).u_{22}$	$p.u_{44}+(1-p).u_{22}$
$p.u_{11}+(1-p).u_{33}$	$p.u_{22}+(1-p).u_{33}$	u_{33}	$p.u_{44}+(1-p).u_{33}$
$p.u_{11}+(1-p).u_{44}$	$p.u_{22}+(1-p).u_{44}$	$p.u_{33}+(1-p).u_{44}$	u_{44}

In formula:

$$y_{ijk} = u_{ij} + E_{ijk} \quad (1)$$

$$u_{ij} = p.u_{ii} + (1-p).u_{jj} \; ; \quad (2)$$

(a) $i = 1,2,3,4. \; ; j = 1,2,3,4. \; ; k = 1,.....,n_{ij};$

(b) $0 \leq p \leq 1.$

In these formulas, y_{ijk} is the value of the dependent variable where there are k observations for the cell ij of a two-dimensional table with identical categories. In our applications, subscript i stands for status of respondent's education and j for spouse's education. The expression u_{ij} indicates population averages of culture consumption for observations in cell ij of this mobility table. E_{ijk} is a stochastic error term with 0 as expected value. Expressions u_{ii} and u_{jj} are population averages in cell ii (the diagonal cell for the reference of the class of the respondent) and cell jj (the diagonal cell for the reference of the class of the spouse) of this two-dimensional table.

In the simple diagonal reference model the reference values for individuals with a partner having the same educational status is u_{ii} (i.e. in our case there are four parameters (u_{11} to u_{44}) estimated representing the diagonal population means). For persons off the main diagonal, this model has two reference values. The first is the diagonal population average of the 'respondent' category u_{ii} weighted by p and the second one is the diagonal population average of the 'spouse' category u_{jj} weighted by (1-p). Restriction (b) implies that education of both the respondent and the spouse are expressed as comparable probabilities. A consequence of this restriction is an estimate of the influence of the respondent's education relative to that of the spouse. The off-diagonal u_{ij} cells thus are a weighted average of two reference values affecting the amount of culture consumption of an individual, and parameter p indicates the influence of respondent's own education in proportion to the effect of that of the spouse. Thus, p and (1-p) indicate the relative influences of the education of the spouse in proportion to that of respondent's own education.

The additive diagonal reference model uses 5 degrees of freedom in a fourway table, where the square additive model uses 7 degrees of freedom. The diagonal additive model is therefore more restrictive and parsimonious than the square additive model.

Weak status maximization: highest status adjustment

The two hypotheses of this paper on status maximization are the parvenu and the impoverished nobility hypotheses (hypotheses 2a and 2b). A diagonal reference model testing the parvenu and the impoverished nobility hypothesis simultaneously is the

following model (De Graaf and Ultee 1987a), that simply alternates the weights of both statuses in the upper and lower part of the table:

$$y_{ijk} = u_{ij} + E_{ijk} \quad (1)$$

$$u_{ij} = p.u_{ii} + (1-p).u_{jj} \quad \text{if educ} > \text{seduc}; \quad (2a)$$

$$u_{ij} = (1-p).u_{ii} + p.u_{jj} \quad \text{if educ} < \text{seduc}; \quad (2b)$$

(a) $i = 1,2,3,4.$; $j = 1,2,3,4.$; $k = 1,.....,n_{ij}$;

(b) $0 \leq p \leq 1.$

(c) educ = respondent's education; seduc = spouse's education.

In equation 2b the parameter p and its inverse (1-p) are alternated. Since, the only difference is this alternation of parameters, this model also uses no more than 5 degrees of freedom. A less restricted model is one which contains an extra parameter allowing that the extent to which one sticks to one's own status in case the partner has a lower status is not identical to the extent to which one holds on to the spouse's status in case the partner has a higher status.

Strong status maximization: exaggeration effects

If we want to specify that the amount of culture consumption varies with differences between origin and destination in a different way than just highest status adjustment, we can expand the diagonal reference models with variables like:

STEP: $|i-j|$

PARV: $|i-j|$, if $i > j$, else = 0

IMPOV: $|i-j|$, if $i < j$, else = 0

Models with strong inconsistency effects are particularly appropriate if we want to relate the dependent variable to a (semi-)continuous contrast between origin and destination. This is for example the case for extreme parvenu effects: these effects should express the tendency of persons with extreme inconsistent statuses to exaggerate their cultural behavior, even beyond the level of those with comparable consistent statuses. The specified term tests the existence of exaggeration for those who have a lower education than their spouse (PARV), for those who have a higher education than their spouse (IMPOV) and for both cases at the same time (STEP).

Covariates

One can extend the above models by introducing covariates. For the marital context, our covariates will be AGE, SEX, father's education (FEDUC), and mother's education (MEDUC). A simple model with covariates[4] is the following:

---

[4] Sobel (1985) shows an even more general model with covariates:

$$y_{ijk} = p_i \ (\alpha_i + \Sigma \ B_{il} \ X_{ijkl}) + r_i \ (\alpha_j + \Sigma \ B_{jl} \ X_{ijkl}) + E_{ijk} \quad (3a)$$

We prefer our more restricted model for the following reasons. First, we want to estimate only "one" weight value p for all reference diagonal cells together (like in model 2) and not for each diagonal cell a separate weight value (i.e. Sobel's p_i). Second, we want to estimate one ß parameter for each

$$y_{ijk} = p\ (\alpha_i + \Sigma\ B_l\ X_{ijkl}) + (1\text{-}p)\ (\alpha_j + \Sigma\ B_l\ X_{ijkl}) + E_{ijk} \quad (3)$$

X_{ijkl} is the value of the covarying variables 1 through L. The parameters α_i, α_j, B_l are parameters for the diagonal (we refer to Sobel (1985) for a full description). All the parameters within parentheses are considered as conceptually identical to u_{ii} and u_{jj} in equation 2. We may write equation 3 in a more simple way (cf. De Graaf and Ultee 1987b)

$$y_{ijk} = p.(u_{ii}) + (1\text{-}p).(u_{jj}) + \Sigma\ B_l\ X_{ijkl} + E_{ijk} \quad (4)$$

Conditional reference coefficients

Next we consider hypotheses that state that adjustment coefficients differ for certain conditions. An example is hypothesis 3a that states that wives adjust their behavior more to that of their husband, whereas husbands adjust their behavior only to a small extent to that of their wife. Or hypothesis 5a, stating that the adjustment differs between age groups. This implies that the reference parameter is conditioned by a third variable, say Z. Such a model can be written as follows:

$$y_{ijk} = (p + \delta p.Z).(u_{ii}) + ((1\text{-}p) - \delta p.Z).(u_{jj}) + \Sigma\ B_l\ X_{ijkl} + E_{ijk} \quad (5)$$

This equation incorporates the restriction that the amount of the conditioning variable Z (i.e. δp) added to the weight p is subtracted from the weight (1-p). The advantage is that (p + (1-p)) still sum to 1 in all ranges of Z, and, therefore, are still expressed as comparable probabilities.

The next hypothesis to be tested is a hypothesis stating that the adjustment is not only dependent upon age and sex, but that the age effect is also sex specific (i.e. hypothesis 6a). This entails an interaction between the conditioning variables age and sex. The model that tests this hypothesis is:

$$\begin{aligned} y_{ijk} = {} & (p + \delta p1.age + \delta p2.sex + \delta p3.(age^{*}sex)).(u_{ii}) \\ & + ((1\text{-}p) - \delta p1.age - \delta p2.sex - \delta p3.(age^{*}sex)).(u_{jj}) \\ & + \Sigma\ B_l\ X_{ijkl} + E_{ijk} \end{aligned} \quad (6)$$

Three independent variables

Three dimensional models

---

covariate and not for each distinct diagonal cell a single beta coefficient ($ß_i$ and $ß_j$) for each covariate. An important empirical result was that our more restricted nested model always resulted in a loss of a relative small amount of CHI square and a large gain in degrees of freedom. Hence, in our case, also empirically the more restricted model is the one to be preferred. Therefore, we will not report the analyses of the less parsimonious models.

The models to be used to analyze the effects of father's, mother's and respondent's education on culture consumption differ from the specifications given above, in that they are three-dimensional in stead of two-dimensional. The reference categories are now formed by those who are consistent throughout the three educational measures. The most restricted model for a three dimensional diagonal mobility model is (Ultee, De Graaf and Van Puijenbroek 1988, 1989):

$$y_{hijk} = u_{hij} + E_{hijk}; \quad (7)$$

$$u_{hij} = p.u_{hhh} + q.u_{iii} + (1 - p - q).u_{jjj} \quad (8)$$

(a) $h = 1,2,3,4$; $i = 1,2,3,4$;

$j = 1,2,3,4$; $k = 1,.....,n_{ij}$;

(b) $0 \leq p \leq 1$; $0 \leq q \leq 1$; $0 \leq (1 - p - q) \leq 1$

In these formulas, y_{hijk} is the value of the dependent variable where there are k observations for the cell (h,i,j) of the educational mobility table. Subscript h stands for status of respondent's education, i for father's education and j for mother's education.

The reference value for individuals with parents with the same education is given as u_{hhh}. For persons off the main diagonal, this model distinguishes between three reference values. First, the population diagonal average of the 'respondent's' reference category weighted by (p). Second, the population diagonal average of the 'father's' reference category weighted by (q), and, third, the population diagonal average of the 'mother's' reference category weighted by (1-p-q). Restriction (b) implies, similar to restriction (b) of equation 2, that the education of the respondent, the father and the mother are expressed as comparable probabilities. A consequence of this restriction is an estimate of the influence of the respondent's education relative to that of the parents, and accordingly, the influence of the mother to that of the father. In this case parameter, u_{hij} is a weighted average of three reference values affecting the amount of culture consumption of an individual.

This model extended with covariates is:

$$y_{hijk} = p.u_{hhh} + q.u_{iii} + (1-p-q).u_{jjj} + \Sigma B_l X_{ijkl} + E_{hijk} \quad (9)$$

All terms have been dealt with previously.

DATA

Our data are taken from the 1977 Life Situation Survey of the Netherlands Bureau of Statistics (CBS 1977). This file is a part of a periodic general survey of the Dutch population that has been held every third year since 1974. Data about various forms of culture consumption and the educational variables pertinent to our research questions (respondent, spouse, father, mother) are routinely collected in all these surveys. The particular advantage of the 1977 issue of the Life Situation survey is that the culture

consumption items were answered with quantitatively formulated response alternatives.[5] There are a total of 4.159 individuals in the file, but we have restricted our analysis to a total of 2.408 person that have valid scores on all variables. 28.7% of the initial sample is left out of the analysis because they do not have a spouse, 5.7% is left out due to a selection of respondents being between 25 and 74 years of age, and the remaining 7.8% of the sample attrition is due to missing values in some of the other variables.

Appendix 1 describes the variables used in analysis. Age and sex are coded so as to facilitate calculations for expected values in contrasting categories. Sex is coded 0 for men and 1 for women, so that sex differences in the parameters directly refer to the contrast between the sexes with the men as a reference categories. Age is coded in ten year wide generations with the youngest coded at 1 and the oldest coded at 5.

The educational status variables are coded into four categories: (1) primary school, (2) basic vocational (3) extended primary and lower secondary, (4) higher secondary and tertiary.[6] This recoding covers the differences between vocational and general tracking in the Dutch educational system that exists within all levels above primary.

The dependent variable, culture consumption, is created as an index of six basic variables: theater and concert going, museum visits, visits to historic monuments, movie going, reading books, and library membership. The index variable counts the number of times that the respondent reports participation in these form of culture consumption. The culture consumption index has a reliability of .691 (Kuder-Richardson coefficient for dichotomous data). Its distribution is somewhat skewed with an over-representation of respondents who do not participate at all (19%) and an under-representation of those who participate in all activities (5%). The elementary breakdown of culture consumption values by educational statuses (without covariates) is given in Appendix 2.

TESTING AND ESTIMATION

The parameters of the models employed are estimated by means of the BMDP's non-linear regression program 3R. The function of the diagonal reference models has to be specified within a subroutine using FORTRAN.[7] In order to be able to compute our models on a VAX with 2408 cases and up to 12 parameters, an extra FORTRAN subroutine had to added to increase the capacity of the BMDP 3R program.

The models are compared with the test statistic proposed by Sobel (1985, p. 705) and uses the Residual Mean Squares of two nested models. The likelihood ratio L is estimated as follows:

---

[5] Another advantage of the 1977 issue of the Life Situation Surveys is that it contains detailed information about father's and mother's occupation, as well as detailed occupational coded. This is the reason that this file has been used frequently in earlier research on stratification in the Netherlands (e.g. Ganzeboom, 1984).

[6] The classification in only four categories is due to the necessity to have a sufficient density on the diagonal of the intergenerational educational mobility table, that is persons who have the same education as their father and mothers. The appropriate Dutch school type names are: (1) LO, VGLO, (2) LBO, (3) MULO, MAVO, MBO, (4) HAVO, VWO, HBO, WO. It is important to note that the four categories are comparable between generations.

[7] Those readers interested in the FORTRAN routines should direct correspondence to the first author.

$L = (rms_f / rms_n)^N$

where rms_f is the maximum likelihood ratio of the residual mean square in the more general model and rms_n the maximum likelihood ratio of the residual mean square in the nested model; N is the sample size. Knowing that -2(log)L has an asymptotic $CHI^2(r)$ distribution, with r being the additional parameters in the general model, we can use this statistic for comparing the models.

ANALYSIS

We will divide the analysis in three parts. First, we will analyze the effects of spouse's and respondent's education. Second, effects of parents' and respondent's education. Third, we will provide a simultaneous treatment of all hypothesized effects.

A. SPOUSES' EFFECTS

The first part of our analysis deals with effects of spouse's education on respondent's level of culture consumption. Table 1 lines up a series of equations for this problem. The central variables in this part are the educations of both spouses and the diagonal reference parametrization will be restricted to these two variables. The parameters of this part of the model is displayed in Table 2. In addition, each model in Table 2 includes age, sex, and parents' education as control variables, of which the main effects are controlled simultaneously with the effects of the spouse's educations.

****** Tables 1 and 2 about here ******

The first model A is not a diagonal reference model, but the familiar 'square additive model' commonly applied in analysis of (co)variance (without interactions). We present this model to illustrate the more parsimonious account given by diagonal reference models. In the square additive model the culture consumption scores are modeled with the marginal scores as a reference. The model uses 11 degrees of freedom: one for the overall mean, four for the control variables and three (out of four) for the each of the marginal reference categories.

Equation B gives the diagonal reference counterpart of the square additive model, the simple additive diagonal reference model. In stead of the average scores in two marginal categories, each cell is now referred to the scores in two diagonal cells. The model is more parsimonious than the square additive model, since it uses only 9 degrees of freedom: four for the diagonal cells, one for the relative contribution of both spouses and four for the control variables. Its fit is almost identical to the square additive model, and significantly better if the two saved degrees of freedom are taken into account.

The diagonal estimates u_{11} to u_{44} in Table 2 show that the higher the educational status of the respondent and her/his partner, the higher the level of culture consumption. The covariates father's and mother's education also have a positive impact on culture consumption. These results confirm our first status group hypothesis. The estimated weights for respondent and spouse in model B

are .594 for respondent's education and (1 - .594 =) .406 for spouses education. The asymptotic standard deviation of the weight coefficient p is .035, which indicates that this weight coefficient is clearly significant.

Equation C models the weak versions of the parvenu (hypothesis 2aP) and the impoverished nobility (hypothesis 2aI) effects. It models an adjustment process between the spouses in which respondents will conform to their spouse's education, if spouse's education is higher than theirs, but that they will conform to their own education if it is higher than their spouse's education. With diagonal reference equations, this adjustment process can be modelled with the same number of degrees of freedom as the additive adjustment model (cf. equations 2a and 2b): the reference process below the diagonal (ED>SED) is the reverse of the one above the diagonal (SED>ED). Model B and C therefore have the same number of degrees of freedom and are not nested; strictly speaking they cannot be compared. However, the associated residual mean squares suggest that this type of adjustment to highest education (Model C) is a much less appropriate description of the data than a simple additive process with a larger weight for one's own education (model B).

A less restricted version of model C is model D, which contains separate parameters for the downwardly and upwardly mobile respondents. The statistics show that this model is to be preferred over model C. Model B, however, still results in a better fit. The conclusion is that we have to reject the status maximization hypotheses 2aP and 2aI (i.e. also in its strong version) for the marital context.

Equation E models a still different kind of adjustment within marriage, namely that the wife adjusts her behavior towards her husband more than that he adjust his behavior to hers (cf. male domination hypothesis 3a). This is modelled in a way analogous to multiplicative terms in regression equations: the within-marriage adjustment coefficients are modelled separately for the male respondents and female respondents (cf. equation 5). The weights p and (1-p) are still expressed as comparable probabilities, since the value that the conditional parameter δp adds to p is simultaneously subtracted from (1-p). Model E consumes an additional degree of freedom as compared to the additive model B. The gain in CHI^2 is 8.7 (see table 2), which indicates that we prefer ($\alpha <$ .05) model E. The parameter estimate for the conditional sex effect is also significant at the 5% level (-0.167; SE 0.073). Consequently, the weight parameters in column E of Table 3 imply that the weight (p) for the respondent's own education is 0.675 for men and 0.508 (0.675 - 0.167) for women. We therefore find significant evidence of male domination within marriage: husbands accommodate their cultural behavior less to their spouse's education than wives do.

Equation F models different adjustment weights for different age groups, where age varies continuously between 1 (25-34 years) to 5 (65-74 years) and stand for marriage duration. The logic of this model is entirely parallel to that of model E, but the multiplicative interaction term now refers to increments between 10-year wide generations. The models assumes that the relative weights of respondent's education and spouse's education differ linearly between age groups (hypothesis 5a). The coefficients for this model F, given in column F of Table 3, imply that the older the age group, the lower the weight of respondent's education and, consequently, the larger the weight of spouse's education. The fit statistics, however, show that these increments, as compared to model B, are only statistically significant (1 df; 2.8 CHI^2) at the 10% level.

If one accepts the previous outcome as a significant result, at least two interpretations can be given to this result, but our data cannot decide between them. To us, a life-course explanation is the most appealing: spouses mutually adjust their behavior to each other's preferences and are in stronger agreement after a long time of marriage than at the beginning. Alternatively, a cohort interpretation can be given: agreement between spouses was more common in earlier cohorts. We would need a comparison between surveys of different periods to decide between these.

Finally, we have to test hypothesis 6a, stating that the influence of spouse's education during marriage increases more for female than for male respondents. Equation G models this third order interaction effect. Model G includes the interaction between the age-interaction and the sex-interaction. The hypothesis that inspires this model is that the adjustment to husband's education (model E) differs between the age groups.

The nested model comparison in Table 1 shows that model G results in a significant better fit compared to models E and F. The second order interaction effects of the weight coefficient p with sex and age are significant at the 5% level and the third order interaction effect is significant at the 10% level. The parameter estimates in column G of Table 2 can be interpreted as follows. The youngest males weigh their educational status by (0.900-1*0.093 =) 0.807 and that of their spouse by (1-0.807 =) 0.193; the oldest males weigh their educational status by (0.900 - 5*0.093 =) 0.435 and of their spouse by 0.565. In other words, the female partner becomes more dominant. This process is quite different for female respondents. The youngest females weigh their education by (0.900 - 0.399 - 1*0.93 + 1*0.96 =) 0.504 and, consequently, their husband by 0.496. The oldest females weigh their education by (0.900 - 0.399 - 5*0.093 + 5*0.096 =) 0.516 and their partner by 0.484. The conclusion is that we have to reject the conditional time acculturation hypothesis 6.a. The empirical result is the other way round. Assuming a life-course explanation, the conclusion is as follows: whereas for males the influence of spouse's education during marriage increases, for female respondents it hardly changes.[8]

B. EFFECTS OF FATHER'S AND MOTHER'S EDUCATION

In Table 3 and Table 4 the focus of the analysis is changed from the influence of spouse's education to the influence of the educations of the father and mother of the respondent. The treatment of the two variables representing parents' educations in Table 3 differs from that in Table 1, in that the diagonal reference parametrization is now applied to the intergenerational adjustment process. The influence of the spouse is now introduced as a control variable, as are sex and age. The models in Tables 3 and 4 differ in design from those in Tables 1 and 2, in that they are three-dimensional in stead of two-dimensional. The reference categories are now formed by those who are consistent throughout the three educational measures respondent's education, father's education, and mother's education. To model the influencing process of the parents, we use an extension of the diagonal reference models, as treated in the equations 7 through 9 in the Methods paragraph. Table 3 reports again the fit statistics of the models and Table 4 reports the associated parameters.

**** Tables 3 and 4 about here ****

The first model A is not a diagonal reference model, but again the familiar square additive analysis of variance (with covariates but without interaction) model. The degrees of freedom consumed are 13: one for the grand mean, three for the control variables, and three for each of the three marginal educational effects. Conversely, the additive diagonal reference Model B uses 9 degrees of freedom: three for the covariates, four for the diagonal reference categories and two for the relative contributions of the three

[8] A cohort interpretation would be that male domination is weaker for older generations than for younger generations. We think that this interpretation is not very plausible.

independent variables. These effects of respondent's education, father's education and mother's education are constrained to sum to 1. The model includes age, sex and spouse's education as covariates. Column B of Table 4 shows that the higher the educational level in general the higher culture consumption of the diagonal reference categories (u_{111} to u_{444}). Also the educations of both parents (q and (1-p-q)) contribute significantly to respondent's culture consumption. The control variable age again has a negative and sex a positive effect on culture consumption. The coefficients of .120 for father's education and .215 for mother's education suggest that mother's education is more important than father's education. This result is contrary to the effects suggested by the male domination hypothesis 3b. Therefore, our next concern is to test whether the difference between mother's and father's education is statistically significant.

For this purpose we introduce model C in Table 3. Model C has the peculiarity that the weights of father and mother are multiplied with 0.5, as can been seen in Table 3. This way we maintain the restriction that the weights of father, mother and respondent sum to 1: i.e. $((1-p) + 0.5p + 0.5p = 1$; if $0 \leq p \leq 1)$. Comparison of models B and C learns that the difference between the weights of father and mother is <u>not</u> significant: The extra parameter (i.e. 1 df) that model B uses to model the difference in impact between father's and mother's educational status results in a gain of only 0.6 CHI^2. Hence, the data are compatible with the assumption that mother and father are equally important.

Taking into consideration the previous results for model B in table 2 modelling the spouses's educations, it appears that the influence of the partner's education (0.406 in column B of Table 2) versus respondent's education is larger than the influence of father's and mother's education (0.163 and 0.163 in column C of Table 4) versus respondent's education. We can draw a similar conclusion from the covariates in Tables 2 and 4. The parameter estimates of .090 for father's education and .168 for mother's education in column B of Table 2 are clearly lower than the parameter coefficient .367 for spouse's education in column C of Table 4.

The result of equal importance of the two parental statuses is used in the development of model D, that implies the process of sex-specific socialization (i.e. hypothesis 4b): male and female respondents are supposed to differ in their weighing of the importance of father and mother. This Model D is in its most parsimonious version, that implies that women's culture consumption is influenced by mother's education by the same amount as men's culture consumption is influenced by father's education. The inspiration of this model is the idea that women tend to follow their mothers, whereas men follow their fathers. But in reality the parameter (column D of Table 4) comes out the other way round: women do weight their father's education more than their mother's education, whereas men do the opposite. However, the standard error is almost twice as large as the parameter estimate, indicating that we can disregard the sex difference for the rest of our models.[9]

The next hypothesis we test holds that the adjustment process will depend upon respondent's age (hypothesis 5b). The older the respondent, the longer his childhood has passed away, and the larger the weight of the current education and the lower the weight of parents' education. Model E (see Table 3) test this hypothesis. The results are presented in Table 3 and column E of Table 4. The CHI^2 test comparison with model C shows that inclusion of the interaction effect with age does not result in a significant better model. Therefore, we will return to the specification given in model C, with equal influence of father and mother, for both sexes and age groups.

---

[9] There is no CHI^2 reported for the nested models C and D. The reason is that even the residual mean square of model D is higher than the more parsimonious model C. The reason is that is that the inclusion of the conditional parameter for sex did not reduce the RSS in a noticeable manner.

At this point, we introduce another model that assumes variations about how parent's educations combine with respondent's education. This model tests both the parvenu (hypothesis 2bP) and the impoverished nobility hypothesis (hypothesis 2bI). They state that only the highest educational status counts. To test hypotheses 2bP and 2bI we introduce the following conditional three dimensional diagonal reference model (model F), which is based upon model C:

In case education of the respondent is higher than parents' education, we obtain the following model:

$$y_{hijk} = p.u_{hhh} + (0.5*(1-p)).u_{iii} + (0.5*(1-p)).u_{jjj} + \text{controls} + E_{hijk} \quad (10)$$

When the respondent's education is lower than parents' education, we obtain:

$$y_{hijk} = (1-p).u_{hhh} + 0.5*p.u_{iii} + 0.5*p.u_{jjj} + \text{controls} + E_{hijk} \quad (11)$$

where u_{hhh} stands for the diagonal reference cell of the respondent's education, u_{iii} and u_{jjj} stand for the diagonal father's and mother's educational diagonal reference category. In order to know whether the respondent has a lower or higher education we constructed the following index for parent's education: PED = ROUND((FED+MED)/2)

The fit of this model is exceptionally good, even better than model C (see Table 3). It belongs to the most parsimonious models and has the lowest residual mean square of all diagonal reference models. The coefficients are .754 for the respondent and a minor .123 for each parent in case the education of the respondent is higher than that of the parents. If, however, respondent's education is lower than that of the parents, the respondent's weight diminishes to .246 and that of each parent becomes .377. The conclusion is that, in case one is downwardly mobile, the weight of one's own attained education becomes even less important than that of the parents.[10]

Although these results strongly confirm the weak version of the parvenu and the impoverished nobility hypotheses, we still can test stronger versions of these mobility hypotheses. This means mobility effects stating for mobile respondents a level of culture consumption even higher than the educational reference categories (i.e. diagonal reference estimates) weighed by (p) and (1-p). The remaining models in Table 3 deal with the particular form that the influence of father and mother have and bring mobility contrasts into the analysis. Model G specifies the traditional status inconsistency pattern. The variables STEP that is introduced is defined as: STEP = ABS(ED-PED); where PED = ROUND((FED+MED)/2). This STEP parameter estimates the effects of the number of steps between respondent's and his/her two parents' educations, independent of main effects of the respondent's and parent's education. The expectation about culture consumption patterns is that high participation is particularly prevalent among the socially mobile, be it descenders or climbers. This expectation is consistent with the parameter estimation for STEP, which is positive. However, the nested model comparison shows that inclusion of the STEP parameter does result in very small improvement of the model (model C versus G: 2.9 CHI^2; 1 df). Column G of Table 4 points out that the estimate for the STEP parameter is not significant, even not at the 10% level. Therefore, we may consider the influence of STEP as negligible.

[10] A less restricted version of model F is a model that not just alternates the weights for upwardly and downwardly mobile individuals, but that contains separate parameters for upwardly and downwardly mobile individuals. Such a model, however, results in gain of only 2.2 CHI2 (1 df).

Model H restricts the effects of social mobility to social climbers and is therefore a test of the strong version of the parvenu-hypothesis: those who have climbed to high status, will display an amount of culture consumption that is relatively high, even as compared to their reference category of arrival. This is tested with a mobility variable, that is constructed in the same way as the STEP variable in the previous model, but now restricted to the upward movers. Those whose educational status is equal to or lower than their parents' are coded 0 on this variable PARV. The nested model comparison in Table 3 shows that also this conjecture about mobility effects do not bear out with the facts. The fit of model H is even worse than model G. Although the signs of the mobility estimates confirm the hypotheses, the general conclusion is that no substantial effects of the two mobility variables distinguished can be observed.

Finally, Model I in Table 3 restricts the effects of social mobility to downward respondents and is therefore a test of the strong version of the 'impoverished nobility'-hypothesis: those who are downward mobile (within their own generation) to low status, will display an amount of culture consumption that is relatively high, even as compared to their reference category of origin. We constructed a variable IMPOV, that consists of score of 0 for those whose educational status is equal to or higher than their parents' and a score of 1 for those whose educational status is lower than their parents'. Column I of Table 5 shows this mobility effect is quite substantial. The IMPOV coefficient amounts to .289 with an asymptotic standard deviation of .137. This result confirms the strong version of the impoverished nobility hypothesis. Also the CHI^2 comparison with model F shows that the model with the strong version of the impoverished nobility hypothesis fits the data significantly better than the model consisting of both weak versions of the impoverished nobility and parvenu hypotheses. This inspires us to a new model combining the weak version of the parvenu hypothesis and the strong version of the impoverished nobility hypothesis. The statistics of this model are reported in Table 4 as well as in column J in Table 5. The Residual Sum of Squares of model J, however is even higher than the more parsimonious model I. Therefore, model I remains the model we prefer, meaning that the combination of the strong version 'impoverished nobility' hypothesis and the weak version of the 'parvenu' hypothesis gives the best representation for the intergenerational educational mobility table.[11]

C. SIMULTANEOUS EFFECTS OF PARENTS'S AND SPOUSE'S EDUCATION

Theoretically, one would prefer to have a model in which the diagonal reference effects of all educational variables are assessed simultaneously, where the reference categories would consist of those that are entirely consistent across all educational variables (ED=SED=FED=MED). Apart from the difficulties intrinsic to specifying and estimating such complicated, four-dimensional diagonal reference models, this type of analysis meets difficulties from a practical point of view, because only very few individuals are consistent across a range of four moderately correlated variables, and we would need much larger sample sizes to obtain reliable estimates for the diagonal reference categories. However, our results above have shown that father's and mother's education are of equal importance. This offers the possibility to include one index for the influence of both parents. This variable is constructed

[11] Similar to model F we can make a model that is less restrictive than model J, that is a model that not just alternates the weights for upwardly and downwardly mobile individuals, but that contains separate parameters for upwardly and downwardly mobile individuals. The residual mean square of such a model, however, appeared to be even higher than the more parsimonious model I.

as follows: ROUND((FED + MED)/2). It is obvious that this constructed variable will have a lower impact on culture consumption than the two separate variables for father and mother together. The advantage, however, is that we have know more cases on the diagonal and that we are able to compare the relative influence of respondent's, parent's, and spouse's education simultaneously. Another disadvantage is that we are not able to test the male domination hypotheses 3b and 4b.[12] The results of our analyses are presented in Tables 5 and 6.

*** Tables 5 and 6 about here ***

Similar to the previous analyses we start with the square additive baseline model, shown in Table 5. Model B is the additive diagonal reference model. Column B in Table 6 shows that the effect of respondent's educational status amounts to .482, for the parent's .187, and for the spouse .331. This implies that the influence of the spouse is almost twice the influence of the parents' education.[13] Another implication is that the effect of respondent's education is almost equal to the effects of parents's and spouse's education taken together (i.e.: .187 + .331 = .518).

In model C we test whether women adjust their behavior more to that of their husband (hypothesis 3a). The CHI^2 comparison with model B shows a significant improvement (8.9 CHI^2; 1 df). The parameter estimates in column C of Table 6 show that men weigh their own education by .545 and their partner by .263. Women on the other hand, weigh their own education a bit less than that of their partner. The parameters show that the influence of females' education amounts to (.545 - .135 =) .410 and that of their spouse amounts to (.263 + .135 =) .498. This result confirms previous results in column E of Table 2.

Next, we test the gradual acculturation hypothesis 5a, stating that for older persons the partner will have a stronger impact. The results of model D shows that this does not lead to a significant improvement. A final test concerns the conditional acculturation hypothesis 6.a holding that the influence of spouse's education during marriage increases more for female than for male respondents. In order to test this hypothesis we model a third order interaction effect between sex, age, and the weight coefficient. A brief description of the formula is shown in model E of Table 5. The improvement compared to the sex adjustment model C amounts to 7.7 CHI^2 for 2 df. Of more interest are the parameter estimates in column F of table 6. Before drawing definite conclusions, however, we have to consider the results in the previous paragraph concerning the impoverished nobility hypothesis 2bI. In model F we include a additional impoverished nobility effect, that does not concern the education of the partner. The reduction in the residual sum of squares is clearly significant as is shown in Table 6. The parameter estimates show first of all that the impoverished nobility effect is positive and significant at the 5% level. The other substantial conclusions are the following. The parents are always weighed by 0.145. The weight parameter p for the youngest female group amounts to (.779 -.330 - 1*.082 + .085 =) .452 and for the partner (.076 + .330 + 1*.082 - 1*.085 =) .403. For the oldest female group the coefficient for their own education is essentially the same, i.e. (.779 -.330 - 5*.082 + 5*.085 =) .464. The husband has in this case a coefficient of .391. This is quite different for men. The youngest male group has a weight coefficient of (.779 - .082 =) .697 (partner .158) and the oldest (.779 - 5*.082 =) .369

[12] The gradual acculturation hypothesis 5b will not be tested either, since the previous analyses clearly showed that no age effect could be detected (cf. Tables 3 and 4).

[13] A model in which the weight coefficients for the spouse and the parents were forced to be similar resulted in a residual mean square of 2.22640 with 7df. Model B consumes 1df extra against 10.1 CHI_2. This implies that the difference between the weight coefficients is significant.

(partner .486). In other words, assuming a life-course explanation: whereas for males the influence of spouse's education during marriage increases, for female respondents it hardly changes. Additionally, those who have an educational training that is three categories lower than their parents, show a level of culture consumption that is 3*.288 = .864 higher than other respondents.

CONCLUSIONS AND DISCUSSION

In this paper we have applied diagonal reference models, as introduced by Sobel (1981, 1985) to model effects of social mobility and status inconsistency, to the influence of respondent's, parents' and spouses participation in cultural activities. As elsewhere (Sobel 1981, 1985; De Graaf and Ultee 1987a, 1990), it was argued that diagonal reference model are not only relevant because of their capacity to cope with mobility effects where more conventional models, such as applied in regression analysis and analysis of variance, fail[14], but also because they embody substantively more adequate specifications of the processes of status group acculturation within marriage and socialization in the parental family than the traditional (marginal reference) models do. Persons who adjust their cultural behavior to one another within marriage or people who are socialized to cultural behavior within the parental family, are more likely to refer to patterns of behavior common in groups with consistent educational makeup than to behavior in groups with varying educational backgrounds. The class of models we apply employs this idea by using the behavior of persons on the diagonal of an educational cross-classification as the reference category, in stead of using the marginal distributions of the educational cross-classification, as in common in analysis of variance models. In addition, diagonal reference models often have the advantage of being more parsimonious than their marginal counterparts, and lead -- at the same time -- to ample opportunities to formulate and test substantive hypotheses about the adjustment process and to constrain the parameters of the models as a consequence.

Our analysis has led us to a number of conclusions. First, the analysis has unequivocally shown the importance of spouse's education and the educations of both parents for the culture consumption behavior of the respondent. The influence of spouse's education appears to be more important than parent's education.

Second, we have been able to show that the adjustment process within marriage differs between male and female respondents. Men appear to weigh their educational status higher than their wives' education, whereas women weigh their educational status similar to their partner's education. The final model included a third order interaction effect between the weights of the spouses and sex and age. The important outcome was that the weight of females education almost does not vary between age groups and is roughly equal to the weight of partner's education. This is quite different for men. Assuming a life-course explanation, the influence of spouse's education during marriage increases considerably.

Third, and finally, in case the respondent's education is lower than parent's education the influence of parents' education is even more substantial than respondent's own education. If, however, the education of the respondent is higher, the influence of the parents is negligible. Conjectures about a different influence of the two parents were inconsistent with the data. The intergenerational analysis showed that both a parvenu-effect and an impoverished nobility effect could be detected. Strong status

[14] That there is still an ongoing discussion on this topic show Glenn (1989) and Mcrae and Brody (1989).

maximization effects, however, could only be detected for those respondents who have a lower education than their parents. Apparently, in these days a woman like Mrs. Jourdain does not have to worry about ludicrous extravagant behavior of her 'parvenu' husband. On the other hand, characters like the nobleman Dorante are still existent.

REFERENCES

Bourdieu, Pierre. 1984. Distinction. A social critique of the judgement of taste, London: Routledge & Kegan Paul [Or. Fr. 1979].

Brophy, J.E. 1970. "Mothers as Teachers of their Own Preschool Children: The Influence of Socioeconomic Status and Task Structure on Teaching Specificity." Child Development 41:17-84.

De Graaf, Nan Dirk and Wout C. Ultee, 1987a. "Intergenerationele mobiliteit en politieke verhoudingen (Intergenerational Mobility, Individual Political Preference and Societal Political Balance)." Acta Politica. 22: 3-37.

----------. 1987b. "Intergenerational Mobility, Individual Political Preference and Societal Political Balance." paper presented at the meeting of the ISA Research Committee on Social Stratification, Berkeley, USA, August 12-15.

----------. Forthcoming (1990) "Individual Preferences, Social Mobility and Electoral Outcomes", Electoral Studies.

DiMaggio, Paul and Michael Useem. 1978. "Social classes and arts consumption: the origins and consequences of class differences in exposure to arts in America." Theory and Society, 5: 141-61.

Central Bureau of Statistics (CBS). 1977. Life Situation Survey 1977 [machine readable data-file]

Elias, Norbert. 1939. Ueber der Prozess der Zivilisation. Soziogenetische und psychogenetische Untersuchungen, Basel:Haus zum Falken.

Erikson, Robert. 1984 Social class of men, women and families. Sociology 18: 500-514.

Ganzeboom, Harry B.G. 1982. "Explaining differential participation in high-cultural activities." Pp. 186-205 Theoretical models and empirical analyses, Edited by Werner Raub. Utrecht: ES Publications.

----------. 1984. Cultuur als informatieverwerking, Utrecht: University of Utrecht (dissertation).

Glenn, Norval D. 1989. "A Flawed Approach to Solving the Identification Problem in the Estimation of Mobility Effect Models: A Comment on Brody and Mcrae." Social Forces 67: 789-95.

Goldthorpe, John H. 1983. "Women and class analysis: in defense of the conventional view." Sociology 17: 465-88.

Goodman, Leo A. 1972. "Some multiplicative models for the analysis of cross-classified data." Pp. 646-96 Proceedings of the Sixth Berkeley Symposium on Mathematical Statistics and Probability. Berkeley: University of California Press.

Halsey, Albert H., Anthony F. Heath and John M. Ridge. 1980. Origins and Destinations: Family, Class and Education in Modern Britain, Oxford: Clarendon Press.

Heath, Anthony F. and N. Britten. 1984. "Women's Jobs do make a difference: a reply to Goldthorpe." Sociology 18: 475-90.

Hess, R.D. and V.C. Shipman. 1965. "Early Experience and the Socialization of Cognitive Modes in Children." Child Development, 36: 869-86.

Hope, Keith. 1971. "Social Mobility and Fertility." American Sociological Review 36: 1019-32.

---------. 1975. "Models of status inconsistency and social mobility effects." American Sociological Review 40: 322-43.

Mcrae, James A. and Charles J. Brody. 1989. "Reply to Glenn." Social Forces 67: 796-98.

Molière. 1953. "The Would-be Gentleman" [Le Bourgeois Gentilhomme], Pp. 1-62 Molière: The Miser and Other Plays [tr. John Wood] , Harmondsworth: Penguin Books, 1953.

Snippenburg Leo and Wout C. Ultee, Forthcoming (1990) "Intergenerationele beroepsmobiliteit en klasse-identificatie in Nederland." Mens en Maatschappij, 65.

Sobel, Michael E. 1981. "Diagonal mobility models: a substantively motivated class of designs for the analysis of mobility effects." American Sociological Review, 46: 893-906.

---------. 1985. "Social mobility and fertility revisited: some new models for the analysis of the mobility effects hypothesis." American Sociological Review, 50: 699-712.

Ultee, Wout C., Nan Dirk De Graaf and Rob Van Puijenbroek. 1988. "Gezonde en ongezonde vraagstellingen." Tijdschrift voor Sociale Gezondheidszorg, 66: 333-339.

Ultee, Wout C., Nan Dirk De Graaf and Rob Van Puijenbroek. 1989. "Healthy Questions about Ill-Health." Pp. 125-50 in Socio economic inequalities in health: Questions on trends and explanations, edited by Gunning-Schepers L.J., I.P. Spruit and J.H. Krijnen. The Hague: Ministery of Welfare, Health and Cultural Affairs.

Weber, William. 1975. Music and the middle class. The social structure of concert life in London, Paris and Vienna. London: Croom Helen.

White, B.L. 1971. "An Analysis of Excellent Early Educational Practices: Preliminary Report." Interchange, 2:71-88.

Figure 1: Overview of hypotheses about status group effects on culture consumption

---

1. Status group hypothesis:

Respondent's cultural consumption increases with his/her own education, as well as with the educational status of spouse and parents.

2. Status maximization hypotheses:

	2a. In marriage relationships:	2b. In intergenerational relationships:
Parvenu:	**2aP. Those who marry with a partner with a higher status will stress their gained status by displaying levels of culture consumption in in accordance with or even higher than is usual for the status of their spouse.**	**2bP. Persons with a higher education than their parents, will display levels of culture consumption in accordance with or higher than is usual in their own educational category.**
Impoverished nobility:	**2aI. Those who marry a partner with a lower status will display levels of culture consumption in accordance with or even higher than is usual in their own status group.**	**2bI. Persons with a lower education than their parents will display levels of culture consumption in accordance with or higher than is usual in the educational category of their parents.**

3/4. Male domination hypothesis:

3a. Women adjust their level of culture consumption more to what is usual in the educational category of their husband, than do husbands adjust to what is usual in the educational category of their wifes.	**3b. The influence of father's status on respondent's culture consumption is more important than that of mother's status.**
	4b. The influence of mother's status on culture consumption is larger for women than for men; the influence of father's status on culture consumption is larger for men than for women.

5. Gradual acculturation hypothesis:

5a. The longer the duration of marriage, the more someone culture consumption will be determined by partner's status, up to a level where it, at most, equals the influence of someone's own status.	**5b. The older a person becomes, the his/her culture consumption will be determined by his/her own status the less by someone's parents.**

6. Conditional acculturation hypothesis:

6a. The influence of spouse's education during marriage increases more for

female than for male respondents.

Table 1: Nested diagonal reference models for effects of spouses' educations on respondent's culture consumption.[a]

	NDF	RMS	SSres		CHI^2
A. Baseline square additive model:					
ED + SED + controls	11	2.21701	5314.17		
B. Additive diagonal reference model:					
[p.ED + (1-p).SED] + controls	9	2.21686	5318.24		
C. Adjustment to highest education:					
[p.ED + (1-p).SED] + controls if ED>SED	9	2.22328	5333.65		
[(1-p).ED + p.SED] + controls if ED<SED					
D. Adjustment to highest education, while allowing p to be different:					
[p1.ED + (1-p1).SED] + controls if ED>SED	10	2.21746	5317.48		
[(1-p2).ED + p2.SED] + controls if ED<SED					
E. Adjustment to husband's education:					
[(p+ δp.SEX).ED + ((1-p)- δp.SEX).SED] + contr	10	2.21286	5306.43	B-E	8.7
F. Age dependent adjustment:					
[(p+ δp.AGE).ED + ((1-p)- δp.AGE).SED] + contr	10	2.21558	5312.96	B-F	2.8
G. Adjustment to husband's education differs between age groups:					
[(p+ δp1.SEX+ δp2.AGE+ δp3.SEX*AGE).ED +	12	2.20953	5294.02	E-G	7.3
((1-p)- δp1.SEX- δp2.AGE- δp3.SEX*AGE).SED] + contr				F-G	13.2

(a) ED: Respondent's education; SED: spouse's education; SEX: sex, coded as 0=women, 1=men: AGE, age coded from 1 (25-34 years) to 5 (65-74). All models, except Model A, fit four parameters (u_{11} - u_{44}) for the diagonal reference cells, and four ß estimates for the control variables: SEX, AGE, MED (mother's education) and FED (father's education). SStot=7616.46, N=2408.

Table 2: Parameters of the diagonal references models presented in Table 2. Standard errors are in parentheses.

	B	C	D	E	F	G
u_{11}	0.935	.947	.953	.915	.929	.868
	(.132)	(.134)	(.133)	(.131)	(.131)	(.133)
u_{22}	1.523	1.550	1.541	1.527	1.539	1.524
	(.115)	(.119)	(.119)	(.115)	(.115)	(.115)
u_{33}	2.497	2.529	2.524	2.476	2.483	2.440
	(.123)	(.132)	(.131)	(.123)	(.123)	(.123)
u_{44}	3.682	3.687	3.719	3.625	3.691	3.598
	(.170)	(.180)	(.180)	(.169)	(.170)	(.169)
ß1 AGE	-.050	-.049	-.050	-.052	-.048	-.038
	(.026)	(.026)	(.026)	(.026)	(.026)	(.027)
ß2 SEX	.257	.218	.258	.259	.251	.257
	(.063)	(.061)	(.063)	(.063)	(.063)	(.063)
ß3 FEDUC	.090	.099	.089	.091	.091	.093
	(.044)	(.044)	(.044)	(.044)	(.044)	(.044)
ß4 MEDUC	.168	.169	.165	.172	.166	.168
	(.054)	(.055)	(.054)	(.054)	(.054)	(.054)
p ED	.594	.479[a]	.567[b]	.675	.694	.900
(1-p) SED	.406	.521[a]	.433[b]	.325	.306	.100
	(.035)	(.046)	(.057)	(.051)	(.073)	(.108)
p2 ED			.621[c]			
(1-p2) SED			.379[c]			
			(.057)			
δp (S)ED*SEX				-.167		-.399
				(.073)		(.153)
δp (S)ED*AGE					-.043	-.093
					(.027)	(.039)
δp (S)ED*SEX*AGE						.096
						(.057)

(a) The coefficient .479 refers to ED if ED > SED and to SED if ED < SED; the coefficient .521 refers to SED if ED > SED and to ED if ED < SED.

(b) if ED > SED

(c) if ED < SED

Table 3: Diagonal reference models for effects of respondent's, father's and mother's educations on respondent's culture consumption[a]

	NDF	RMS	RSS	CHI2	
A. Baseline square additive model:					
ED + FED + MED + controls	13	2.21657	5308.68		
B. Additive diagonal reference model:					
[p.ED + q.FED + (1-p-q).MED] + controls	9	2.21843	5322.02		
C. Equal effects of mother and father:					
[(1-p).ED + .5*p.FED + .5*p.MED] + contr	8	2.21814	5323.54		
D. Sex specific modelling:					
[(1-p).ED + (.5*p + _p.SE).FED + (.5*p - _p.SE).MED] + controls	9	2.21895	5323.26		
E. Age specific modelling:					
[(1-p+ _p.AGE).ED + (.5*p - _p.AGE).FED + .5*(p - _p.AGE).MED] + controls	9	2.21791	5320.77	C-E	0.5
F. Effect of highest education:					
if ED > PED: [p.ED + .5*(1-p).FED + .5*(1-p).MED] + controls; if ED < PED [(1-p).ED + .5*p.FED + .5*p.MED] + controls	8	2.21789	5322.93		
G. Social mobility:					
[(1-p).ED + .5*p.FED + .5*p.MED] + controls + ß.STEPS	9	2.21680	5318.11	C-G	2.9
H. Parvenu:					
[(1-p).ED + .5*p.FED + .5*p.MED] + controls + ß.PARV	9	2.21835	5321.83		
I. Impoverished Nobility:					
[(1-p).ED + .5*p.FED + .5*p.MED] + controls + ß.IMPOV	9	2.21499	5313.76	C-I F-I	6.8 6.3
J. Effect of highest education + Impoverished Nob.:					
if ED > PED: [p.ED + .5*(1-p).FED + .5*(1-p).MED] + controls; if ED < PED: [(1-p).ED + .5*p.FED + .5*p.MED] + controls + ß.IMPOV	9	2.21867	5322.59		

(a) ED: Respondent's education; SED: spouse's education; PED: parent's education: ROUND((FED+MED)/2); SEX: sex, coded as 0=women, 1=men: AGE, age coded from 1 (25-34 years) to 5 (65-74). All models, except Model A, fit four parameters (u_{111} - u_{444}) for the diagonal reference cells, and three ß estimates for the control variables: SEX, AGE, and SED (spouse's education). SStot=7616.46, N=2408.

Table 4: Parameters of the diagonal references models presented in Table 4. Standard Errors are in parentheses.

	B	C	D	E	F	G	H	I	J
u_{111}	.779	.785	.789	.767	.740	.754	.765	.761	.747
	(.126)	(.126)	(.126)	(.127)	(.114)	(.126)	(.126)	(.126)	(.114)
u_{222}	1.255	1.245	1.247	1.247	1.159	1.203	1.226	1.196	1.164
	(.136)	(.135)	(.135)	(.136)	(.120)	(.146)	(.146)	(.133)	(.120)
u_{333}	2.131	2.112	2.110	2.128	1.977	2.063	2.100	2.018	1.983
	(.163)	(.161)	(.161)	(.162)	(.143)	(.170)	(.168)	(.163)	(.143)
u_{444}	3.256	3.217	3.211	3.262	3.030	3.206	3.234	3.118	3.037
	(.208)	(.202)	(.203)	(.207)	(.172)	(.205)	(.208)	(.207)	(.172)
ß1 AGE	-.046	-.048	-.048	-.042	-.041	-.045	-.046	-.045	-.042
	(.026)	(.026)	(.026)	(.027)	(.025)	(.026)	(.026)	(.026)	(.025)
ß2 SEX	.262	.262	.258	.263	.269	.266	.265	.265	.268
	(.063)	(.063)	(.064)	(.063)	(.063)	(.063)	(.063)	(.063)	(.063)
ß3 SEDUC	.367	.367	.366	.368	.369	.365	.366	.365	.367
	(.037)	(.037)	(.037)	(.037)	(.031)	(.037)	(.037)	(.037)	(.032)
p ED	.665								
	(.052)								
q FEDUC	.120								
	(.057)								
(1-p-q) MED	.215								
(1-p) ED		.674	.677	.662	.754[a]	.579	.581	.736	.754[a]
		(.052)	(.053)	(.051)	(.062)	(.080)	(.122)	(.064)	(.062)
p FED		.163	.162	.169	.123[a]	.210	.209	.132	.123[a]
		(.052)	(.053)	(.051)	(.062)	(.080)	(.122)	(.064)	(.062)
p MEDUC		.163	.162	.169	.123[a]	.210	.209	.132	.123[a]
		(.052)	(.053)	(.081)	(.062)	(.080)	(.122)	(.064)	(.062)
δp M(F)EDUC*SEX			.030						
			(.085)						
δp M(F)EDUC*AGE				-.025					
				(.022)					
ß STEP						.098			
						(.065)			
ß PARV							.080		
							(.097)		
ß IMPOV								.289	.054
								(.137)	(.146)

a These coefficients concern the situation in case the education of the respondent is higher than that of the parents. In case the respondents education is lower, these coefficients become for both model F and J: for ED .246; for each parent .377.

Table 5: Nested Diagonal reference models for effects of respondent's, parents' and spouse's educations on respondent's culture consumption[a]

	NDF	RMS	RSS	CHI2	
A. Baseline square additive model:					
ED + PED + SED + controls	**12**	**2.22003**	**5319.19**		
B. Additive diagonal reference model:					
[p.ED + q.PED + (1-p-q)*SED] + controls	**8**	**2.22172**	**5332.12**		
C. Adjustment to husband's education:					
[(p+ δp.SEX).ED + q.PED + (1-p-q- δp.SEX).SED] + contr	**9**	**2.21760**	**5320.02**	**B-C**	**8.9**
D. Age dependent adjustment:					
[(p+ δp.AGE).ED + q.PED + (1-p-q- δp.AGE).SED] + contr	**9**	**2.22041**	**5326.77**	**B-D**	**2.8**
E. Adjustment to husband's education differs between age groups:					
[(p+ δp1.SEX+ δp2.AGE+ δp3.SEX*AGE).ED + q.PED ((1-p-q- δp1.SEX- δp2.AGE- δp3.SEX*AGE).SED] + contr	**11**	**2.21407**	**5307.12**	**C-F**	**7.7**
F. Adjustment to husband's education differs between age groups + impoverished nobility:					
[(p+ δp1.SEX+ δp2.AGE+ δp3.SEX*AGE).ED + q.PED ((1-p-q- δp1.SEX- δp2.AGE- δp3.SEX*AGE).SED] + IMPOV + contr	**12**	**2.21118**	**5297.99**	**E-F** **C-F** **B-F**	**6.3** **14.0** **22.9**

(a) ED: Respondent's education; SED: spouse's education; PED: parent's education: ROUND((FED+MED)/2); SEX: sex, coded as 0=women, 1=men: AGE, age coded from 1 (25-34 years) to 5 (65-74). All models, except Model A, fit four parameters (u_{111} - u_{444}) for the diagonal reference cells, and two ß estimates for the control variables: SEX and AGE. SStot=7616.46, N=2408.

Table 6: Parameters of the diagonal references models presented in Table 6. Standard errors are in parentheses.

	B	C	D	E	F
u_{111}	1.189	1.174	1.181	1.125	1.099
	(.117)	(.117)	(.117)	(.118)	(.119)
u_{222}	1.930	1.943	1.947	1.941	1.889
	(.104)	(.104)	(.104)	(.105)	(.106)
u_{333}	3.157	3.148	3.137	3.103	3.006
	(.117)	(.117)	(.116)	(.117)	(.122)
u_{444}	4.596	4.552	4.602	4.518	4.432
	(.137)	(.136)	(.137)	(.136)	(.142)
ß1 AGE	-.051	-.053	-.050	-.039	-.036
	(.026)	(.026)	(.026)	(.027)	(.027)
ß2 SEX	.258	.259	.251	.257	.259
	(.063)	(.063)	(.063)	(.063)	(.063)
p ED	.482	.545	.564	.730	.779
	(.036)	(.046)	(.063)	(.090)	(.096)
q PED	.187	.192	.170	.190	.145
	(.038)	(.038)	(.037)	(.037)	(.035)
(1-p-q) SED	.331	.263	.250	.080	.077
δp (S)ED*SEX		-.135		-.327	-.330
		(.058)		(.123)	(.125)
δp (S)ED*AGE			-.050	-.076	-.082
			(.026)	(.031)	(.032)
δp (S)ED*SEX*AGE				.079	.085
				(.046)	(.047)
ß IMPOV					.288
					(.141)

Appendix 1: Definitions and characteristics of variables in the analysis

Var	Code	Mean	Description
AGE	1-5	2.483	Age of respondents coded from 1 (25-35 years of age) to 5 (65-74 years of age)
SEX	0-1	0.463	Sex: 0 - men, 1 - women
ED	1-4	2.277	Respondent's education
SED	1-4	2.233	Spouse's education
FED	1-4	1.494	Respondent's father education
MED	1-4	1.290	Respondent's mother education
CULT	0-6	2.275	Count of times active in 34.2% theater & concert going 28.3% movie going 39.5% museum visits 40.9% visits to historical monuments 61.7% reading books 24.6% library membership

The sample is restricted to married people with a valid score on all background variables. For the construction of the CULT variable mean substitution was used.

Appendix 2: Average culture consumption cross-classified by respondent's education and spouse's education (Number of cases between brackets).

		Respondent's Education				
		LOW			HIGH	
		I	II	III	IV	
LOW	I	1.1279	1.4970	2.0094	3.2000	1.3861
		(469)	(169)	(106)	(20)	(764)
Spouse's	II	1.5975	1.8551	2.4751	3.0000	2.0331
Education		(159)	(283)	(181)	(41)	(664)
	III	1.8876	2.2639	2.9506	3.6522	2.7981
		(89)	(144)	(263)	(138)	(634)
HIGH	IV	2.6800	2.6053	3.3208	4.3955	3.7457
		(25)	(38)	(106)	(177)	(346)
		1.3720	1.8975	2.7271	3.9069	2.2753
		(742)	(634)	(656)	(376)	(2408)