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FEEDBACK

Another Cautionary Note on Interpreting Regression Results in Family Research: A Comment on Peterson and Gerson (1992)

Occasionally in the family literature we receive reminders to be cautious about our interpretations of regression results (e.g., Glenn & Kramer, 1985; Glenn & Shelton, 1983). After all, regression results are stated in the language of mathematics. We must be careful when we translate from the language of mathematics, which is blind to the human situation being represented by the numbers, into language that is meaningful in the human context. This brief note critiques the interpretation of regression results in an article by Peterson and Gerson (1992) that appeared in a recent issue of the *Journal of Marriage and the Family*.

Peterson and Gerson (1992) reported data from a survey of 950 men and 1,200 women from the National Longitudinal Survey of the High School Class of 1972. The researchers used the data to understand the structural forces inhibiting or pushing for men in dual-earner families to take greater responsibility for making child care arrangements. Table 2 in their report gives logistic regression coefficients relating various independent variables to the dependent variable, responsibility for making child care arrangements (treated as an ordinal-level scale, despite averaging two items and rounding down to the nearest integer to create the variable). For men's reports of the dependent variable, there was a significant coefficient of .17 for the independent variable, number of children in household, meaning that the "number of children in the household increases men's responsibility for child care arrangements" (p. 532). The coefficient for this predictor was nonsignificant for women's reports of

the dependent variable. In addition, a significant coefficient of .02 for men was reported for the independent variable, wives' work hours, meaning that "men whose wives work longer hours also have greater responsibility" (p. 532) for child care arrangements. For women's reports of the dependent variable, the coefficient for wives' work hours was $-.02$ ($p < .001$), meaning that wives reduced their responsibility for making child care arrangements as their work hours increased.

In their discussion of these (and other) results, the authors conclude that identifying some structural bases of gender inequality, such as number of children and wives' work hours, can be helpful because it "suggests how and why such inequality might decline" (p. 534). For instance, "If employment, particularly full-time employment, continues to become more common for women throughout the life cycle . . . husbands are likely to assume more responsibility for child care arrangements and wives are likely to assume less" (p. 534). This, of course, is an accurate interpretation of the regression planes associated with the logistic regression models. The models predict that more children and more wives' work hours will "produce" more responsibility for child care arrangements by men.

However, we must be cautious when we place the regression planes of these two models into human terms. The ranges of these two independent variables, number of children in the household and wives' work hours, are limited in real life. When one considers the range that these variables are likely to take on in dual-earner couples' real lives, the regression coefficients, although

statistically significant, suggest that these variables have little effect on men's responsibility for child care arrangements. In fact, using the original distribution (preschool-age children) of men's and women's reports of responsibility for child care arrangements given in Table 1 of Peterson's and Gerson's article, we calculated the predicted distributions of the dependent variable given incremental increases in the two independent variables discussed above (there were other significant independent variables in the model). That is, using the given logistic regression coefficients in Table 2 of Peterson and Gerson (1992), we calculated the average log odds of moving to the next adjacent category of the ordinal dependent variable, and determined the resultant distributions for a narrow but realistic range of the scales associated with the independent variables.

As our Table 1 demonstrates, there are only minor shifts in the proportions of men taking on most or all responsibility for child care arrangements given realistic increases in the independent variables. For example, the regression model suggests that if two children are added to the household, then the proportion of men reporting that they make all the child care arrangements increases from 20% to about 22% (see Panel A).

The proportion of fathers reporting that they make most of the arrangements does increase quite a bit when two children are added to the household, from 4% to about 13%. Still, even when two children are added to the household, the proportion of men who make most or all of the arrangements increases only from 24% to 37%. When placed in the broader context of what is happening in the home, we should be cautious about how meaningful a shift it is. How likely are wives in dual-earner families to trade off having two more children for a slightly larger chance that their husbands will take responsibility for child care arrangements? Moreover, women report much less involvement on the part of their husband in making child care arrangements than husbands do (see Table 1 of Peterson & Gerson, 1992). Thus, if we estimated changes in the distributions of the dependent variable from women's reports, the changes would be even less substantial. However, because the coefficient associated with number of children for the regression model of wives' reports of child care arrangements is nonsignificant, we did not estimate those new distributions.

A similar argument can be made looking at the changing distributions of men's and women's

TABLE 1. PREDICTED DISTRIBUTIONS FOR MEN'S AND WOMEN'S REPORTS OF RESPONSIBILITY FOR CHILD CARE ARRANGEMENTS IN DUAL-EARNER COUPLES GIVEN INCREMENTAL INCREASES IN NUMBER OF PRESCHOOL-AGE CHILDREN IN THE HOUSEHOLD (PANEL A) AND WIVES' WORK HOURS (PANELS B AND C)

<i>Panel A—Number of Children (Men's Reports of Responsibility)</i>	Original Distribution	+1 Child	+2 Children	+3 Children
I make <i>all</i> of the arrangements	20.0%	20.7%	22.4%	24.7%
I make <i>most</i> of the arrangements	4.0	8.8	12.6	15.6
I make <i>about half</i> of the arrangements	30.0	29.4	28.7	27.8
I make <i>some</i> of the arrangements	27.0	25.5	23.7	21.6
I make <i>none</i> of the arrangements	19.0	15.4	12.6	10.3
<i>Panel B—Wives' Work Hours (Men's Reports of Responsibility)</i>	Original Distribution	+10 Hours	+20 Hours	+30 Hours
I make <i>all</i> of the arrangements	20.0%	20.9%	23.1%	26.2%
I make <i>most</i> of the arrangements	4.0	9.8	14.1	17.3
I make <i>about half</i> of the arrangements	30.0	29.3	28.4	27.2
I make <i>some</i> of the arrangements	27.0	25.2	22.9	20.4
I make <i>none</i> of the arrangements	19.0	14.8	11.5	9.0
<i>Panel C—Wives' Work Hours (Women's Reports of Responsibility)</i>	Original Distribution	+10 Hours	+20 Hours	+30 Hours
I make <i>all</i> of the arrangements	79.0%	61.5%	47.9%	37.3%
I make <i>most</i> of the arrangements	15.0	29.2	36.3	38.9
I make <i>about half</i> of the arrangements	5.0	7.2	12.1	17.4
I make <i>some</i> of the arrangements	0.0	1.1	2.5	4.6
I make <i>none</i> of the arrangements	1.0	1.0	1.3	1.8

Note: Original distributions taken from Table 1 (preschool-age children) in Peterson & Gerson (1992). Logistic regression coefficients for "number of children" and "wives' work hours" were .17 and .02, respectively, for men's reports, and -.09 and -.02, respectively, for women's reports. The coefficient associated with number of children in the model for women (-.09) was not significant, thus we did not compute the estimated distributions based on wives' original distribution for this variable.

reports of the dependent variable as wives' work hours increase. To simplify, we added to wives' work hours in increments of 10 hours. Our calculations in Table 1 show that an increase of 20 hours in wives' work situations similarly "produces" a shift from 24% to 37% of men reporting they make most or all of the child care arrangements (see Panel B). Note that if we examine the changes in the distributions in women's (not men's) reports of making child care arrangements, even less change in men is estimated because women report that men take on less responsibility for making child care arrangements than men do. According to women's reports (see Panel C), if women are employed an extra 20 hours a week, the proportion of men who take on equal or greater responsibility for child care arrangements increases only from 6% to 16%. Again, we are skeptical that adding 20 hours of employment outside the home to receive a somewhat greater chance that dual-earner husbands would accept greater responsibility for making child care arrangements would be a reasonable tradeoff in the minds of most dual-earner wives. Some might argue that at a societal level, rather than a personal level, these estimated increases in men's responsibilities for child care arrangements may be an important social shift. Nevertheless, it is highly unlikely that we will see fertility or employment-hour changes for women of the magnitude required to get even modest increases in men's responsibilities for child care arrangements. The fertility rate for women in the United States has been steadily decreasing for decades, and adult women, on average, already work over 36 hours a week (Taeuber, 1991).

In many respects Peterson and Gerson's (1992) article is enlightening and a contribution to the field. Moreover, our critique does not alter substantially the theoretical implications stressed by

the authors in the concluding section of their paper. Still, for the authors in this situation to conclude that increases in the number of children in the household and wives' work hours will increase men's responsibility for making child care arrangements in the population is statistically accurate but humanly misleading. The variation in these independent "variables" is, in fact, severely restricted. Regression lines are infinite: people's real-life situations are not. We believe a more accurate interpretation of the numbers in Peterson and Gerson's article is that these structural variables will have only minor impact on fathers' responsibility for child care arrangements given the variables' limited and realistic variation in the lives of dual-earner couples in contemporary America. Thus, this article reminds family scholars to go beyond the numbers generated by statistical analyses to the meaning of those numbers as they are likely to be played out in human terms.

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