STILL WEAK SUPPORT FOR STATUS-CASTE EXCHANGE: A REPLY TO CRITICS[1]

I am delighted that my article, "Critique of Exchange Theory in Mate Selection" (Rosenfeld 2005) has elicited two such interesting responses. I begin my comments with Gullickson and Fu's remarks in "An Endorsement of Exchange Theory in Mate Selection."

Gullickson and Fu propose a different way to measure status-caste exchange within loglinear models. The parameter they propose has technical advantages over the parameter I used in my article. Their parameter, which is similar to one I described my "Critique of Exchange Theory in Mate Selection" (p. 1307, n. 20) is superior, and I am happy to adopt it. In footnote 20 (Rosenfeld 2005) I noted that the type of parameter Gullickson and Fu now use yields the same substantive results as the parameter I employed in my "Critique of Exchange Theory." Gullickson and Fu are, in part, replicating results from my footnotes and web-posted supplementary analyses, with one interesting difference: Gullickson and Fu truncate the results to exclude the best-fitting model.

All the models from my article that supported status-caste exchange theory (hereafter SCE theory) still support SCE theory using Gullickson and Fu's parameter. All the models from my article that rejected SCE theory, which include all of the better-fitting models, still reject SCE theory using Gullickson and Fu's parameter. Table 1 compares the results.

The parameters of my article (Rosenfeld 2005) and of Gullickson and Fu (in this issue) both support SCE in models 1 and 2 but reject SCE in the better-fitting models 3, 4, and 5. The models are as I described (Rosenfeld 2005, pp. 1304–5), with the best-fitting models on the right and the worst-fitting models on the left.[2] Gullickson and Fu's parameter is scaled differently from my own, but both parameters support SCE theory when they are positive and significantly different from zero. Models 3–5 fit substantially better than model 2 by the likelihood ratio test (LRT).

[1] Thanks are due to Paula England and David Grusky for helpful comments. Direct correspondence to Michael J. Rosenfled, Department of Sociology, Stanford University, 450 Serra Mall, Building 120, Stanford, California 94305. Email: michael.rosenfeld@stanford.edu.

[2] In models 2–4, I have added one term corresponding to the gender specific interaction between black husbands and white wives, because Gullickson and Fu added this term in their reanalysis. The inclusion of this term has no effect on SCE.

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TABLE 1
SIMILARITY OF RESULTS FOR STATUS-CASTE EXCHANGE: COEFFICIENTS FROM LOGLINEAR MODELS

	Model 1	Model 2	Model 3	Model 4	Model 5
Rosenfeld's SCE					
parameter	.14***	.07***	.016	−.006	−.06
df	285	259	199	139	103
L^2	277,491.9	2,323.9	1,536.0	913.6	130.96
BIC	273,710.2	−1,112.8	−1,104.5	−930.8	−1,236.6
Gullickson and Fu's SCE parameter	.257***	.113***	.03	−.09	−.092
df	285	259	199	139	103
L^2	277,506.8	2,320.9	1,535.9	913.7	131.15
BIC	273,725.1	−1,115.8	−1,104.6	−930.7	−1,235.6
Advantage in goodness of fit over model 2:					
df			60	120	156
χ^2			785***	1,407***	2,190***

NOTE.—Data are 1980 census marriage data used in Rosenfeld (2005). Data have 324 cells; $N =$ 578,994. White and black are non-Hispanic white and non-Hispanic back. The goodness-of-fit comparison with model 2 refers to models with the Gullickson-Fu exchange parameter.
Model 1 = log (*U*)Constant + HRace * HEd + WRace * WEd + racial endogamy + black endogamy + black * white + black − whiteSCE.
Model 2 = Model 1 + HEd * WEd + HBlack * WWhite.
Model 3 = Model 1 + HBlack * HEd * WEd + WBlack * HEd * WEd + HBlack * WWhite.
Model 4 = Model 1 + HRace * HEd * WEd + WRace * HEd * WEd + HBlack * WWhite.
Model 5 = Model 1 + HRace * HEd * WEd + WRace * HEd * WEd + racial endogamy * HEd * WEd + HBlack * WWhite + black * white * BlackEd.
$^+$ $P < .10$.
* $P < .05$.
** $P < .01$.
*** $P < .001$.

Models 3–5 fit better than model 2 because models 3–5 include necessary controls that, by standard practice, have to be included in the models for the tests of SCE to be valid.

The goodness-of-fit chi-square test for model 5 is 131.15 on 103 degrees of freedom (using Gullickson and Fu's parameter). This represents an improvement in the chi-square statistic from model 2 of 2,320.9–131.15 = 2,190 on 259–103 = 156 degrees of freedom. The expected value for a chi-square distribution of 156 degrees of freedom is 156, and a difference of more than 186 in the chi-square statistics would strongly favor model 5 (the probability of a value of 186 or greater from a chi-square distribution with 156 degrees of freedom is 5%). A value of 2,190 is too large to ever be reached by chance from a chi-square distribution on 156 degrees of freedom, so this means we can absolutely reject the null hypothesis that model 2 fits the data as well as model 5 does.

The improvement in fit from model 2 to model 5 is not a small difference. Model 5 also fits substantially better than model 2 by the BIC criteria. Model 5's BIC of −1,235.6 is 120 smaller than model 2's BIC of −1,115.8. Smaller values of BIC imply better fit, and differences of more than 10 in the BIC are significant (Raftery 1995). Gullickson and Fu's tables fail to include model 5, which is the best-fitting model.

Gullickson and Fu's reanalysis does not overturn my results; on the contrary, their models and mine yield the same substantive results. Gullickson and Fu reach a different conclusion about SCE because they make different choices from the same set of results. They argue that model 2 is the most reasonable model on the grounds of parsimony, despite the fact that the parsimony-favoring BIC strongly prefers model 5 over model 2.

The fundamental principle in model selection is and always has been that models are preferred in proportion to how well they fit the data (Agresti 2002). The better a model's fit, the more accurately the model describes the data, and the more reliable the model is for making causal inferences. Drawing hypotheses and conclusions from poor-fitting models is never a good idea, but that is what Gullickson and Fu do. The advantage in the goodness-of-fit LRT of models 3, 4, and 5 over model 2 is not a small advantage, it is an enormous advantage. The advantage of model 5 over model 2 in the BIC criteria is also strongly significant. Because Gullickson and Fu's argument rests on their dismissal of a broad class of log-linear models that happen to fit the data well, I briefly review the definition of SCE in light of Gullickson and Fu's arguments.

Status-Caste Exchange Defined, and the Necessity for Appropriate Controls

Status-caste exchange (SCE) theory was first introduced by Kingsley Davis (1941) and Robert Merton (1941). Theories of race that were in use in the 1940s had difficulty explaining why any white person would choose a black spouse. Racial theory has come a long way since the 1940s. Davis and Merton's SCE theory proposed that the only reason black-white marriages took place was that the black spouse must have especially high status, much higher than the white partner, and that the high status of the black spouse would compensate the white partner for throwing his or her lot in with black society. Davis and Merton did not base their SCE theories on marriage data from the United States, as such data were not available in the early 1940s.

In order to measure SCE theory, within loglinear models or any other method, one needs to demonstrate a status gap between blacks and their white spouses that is larger than one would otherwise expect. To measure the status gap implied by SCE, a researcher must take the statuses and the races of both spouses into account. Measuring SCE in multivariate models requires a four-way interaction between the races and educations of both spouses. Gullickson and Fu's SCE parameter is appropriately four dimensional. In order to properly measure a four-way interaction, standard practice for log-linear models and all other types of multivariate models is to include "all lower order terms contained in a higher order model term" (Agresti 2002, pp. 316–17). This is the standard rule of model hierarchy, which model 2 violates but models 3–5 satisfy.

What makes models 3–5 fit better than model 2 is that models 3–5 control for the three-way interactions that must be present in any model that contains the four-way SCE interaction. And what are the relevant three-way interactions? The pattern of educational assortative mating turns out to be somewhat different for blacks and whites, regardless of the race of the spouse. Blacks are more likely than whites to marry someone whose education differs from theirs. Since the vast majority of blacks marry blacks, and the vast majority of whites marry whites, this difference in educational assortative mating between blacks and whites is not a function of SCE. If one wants to know whether the pattern of educational assortative mating between blacks and whites is unusual (as SCE theory would imply), one must control for the patterns of black and white educational assortative mating in the general case; that is, without regard to the race of the spouse. Without the inclusion of appropriate controls, the measured coefficients are all subject to omitted variable bias (Greene 2002, pp. 148–49).

Gullickson and Fu's Argument against Control Variables

Gullickson and Fu not only prefer model 2, which violates the standard hierarchical model building rule and fits the data relatively poorly, but they attempt to persuade us that SCE can *only* be measured when the underlying three-dimensional controls (education of both spouses by either spouse's race) are left out of the model. They show that inclusion of the three-dimensional controls changes the relationship among the predicted values, and changes the meaning of the SCE parameter. What Gullickson and Fu fail to recognize is that the behavior they identify is the expected behavior of control variables in multiple regression. Any new nonzero variable changes the predicted values of a model, and the inclusion of new variables generally complicates the interpretation of variables already entered. As Agresti states in his introductory text, "The association between two variables may change dramatically under a control for another variable" (Agresti 1996 p. 53)

Specifically, Gullickson and Fu show (with their eq. [5]) that cells of predicted values that had a relationship equal to the SCE parameter in model 2 no longer have such a relationship after the inclusion of the three-dimensional controls. Gullickson and Fu claim that this change proves that there is some mysterious element of SCE hidden in the three-dimensional controls. Their preferred model, model 2, also includes controls for husband's education by wife's education, regardless of the race of either spouse. The controls in model 2 that they use have the same effect they complain about, changing one set of odds ratios of predicted values away from a simple SCE parameter (see the appendix). Following Gullickson and Fu's flawed logic their own preferred model would also have to be discarded, and this is a sign that their approach to model selection is not valid.

Gullickson and Fu's Table 2

Because Gullickson and Fu's own SCE parameter rejects SCE in the best-fitting models (a fact that they fail to report), Gullickson and Fu seem to abandon hypothesis testing of SCE within loglinear models and turn instead to a table of odds ratios derived from predicted values, their table 2. Of the 60 odds ratios listed in their table 2, 35 point in a direction consistent with SCE, while 25 point in the opposite direction. If one flipped a coin 60 times, the probability of heads coming up at least 35 times would be 12%. After excluding the cells with black women married to white men, Gullickson and Fu proclaim success with the reduced data set: they report that 24 out of 30 odds ratios for black men married to white women are consistent with SCE.

The joint probability of coin flips is easy to calculate because individual coin flips are independent and identically distributed. The odds ratios listed by Gullickson and Fu in their table 2 are neither independent from each other nor identically distributed. Some of the odds ratios are based on thousands of cases, while other of the odds ratios include cells with predicted counts of less than one. Because of the lack of independence and the problem of wildly different weights, Gullickson and Fu's set of odds ratios cannot be summarized in a way that would make them useful for hypothesis testing. The way to know whether these odds ratios, as a group, really support SCE is to measure them jointly within the loglinear model using a parameter such as Gullickson and Fu's SCE parameter, which would properly account for the different cell weights. The separate odds ratios in their table 2 are like the broken shards of a nice a piece of pottery: when they were part of a coherent whole they amounted to something, but as a group of separate parts they are not very useful.

Gullickson and Fu's table 2 is odd in another way as well. The axes of husband's education and wife's education are reversed from the top to the bottom of the table. The two triangles seem to be complementary, but after making the axes the same, one sees that the two triangles are actually the same. The reversal of axes disguises the fact that Gullickson and Fu's 30 odds ratios of educational assortative mating (EAM) for black men married to white women cover the same 15 cells two different ways (cells in which black husbands have more education than their white wives). In addition to excluding all of the white men married to black women from their analysis of the odds ratios of predicted values, Gullickson and Fu also exclude half of the cells relevant to marriage between black men and white women. The other half of the EAM table, wherein white wives have less education than their black husbands, is just as important to SCE theory, but Gullickson and Fu never mention it in relation to their table 2. Black men with less education than their white wives should be especially rare if SCE theory were true. Gullickson and Fu's SCE parameter properly treats both halves of the table equally, assigning a value of 1 to cells where the black spouse has more education, and −1 to the cells where the white spouse has more education.

An alternate version of Gullickson and Fu's table 2, examining only black men married to white women (as Gullickson and Fu suggest), but using the other half of the EAM table which they neglect, points in a different direction. In this alternate version of Gullickson and Fu's table 2, only 11 of the 30 local odds ratios for black men married to white women are consistent with SCE theory. Gullickson and Fu's claim that 24 out of 30 odds ratios support SCE for black men married to white women is based on their counting the same half of the EAM table (for black men married to white women) twice, and the other half of the EAM table (for black men married to white women) not at all.

The Negative Binomial Version of Gullickson and Fu's models

If we use the negative binomial model, which is a generalization of the loglinear model, SCE theory would be rejected by all 5 models, including Gullickson and Fu's favored model 2. Table 2 shows that the negative binomial models fit the data dramatically better than the loglinear versions in every case except model 5, where the fit is the same. For model 2, the model Gullickson and Fu prefer, the negative binomial version has a likelihood ratio test advantage of 1,420 on one degree of freedom, a massive advantage for the negative binomial model, while also erasing the significance of the SCE parameter. The literature strongly supports negative binomial models as a generalization from log linear models (King

TABLE 2
THE NEGATIVE BINOMIAL VERSION OF GULLICKSON AND FU'S MODELS: NO SUPPORT FOR SCE THEORY

	Model 1	Model 2	Model 3	Model 4	Model 5
Gullickson and Fu's SCE parameter	.068	.037	−.003	−.111	−.092
SE	.156	.045	.065	.062	.055
Likelihood ratio χ^2 advantage over the loglinear version (df = 1)	275,736***	1,420.2***	759.9***	267.6***	0

NOTE.–Data are 1980 census marriage data used in Rosenfeld (2005); 324 cells. N = 578,994. Loglinear and negative binomial models coincide exactly in model 5.
$^{+}$ $P < .10$.
* $P < .05$.
** $P < .01$.
*** $P < .001$.

1989; Long 1997) where the actual data are sparse (there are few black-white married couples with disparate educational attainments, even in the massive census files). Gullickson and Fu never mention the negative binomial versions of the models.

Kalmijn's Analysis

Kalmijn argues in this volume that the differences in educational attainment between men and women, and between blacks and whites, could mask the evidence for SCE in summary statistics. I see more value in the summary statistics than Kalmijn does,[3] but I happily grant Kalmijn's

[3] It is true, as Kalmijn notes, that whites had more formal education than blacks and that married men had more formal education than married women in the UnitedStates at the time of the 1980 census. SCE theory, however, is a theory about exchange *within couples*. Regardless of the ample differences between blacks and whites in the society as a whole (and these differences were even more dramatic in the early 20th century), SCE theory predicts that within couples the black spouse should have higher status than the white partner, to directly compensate the white partner for marrying a black person. If the black and white spouses have the same status as each other, it is not easy to see how SCE can be taking place, regardless of the fact that blacks in the society may have lower average status than whites. While black educational attainment has improved over the 20th century relative to white educational attainment, black-white couples have always been closely matched on education and on other measures of status. In my data set of marriages from the 1980 census, there are 2,607 black-white intermarried couples. Of these, 1,059 have the same educational attainment (using the six educational categories from the full data set), 776 of the black spouses have higher educational attainment than their white partners, and 772 of the black spouses have lower educational attainment than their white partners. In other words, black and white spouses are evenly matched in education. Status homogamy (the marriage between people of similar status) appears to have always been the rule for

point that the actual lack of support for SCE at the summary level could be misleading, because any method (including loglinear models) can be misleading. Loglinear models provide the ability to control for marginal distributions in education by race and gender, so loglinear models provide different kinds of tests for SCE. I agree with Kalmijn that loglinear models are a valuable and relevant way to test for SCE. We do indeed want to compare the actual observed pattern of black-white marriage with the pattern that we would expect under a variety of assumptions. The key question is, Which set of assumptions should be used to generate the expected values?

My disagreement with Kalmijn is similar to my disagreement with Gullickson and Fu: Kalmijn's evidence for SCE is entirely dependent on the particular loglinear models he chooses. Like Gullickson and Fu, Kalmijn rests his entire argument on loglinear models that fit the data poorly. Adding essential controls into Kalmijn's models improves the fit dramatically and overturns the apparent support for SCE theory.

In table 3, I summarize Kalmijn's models (here named K1 and K2). Each proponent of SCE theory has their own method for measuring SCE. In reevaluating Kalmijn's results, I follow Kalmijn's method for measuring SCE, and I use Kalmijn's reduced version of the data set in order to show that even on his own terms, the claims favoring SCE are not robust.[4] Models R1–R3 of table 3 can be described as follows:

R1 adds HEd * WEd, racial endogamy * HEd, and educational endogamy * HRace to model K1.

R2 adds HEd * WEd, racial endogamy * HEd, and educational endogamy * HRace to model K2.

R3 adds HRace * HEd * WEd, WRace * HEd * WEd, and racial endogamy * HEd to model K2.

Where HRace is husband's race; HEd is husband's education; WRace is

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black-white intermarriage, even in the early 20th century when blacks were so disadvantaged that the black educational distribution and the white educational distribution hardly overlapped at all.

[4] Kalmijn modified the 1980 census data set from my original article and fit models that are similar to the models from his own work (Kalmijn 1993). Specifically, Kalmijn collapsed the six educational categories to four (by combining the top two and the bottom two), and he dropped the third racial group, "All Others," from the data set entirely. The resulting dataset has $2 \times 2 \times 4 \times 4 = 64$ cells (reduced from 324), and N is reduced to 540,852 from 578,994. Dropping all the Hispanics, Asians, and other nonwhite and nonblack individuals from the data set is problematic because the "Other" racial groups are part of the marriage market, and their marriage patterns ought to be considered in determining whether black-white marriage patterns are unusual. The reduction in number of cells sharply reduces the sparseness in the data set and makes the results of negative binomial models similar to the results of loglinear models. I show only the loglinear models in this section.

TABLE 3
KALMIJN'S MODELS AND VARIOUS BETTER-FITTING ALTERNATIVES

	K1	K2	R1	R2	R3
Kalmijn's SCE ratio:					
For black men married to white women	1.31	1.33	.99	.99	1.01
For black women married to white men	1.01	1.00	1.01	1.01	1.04
df	35	29	28	22	5
L^2	774.3	734.1	80.9	53.54	6.32
BIC	312.3	351.3	−288.7	−236.9	−59.7
Advantage in goodness of fit over:					
Model K1					
df			7	13	30
χ^2			693.4***	720.8***	768.0***
Model K2					
df				7	24
χ^2				680.6***	727.8***

NOTE.—Data are 1980 census marriage data from Rosenfeld (2005), adapted by Kalmijn. Data has 64 cells, $N = 540{,}852$. Kalmijn's ratio supports SCE when it is substantially larger than 1 for black men married to white women, and the ratio supports SCE when it is substantially less than 1 for black women married to white men. K1 and K2 are Kalmijn's models 1 and 2 from his table 2 (in this issue, p. xx).

$^+$ $P<.10$.
* $P<.05$.
** $P<.01$.
*** $P<.001$.

wife's race; WEd is wife's education; educational endogamy is a dummy variable equal to one when both spouses have the same education (and zero otherwise). Models R1 and R2 start with Kalmijn's model 1 and 2 and add controls for the general pattern of educational assortative mating (without regard to race of either spouse), variation in racial endogamy by husband's education, and variation in educational endogamy by husband's race (without regard to race of the wife).

Kalmijn's models fit the data poorly. Comparing models R1 and K1 yields an LRT of 774.3–80.9 = 693.4 on seven degrees of freedom. The expected value of a chi-square distribution with seven degrees of freedom is seven. The high value of the LRT strongly prefers R1 to K1. The LRT prefers models R1–R3 dramatically over K1 and K2. Models R1–R3 also fit better than K1 and K2 by the BIC. Models R1 and R2 have an advantage of more than 500 in BIC over K1 and K2 (lower BIC values are better), while model R3 has an advantage of more than 300 over K1 and K2. According to Raftery (1995), a difference greater than 10 in the BIC criteria should be decisive.

SCE theory does not fare nearly as well in the better-fitting models R1–

R3 as in Kalmijn's models K1 and K2. For black men married to white women, Kalmijn's ratio supports SCE theory when the ratio is substantially larger than 1.[5] Values of 1.31 and 1.33 in models K1 and K2 were reported by Kalmijn as impressive support for SCE theory for black men married to white women. The better-fitting models R1, R2, and R3 generate Kalmijn ratios indistinguishable from 1 (actually 0.99, 0.99, and 1.01), implying no evidence for SCE among black men married to white women.

For black women married to white men, Kalmijn's ratio should be substantially less than 1 to support SCE theory. None of the models in table 3 has a Kalmijn ratio of less than 1 for black women married to white men, meaning there is no hint of evidence of SCE for black women and white men. Among the models in table 3, model R1 fits the best by BIC and model R3 fits best by LRT; neither model shows any evidence for SCE.

Kalmijn's justifies his choice of models by noting that his models do not account for many types of asymmetry in the data. There are all sorts of asymmetries in the data that have nothing to do with SCE, however. Kalmijn's log-linear models attribute too much influence to SCE because Kalmijn's models do not fully account for the educational endogamy difference between whites and blacks or the difference in racial endogamy between college-educated and non-college-educated persons. Adding the appropriate controls dramatically improves the fit of Kalmijn's models and overturns his core result. The observed data—that is, the actual data—show no evidence for SCE. Kalmijn's comparison of expected with observed values appears to support SCE only because the models that he uses to generate the expected data lack the necessary controls and fit the data poorly as a result.

Discussion

Gullickson and Fu have proposed a new parameter for testing SCE within loglinear models. Their parameter is a useful improvement, but it changes none of the substantive results, nor does it change the relative fit of the different models.

Kalmijn's and Gullickson and Fu's analyses here provide fresh examples of something I first identified in my article: that evidence for SCE theory appeared to be based on loglinear models that fit the data poorly.

[5] The standard error of Kalmijn's ratio has not been defined in the literature, which makes hypothesis testing with Kalmijn's ratio somewhat problematic.

Support for SCE among the loglinear models is *always* overturned when the models include appropriate controls.

Goodness of fit is fundamental to model selection, perhaps even more for loglinear models than for other kinds of models. Without paying attention to the goodness of fit, there would be no reasonable way to choose among the infinite set of models that could be fit to the data. It is not surprising that supporters of SCE have their favorite models, which do support SCE theory. What is surprising is that Gullickson, Fu, and Kalmijn promote loglinear models as the only valid way to test for SCE while also dismissing the evidence from the loglinear models that fit the data best. The goodness-of-fit advantage in this data set for the models that reject SCE is not a small advantage, but the kind of dramatic advantage that leaves little room for doubt.

In their effort to disqualify the better-fitting models (which reject SCE), Gullickson and Fu make a variety of arguments about patterns in the predicted values of the different models. None of these arguments stand up to close scrutiny.

In some sense, the debate over SCE is an arcane debate, because few scholars have published directly on the subject. In another sense, the debate over SCE has some general implications, because the debate turns on widely applicable issues of model selection and how social scientists present their results.

In my "Critique of Exchange Theory" paper, I showed that blacks and their white spouses have always had roughly the same level of status, a finding that makes SCE rather unlikely. Many other authors have made the same simple discovery (see Rosenfeld 2005 for references). Gullickson and Fu and Kalmijn all argue that their use of loglinear models allows them to ignore the simple summary statistics, because of the supposed inherent superiority of log-linear models as an analytic tool. Yet Gullickson and Fu, and Kalmijn's selective reporting of the results, and their subtle avoidance of the standard rules of model fitting, yield misleading loglinear results regarding SCE, which ironically demonstrate how vulnerable the complex models are to unstated assumptions. This is what Leamer (1983) refers to as the "con" in econometrics. Freedman (1991) eloquently makes the case for the inclusion of simple analyses of summary statistics, which at least have the benefit of transparency.

If the supporters of SCE included the best-fitting models in their tables of results, readers would be free to make up their own minds about the various arguments advanced by the SCE supporters for preferring the poor-fitting models over the better-fitting models. My chief complaint is that Kalmijn and Gullickson and Fu do not report the evidence from the best-fitting models in their tables. Because the best-fitting models lead to a different conclusion about SCE, and because readers cannot conjure up these alternate results without reanalyzing the data from scratch (Young 2009), I reanalyze the findings that claim to support SCE theory. Reanalysis easily overturns findings in favor of SCE theory for a simple reason: there is very little support for SCE theory in the data.

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APPENDIX

Consequences of Gullickson and Fu's Rule

In table A1, based on model 1, the local table log-odds ratios generated from predicted values reproduce the SCE parameter, which is the behavior Gullickson and Fu claim to want. In table A2, based on model 2 (Gullickson and Fu's preferred model), the local table log-odds ratios no longer reproduce the SCE parameter, because model 2 contains control variables that are not included in model 1.

TABLE A1
Local Table Log-Odds Ratios from Predicted Values of Model 1

White Wives' Education	Black Husband's Education					
	1	2	3	4	5	6
1	0	.257	0	0	0	. . .
2	−.257	0	.257	0	0	. . .
3	0	−.257	0	.257	0	. . .
4	0	0	−.257	0	.257	. . .
5	0	0	0	−.257	0	. . .
6	. . .	. . .	. . .	. . .	. . .	. . .

Note.—This table reveals Gullickson and Fu's SCE parameter of .257. Local table log-odds ratios for i,j are $\ln[F(i,j)F(i+1,j+1)/F(i+1,j)F(i,j+1)]$, where F = predicted values.

TABLE A2
LOCAL TABLE LOG-ODDS RATIOS FROM PREDICTED VALUES OF MODEL 2

WHITE WIVES' EDUCATION	BLACK HUSBANDS' EDUCATION					
	1	2	3	4	5	6
1	.927	.271	.147	−.230	−.387	. . .
2	−0.094	1.194	.572	.819	−.025	. . .
3	.121	.148	1.296	.568	.362	. . .
4	−0.268	.456	.161	1.281	.260	. . .
5	−0.177	−.185	.082	−.302	1.166	. . .
6	. . .	. . .	. . .	. . .	. . .	. . .

REFERENCES

Agresti, Alan. 1996. *An Introduction to Categorical Data Analysis*. New York: John Wiley & Sons.

———. 2002. *Categorical Data Analysis*, 2d ed. Hoboken, N.J.: Wiley Interscience.

Davis, Kingsley. 1941. "Intermarriage in Caste Societies." *American Anthropologist* 43: 376–95.

Freedman, David A. 1991. "Statistical Models and Shoe Leather." *Sociological Methodology* 21:291-313.

Greene, William H. 2002. *Econometric Analysi*, 5th ed. New York: Prentice Hall.

Kalmijn, Matthijs. 1993. "Trends in Black/White Intermarriage." *Social Forces* 72: 119–46.

King, Gary. 1989. "Variance Specification in Event Count Models: From Restrictive Assumptions to a Generalized Estimator." *American Journal of Political Science* 33: 762–84.

Leamer, Edward E. 1983. "Let's Take the Con out of Econometrics." American Economic Review 73:31−43.

Long, J. Scott. 1997. *Regression Models for Categorical and Limited Dependent Variables*. Thousand Oaks, Calif.: Sage Press.

Merton, Robert K. 1941. "Intermarriage and the Social Structure: Fact and Theory." *Psychiatry* 4:361–74.

Raftery, Adrian E. 1995. "Bayesian Model Selection in Social Research." *Sociological Methodology* 25:111–63.

Rosenfeld, Michael J. 2005. "A Critique of Exchange Theory in Mate Selection." *American Journal of Sociology* 110:1284–1325.

Young, Cristobal. 2009. "Model Uncertainty in Sociological Research: An Application to Religion and Economic Growth." American Sociological Review 74:380−397.